Optimization Strategies for Virtual Special Issues in Medical Science and Technology Journals

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Abstract

Objective: By investigating the implementation experience of virtual special issues in medical science and technology journals, to explore optimization strategies for such virtual special issues.

Methods: We collected and deeply analyzed data related to virtual special issues from the Chinese Journal of Nervous and Mental Diseases and the Journal of Sun Yat-sen University (Medical Sciences), analyzing the current status of research and application of virtual special issues as well as implementation pathways. We summarized from six aspects including timeliness of virtual special issues, topic selection, copyright, publishing formats, virtual academic communities, and reader needs. Additionally, through questionnaire surveys of authors, we further understood authors' perceptions of virtual special issues, disseminated information about virtual special issues, and enhanced the visibility of the journals and their virtual special issues.

Results: The optimization strategies for virtual special issues in medical science and technology journals are summarized as follows: pay attention to timeliness, referencing the discipline's half-life; conduct overall planning with multi-category topic selection; pay attention to copyright, requiring signed authorization forms; implement three-dimensional dissemination through multi-dimensional release; attract readers by developing derivative virtual academic communities; and use questionnaires to analyze demand-oriented approaches. According to the author questionnaire survey results, 55.97% of respondents had followed the virtual special issues of the two journals, 85.54% agreed to have their articles selected for virtual special issues, and 76.10% were willing to give online or offline lectures on their papers. Regarding satisfaction, 79.31% of respondents were "very satisfied" with the journals, and 20.69% were "relatively satisfied".

Conclusion: Medical science and technology journals should be oriented toward readers' reading perspectives, combining scientific papers into virtual special

issues with multiple models and diversified dissemination, which can promote the scope of scientific information sharing and the speed of dissemination and circulation, and play an important role in promoting journal development.

Full Text

Optimization Strategies for Virtual Special Issues in Medical Science Journals

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Abstract

[**Objective**] This study aims to explore optimization strategies for virtual special issues (VSIs) in medical science journals by investigating existing implementation experiences. [**Methods**] We collected and analyzed VSI-related data from *Chinese Journal of Neurology and Psychiatry* and *Sun Yat-sen University Journal of Medical Sciences*, examining the current status, application, and implementation pathways of VSIs. Strategies were categorized into six dimensions: timeliness, topic selection, copyright, dissemination formats, virtual academic communities, and reader needs. Additionally, a questionnaire survey was conducted among authors to further understand their perceptions of VSIs, disseminate VSI information, and enhance journal and VSI visibility. [**Results**] The optimized strategies for VSIs in medical science journals include: (1) ensuring timeliness by referencing disciplinary half-life; (2) conducting comprehensive planning with multi-category topic selection; (3) addressing copyright through signed authorization letters; (4) implementing multi-dimensional, 立体传播 (stereoscopic) dissemination; (5) attracting readers by developing virtual

academic communities; and (6) conducting questionnaire surveys for demand-oriented analysis. Survey results showed that 55.97% of respondents had followed the VSIs of the two journals, 85.54% agreed to have their articles included in VSIs, and 76.10% were willing to deliver online or offline lectures on their papers. Furthermore, 79.31% of respondents were "very satisfied" with the journals, and 20.69% were "relatively satisfied." **[Conclusion]** Medical science journals should adopt a reader-centric perspective, combining scientific papers into VSIs with multiple patterns and diversified dissemination. This approach can enhance the scope and speed of scientific information sharing and significantly promote journal development.

Keywords: Science and technology journals; Virtual issue; Media integration; Investigation and research; Stereoscopic dissemination; Virtual academic community

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Academic journals serve as carriers of human civilization and important platforms for academic exchange. In 2021, the Publicity Department of the Central Committee of the Communist Party of China, the Ministry of Education, the Ministry of Science and Technology, and other four ministries jointly issued the *Opinions on Promoting the Prosperous Development of Academic Journals*, which proposed requirements to "innovate content carriers and methods" and "enhance brand influence." In 2022, General Secretary Xi Jinping emphasized in the report of the 20th National Congress of the Communist Party of China that "high-quality development is the primary task of building a modern socialist country in all respects" [1].

