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Convergence and Innovation of Science and Technology Communication in the New Media Environment: Postprint

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Abstract

Driven by the rapid development of internet-based new media industries, human society has entered the new media era. In this environment, the pathways and modalities of science and technology communication have undergone significant transformations, while the target audiences in terms of scale, diversity, and needs continue to evolve. In this context, to better accommodate audience demands for science and technology content, necessary reforms and even breakthroughs in existing concepts and models of science and technology communication are imperative. By adopting integration and innovation strategies to seize new opportunities for science and technology communication in the new media environment, this necessitates focused theoretical research and practical exploration centered on the integration and innovation of science and technology communication. This paper, based on an analysis of emerging opportunities and trends in science and technology communication within the new media landscape, provides practical justification for the necessity of integration and innovation in science and technology communication. Furthermore, it proposes strategic recommendations for the effective implementation of such integration and innovation, thereby enriching the approaches and methodologies of science and technology communication and unleashing its substantial potential.

Full Text

Integration and Innovation of Science and Technology Communication in the New Media Environment

Abstract: Driven by the rapid development of internet-based new media formats, human society has entered the era of new media. In this environment, the pathways and methods of science and technology communication have undergone significant changes, while the audience—both in terms of scale, type,

and needs—continues to evolve. To better adapt to audience demands for scientific content, necessary reforms and even breakthroughs in traditional science communication concepts and models are required. By adopting strategies of integration and innovation, we can seize new opportunities for science communication in the new media environment. This necessitates in-depth theoretical research and practical exploration centered on the integration and innovation of science communication. Based on an analysis of new opportunities and trends in science communication within the new media landscape, this article provides practical demonstrations of the necessity for integration and innovation in science communication, and proposes relevant strategic recommendations for effective implementation. These efforts aim to enrich approaches to science communication and unleash its powerful advantages.

Keywords: new media; science and technology communication; integration and innovation

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Science and technology communication transmits information related to scientific development through various media channels to achieve the goal of influencing and even transforming development. In an era of widespread and deep information technology penetration, science communication has become a crucial force for promoting scientific achievements and advancing technological development. However, due to hierarchical differences in audience interest, knowledge, and capacity, achieving desired communication outcomes has become increasingly challenging. For science communication in the new media environment, beyond expanding scientific achievements to provide vast content resources, continuous optimization of communication channels from the perspective of integration and innovation is necessary to better accommodate personalized audience needs.

1. New Opportunities for Science and Technology Communication in the New Media Environment

The impact of new media on science communication is profound and extensive, altering not only the methods and pathways of content dissemination but also indirectly influencing the content itself, making science communication through new media more abundant and diverse. Current new media developments present several key opportunities for science communication.

1.1 Popularization of Science and Technology Communication

In the traditional media context, science communication was primarily led by government and research institutions, focusing on frontier scientific achieve-

ments closely related to national development. In the new media environment, however, content increasingly relates to science and technology pertinent to public life and work. For instance, under traditional media, audiences mainly learned about major scientific breakthroughs through television and radio, but these technologies often had little direct relevance to their daily lives, making them passive recipients. In contrast, new media allows audiences to actively research scientific developments relevant to their personal needs and integrate this knowledge into their lives and work, truly realizing technology's transformative potential. This popularization enables more actors to participate in disseminating and applying scientific achievements, amplifying their positive impact across broader scopes and deeper levels.

1.2 Increasing Specialization of Science and Technology Communication

In the early stages of science communication development, scientists were the dominant actors, presenting their experimentally validated findings through papers and monographs to influence societal development. However, as scientific research has grown more complex, scientists have had to devote increasing energy to solving technical challenges, leaving less capacity for communication efforts. Consequently, media professionals have assumed the function of science communication, broadly disseminating scientists' research achievements through media channels. This has gradually differentiated science communication from research itself, establishing it as an independent domain. In today's new media environment, the rise of self-media means audiences can be both recipients and producers of science communication, sharing scientific knowledge they acquire with others and thereby functioning as communication agents themselves. Thus, the new media environment has intensified specialization while simultaneously lowering the barrier to entry for becoming a communication agent.

1.3 Diversification of Science and Technology Communication Methods

New media technologies' digital, high-capacity, and trans-spatial characteristics greatly satisfy audience demands for science communication. Additionally, media's retrievability and strong integrative capacity provide technical support for meeting diverse communication needs. Beyond traditional broadcast, television, and newspaper channels, audiences can now retrieve needed science content through various network terminals. This internet-supported approach creates favorable conditions for active audience participation. For example, media users can disseminate scientific achievements through short videos in cyberspace—a method that is more personalized, free, and popular among audiences than traditional broadcasting.

2. New Requirements for Science and Technology Communication in the New Media Environment

The new media environment's influence on science communication is broad and profound, offering new opportunities for integration and innovation while simultaneously elevating audience expectations. Demands have gradually shifted from quantity-focused to quality-focused requirements. Science communication agents must analyze these evolving conditions to accurately grasp new requirements and trends, thereby better mastering methods of integration and innovation.

2.1 Lifecization of Communication Content Themes

New media science communication targets ordinary media audiences who possess significantly different levels of scientific knowledge and comprehension ability compared to scientists. Therefore, communicators must ensure content is life-oriented and presented in accessible ways to minimize knowledge or capability barriers to reception. For instance, when audiences lack professional understanding of artificial intelligence concepts, communicators can employ more life-oriented language such as “machines or technology replacing human labor” to facilitate comprehension.

