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Analysis of Development Strategies for Scientific Journals of "Double First-Class" Universities in the Context of First-Class Journal Construction: Postprint

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Abstract

"Double First-Class" universities constitute the mainstay of scientific research in China, and their scientific journals play a significant role in advancing scientific and technological innovation. This paper examines the development strategies for scientific journals of "Double First-Class" universities within the context of first-class journal construction. It proposes that these journals should concentrate their developmental efforts on leveraging resources from first-class discipline construction and establishing English-language journals in advantageous disciplines. Simultaneously, they should actively promote the internationalization of university scientific journals, utilize new technologies to foster an all-media communication landscape, construct alliances among university scientific journals, and promote the professional elite cultivation of journal management personnel. These measures will enable scientific journals of "Double First-Class" universities to fully assume their responsibilities and systematically progress toward the goal of establishing world-class scientific journals.

Full Text

Analysis of Development Strategies for Sci-Tech Journals of "Double First-Class" Universities Under the Background of First-Class Journal Construction

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Abstract: "Double First-Class" universities represent the backbone of scientific research in China, and their sci-tech journals play a crucial role in driving

scientific and technological innovation. This paper analyzes the development strategies for sci-tech journals of "Double First-Class" universities within the context of first-class journal construction. It proposes that these journals should focus their development efforts on leveraging first-class discipline construction resources and establishing English-language journals in advantageous disciplines. Simultaneously, they should actively promote the "going global"initiative for university journals, utilize new technologies to create an all-media communication landscape, construct university journal alliances, and promote the elite cultivation of editorial talent. Through these measures, sci-tech journals of "Double First-Class"universities can fully assume their responsibilities and systematically advance toward the goal of establishing world-class sci-tech journals.

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Although China currently publishes a vast number of sci-tech journals, the outflow of high-quality domestic papers to foreign journals remains severe. A primary reason for this situation is the critical shortage of Chinese sci-tech journals capable of publishing first-class academic papers while gaining recognition from the international academic community. In 2019, the China Association for Science and Technology, the Publicity Department of the CPC Central Committee, the Ministry of Education, and the Ministry of Science and Technology jointly issued the "Opinions on Deepening Reform and Cultivating World-Class Sci-Tech Journals." This document put forward 20 specific recommendations covering overall requirements, key tasks, and safeguard measures, explicitly stating that "within the next five years, the number of sci-tech journals entering the world-class camp will increase significantly." This policy has undoubtedly injected new vitality into the sustainable development of China's sci-tech journals. University-affiliated sci-tech journals constitute an important component of China' s journal landscape, with those hosted by "Double First-Class" universities generally maintaining high academic standards. In 2018, among the 10 English-language sci-tech journals from China indexed by SCI, seven were university-hosted; similarly, among 81 ESCI-indexed journals, 25 were university-hosted. However, influenced by the research evaluation system and their own positioning, "Double First-Class"university journals face shortages of high-quality manuscript sources and encounter difficulties in maintaining high-level author communities. Moreover, most university journals operate under a "small workshop" model, suffer from serious homogenization, and demonstrate weak academic competitiveness.

This paper explores the necessity and development strategies for integrating "Double First-Class" university sci-tech journals into their institutions' "Double First-Class" construction, aiming to cultivate more world-class journals.

1. The Necessity of Integrating Sci-Tech Journals into "Double First-Class" Construction

Due to the orientation of the SCI-based academic evaluation system, many sci-tech journals of "Double First-Class" universities have become marginalized during their institutions' rapid development. Today, as "Double First-Class" construction advances vigorously, some journal editors still believe that this initiative concerns only the university' s discipline construction offices, research departments, and key faculties, with little relevance to editorial and publishing work, thus contentedly accepting their marginalized status. In reality, as both the "leading edge" and "tail end" of scientific research, sci-tech journals can only contribute to their universities' "Double First-Class" construction by actively participating in it and continuously seeking policy, funding, and talent support. Without university attention and support, and if they remain detached from "Double First-Class" construction, these journals will face severe constraints on sustainable development and occupy an even weaker position in their institutions' overall development. Integrating university sci-tech journals into the "Double First-Class" construction system facilitates mutual benefits for both journal development and discipline construction, representing a feasible, urgent, and necessary measure.

