Editing Practice

CASE ANALYSIS

Towards the paths to high-quality development of popular science journals in China: A case study of the journal *Studies on Science Popularization*

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ABSTRACT

Science popularization research is a field of study that focuses on the theories and practices of science popularization. Academic journals in the field of popular science research not only serve as a bridge and link between scientific research and popular science but also an important driving force for the development of popular science research. This article takes *Studies on Science Popularization* as an example to explore the high-quality development path of academic journals in the field of science popularization research from three levels, namely the macro, meso, and micro levels.

Key words: science polularization, high-quality development, scientific publications

INTRODUCTION

Science popularization research is a field that focuses on the theoretical and practical aspects of science popularization. With the development of media technology, the new media era has arrived, offering more novel and diverse channels for the dissemination of popular science information. In terms of media carriers, the influence of print media, such as newspapers and books, has weakened, while traditional media, such as television and radio, are gradually being replaced by mobile internet devices. According to the *54th Statistical Report on China's Internet Development* released by the China Internet Network Information Center (CNNIC), as of June 2024, 99.7% of Chinese internet users access the internet *via* mobile phones, and the number of short video app users has reached 1.05 billion, accounting for 95.5% of all internet users.[1] Mobile phones have thus become the primary channel for users to access information. Consequently, the forms of popular science content have shifted from cartoons and short articles to multimedia formats. The more interactive short video format combines the rigor of scientific communication with the entertainment value that internet users seek, bridging the gap between the audience and science, and encouraging the public to engage with and understand science.

In 2021, the *White Paper on China's Comprehensive Well-Off Society* published by the State Council Information Office showed that the consolidation rate of nine-year compulsory education in China had reached over 95%, and the scientific and cultural literacy of residents had improved significantly.[2] However, this does not mean that the importance of science popularization education has diminished. On the contrary, with the improvement of public information literacy, "pseudo-scientific" rumors are emerging in increasingly deceptive forms,

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confusing non-professional audiences. Moreover, the rapid expansion of information brought about by mobile internet technology has made it more difficult for individuals to discern the authenticity of scientific content. Therefore, in the new era, science communication not only needs to "preserve truth" but also "eliminate falsehoods", cultivating the public's ability to distinguish between credible and misleading information. At the same time, the number of people who love science and engage in self-driven science learning has grown significantly. Their demand for both the quantity and quality of popular science content has risen. In response to this demand, many popular science platforms have produced a number of excellent content creators. Popular science research is thus increasingly focused on the innovation of communication forms and the study of new phenomena in the dissemination of scientific knowledge.

Academic journals play a key role in facilitating academic exchange, nurturing scholarly talent, and promoting knowledge accumulation and innovation.[3] Journals in the field of popular science, represented by *Studies on Science Popularization*, serve as a bridge between research and science popularization, and are critical to the development of the field. On the one hand, these journals contribute to the advancement of disciplines by nurturing academic talent, promoting scholarly exchanges, and integrating research resources.[4] On the other hand, some research published in journals can guide practical efforts and offer new directions for science popularization. For instance, in February 2020, in response to the outbreak of the corona virus disease 2019 (COVID-19) pandemic, *Studies on Science Popularization* organized a special call for papers on "Science Communication and Popularization in Public Health Emergencies", offering valuable lessons for science communication in future emergencies. Academic journals are born from practice and, in turn, help to advance it, fulfilling a social function of promoting development through knowledge.

PATHWAYS FOR HIGH-QUALITY DEVELOPMENT OF STUDIES ON SCIENCE POPULARIZATION

As new media platforms rapidly develop and the digitalization of journal publishing increases, journals in the field of popular science research face unprecedented opportunities and challenges. This study proposes systematic development strategies from macro, meso, and micro levels to explore a path for the future of journals.

