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Research on the Integration of Subject Service Innovation in University Libraries and the Cultivation of Practical Ability of Postgraduate in Library and Information Science

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Abstract: This study investigates the integration pathway between disciplinary service innovation in university libraries and the cultivation of practical competencies in professional degree graduate students in library and information science. Through theoretical analysis and institutional examination, the research constructs a systematic integration framework encompassing goal alignment, knowledge flow, and organizational synergy. The findings demonstrate that this integration follows the logic of value co-creation, where project-based practices and bidirectional empowerment mechanisms effectively enhance service specialization while promoting students' professional knowledge development. To achieve this, it is imperative to innovate practical teaching models, deepen the integration of curriculum content with real-world service projects, redefine the dual-mentor role, and establish a competency-driven evaluation feedback cycle. These insights provide a sustainable ecological development framework for library service transformation and the quality enhancement of professional degree education.

Keywords: Disciplinary Service Innovation; Professional Degree in Library and Information Science; Practical Ability Cultivation; Integration Mechanism; Collaborative Innovation

1. Introduction

Driven by the dual forces of connotative development in higher education and rapid transformations in information resource environments, university libraries are undergoing profound transformation in their traditional service models. Discipline service innovation has become the key pathway to enhance core values and integrate into teaching and research processes. Meanwhile, professional degree graduate education in library and information science aims to cultivate high-level, application-oriented specialists, where students' practical competencies directly influence future industry workforce quality. However, there remains a lack of systematic and in-depth coordination mechanisms between the practical demands of discipline service innovation and the supply of professional degree talent cultivation, resulting in a certain degree of disconnect between theory and practice. Therefore, exploring the integration mechanisms and implementation paths between these two aspects not only provides sustainable talent and intellectual support for library service upgrades, but also offers precise practical fields and competency anchors for professional degree education, holding significant theoretical value and practical urgency. This paper aims to systematically clarify the intrinsic logical connections between the two, constructing a theoretical framework and practical paradigm for integrated development.

2. Theoretical Basis of Integration of Discipline Service Innovation and Professional Degree Education

2.1 The Connotation and Evolution Dimension of Discipline Service Innovation

Disciplinary service innovation transcends mere service project aggregation. Its essence represents a profound transformation of university libraries' role from traditional document custodians to knowledge partners in modern academic communities. This evolution is fundamentally characterized by a shift in service logic: from passive, generalized reference consultations to proactive, precision-oriented in-depth knowledge services. As academic ecosystems evolve, disciplinary services have expanded into critical phases of the research lifecycle-providing frontier trend analysis during

project incubation, assisting data management and open sharing during output phases, and enhancing influence building during dissemination and evaluation. Service scopes have also extended to teaching support domains, including embedded information literacy education in curricula and resource design for blended learning with reconfigured learning spaces. Emerging fields like research data management and digital humanities project support now serve as frontiers for specialized disciplinary service exploration. This progression clearly demonstrates trends toward specialization, knowledge integration, and embeddedness, requiring service providers to not only master resources but also comprehend the intrinsic knowledge logic and research methodologies of specific disciplines. This trend establishes clear objectives for integrating libraries with professional degree education: future disciplinary service innovation urgently needs talents capable of understanding and mastering this deep-service model, which serves as the anchor point for integration practices [1].

2.2 Core Components of Practical Competence for Library and Information Science Professional Degree Postgraduates

The cultivation of practical competencies in library and information science graduate programs hinges on transcending traditional theoretical frameworks to develop a comprehensive skill set that aligns with industry frontiers, is transferable, and capable of addressing complex real-world challenges. At its core lies information analysis and insight-generating capability, requiring students to not only master information retrieval but also critically evaluate, deeply mine, and identify trends within vast, multi-source data streams, extracting actionable knowledge for decision-making and innovation. Knowledge organization and design form the backbone of practical skills, involving the application of modern tools to restructure information content, reveal correlations, and visualize data-sometimes even designing scenario-specific knowledge management systems or service platforms that transform chaotic information flows into structured knowledge assets. The ultimate realization of practical value comes through service innovation and promotion capabilities, encompassing acute awareness of users' latent needs, prototyping and iterative optimization of

