Exploration and Practice on Thematic Planning and Dissemination of Scientific Journals: A Case Study of *Journal of Mechanical Engineering* (Postprint)

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Abstract

【Purpose】 To investigate the role of different special issue types and dissemination methods in enhancing the academic quality and influence of scientific journals, and to provide references for the academic leadership and high-quality development of Chinese scientific journals.

【Methods】 This study reviews the special issues published in the Journal of Mechanical Engineering over the past 20 years, categorizes different topic types, and introduces the dissemination practices of special issues under the trend of integrated publishing.

【Results】 The special issues of the Journal of Mechanical Engineering are mainly categorized into different topic types themed on commemorative activities, serving national strategies and major projects, continuously tracking disciplinary progress, and timely reporting emerging technologies and academic ideas. These special issues are further disseminated through WeChat public platforms, online special issue sharing sessions, and offline thematic forums to expand their influence.

【Conclusion】 Special issue publishing is an important approach for scientific journals to lead innovation and gather high-quality manuscript sources. Scientific journals should leverage special issues as a key tool to serve national strategies, serve the industry, and serve scholars, and utilize various new technological means to promote the high-quality dissemination of special issues and journals.

Full Text

Preamble

Exploration and Practice in Thematic Planning and Dissemination for Scientific Journals: A Case Study of the *Journal of Mechanical Engineering*

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Abstract

[**Purpose**] This study investigates how different thematic types and dissemination approaches enhance the academic quality and influence of scientific journals, providing insights for academic leadership and high-quality development of Chinese scientific journals. [**Method**] We systematically reviewed special issues published in the *Journal of Mechanical Engineering* over the past two decades, categorized different thematic types, and introduced dissemination practices under the trend of integrated publishing. [**Results**] The *Journal of Mechanical Engineering* primarily organizes special issues around four themes: commemorative activities, national strategies and major projects, continuous tracking of disciplinary progress, and timely reporting of emerging technologies and academic ideas. The journal employs WeChat public platforms, online thematic sharing sessions, and offline forums for secondary dissemination, significantly expanding the impact of these special issues. [**Conclusion**] Thematic publishing represents a crucial approach for scientific journals to drive innovation and attract high-quality submissions. Journals should leverage special issues to serve national strategies, industries, and scholars while utilizing new technological means to promote high-quality dissemination of both special issues and the journal itself.

Keywords: Thematic publishing; Thematic types; Online sharing sessions; Offline forums; Dissemination practices

Introduction

High-quality content has always been the foundation for the survival and development of scientific journals. It not only determines academic quality but also constitutes a core element of competitive advantage. Special issues represent systematic coverage of representative research achievements in a specific field, showcasing its hotspots and frontiers. Publishing high-quality special issues has become a primary means for scientific journals to pool excellent manuscript resources and enhance academic influence. In June 2021, the joint "Opinions on Promoting the Prosperous Development of Academic Journals" issued by the Publicity Department of the CPC Central Committee, Ministry of Education, and Ministry of Science and Technology emphasized: "Adhere to innovation

level and scientific value as the criteria for manuscript selection, strengthen editorial planning, create key columns around major themes, organize special issues, and address content homogenization." The document also encouraged multidisciplinary comprehensive journals to transform into specialized publications, highlighting advantageous fields, refining professional content, developing distinctive columns, and moving toward a "specialized, refined, distinctive, and innovative" direction.

With China' s rapid scientific progress and the continuous emergence of research achievements, an increasing number of scientific journals recognize the critical role of thematic publishing in pooling academic resources and driving journal development. For instance, *Engineering Science and Technology* serves major national strategic engineering projects by establishing special columns such as "Focus on National Key R&D Programs" and "Scientific Frontiers," which have attracted widespread attention. *Biotechnology Bulletin* has developed a suitable development model by planning special issues on bioinformatics, plant stress biology, and synthetic biology, gradually establishing its brand characteristics within the industry. *Acta Aeronautica et Astronautica Sinica* focuses on aerospace disciplines, collaborating with universities and brand forums to organize special features such as electric aircraft columns, advanced aircraft strength technology special issues, and the Tianwen-1 Mars landing column, demonstrating distinct aerospace characteristics. *China Tropical Medicine* has published over a dozen special columns through active solicitation in recent five years, fostering collaborative work among editorial boards, experts, and authors, thereby providing tremendous support for journal development.