2.2 Mainstreaming of Communication Methods

The carriers for science communication content have become increasingly diverse, encompassing not only traditional media like radio, television, newspapers, and books but also numerous internet-based new media platforms. However, not all media forms achieve effective science communication results. In other words, science communication must identify appropriate channels based on audiences' preferred mainstream media to ensure effective content dissemination. For example, given WeChat's mainstream status among media audiences, an increasing number of science communication agents are choosing WeChat official accounts as their primary communication channel.

2.3 Interestingness of Communication Forms

Communication form—how science content is presented to audiences—is a critical factor influencing communication effectiveness. In the new media environment, disseminated content has gradually transcended traditional media's single text-and-image format, shifting toward more diversified and interesting forms to adapt to evolving audience demands. In practice, communicators should employ concise forms to directly convey scientific content, accommodating audiences' fragmented reading habits and avoiding lengthy discourse. Simultaneously, to attract audience attention, communicators should appropriately employ dynamic formats like video and audio instead of static text and images to actively adapt to audience content consumption preferences.

3. Necessity of Integration and Innovation in Science and Technology Communication in the New Media Environment

Integration and innovation in new media science communication aims to enhance comprehensive communication effectiveness through content and method integration, enabling science to better penetrate social development domains and exert deeper transformative impacts on people's lives. Based on current scientific development realities, the necessity of pursuing integration and innovation can be summarized in two aspects.

3.1 Integration and Innovation as an Effective Approach to Align with Science and Technology Development Trends

Amid rapid scientific and technological development, traditional disciplinary boundaries have been broken, and integration and innovation across different fields have become normalized. As a driving force for scientific development, science communication risks falling behind and diminishing its effectiveness if it fails to integrate and innovate. Moreover, in the new media environment, audience demands have already broken through single professional domains, expanding toward multidisciplinary and multi-field orientations. This requires science communication agents to provide more interdisciplinary scientific achievements through integration and innovation to better satisfy audience needs. Taking information technology as an example, the penetration of big data, artificial intelligence, and cloud computing in enterprises has prompted them to conduct in-depth research and extensive application of these technologies centered on business development—this integration of business and technology represents an effective approach to adapting to information technology trends.

3.2 Integration and Innovation as a Scientific Strategy to Leverage New Media Advantages

New media's influence on science communication is profound. Rather than passively adapting to these changes, science communication agents should actively respond according to communication needs, exploring more scientific pathways amidst complex conditions. Given new media's demonstrated convergence, agents should combine communication objectives to deeply explore new media's advantageous functions in science communication, enabling science communication to fully harness new media's momentum and significantly enhance communication effectiveness. For example, agents should fully utilize regional integrated media centers, leveraging the convergence advantages of traditional and new media to broaden thinking and methods for integration and innovation, thereby realizing the function of media—especially new media—in supporting science communication development.

4. Strategies for Integration and Innovation in Science and Technology Communication in the New Media Environment

Integration and innovation in science communication represents a new task for science communication work in the new media environment, testing practitioners' abilities to innovate communication pathways and improve effectiveness. In response to the necessity of integration and innovation, agents must explore more scientific and efficient communication paths based on communication content. Current practices indicate that effectiveness should be pursued through the following aspects.

4.1 Strengthening the Concept of Integration and Innovation in Science and Technology Communication

Possessing advanced concepts is the prerequisite and foundation for science communication agents to actively explore new ideas and methods for integration and innovation, as well as an important standard for measuring communication capacity. Long-term practice has accumulated rich experience in science communication, but much of this knowledge is based on traditional media like radio, television, newspapers, and journals, creating significant gaps with new media environment requirements. Therefore, agents must update communication concepts promptly with new media as the reference point, gradually establishing new science communication thinking characterized by openness, integration, and innovation to lay a solid conceptual foundation. For example, agents can organize various industry exchange activities focusing on development trends in the new media environment to conduct in-depth discussions on directions and strategies, thereby enriching thinking on integration and innovation.

4.2 Firmly Grasping the Content Mainline of New Media Communication

A crucial feature of the new media era is “content is king” —the core of media communication lies in content that aligns with audience interests and needs, which ensures successful communication objectives. For science communication agents, a key challenge is striking a balance between communicating accurate scientific content and making it accessible. On one hand, science communication content comprises scientific and technological achievements with clear technical and professional characteristics, requiring audiences to possess certain professional knowledge for accurate understanding. On the other hand, most media audiences lack deep professional foundations and sufficient time or energy to thoroughly read and analyze scientific content.

4.3 Creating Diversified Paths for Integration and Innovation in Science and Technology Communication

Path integration and innovation constitute important components of science communication work and key indicators of whether communication content truly achieves its objectives. Only with correct communication paths can content effectively reach target audiences. Given the diversification of communication methods in the new media environment, agents must determine diversified science communication strategies based on audience media preferences. On one hand, they should maintain and deepen professional communication methods using science journals and books as carriers, building high-quality science communication brands and expanding market influence through high-quality content. On the other hand, they should leverage the lifecization advantages of “micro-media” such as Weibo, WeChat, and micro-videos to broaden the reach and impact of scientific achievements, better adapting to new media environment development. Simultaneously, agents should use digital communication methods to break down barriers between traditional and new media formats, enabling truly integrated multi-media communication forms to generate greater media effects. For example, beyond publishing science journals and books, agents should operate WeChat official accounts and Weibo accounts to proactively push science content relevant to daily life, enhancing audience understanding and application of scientific achievements.

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