Macro-level strategies

National economic development, technological strength, and the progress of education are the cornerstones of the steady development of academic journals. A public atmosphere that focuses on science popularization and supports technological development can provide abundant research materials for popular science theory and practice. Additionally, national efforts in foreign exchange activities are an important opportunity for academic journals to engage in international mutual learning and to promote their influence abroad. A coordinated approach in both domestic and foreign affairs is necessary to create a robust macro-support system for the development of popular science journals.

Economics is the foundation of all development. The high-quality development of *Studies on Science Popularization* requires financial support at the national level and stable backing from the "knowledge economy". Currently, the funding for academic journal publishing in China primarily comes from national investments, such as special funds and financial subsidies, as well as public funds from local governments and academic associations. Compared with international markets, Chinese academic journals have weaker capabilities to generate independent revenue, and the commercialization of publishing is still underdeveloped. As such, academic journals in China are more dependent on state and social funding and require long-term stable financial support.

The normal publication and distribution of academic journals are crucial to the nation's academic progress and the healthy development of society's technological culture. Journals cannot simply adopt a market-driven economic model and transition to full commercialization. In the 1980s, as publishers entered the academic journal publishing sector in Europe and the United States, the industry experienced a journal crisis, marked by sharply rising prices, reduced subscriptions, and a vicious cycle of price hikes. This crisis exposed the dangers of commercialization in academic journals and serves as a warning to the industry to carefully consider the commercialization of journals. Government funding and support are essential to reduce the operational risks of journals. In addition to direct investments, the government can offer tax breaks, low-interest loans, and discounted postage rates to help cover the full publishing costs of journals.[5] Furthermore, local governments, industry associations, and private enterprises should be encouraged to establish specialized funds to support academic journals. Macroeconomic strategies should also stimulate the profitability of academic journals, including revenue from advertising, subscription fees, page charges, and intellectual property rights, thereby introducing market-based advantages.

Academic journals, in essence, are high-end "cultural commodities". Compared with general publications, academic journals are more technology-intensive and require a higher level of literacy from readers. With the

continuous advancement of the "Science and Education to Strengthen the Nation" strategy, Chinese residents have attained a basic level of scientific literacy, and science popularization has evolved into a cultural sub-branch, separate from agricultural and industrial production activities. During this period, a large number of practical achievements in science popularization emerged, providing abundant academic resources for the field of popular science research. The government must ensure the stable operation of the scientific and technological industries, signal its support for educational development, and strengthen the confidence in the long-term development of popular science research journals.

The internationalization of academic journal publishing is one of the keyways to enhance journal influence and achieve a good reputation in the academic community. With the increasing frequency of international academic exchanges, the degree of internationalization of a journal has become an important indicator of its quality and impact. To reach international standards, academic journals must maintain continuous exchanges with top global journals. National key projects can support the internationalization of journals, such as through initiatives like the *Belt and Road* and Confucius Institutes, which promote Chinese journals to "go global" and invite excellent international journals to "come in". Relevant government departments serve as the core link for official international exchanges and play a crucial role in establishing platforms for Chinese journals to engage globally. Active organization of conferences, co-funded projects, and mutual recognition of achievements will help *Studies on Science Popularization* become an international core journal in the field of science popularization.

Meso-level strategies

In line with international journal development trends, the cluster development model for journals is becoming the mainstream. Currently, large journal publishers like Elsevier, Springer, and Wiley have established dominant positions in the market, with some forming near-monopolies. While China has already begun exploring journal cluster development, the country's unique journal management system and approval processes have slowed the development of a mature commercial model. The cluster or group operation model for academic journals is still in its infancy, and China lacks large publishing institutions capable of managing over 100 journals. Nevertheless, the application of digital publishing technologies has shaken up the traditional publishing model and created opportunities for the formation of publishing clusters. Although the number of popular science journals is relatively small and the market is limited, Chinese institutions like the *China Association for Science and Technology* and the *China Popular Science Research Institute* have strong resource integration capabilities, making it possible to coordinate the operation of journals within the same organizational framework. This can fill the gaps in specialized journals and enhance the overall development of popular science publishing.