Established in 1953 and sponsored by the China Association for Science and Technology and the Chinese Mechanical Engineering Society, the *Journal of Mechanical Engineering* primarily publishes innovative fundamental theoretical research and outstanding engineering applications in mechanical engineering and its interdisciplinary fields. Over its 70-year history, the journal has consistently adhered to rigorous, serious, truth-seeking, and pragmatic principles, earning deep recognition from industry experts and scholars. The journal has always emphasized high-quality content construction, gradually forming a three-dimensional reporting structure comprising regular columns, invited columns, and special issues. Particularly in the past decade, it has intensified efforts in planning and publishing columns and special issues, producing nearly a hundred special features between 2013 and 2022. This approach has enabled the journal to explore a suitable model for thematic planning and dissemination, keeping this academic brand vibrant and enduring.

Using the *Journal of Mechanical Engineering* as a case study, this paper elaborates on the journal' s active exploration and experimentation in thematic planning and dissemination, aiming to provide valuable insights for enhancing academic quality and expanding the influence of scientific journals.

1. Theme Selection

For engineering technology journals, close attention to major national strategic needs and service to major engineering projects is essential. The success of a special issue depends on whether the selected theme is innovative, forward-looking, and distinctive enough to attract attention and stimulate discussion. By reviewing special issues published in the *Journal of Mechanical Engineering* over the past two decades, we have identified four organizational approaches.

1.1 Integration with Commemorative Activities

Commemorative special issues celebrate historical milestones or honor important figures. The *Journal of Mechanical Engineering* published special series for its 50th and 60th anniversaries, soliciting contributions from editorial board members and directors. These issues featured forward-looking review papers documenting the historical development and future trends of mechanical engineering disciplines, as well as cutting-edge research achievements with innovative significance. These commemorative issues not only mapped the landscape of mechanical engineering development but also demonstrated the journal' s academic leadership, playing a vital role in advancing the discipline.

To honor Academician Zhang Qixian, a pioneer in Chinese robot mechanism theory, the journal has published commemorative special issues on robotics every five years since 2005. Zhang not only pioneered interdisciplinary research bridging mechanism theory and robotics in China but also established the Robotics Institute at Beihang University and a national key laboratory, cultivating numerous outstanding talents. These special issues feature contributions from experts and Zhang' s students, showcasing the latest research achievements in modern mechanism theory and advanced robotics technology while commemorating his legacy.

The journal also collaborates with universities on commemorative special issues. In March 2013, to mark the centennial of mechanical engineering education at Jiaotong University—which originated from the Electrical and Mechanical Department established by the Ministry of Communications in 1913 and evolved alongside Shanghai Jiao Tong University and Xi' an Jiao Tong University—the *Journal of Mechanical Engineering* partnered with both universities to publish a commemorative issue. This issue compiled their recent research achievements in addressing major national needs and disciplinary frontiers, effectively supporting academic summarization and promotion.

1.2 Alignment with National Strategies and Major Projects

The *Journal of Mechanical Engineering* consistently aligns with major national engineering projects. In 2004, China' s National Development and Reform Commission released the "Medium and Long-term Railway Network Plan," marking the beginning of large-scale high-speed rail construction. Following the 2008 plan for jointly developing next-generation high-speed trains and the launch

of the Beijing-Tianjin intercity railway, high-speed rail equipment manufacturing became a strategic emerging industry. The journal targeted this national strategic need, publishing nine special columns and albums on rail transit technology in 2008, 2010, 2013, and 2018. These issues gathered the latest research from Southwest Jiaotong University, Tongji University, Beijing Jiaotong University, and the China Railway Corporation, with papers supported by major national programs including the 863 Program, 973 Program, National Science and Technology Support Program, National Key R&D Program, and National Natural Science Foundation. The issues addressed critical challenges such as novel safety materials, vibration and noise reduction in train-track coupling systems, and lifecycle management of key components, demonstrating significant practical value and forward-looking vision.