new service models, and the ability to seamlessly integrate innovations into workflows for sustainable operations. These interconnected and progressive competencies collectively define the practical standards for professional degree programs, providing libraries with clear benchmarks for disciplinary service innovation. This suggests that the key to integration lies in situating competency development within authentic, challenging disciplinary service innovation contexts [2].

2.3 Guiding Value of Collaborative Innovation Theory and Ecosystem View

Exploring the integration between disciplinary service innovation and professional degree education requires moving beyond simplistic "supply-demand alignment" thinking, instead seeking robust theoretical frameworks to reveal their deep-seated interactive mechanisms. The collaborative innovation theory provides an enlightening perspective, viewing libraries and educational institutions as independent innovation entities with heterogeneous resources and knowledge. Their integration essentially constitutes a collaborative innovation process aimed at transcending boundaries through deep interaction and resource sharing to achieve value-added outcomes. This theory prompts us to focus on establishing effective communication interfaces, building mutual trust and consensus, and designing reasonable mechanisms for benefit distribution and risk sharing, thereby guiding the two systems from loose collaboration to strategic synergy. Meanwhile, the ecosystem perspective offers a broader framework for understanding the complexity of integration. It views the integration context as a dynamic academic service ecosystem composed of multiple elements including talent, knowledge, services, technology, and culture. Within this system, librarians and graduate students are no longer in a simple mentor-mentee relationship but serve as distinct knowledge nodes that facilitate the continuous flow and reproduction of explicit and tacit knowledge. Innovative service concepts and projects not only serve as outputs but also nourish the soil for talent cultivation. The ecosystem perspective emphasizes interdependence, cyclical symbiosis, and co-evolution among elements, reminding us that integration success depends not only on optimizing individual components but also on the structural health and dynamic balance of the

entire ecosystem. These two theories collectively establish the academic foundation for this study, guiding us to view integration practices as a systematic project for constructing a virtuous innovation ecosystem [3].

3. The Intrinsic Logic and Mechanism Construction of Integrated Development

3.1 Goal Coupling and Value Co-creation Logic

The pursuit of disciplinary service innovation by university libraries and the development of advanced practical competencies by professional degree graduate students in library and information science may appear to be goals of separate organizations, yet they share profound intrinsic consistency. The substantive improvement of library service efficiency increasingly relies on a team of professionals who understand academic ecosystems and master modern information methodologies to execute complex knowledge services. Similarly, the effective cultivation of practical abilities in professional degree graduate students urgently requires a real-world battlefield that transcends simulated environments and directly engages with authentic users and complex challenges. This high degree of alignment between intrinsic needs forms the solid foundation for the coupling of their objectives. Based on this, integrated practice unfolds through the logic of value co-creation. Libraries and graduate students collaborate to plan and implement specific disciplinary service projects-such as supporting specialized intelligence analysis for research teams or participating in designing data literacy courses for new humanities disciplines-thus forming a close-knit practical community. In this process, libraries not only gain fresh perspectives and project resources, driving innovative attempts in service content and models, but graduate students also transform theoretical tools into practical solutions under real-world pressure, achieving substantial growth in professional awareness, comprehensive skills, and innovative confidence. Ultimately, such co-creation activities enable libraries to more effectively integrate into the core teaching and research processes of universities, achieving their strategic transformation goals. Meanwhile, degree programs develop distinctive talent cultivation characteristics, enhancing educational social

adaptability and competitiveness, thereby jointly meeting the strategic development needs of both organizational levels [4].