To innovate the presentation of academic papers and enhance their influence and dissemination power, many science and technology journals have explored various forms of paper dissemination. Currently, common paper 推送 (push/dissemination) methods include whole-issue and single-article 推送 via webpages and new media platforms, with diverse formats such as electronic journals and video papers, and platforms including websites, email, and social media like WeChat and Weibo [2-9]. However, given the increasingly subdivided disciplinary directions, whole-issue 推送 lacks precision in content scope, while single-article 推送 is inefficient. Consequently, some science and technology journals have begun experimenting with virtual special issue planning.

1 Research Status

A CNKI search using the theme "journal" plus the full text "virtual special issue" (as of December 15, 2022) yielded 68 articles. Regarding topic planning, Tao et al. [10] published an in-depth study on virtual issues in *Chinese Journal of Science and Technology Periodical Research*, categorizing VSI planning directions into four types: academic hotspots, high-impact authors, high-impact research institutions, and major funded projects. Yu [9] argued that university journals, lacking fixed author groups or association authors, could create actual

or virtual special issues based on author needs to create new user experiences, expand knowledge service models, and ultimately enhance journal reputation. In terms of 推送 methods, some journals use big data mining to match virtual columns or VSIs with targeted experts and scholars for precise email 推送 [11], while others publish VSIs via WeChat public accounts, with most journals combining websites and WeChat platforms. Existing research has focused on VSI topic planning and their role in journal development, but has not deeply investigated VSI implementation strategies. Therefore, to provide empirical research and theoretical support for medical science journal publishing, help publishing institutions utilize VSIs more effectively to enhance academic value and market competitiveness, and offer new perspectives for academic exchange and knowledge dissemination, this study conducts in-depth research on multiple aspects of VSIs.

2 Concept and Research Methods

Currently, no articles have reported a precise definition of various virtual special issues. Our team proposes the following definition: Virtual special issues, also known as virtual special publications, virtual albums, virtual columns, or electronic special issues, with the English term "Virtual Issue," refer to digital/electronic compilations that categorize previously published papers according to specific hot topics, issues, or events, screen them in a logical sequence, supplement them with multi-modal editing using new media technologies, and assemble them through digital/electronic channels without physical publication.

This paper analyzes VSIs from six aspects: timeliness, topic selection, copyright, dissemination formats, virtual academic communities, and reader needs, based on the editorial departments of *Chinese Journal of Neurology and Psychiatry* and *Sun Yat-sen University Journal of Medical Sciences*. A questionnaire survey was then conducted to further understand authors' perceptions of VSIs, disseminate VSI information, and enhance journal and VSI visibility, thereby exploring optimization strategies for VSIs in medical science journals to provide reference experiences for other journals.

3.1 Ensuring Timeliness by Referencing Disciplinary Half-Life

VSI topic selection must consider timeliness. Since papers already experience publication delays from submission to publication, secondary VSI planning requires even greater attention to timeliness to attract readers. Each discipline has a different update half-life, and we believe that the cited half-life of disciplinary literature can, to some extent, represent the speed of information update in that discipline. This study uses the average cited half-life of various disciplines from the Chinese S&T Journal Citation Reports as a reference, then subtracts the journal's publication cycle to determine the appropriate time range for VSI topic selection. Taking *Chinese Journal of Neurology and Psychiatry* as an example, its category is neurology and psychiatry. Based on data from the 2022

Chinese S&T Journal Citation Reports (Core Edition), the average cited half-life for this category is 4.1 years. After accounting for publication delay, we recommend selecting papers published within 3 years for VSI topics in *Chinese Journal of Neurology and Psychiatry*.

3.2 Comprehensive Planning with Multi-Category Topic Selection

VSI topic selection differs from print issue topic selection, as it involves secondary planning, screening, and editing based on already published papers [10]. Professional journals have relatively fixed author groups and content limited to specific disciplines. However, with increasing specialization in disciplinary development and finer subdivision of research directions, it is difficult for professional journals relying primarily on natural submissions to concentrate articles on a specific research direction in the same issue. Comprehensive university journals differ from professional journals in that they cover a wide range of disciplines, making it difficult to intensively report on a specific discipline in a single issue or to establish fixed columns for a discipline long-term. Therefore, whether professional or comprehensive journals aim to attract readers, enhance reading experience, and enable readers to quickly find content of interest, editors must think creatively from a reader's perspective to re-plan, organize, and innovate existing papers.

