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Analysis and Development Exploration of Policies and Regulations for Science Popularization Personnel under the Background of the Revision of the Science Popularization Law

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Abstract

In the context of the revision of the "Science Popularization Law", this study aims to deeply analyze the relevant policies and regulations for science popularization personnel, so as to promote the construction and development of the science popularization personnel team, and then enhance the scientific literacy of the whole people. The research uses the literature research method to interpret in detail the policies on the training of science popularization personnel, the participation of different groups, the cultivation of professional talents, the construction of volunteer service, and evaluation and incentives. It analyzes the problems existing in the implementation of the policies and puts forward targeted development suggestions. The study finds that the current construction of the science popularization personnel team faces key problems such as a disconnect between training content and actual needs, poor cooperation among various groups, a mismatched talent cultivation system, insufficient management and incentives for volunteer services, and an imperfect evaluation and incentive mechanism. Based on this, it is recommended to optimize the training content and methods, strengthen communication and cooperation among various groups, improve the talent cultivation system, improve volunteer management and incentive measures, and construct a scientific and reasonable evaluation and incentive system, so as to promote the construction of a professional and diversified science popularization personnel team, meet the social needs for science popularization, and help improve the scientific literacy of the whole people.

Subject Areas

Information Science

Keywords

Revision of the Science Popularization Law, Science Popularization Personnel, Policy Regulations, Team Building, National Science Literacy

1. Introduction

1.1. Research Background

In the era of rapid technological advancement, scientific progress not only drives economic and social development but also raises higher demands for public scientific literacy. Enhancing national scientific literacy has become a crucial component of China's innovation-driven development strategy and a key factor in achieving the goal of becoming a global leader in science and technology [1]. As a vital bridge connecting science with the public, science communication efforts have gained increasing prominence. The professional capabilities and organizational development of science communicators—core practitioners in this field—directly determine the quality and effectiveness of these initiatives. Recent revisions to the "Science Popularization Law of the People's Republic of China" (hereinafter referred to as the "Law") have significantly strengthened policy support for science communicators. These measures aim to optimize team structures and improve overall competence through institutional frameworks [2]. In the new era, science communication faces diversified and complex demands. How to build a professional, multi-tiered, and dynamic team of science communicators through policy support has emerged as an urgent challenge requiring immediate resolution.

1.2. Problem Statement

While the central role of science communicators in public education has gained widespread recognition, challenges persist in building their workforce. First, training policies often fail to align with practical needs, leaving professionals struggling to handle evolving communication scenarios [3]. Second, fragmented collaboration mechanisms among different groups hinder resource integration, reducing overall effectiveness [4]. Third, an underdeveloped talent cultivation system with mismatched curricula and real-world demands leaves graduates ill-equipped for complex environments. Meanwhile, volunteer service programs face issues like high attrition rates and inadequate incentives, undermining their impact [3]. These findings highlight the need for optimized policies and implementation frameworks to better meet modern science communication requirements.

1.3. Research Objectives

This study aims to systematically analyze existing challenges in the development

of science communication professionals through an in-depth interpretation of relevant policies, while proposing targeted recommendations. Specifically, starting from policy background, the research will examine training policies for science communicators, participation policies for different groups, professional talent cultivation policies, volunteer service development policies, and evaluation incentive mechanisms, assessing their implementation effectiveness and existing shortcomings [1]. Building on this foundation, by integrating domestic and international research findings and practical experiences, specific pathways for optimizing policy frameworks are proposed to enhance the policy system for science communicators, promoting their professionalization and diversified development [2]. Through this study, we aim to provide theoretical foundations and practical references for policymakers, thereby comprehensively improving the development of science communication teams, meeting societal needs for science popularization, and contributing to the continuous enhancement of public scientific literacy [3].

2. Literature Review

2.1. Theoretical Basis

The research and formulation of science communication policies require theoretical foundations, with human capital theory and communication theory providing crucial guidance in this field. Human capital theory emphasizes enhancing individual capabilities through education and training to create greater social value [4]. In cultivating science communicators, this theory explains how systematic training programs and educational resource investments can improve their scientific literacy, professional skills, and comprehensive competencies. For instance, Li Guochang *et al*. highlight that building a team of science communicators requires recognizing scientists as the primary source of creative talent, while expanding discovery and cultivation mechanisms through multiple channels—this exemplifies the practical application of human capital theory [4]. Communication theory further establishes requirements for communicators skills, asserting that effective knowledge dissemination depends on communicators' communication abilities, media selection, and audience feedback. Therefore, science communicators must possess effective communication techniques to adapt to diverse scenarios [5]. These theories not only provide framework guidance for policy design but also lay the groundwork for evaluating policy implementation outcomes [6].