2. Development Strategies for "Double First-Class" University Sci-Tech Journals

2.1 Leveraging First-Class Discipline Resources to Cultivate First-Class University Journals

University-affiliated sci-tech journals are closely related to discipline construction work. Disciplines constitute the fundamental building blocks of universities, and discipline construction represents the core of university operations. Sci-tech journals were originally established primarily to meet the needs of their universities' discipline development. As an indispensable communication link in the academic innovation system, journals should provide an information dissemination platform guarantee for their universities' first-class discipline construction by enhancing their own influence. First-class discipline construction is crucial for academic atmosphere and discourse power in universities and represents the most important advantageous resource for "Double First-Class" universities to establish first-class journals. Currently, some universities have already incorporated the establishment of high-academic-quality sci-tech journals into their first-class discipline construction efforts, using journals' communication and exchange functions to provide windows for disciplines to showcase themselves to the world. Journal development depends on discipline development,

while journals can also guide the direction of discipline development—the two have a mutually reinforcing and win-win relationship. Quantitative studies on the contribution of university-hosted SCI journals to ESI disciplines have shown that these journals make significant contributions to their universities' ESI discipline construction in terms of both publication volume and citation frequency. For example, *Chinese Journal of Natural Medicines* hosted by China Pharmaceutical University and *Asian Journal of Pharmaceutical Sciences* hosted by Shenyang Pharmaceutical University have played important roles in advancing their institutions' pharmacology and toxicology disciplines into the top 0.1% of ESI rankings.

To establish first-class journals, "Double First-Class" university sci-tech journals should precisely position their disciplinary attributes and academic development status around first-class discipline construction. By intensifying solicitation efforts to attract high-level manuscripts from their universities' first-class discipline fields, and adhering to the principles of serving academic communication and national innovation construction, they should focus on disciplinary development frontiers and carefully plan aspects ranging from topic selection design and service methods to promotion and publicity, thereby deeply participating in first-class discipline construction and fully exercising their scientific leadership function. Sci-tech journals should establish specialized columns precisely aligned with the construction and development needs of their universities' first-class disciplines. By emphasizing distinctive features and building brand identity, they can foster positive interaction between journal development and first-class discipline construction. Taking "Double First-Class" construction as an opportunity and closely following national science and technology strategic development needs, university sci-tech journals should fully leverage their role in transforming scientific research innovation achievements.

2.2 Establishing English Journals in Advantageous Disciplines with Coordinated Chinese-English Journal Development

According to the *Blue Book on the Development of Chinese Sci-Tech Journals (2019)*, by the end of 2018, among the 4,973 sci-tech journals published nationwide, only 333 were English-language journals, accounting for merely 6.7% of the total. In contrast, English-language journals in Germany and Japan account for 53.09% and 38.3% respectively, and many international databases consider English publication language as an important criterion for journal inclusion. Several world-class foreign publishers have already changed their journals from their native languages to English. For example, the century-old German publisher Thieme changed the publication language of its journal *Ultraschall in der Medizin* from German to English, with its impact factor rising from approximately 1 before 2004 to 2.394 in 2008 and reaching 4.389 in 2017, ranking first in its JCR subject category.