VSI topic selection requires understanding disciplinary dynamics, screening hot keywords, and conducting overall planning based on the characteristics of published content for multi-category topic selection [12]. During VSI planning, barriers can be broken by compiling papers into special issues based on type, level, and editorial organization, concentrating papers on a specific discipline or hot topic from different levels and perspectives to meet readers' personalized reading needs. Although various science and technology journals have different characteristics, they share the same goal of enhancing journal influence, dissemination power, and meeting authors' personalized reading needs.

We recommend that science and technology journals conduct overall planning with multi-category topic selection before creating VSIs to meet the diverse needs of readers and authors. Our team has summarized the following topic selection directions from the two journals as references for medical science journals.

3.2.1 Classification by Disciplinary Direction Classifying topics by disciplinary direction is a common VSI topic selection approach. For medical journals, the standard is disease classification. What distinguishes *Chinese Journal of Neurology and Psychiatry* and *Sun Yat-sen University Journal of Medical Sciences* is that, beyond disease classification, they also plan dissemination timing by selecting disease commemoration days advocated by academic communities as time nodes, preparing VSIs on those disease research directions in advance and launching them on the commemoration day. *Sun Yat-sen University Journal of Medical Sciences* has planned "Cervical Disease Special Issue," "Ocu-

lar Disease Research," and "Hepatitis-related Disease Research," while *Chinese Journal of Neurology and Psychiatry* has planned "World Stroke Day," "International Rare Disease Day," and "World Parkinson's Day" special issues. On disease commemoration days, relevant societies and organizations worldwide conduct numerous promotional activities, and doctors and researchers in these specialties particularly focus on collecting academic progress information. The 推送 of such VSIs demonstrates academic journals' social responsibility to promote disciplinary development and attract public attention, thereby enhancing social influence and brand recognition.

3.2.2 Topic Selection Based on Citation and Download Rankings Papers with high citations and downloads represent research hotspots in a discipline. Our team has planned another type of VSI by compiling the top 10 or 20 most cited and downloaded papers from the previous two years. By analyzing citation and download statistics, we help readers quickly, intensively, and comprehensively understand research progress in specific fields. These compilations are released at the beginning of each year, providing authors with data feedback after publication, which helps increase loyalty among outstanding authors and assists in developing author resources and establishing core author teams.

3.2.3 Topic Selection for Guidelines and Consensus Articles Clinical diagnosis and treatment guidelines and expert consensus are articles that guide clinical practice and standardize diagnostic and treatment processes. They are typically written by authoritative experts in the field who analyze domestic and international evidence-based medical evidence and formulate guidelines according to evidence strength and national conditions [13]. Due to their authority and practicality, they receive widespread attention from professional readers and have high citation and download rates, contributing to enhanced journal influence [14]. Our team has created VSIs of all published guidelines and consensus articles for convenient reader access and download.

3.2.4 Topic Selection Related to Hot Events Another topic selection direction is based on recent hot events, screening thematic keywords for topic selection. Hot events can be news, public events, important academic breakthroughs, or journal awards and evaluations—primarily themes with significant influence and strong topicality. This requires editors to have keen insight and strong information search capabilities to promptly capture connections with their disciplines after events occur and quickly plan and produce VSIs. VSIs of this type created by our team include "Review of 2021 Nobel Prize-related Research Published in *Sun Yat-sen University Journal of Medical Sciences*" following the Nobel Prize announcement, and award-related topics such as "Expert Consensus with Outstanding Performance in the 2021 China Guidelines/Consensus STAR Rating," "Nine Excellent Papers from Our Journal Selected for the Science and Technology Journal Bilingual Dissemination Project," and "92 Papers from Our Journal Selected as CNKI High-Impact Papers." Hot events themselves attract

significant attention, and such VSIs provide readers with extended reading materials related to these events. These VSIs have high forwarding potential and greatly help enhance journal activity and attract readers.