The official websites of academic journals serve as one of the primary channels for digital publishing. In the field of science popularization research, journals such as *Science Communication*, *Science Popularization Creation Review*, and *Studies on Science Popularization* all have official websites. Among them, *Science Communication* has continued to be published regularly, but its website ceased to be updated after 2016. The site does not offer full-text access to journal articles but merely stores the contents and index information of the 2016 issue (Issue 20) and earlier, providing convenience for readers to reference, though direct browsing on the website is not possible. Overall, the website construction of this journal remains insufficient, and its digital publishing capabilities are minimal.

Both *Science Popularization Creation Review* and *Studies on Science Popularization* have better-developed websites that are updated in accordance with the journal's publication schedule. Notably, both websites offer free online access to full-text articles, searchable by year and issue. *Science Popularization Creation Review* uses hypertext markup language (HTML) format for its online articles, embedding them directly on the website, which allows for easy reading and a well-organized layout, indicating a high degree of digital publishing development. In contrast, *Studies on Science Popularization* currently does not provide an online reading platform but offers full-text access in PDF format, which mirrors the print version's layout. Therefore, it cannot yet be considered a fully digital publication platform. The advantage of *Studies on Science Popularization*'s website is that its article abstract page provides hyperlinks for English and Chinese keywords, funding projects, and authors, which direct users to the All-Journals database for related searches. This feature greatly facilitates literature searches and access to neighboring articles. Additionally, the website includes a "View/Comment" function, which encourages communication among readers and provides a feedback channel for editors. Science popularization journals should share their digital publishing experiences, learn from industry best practices, and gradually establish a "composite information terminal" platform that integrates print media, websites, and mobile terminals, maximizing the value of academic journal content.

To build an academic journal communication network, it is essential to utilize traditional methods such as academic conferences and university classrooms while also adopting new media formats such as WeChat official accounts, short videos, and live streaming for

greater journal publicity. Offline promotion now is well-established and widely accepted within academia, making it relatively easy to implement. For online platforms such as WeChat, science popularization journals need to condense content, shorten publication cycles, and emphasize the newsworthiness and relevance of their research to societal issues. Journal operators should analyze the characteristics of their WeChat followers, cater to users' reading habits, and offer customized, interactive online services. New media formats like short videos and live streaming are inherently entertaining and attention-grabbing, so the content must be lively, engaging, and visually appealing to achieve desired publicity results. This does not mean undermining the seriousness of academic journals, but rather, it is about presenting rigorous scientific research in ways that resonate with the audience's preferences. Simplifying the language of research findings and lowering the comprehension difficulty of audiovisual content will attract younger readers, creating a new type of academic journal media that is popular with online audiences.

Micro-level strategies

A specialized editorial team is the soul of a successful academic journal. An international editorial board and professional editors play a significant role in promoting the development of journals. This is especially true for specialized journals such as those focused on science popularization, where editors must have a broad academic perspective and high professional standards to accurately assess the value of submitted manuscripts. The development of editorial talent includes ensuring proficiency in publishing operations, professional technical skills, marketing and business expertise, and the ability to utilize various tools. Editors must be familiar with academic output patterns and frontier developments, expand their knowledge base, and continuously enhance their professional capabilities. At the same time, editorial teams should maintain a lifelong learning attitude, improving their skills in accordance with the latest national regulations such as the *National Language Law of the People's Republic of China*, *Copyright Law*, and *Academic Publishing Standards*. Editors should align their work with national standards.[6] In the new media era, editorial teams should also actively integrate into various social media platforms, adopting a friendly and inclusive attitude towards exploring new trends and business models. Cultivating a strong "online sensibility" and market-oriented thinking is essential for improving overall operational capabilities.