The journal also followed the Five-hundred-meter Aperture Spherical Telescope (FAST) project, a national major scientific infrastructure completed in September 2016 after 22 years of construction involving over a hundred researchers from more than 20 universities and institutes. In 2017, the *Journal of Mechanical Engineering* published a FAST special column, inviting Researcher Nan Rendong, the project' s chief scientist and chief engineer, to write the preface. This column, published less than a year after FAST' s completion, received widespread attention and sparked enthusiastic discussion in the industry.

1.3 Continuous Tracking of Disciplinary Progress

As a first-level discipline, mechanical engineering encompasses numerous subfields with constantly emerging theories and evolving technologies, requiring sustained attention and repeated coverage. The *Journal of Mechanical Engineering* has strategically positioned itself in electric vehicles, intelligent manufacturing, robotics, and micro-nano manufacturing, systematically and periodically showcasing scientific progress while assembling a large pool of industry experts as editorial board members, reviewers, authors, and readers.

Since 2001, when the Ministry of Science and Technology launched the major electric vehicle R&D program, the journal has published special issues tracking the field' s development. Beginning with the 2005 "Electric Vehicle Major R&D Program Special Column" with a preface by program chief expert Wan Gang, the journal has published special issues in 2009, 2010, 2013, 2015, 2017, 2019, 2021, and 2022. These issues showcased advanced research from leading institutions such as Tsinghua University, Beijing Institute of Technology, Jilin University, and Tongji University, as well as industry partners. The journal not only presented research progress as an academic exchange platform but also documented the evolution of electric vehicle technologies from nascent to mature stages, while witnessing the growth of numerous young scholars. Through continuous development of serialized special issues, the journal achieved a unity of innovative and sustained academic leadership, closely connecting disciplinary progress, supporting projects, and research teams. This approach fully demonstrates that scientific journals serve as both the "dragon' s tail" (documenting

results) and "dragon' s head" (leading innovation), gradually enhancing the journal' s academic influence and leadership in relevant fields.

1.4 Timely Reporting of Emerging Technologies and Academic Ideas

Timely coverage of emerging technologies and academic ideas is a primary method for scientific journals to demonstrate academic leadership, and presenting them as special issues often generates widespread industry attention. In 2020, the journal published a special column on 4D printing technology—a disruptive manufacturing technology for intelligent components that emerged from the deep integration of materials, mechanics, and information sciences. First proposed in 2013, the concept was elaborated by Professor Shi Yusheng of Huazhong University of Science and Technology in 2016. The *Journal of Mechanical Engineering* promptly invited Professor Shi as guest editor-in-chief to showcase the latest developments in this emerging field. As of April 2023, articles from this special issue had an average download count of 728 on CNKI, nearly double the 371 average for other articles in the same period.

In 2021, the concept of "human-centered intelligent manufacturing" was proposed, emphasizing human-information-physical systems that integrate human-centric principles throughout the lifecycle of intelligent manufacturing systems and robots. The *Journal of Mechanical Engineering* seized this academic high ground, publishing a special issue in 2022 featuring 25 articles covering theoretical reviews, technology development, and applied research. As of April 2023, this special issue' s average download count reached 970, 2.7 times that of other issues from the same year. This demonstrates that concentrated reporting on innovative and forward-looking theories and technologies significantly enhances journal impact.