International discourse power represents an important manifestation of national soft power, and practice has proven that English-language journals are crucial

means for securing discourse priority. English is the primary international lingua franca in today' s world, and China' s current basic education and higher education systems both emphasize English instruction, enabling most researchers and editorial staff at "Double First-Class" universities to read and write English papers proficiently. This provides the necessary foundational conditions for establishing English-language journals. Furthermore, hosting English-language journals requires substantial accumulation of research achievements and resources in advantageous disciplinary fields—requirements that most "Double First-Class" universities can meet. Therefore, China' s "Double First-Class" universities can conduct forward-looking planning to establish or support a batch of first-class English-language journals in fields with active scientific innovation, thereby refining and strengthening advantageous disciplines and directly participating in competition within the global scientific community to win the initiative in future scientific reporting. *Journal of Marine Science and Application*, an English-language journal hosted by Harbin Engineering University, positions itself in the university' s characteristic and only first-class discipline—naval architecture and ocean engineering. A series of strong disciplinary English journals hosted by "Double First-Class" universities such as Tsinghua University and Zhejiang University, including *Nano Research*, *Friction*, *Journal of Advanced Ceramics*, *Building Simulation*, and *Frontiers of Information Technology & Electronic Engineering*, have all gained considerable recognition in the international sci-tech journal community.

Currently, the mainstream model for "Double First-Class" universities to establish English-language sci-tech journals is cooperative publishing with internationally renowned publishing platforms. This approach provides international submission and peer-review systems, international editorial boards, international readership, and international academic exchange platforms, enabling Chinese "Double First-Class" university English journals to enhance their international influence within a relatively short timeframe. However, it must be emphasized that establishing a batch of high-level English-language journals with disciplinary resource advantages represents only part of university journal work and does not mean neglecting or abandoning the development of Chinese-language journals. Moreover, with the rapid development of advanced technologies such as artificial intelligence, breaking language barriers through machine translation and machine learning is no longer a distant goal. Therefore, in the process of establishing first-class journals, English and Chinese journals of "Double First-Class" universities should complement each other' s strengths, clarify their positioning, optimize their layout based on respective resources, and jointly contribute to building an innovative country.

2.3 Embracing Open Thinking to Promote the "Going Global" Initiative for University Journals

To become world-class journals, sci-tech journals must actively learn from and draw upon the operational experiences and successful models of excellent in-

ternational journals. Foreign sci-tech journals possess top-tier design, well-developed market mechanisms, advanced publishing processes, and relatively mature journal evaluation systems. "Going global" is essential for enhancing journals' international competitiveness and gaining acceptance from the international academic community, while also serving as a "window" for disseminating Chinese wisdom on the world scientific stage. In recent years, Chinese authorities have introduced multiple policies to support and facilitate the "going global" initiative, and "Double First-Class" university sci-tech journals should seize this opportunity to strengthen academic cooperation and exchanges with world-class publishing institutions, utilizing their well-established dissemination channels for overseas promotion to showcase university research strength and faculty academic excellence, thereby continuously enhancing international influence.

As first-class discipline construction advances vigorously, universities are increasingly engaged in international academic exchanges. Editorial departments of "Double First-Class" university sci-tech journals should leverage their institutional advantages when "going global." For instance, they can recruit visiting scholars or international students from their universities as part-time or special editors to strengthen connections with foreign research institutions and universities and attract high-quality manuscript sources. Additionally, "Double First-Class" universities frequently host international academic conferences, and journal editorial departments should actively participate to solicit manuscripts and promote their journals. When conditions permit, qualified editorial departments can apply to host or organize international academic conferences with university support, and may even consider establishing overseas branches using university alumni association resources to intensify international solicitation and journal promotion efforts.

2.4 Keeping Pace with Technological Innovation to Create an All-Media Communication Landscape

The rapid development of new technologies such as mobile internet, artificial intelligence, cloud computing, and virtual reality is driving the renewal of publishing concepts and the reinvention of publishing processes. Through the organic integration of different media forms and production elements, traditional journals are achieving integrated publishing across the entire industry chain. The supply of high-quality publishing content and the expansion of dissemination channels require breaking down outdated ideological barriers and dependence on traditional pathways, keeping pace with integrated innovation to build a scientific, efficient, and comprehensive journal publishing operation system. Faced with thriving new technologies, "Double First-Class" university sci-tech journals must not rest on their laurels but should actively explore their potential applications and techniques in journal editing and publishing, continuously investigating new integrated publishing models. Currently, some university journals are experimenting with new models such as augmented reality publishing and video

publishing, striving to narrow the gap with world-class journals. For example, *Chinese Journal of Clinical Thoracic and Cardiovascular Surgery* hosted by West China Hospital of Sichuan University accepts video paper submissions, simultaneously publishing thoracic and cardiovascular surgery videos in both print and online versions to comprehensively showcase the latest research achievements through multimedia means.