3.2 Knowledge Flow and Two-way Empowerment Mechanism

The integration process fundamentally constitutes a dynamic cycle of knowledge exchange and reproduction. It facilitates valuable two-way flow between explicit and tacit knowledge between librarians and graduate students, establishing an organic mechanism for mutual empowerment. Explicit knowledge-including documented service standards, specialized analytical methodologies, and authoritative data management workflows-can be transmitted through formal training, document sharing, and structured guidance. As seasoned practitioners, librarians serve as the primary source of this knowledge transfer to graduate students. However, the more profound significance lies in the flow of tacit knowledge: librarians 'intuitive judgments about disciplinary user needs accumulated through long-term practice, their unstructured expertise in handling complex inquiries, and nuanced communication skills developed through cross-departmental collaboration. This knowledge is often passed on informally through observations, imitation, real-time feedback, and post-action reflection during collaborative work. Conversely, graduate students bring fresh theoretical perspectives, acute sensitivity to emerging technologies, and thinking patterns unshackled by conventional frameworks. These elements serve as new knowledge inputs that stimulate and enrich librarians' existing cognitive frameworks, potentially even prompting constructive reflections on traditional service practices. This bidirectional flow-particularly of tacit knowledge-creates a continuous cycle of empowerment. On one hand, it directly enhances the innovation level and execution quality of specific service projects; on the other, it deeply participates in the construction of graduate students' professional knowledge, equipping them not just with static skills but with dynamic problem-solving capabilities in complex scenarios. This symbiotic relationship ensures that integration is not merely a simple accumulation of human resources, but also a systematic enhancement of knowledge capital [5].

3.3 Organizational Coordination and Institutional Safeguards

To transform the integration of disciplinary service innovation with professional degree education from conceptual ideas into stable and sustainable practices, it is essential to establish a robust organizational coordination framework and institutionalize it as a reliable safeguard. At the organizational level, a permanent coordinating body should be established involving libraries, relevant academic departments, and degree programs, such as the "Joint Committee on Disciplinary Services and Practical Teaching." This committee would be responsible for top-level design, formulating strategic plans for integrated development, reviewing major collaborative projects, and coordinating key issues like cross-departmental resource allocation. It ensures alignment between organizational actions and the goals of both parties, providing an authoritative communication platform for daily collaboration. More crucially, this coordination must be embedded in specific institutional arrangements. In talent development programs, clear practical credits should be established, with students 'library-based disciplinary service projects that pass evaluation recognized as a pathway to earn these credits. The "dual-mentor system" must be implemented and refined, clearly defining the specific responsibilities and collaboration norms between academic mentors and library practice mentors in areas such as topic guidance, process supervision, and outcome assessment, avoiding ambiguous accountability. Additionally, a scientific evaluation system for practical outcomes should be established. This system should go beyond simple workload calculations and comprehensively assess students' incremental skill growth, innovative contributions, and the actual impact of their services. Only through these institutionalized designs can integrated practice break free from reliance on personal enthusiasm or temporary projects, securing stable and predictable resource investment and development space, ultimately achieving sustainable development [6].

4. Innovation Path of Practice Teaching Mode Facing Integration

4.1 Deep Integration of Course Content with Project-Based Practice

Traditional course instruction often struggles to overcome the disconnect between theory and practice. The primary approach to reforming integrated practical teaching models lies in achieving genuine deep integration between curriculum content and project-based practices. This means that the core of professional degree programs should no longer be limited to systematic instruction of existing knowledge systems. Instead, it should proactively transform real-world, complex, and non-standardized challenges faced by library science services-such as building specialized knowledge bases for key laboratories, designing visual solutions for disciplinary competitiveness analysis, or organizing research data management workshops for young scholars-into core course modules or semester-long projects. Students are no longer passive knowledge recipients but actively participate in project teams guided by mentors, experiencing the entire process from requirement analysis, solution design, tool application to outcome presentation. Through this process, abstract concepts like information organization principles, data analysis methods, and user behavior theories learned in class are instantly activated and tested in concrete scenarios. Students must comprehensively apply multidisciplinary knowledge to address uncertainties, honing their abilities in complex problem-solving, technical tool selection and adaptation, as well as teamwork and communication skills through real-world pressure and responsibility. This deep integration breaks down invisible barriers between academic and professional environments, transforming courses into mini innovation workshops where talent development goals are achieved through exploration and creation [7].