3.3 Author Permission and Copyright Issues

Article 16 of the *Copyright Law of the People's Republic of China* stipulates: "Publishing a work compiled from existing works requires permission from the copyright holder of the compiled work and the original copyright holder, and remuneration shall be paid." Manuscript processing notices already include a statement that "all authors agree to grant the editorial department the right to reproduce and disseminate the entire article and its accompanying figures, tables, abstracts, or other extractable parts—including but not limited to reproduction, distribution, information network dissemination, performance, translation, compilation, and adaptation rights." Creating VSIs falls under the category of compilation and requires informing authors and obtaining their permission. Therefore, for papers selected for VSIs, corresponding authors must be contacted via email to inform them of the purpose and procedures of the VSI and to sign a "Paper Licensing Authorization Letter" with them.

To facilitate communication with authors, we have adopted two forms for obtaining authorization letters: (1) sending the authorization letter via email for authors to sign, photograph, and return; and (2) sending a QR code for the authorization letter via email for authors to scan and fill out [Figure 1: see original paper]. Currently, most authors prefer the QR code method and show high cooperation rates. A few authors cannot understand or do not support the VSI format and are unwilling to participate; we exclude unauthorized papers when publishing VSIs.

3.4 Multi-Dimensional Dissemination

Adopting multi-dimensional dissemination maximizes communication channels and enhances dissemination power. With VSIs as the core, we have built a four-in-one 立体传播 (stereoscopic) platform comprising websites, WeChat public accounts, mini-programs, and APPs. Based on VSIs, we have developed a dissemination matrix including online and offline special lectures, WeChat discussion groups, and popular science videos. This not only achieves multi-carrier release and multi-form dissemination, promoting the integrated development of traditional and emerging media, but also leverages the strong interactivity of new media to greatly increase interaction among journals, experts, and authors, as well as between experts and authors themselves. Taking disease-classified VSIs as an example, on disease commemoration days, authors of selected articles are invited to simultaneously launch online and offline special lectures, including: (1) interpreting expert guidelines or consensus on disease diagnosis and treatment; (2) inviting influential experts in the field to share the latest progress; (3) providing in-depth analysis and commentary on previously published difficult cases; (4) inviting field experts for online discussions; and (5) establishing the-

matic discussion WeChat groups by disease category for secondary promotion of high-quality article content. *Sun Yat-sen University Journal of Medical Sciences* also writes editor's notes for each VSI, incorporating enhanced publishing concepts by displaying key data tables and figures from articles and even contacting authors for surgical videos to enrich research presentation. Through rich multimedia integration, we achieve academic brand extension, maintain the activity of professional academic media, create premium journal brands, enhance author and reader group stickiness, and ultimately achieve effective dissemination to promote journal development and academic progress [15-17].

3.5 Attracting Readers and Developing Virtual Academic Communities

New media has unique characteristics, including prominent personalization, diverse audience choices, varied presentation forms, real-time information release, and strong interactivity. However, new media information can also be submerged in massive amounts of content and disappear in an instant. According to an *iiMedia Research* report on WeChat self-media reading habits of Chinese mobile phone users in 2015, users spent an average of only 85.08 seconds reading each article on the WeChat platform [18]. To attract more readers' attention to VSIs and extend their duration, we have made attempts in two aspects.

3.5.1 Conducting VSI-Themed Lectures There are two lecture formats: inviting experts and inviting authors of VSI papers. Inviting experts for thematic lectures provides in-depth interpretation of research progress in the field based on VSI papers, enhancing the academic height and readability of the special issue. Inviting authors to present their papers provides them with promotional opportunities and makes them feel that their papers continue to attract attention after publication, enhancing the journal's visibility and brand effect within the author community, helping attract high-quality manuscript sources and increase author participation in VSIs. Special lectures expand VSI papers from text to video format.

3.5.2 Developing Virtual Academic Communities The concept of virtual community was first proposed by Rheingold, defined as "a group of people who primarily communicate via computer networks, who know each other to some extent, share knowledge and information to some degree, and care for each other largely as friends, thus forming a group" [19]. People in the same virtual community communicate, share information and knowledge through networks, forming personal community relationship networks and ultimately developing common community consciousness and culture [20]. Our team has used VSIs as the core to expand special lectures and further develop virtual academic communities based on this information foundation.

Specifically, WeChat group QR codes are added to VSI 推送 pages and special lecture course materials with explanations, thus creating WeChat groups named

after the special topics. Virtual community maintenance requires high-quality information sharing [21]. Taking a rare disease case discussion community as an example, we 推送 the rare disease VSI to the community and 推送 each online case discussion meeting to the community. Through continuous forwarding by community members, more users interested in the topic are attracted, and cases from the VSI are discussed and studied in the group, forming a well-functioning virtual academic community.