Furthermore, to establish first-class journals, university journal editors should embrace the concept that communication is as important as publishing content, gradually building a diversified and three-dimensional publishing and communication landscape. As researchers increasingly obtain information through search engines and social media channels, the Journal Press of Central South University has implemented a diversified development strategy by establishing homepages on mainstream international SNS platforms to publish journal-related information, cooperating with TrendMD and AMiner to increase journal exposure, developing mobile application clients for academic journals to provide free download services, and extending digital publishing product functions through WeChat official accounts. "Double First-Class" university sci-tech journals must be willing to try and apply new technologies, new media, and new methods to keep pace with the rapid development of the new era and achieve all-media integrated publishing of digital content. Since most university journal editorial departments currently lack full-time new media technicians, they can establish work-study positions within their universities to recruit students majoring in internet and new media to assist with new media operations during their spare time. Additionally, beyond applying for social media accounts for information dissemination, "Double First-Class" university sci-tech journals can apply to join their universities' official new media matrices to continuously expand their influence by leveraging institutional reputation.

2.5 Constructing University Sci-Tech Journal Alliances to Enhance Scale Effects Through Clustering

Cluster management can generate scale effects through rational resource allocation and represents an important strategy for the sustainable development of sci-tech journals. Cultivating world-class journals requires leveraging the advantages of journal clusters to achieve complementary and coordinated development between individual journals and journal groups. Currently, the clustering degree of major international academic publishing institutions is very high, and China' s high-quality sci-tech journals are increasingly emphasizing cluster publishing. For example, Science Press has formed a sci-tech journal matrix of over 270 titles using platform-based management models. At present, the cluster development of "Double First-Class" university sci-tech journals is relatively slow, but editorial colleagues are actively working to improve the current small, weak, and scattered publishing situation. The editorial department of the *Journal of Nanjing University of Aeronautics and Astronautics* has experimented with a deep intensive model for its three published journals (*Journal of Nanjing University*

of Aeronautics and Astronautics [Chinese and English editions] and *Journal of Data Acquisition and Processing*), achieving comprehensive integration of publishing content and workflows with gradually emerging results. The Zhejiang University Journal Press has promoted the sharing and interconnection of information resources within the press, proposing a journal construction concept of "one platform as the core, multi-point construction, coexistence of multiple publishing forms, and cluster development," and has formed a cluster-oriented collaborative publishing approach through various new media platforms, with its journal cluster exceeding 30 titles.

Although some "Double First-Class" university sci-tech journals have achieved modest success in intensive development under the same sponsoring organization, inter-university journal cooperation and publishing remain seriously inadequate. The cluster development of sci-tech journals should break through institutional barriers, draw on the operational experience of foreign publishers, integrate publishing resources across regions and departments, and formulate a cluster development strategy with Chinese characteristics. For "Double First-Class" university sci-tech journals, they can 借鉴 existing university alliance concepts such as the Excellence League and the High-Level Industry Characteristic Universities Quality Resource Sharing Alliance, organizing university sci-tech journals with common development goals according to alliance principles of "equality, cooperation, mutual assistance, and reciprocity" to break through the current "single combat" model and converge high-quality university sci-tech journal resources. Specific approaches for university sci-tech journal alliances can reference the publishing model of the Chinese Medical Association, which is professionally based on medical disciplines, forming alliances according to the main disciplines targeted by university journals. Alternatively, they can reference the open access platforms of Chinese Academy of Sciences journals, the Chinese Optics Journal Network, and the Chinese Geoscience Journal Network, using leading brand journals or excellent journals with mature network platforms as cores to attract other willing university journals for digital cluster publishing based on network platforms. Clustering represents an effective choice for university sci-tech journals to become larger and stronger, and "Double First-Class" university sci-tech journals should continue exploring to identify suitable intensive publishing development paths for Chinese university sci-tech journals, deepen industrial chain cooperation, and enhance the influence and core competitiveness of university sci-tech journals.