2. Promotion and Dissemination of Special Issues

With the rapid development of information technology, digital technology, and mobile internet, traditional publishing has gradually been replaced by integrated publishing models. How to expand dissemination channels and enhance the influence of special issues has become a critical concern for scientific journals. In recent years, the *Journal of Mechanical Engineering* has utilized new media technologies and platforms to extensively promote special issues, organizing online sharing sessions and offline academic forums based on thematic content, achieving excellent dissemination results.

2.1 Leveraging WeChat Public Platforms

The *Journal of Mechanical Engineering* began operating its WeChat public platform in 2016, which has become the journal's primary dissemination channel. With growing followers and expanding brand influence, the platform plays a crucial role in both pre-publication solicitation and post-publication promotion of special issues.

After completing thematic planning, most columns solicit contributions from scholars through the WeChat platform, significantly enriching manuscript sources and ensuring successful publication. Following publication, the journal promptly promotes special issues via WeChat, with posts featuring cover images and article links to attract readers. Beyond promoting entire columns, the journal selectively highlights high-quality articles, integrating value-added content such as videos, audio, images, and source data that cannot be accommodated in print. This approach enables video reproduction of key experimental processes, allowing readers to comprehensively understand research content and teams. By combining enhanced digital publishing with traditional print, the journal extends the breadth of dissemination and improves overall impact.

2.2 Organizing Online Thematic Sharing Sessions

With the rise of live streaming platforms, online academic forums have become common and widely recognized. To expand special issue influence, the *Journal of Mechanical Engineering* has conducted a series of sharing sessions via live streaming. As of April 2023, the journal has organized nine thematic sharing sessions featuring nearly a hundred experts who shared their latest research progress, attracting nearly 150,000 viewers and achieving excellent promotional results. Through continuous practice, the journal has accumulated valuable experience and established a streamlined, branded live streaming system.

First, approximately one week before each session, the editorial team creates promotional posters or short videos released on WeChat to build anticipation. Second, during live broadcasts, Q&A sessions are incorporated, with assistants organizing audience questions for the moderator to address. Unlike offline conferences constrained by time, online sessions typically allow half-hour discussions, attracting diverse audiences from academia, industry, and even prospective students and job seekers, thus meeting varied needs. Third, sessions are simultaneously broadcast across multiple platforms including WeChat Video Channel, Jiuzhou Cloud Broadcasting, and Bilibili, significantly expanding reach. Finally, after each event, expert presentations and Q&A sessions are edited into long-form videos available on all platforms, sustaining attention and impact.

2.3 Conducting Offline Forums Themed on Special Issues

To facilitate face-to-face exchanges among experts, especially peers in specialized fields, the *Journal of Mechanical Engineering* organizes offline forums themed on special issues, using them as a bridge for academic exchange. In 2019, based on the "Key Technologies for Distributed Drive Electric Vehicles" special issue, the journal hosted a forum on distributed drive electric vehicle technologies and industrialization prospects. As part of a China Association for Science and Technology youth scientist forum series, the event invited over 150 participants including representatives from CAST, the Chinese Mechanical Engineering Society, special issue authors, researchers, young scholars, and industry representatives. Themed on the special issue, the forum not only provided a platform for

experts to present and exchange ideas but also attracted significant industrial attention, promoting integration of research and industry and driving industrial development.

To deepen academic exchange in electric vehicles, the journal also collaborated with Chongqing University in late 2019 to organize a youth forum on power battery system key technologies based on the corresponding special issue. Featuring primarily young faculty and students, this forum provided doctoral candidates with rare opportunities to present their research, fully demonstrating the journal' s positive role in promoting disciplinary development and supporting young scholars.

Thematic publishing has always been a focus for scientific journals. How to leverage special issues to better serve national strategies, major projects, industries, and scholars, and how to disseminate thematic content more effectively in the context of integrated publishing to fully demonstrate the journal' s innovative leadership—these are questions that editors must continuously consider and explore. Editors should not only closely monitor research developments and identify disciplinary frontiers but also proactively integrate into academic communities, embrace emerging technologies and publishing formats, and contribute to building academic communities and achieving academic prosperity.

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