3.6 Questionnaire Survey and Demand-Oriented Analysis

Reader questionnaires are an important way to obtain reader feedback, understand reader needs, and improve work directions, as well as a means to publicize the VSI 推送 method to readers. Guided by the *Work Plan for Conducting Investigation and Research Throughout the Party* issued by the General Office of the CPC Central Committee, to further understand authors' perceptions of VSIs, our research group developed a questionnaire on the Questionnaire Star platform regarding VSI planning. The questionnaire was distributed to readers (authors) via WeChat groups, conversations, and Moments. Between April 1 and 27, 2023, 159 responses were collected. Respondents included 35 with bachelor's degrees, 75 with master's degrees, and 49 with doctoral degrees; 20 had no professional title, 38 had junior titles, 43 had intermediate titles, and 58 had senior or principal senior titles. Regarding reading sources, 113 respondents read articles from databases (CNKI or Wanfang), 61 from WeChat public accounts, 77 from websites, and 17 from libraries. Regarding download habits, 101 downloaded from databases, 77 from WeChat public accounts, 8 from WeChat mini-programs, 73 from websites, 4 from mobile APPs, and 13 borrowed from libraries. Regarding VSI attention, 44.03% of respondents had not followed VSIs, while 55.97% had. Regarding willingness, 85.54% of respondents were willing to have their articles combined with related disease articles into VSIs on the journal's website and WeChat public account, and 76.10% were willing to give online or offline lectures on their published articles. Regarding satisfaction, 97.48% of respondents were willing to continue submitting manuscripts, with 79.31% being "very satisfied" and 20.69% "relatively satisfied" with the journals. The overall satisfaction score on the Questionnaire Star platform reached 4.79 (out of 5).

Reader surveys help increase interaction between journals and readers, spreading information about VSIs while understanding reader needs and enhancing journal and VSI visibility. The relatively high percentage of respondents who had not followed VSIs indicates the need to improve 推送 methods and frequency in future work. A small number of respondents were unwilling to have their articles published in VSIs; further investigation revealed this was due to lack of understanding of VSIs and reluctance to increase workload. After explaining the VSI implementation method, all respondents agreed to have their papers published in VSIs.

The development of digital publishing and media formats has brought iterative

updates to science and technology journal publishing, with various information in scientific papers being symbolized and fragmented, enabling multiple combination methods for readers. The emergence of VSIs has changed the traditional print journal model where readers could only read entire issues, and also changed the single "search-read" model in the early stage of digital publishing. Journals' diversified dissemination of previously published papers through various combinations and patterns in VSIs can promote the scope and speed of scientific research information sharing, playing an important role in promoting journal development.

Our research team has explored and practiced VSI implementation strategies, analyzed relevant data, and conducted reader surveys. The implementation strategies for VSIs in medical science journals are summarized as follows: First, conduct overall VSI topic planning, including disciplinary directions, article rankings, guidelines and consensus, and hot event-related themes. Second, ensure timeliness by referencing disciplinary half-life to maintain VSI innovation. Third, adopt multi-directional, multi-form, multi-platform dissemination to maximize communication channels and enhance VSI dissemination power. Fourth, obtain informed consent from authors and pay attention to copyright issues. Fifth, conduct VSI-themed lectures to develop virtual academic communities, increase user engagement, and develop private domain traffic.

The limitations of this study include that the research sample is limited to VSIs from two medical journals, which may restrict the universality of the findings. Additionally, due to limited data, the analysis is primarily based on existing research and VSI readership data, lacking other dissemination data such as likes and shares, which may affect the accuracy of the results. Future research could track and analyze VSI dissemination data, including readership, likes, and shares, to more comprehensively understand VSI dissemination effects. Meanwhile, expanding the research sample to compare VSIs across different medical journals could provide deeper insights into the application and influence of VSIs in the medical field.

Author Contribution Statement:
Li Li: Designed research framework, analyzed data, created charts, drafted and revised manuscript, finalized paper
Yu Jing: Proposed research direction, created charts, participated in manuscript revision and review

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Note: Figure translations are in progress. See original paper for figures.