4.2 Mentor Team and Role Restructuring

Effective integration practices require innovative guidance frameworks, with the establishment of a dual-mentor team featuring clear responsibilities and complementary strengths being pivotal. This team should comprise academic mentors from academic departments and senior subject librarians from libraries, though its effectiveness hinges on systematically redefining traditional roles. Academic mentors must transition from mere knowledge transmitters to mentors who provide methodological support and academic vision guidance. Their primary responsibilities include helping students solidify theoretical foundations,

grasp the logical structure of research projects, abstract practical experiences into transferable cognitive frameworks, and ensure academic rigor in practical exploration. Library practice mentors should evolve from frontline service providers to project planners, process coaches, and industry leaders. Their core duties involve introducing real-world business scenarios and challenges, providing support through library resources, technical platforms, and user networks, offering real-time operational guidance during project execution, and imparting industry practices, professional ethics, and adaptive wisdom not found in textbooks. The division of labor between these two roles should not be fragmented but rather maintain close collaboration around shared project objectives, with regular communication to align directions. This restructured synergy can build a robust bridge connecting theoretical towers with practical fertile ground, ensuring students can both gaze at the stars and keep their feet on the ground during exploration [8].

4.3 Feedback Loop of Practice Evaluation and Competency Development

Establishing a scientific evaluation system is the cornerstone for ensuring the quality of integrated education and driving its continuous improvement. This system must completely abandon the traditional summative evaluation centered on final reports or simple attendance, and instead establish a developmental evaluation framework oriented toward competency enhancement that spans the entire practical process. The core evaluation indicators should shift from "what was done" to "what was learned" and "what value was created." Therefore, it requires detailed process observation and documentation of students 'key competency growth demonstrated in projects, such as keenness in demand insight, innovative solution design, technical proficiency, and team collaboration efficiency. Simultaneously, evaluations must correlate with the practical utility of work outputs, i.e., the concrete impact on library service innovation or tangible benefits to users, thereby aligning individual growth with organizational value creation. More importantly, evaluations themselves should not be one-way judgments but serve as hubs for dynamic feedback loops. Through mid-term reviews, joint mentor evaluations, student reflection journals, and final multidimensional defenses, the

evaluation process should promptly and specifically provide feedback to students and both parties on identified competency gaps, practical deviations, and innovative highlights. This drives the formation of a closed-loop cycle of "practice implementation-multidimensional evaluation-deep reflection-targeted improvement." Based on feedback accumulated in each cycle, both parties can collaboratively optimize subsequent project designs, mentor guidance strategies, and even curriculum settings, thereby achieving spiral improvement and continuous optimization of the integrated education model's quality.

5. Conclusion

Through theoretical analysis and mechanism exploration, this study demonstrates the inevitability and feasibility of integrating disciplinary service innovation in university libraries with practical competency development for graduate students in library and information science. The research reveals that such integration transcends simple addition, constituting a profound ecosystem restructuring grounded in goal alignment, bidirectional knowledge exchange, and organizational synergy. This requires theoretical breakthroughs in institutional barriers, coupled with systematic innovations at the practical level-project-based curricula, mentor-led teams, and process-oriented evaluations. Future endeavors should focus on managing specific tensions during integration and sustaining long-term momentum, ultimately establishing replicable institutional paradigms. Deepening this integration approach is expected to inject fresh vitality into library services while creating fertile ground for high-quality professional education in library and information science, thereby supporting the macro-strategic goals of building a learning society and an innovative nation.

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