The professional editorial board is responsible for maintaining the quality of published content. However, journal operations should not be solely controlled by the editorial team. Many journals have adopted a collaborative model, involving scholars in the editorial process. Scholars, as frontline practitioners in academic research, have a more accurate understanding of the field's direction and a more precise judgment of manuscript quality. Their unique position as the main audience for academic journals allows them to fill gaps in the editorial team's perspective, providing high-quality editorial feedback. Therefore, the collaborative model between editors and scholars has been widely adopted in academic publishing. To sustain this development, it is important to recruit outstanding editorial talent, broaden their international perspectives, and guide the journal's long-term development.

Strengthening the relationship between journals and authors is crucial for creating an open and collaborative academic platform. During the submission and review process, editors should communicate thoroughly with authors, refining manuscript quality based on the reviewers' comments. It is also the editor's responsibility to guide authors in improving their writing skills and enhancing their academic capabilities. For emerging authors, such as graduate students and young scholars, editors should focus on identifying their academic innovations and writing potential, ensuring that their manuscripts meet publication standards. For science popularization practitioners, whose manuscripts may focus more on practical experience and lack theoretical depth, editorial teams must offer academic insights and detailed revision suggestions, helping to develop well-rounded talent in the field of science popularization research. While the capacity for research output in science popularization is limited due to its niche nature, the editorial team can invite renowned scholars from related fields to provide fresh perspectives and insights, stimulating debate and innovation within the academic community.

The quality of journal publishing is the foundation of its development. Regardless of the strategy, the primary goal must always be to improve the quality of the journal. The journal's organizing institution and staff must remain committed to high standards to meet the challenges and opportunities of the new era. Maintaining academic standards and strict quality control throughout the selection, planning, review, and publishing stages is essential. Close attention should be paid to developments in national science funding and intellectual property, proactively reaching out to leading scholars and potential contributors. There is no shortcut to success in publishing high-quality science popularization journals; it requires a steadfast commitment to excellence and continuous improvement to make meaningful contributions to the growth and development of the field.

FUTURE OUTLOOK

Since the concept of science popularization research was introduced to the Chinese academic community, it has

grown tenaciously amid numerous challenges, exhibiting increasingly strong vitality and enormous potential for the future. *Studies on Science Popularization* has evolved alongside China's scientific and technological development and the science popularization cause, nurturing generations of science communication professionals.

Journals in the field of science popularization research are exploring various new development paths, but the environment is also full of challenges. The complex and ever-changing international landscape, the resurgence of scientific isolationism and academic hegemony, combined with the intense impact of new media technologies on the academic journal industry, present unprecedented challenges for academic journals in the field of science popularization. The transformation of the times presents both challenges and opportunities. As a niche discipline, science popularization research is gaining increasing attention. The Chinese government and national institutions are providing policy support and strategic guidance for the development of science popularization and academic journals. Meanwhile, social forces such as associations and enterprises are actively investing in the journal publishing industry, and new media and digital publishing technologies are being widely applied in the journal industry. Journals in the field of science popularization research, represented by *Studies on Science Popularization*, now face the best opportunity to promote development through reform.

Journal publishers should seize the rare opportunity for development, focusing on improving the quality of their journals and accelerating scientific progress, while also innovating their communication methods and assuming social responsibility. Although the field of science popularization research is relatively niche, by fully utilizing the conveniences brought by new technologies, there is a chance to turn disadvantages into advantages. Throughout the entire process, from topic selection to manuscript publication, these journals can effectively utilize big data technologies and platforms like CNKI and AMiner to conduct subject profiling and expert identification, which can assist in topic planning and author selection. For instance, the editorial team of *Studies on Science Popularization* has conducted foundational research on academic profiling and applied it in their topic planning practices. They have also used the Qinyun journal management system to achieve information management throughout the entire process, from submission to publication. In the context of the ongoing acceleration of media convergence, when disseminating content, journals can leverage a multi-dimensional product matrix, including WeChat, Weibo, digital journals, and online communities, to provide social and personalized reading services and establish an interactive communication mechanism with authors and readers. With such a synergy between external conditions and the efforts of the journals themselves, the high-quality development of journals in the field of science popularization research will surely be achieved steadily.[7]

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