2.6 Developing a Scholar-Editor Model to Promote Editorial Talent Elite Cultivation

Compared with world-class sci-tech journals, there remains a significant gap in the overall quality of China' s sci-tech journal editorial teams. Establishing first-class journals requires a group of publishing professionals with international vision and high academic competence. Editorial staff should possess internationally advanced publishing concepts and fully understand the latest global

academic research trends. Editors serve as the "gatekeepers" of sci-tech journal publishing, and their professional competence and style directly influence journals' academic quality and character. Therefore, in the process of mastering international academic discourse power and building first-class journals, editors' roles cannot be underestimated. Most editors of world-class sci-tech journals have established reputations in specialized academic fields and can quickly screen submissions and accurately assign reviewers using their professional expertise, objectively evaluate reviewers' comments, and more easily gain academic respect and persuasiveness in communications with authors and reviewers.

In recent years, talent recruited by "Double First-Class" universities generally holds doctoral degrees and mostly has overseas study backgrounds, meaning that new editorial staff at university sci-tech journals have largely undergone systematic research training. Additionally, many existing editorial staff have transferred from full-time faculty positions and possess professional disciplinary backgrounds, enabling them to fully explore cutting-edge academic hotspots and achieve high-quality solicitation, reviewing, and editing. Therefore, for "Double First-Class" university journals, developing a scholar-editor model is not a difficult task. Scholar-editors need to continuously enhance their professional competence and expertise, possessing the ability to conduct high-quality academic exchanges with experts in specific fields. The highly scholarly development of journal editors will become a breakthrough point for "Double First-Class" university sci-tech journals to establish first-class journals. By actively cultivating high-quality and innovative editorial talent teams, they can better serve their universities' "Double First-Class" construction.

The editors-in-chief and editorial board members of world-class sci-tech journals are generally renowned experts and scholars recognized by the academic community, who provide guiding roles for journal development and constitute important support for journal branding. Editorial board members need to possess a strong sense of mission to confront challenges posed by international competition in science communication, including challenges to publishing concepts, academic evaluation, and market competition. "Double First-Class" universities possess advantages in high-level research talent, and their sci-tech journals should fully tap into these talent reserves by inviting academicians, recipients of the National Science Fund for Distinguished Young Scholars, recipients of the Excellent Young Scientists Fund, and participants in the Thousand Talents Plan to serve as editorial board members and reviewers. This enables journals to accurately grasp research frontiers, leverage these scholars' academic achievements to solicit and compose high-level research papers, impart experiences and advanced concepts from world-renowned journals, and thereby enhance journals' visibility and influence.

Building world-class sci-tech journals and striving to realize the dream of becoming a powerful sci-tech journal nation represents the common pursuit and sacred mission of sci-tech journal professionals. Although the journey for many "Double First-Class" university sci-tech journals to become world-class remains long,

we must shoulder our era' s mission, adopt a global perspective, and diligently develop internal capabilities. Based on absorbing successful experiences from outstanding domestic and international journals, we should practice high-quality development, establish feasible goals with purpose and in phases, and steadily advance toward the objective of building world-class sci-tech journals. "Double First-Class" university sci-tech journals should fully leverage the opportunities presented by their institutions' "Double First-Class" construction to achieve mutual benefits between journal development and discipline construction. In addition to establishing and supporting English journals that can quickly integrate with international standards, Chinese-language sci-tech journals must also adopt a global perspective, seeking balance between internationalization and localization in both content and form. In summary, professionals at "Double First-Class" university sci-tech journals should remember their original mission, forge ahead with determination, adhere to open collaboration as their principle, continuously lead scientific research and technological innovation, and propel China' s "Double First-Class" universities toward becoming world-class institutions of scientific and technological excellence.

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