2.2. Domestic and International Research Progress

Domestic and international scholars have made significant progress in studying science communication policies, particularly regarding training frameworks and participation mechanisms for different groups. Domestic research primarily focuses on building and optimizing talent development systems for science communicators. [7] Concurrently, studies track policy evolution trends. CiteSpace visualization analysis reveals that keywords like "science communication policies," "public science education," and "scientific literacy promotion" have become

research hotspots, reflecting academic attention to core policy issues [8]. In contrast, foreign research emphasizes diversified participation models and social impact of science communicators. For instance, Western countries widely encourage researchers, educators, and students to engage in science communication activities, with legislative protections ensuring their rights and establishing mature collaborative mechanisms [9]. Although differences exist in policy research approaches between domestic and international studies, both emphasize practical implementation and sustainability—providing valuable references for this research.

2.3. Research Gaps

While existing literature has extensively explored policies for science communicators, several research gaps remain to be addressed. First, current evaluations of policy implementation effectiveness predominantly focus on textual interpretation or case studies, lacking systematic assessments of overall execution outcomes [10]. For instance, empirical analyses based on large-scale data are scarce regarding the actual impact of training policies for science communicators, making it difficult to accurately determine whether training content truly meets practitioners' needs [11]. Second, the synergistic effects between different policies have not received sufficient attention. The development of science communicator teams involves multiple components including training, incentives, and evaluation systems. The coordination and synergy among these policy components directly influence overall effectiveness, yet existing research seldom examines how these policies can work in concert to advance science communication [10]. Additionally, studies addressing critical issues like high volunteer attrition rates and overly simplistic evaluation criteria remain underdeveloped, requiring thorough analysis to resolve. This study aims to explore these unaddressed areas, seeking new perspectives and solutions for improving policies for science communicators.

3. Interpretation of Relevant Policies for Science Popularization Personnel

3.1. Science Popularization Personnel Training Policy

3.1.1. Training Objectives

The core objective of science communication training policies is to enhance the scientific literacy and dissemination skills of professionals, enabling them to meet the complex demands of modern science communication. Analysis of existing policy documents reveals that training objectives primarily focus on two aspects: first, strengthening the scientific knowledge and theoretical proficiency of communicators to ensure accurate delivery of cutting-edge technological achievements; second, improving their communication capabilities including interpersonal skills and new media application proficiency to satisfy diverse public education needs [11]. However, there exists a certain disconnect between training goals and practical communication requirements in implementation. For instance, some programs overemphasize theoretical knowledge impartation while neglecting practical

skill development, resulting in communicators' inability to effectively handle multifaceted scenarios [12]. Moreover, significant regional and sectoral variations in communication needs remain inadequately addressed by current training objectives, thereby undermining the practical effectiveness of these policies.

3.1.2. Training Content

The design of training content for science communicators directly impacts their professional development. Current training programs primarily focus on scientific knowledge, communication skills, and regulatory compliance. In terms of scientific knowledge, the curriculum covers fundamental sciences, cutting-edge technologies, and interdisciplinary fields to broaden practitioners' intellectual horizons [13]. Regarding communication skills, emphasis is placed on developing language proficiency, interactive communication techniques, and new media application capabilities to enhance dissemination effectiveness [14]. However, the training remains insufficient in both comprehensiveness and practicality. On one hand, some content appears overly theoretical, lacking case studies and hands-on guidance for real-world challenges. On the other hand, outdated material fails to reflect the latest technological advancements and evolving societal needs. These issues result in practitioners facing knowledge gaps and skill limitations in practical applications, ultimately constraining their professional performance.

3.1.3. Training Methods

The diversity and effectiveness of science communication training methods are crucial factors in policy implementation. Current training approaches primarily include offline centralized sessions, online courses, and practical drills. Offline programs, typically organized by professional institutions, leverage face-to-face interactions to effectively address workplace challenges [15]. However, these programs have limited reach and are constrained by time and space limitations. In contrast, online courses overcome geographical barriers, offering flexible learning opportunities for more professionals. Yet, they often suffer from insufficient interactivity and difficulty in evaluating learning outcomes. Additionally, while practical drills provide valuable hands-on experience in real-world scenarios, their high implementation costs hinder widespread adoption. Therefore, integrating the strengths of different training methods to build a multi-tiered system has become key to enhancing training effectiveness.

3.2. Participation of Different Groups in Policy

3.2.1. Participation of Researchers

As primary creators of scientific knowledge, researchers hold irreplaceable advantages in science communication. In recent years, the government has introduced policies encouraging scientists to engage in public outreach activities, such as incentivizing them to convert research achievements into educational content through performance evaluations and professional title assessments [16]. Their participation not only enhances the scientific rigor and credibility of public education

materials but also strengthens public trust in technology through their expertise [2]. However, practical implementation faces challenges. Some researchers perceive science communication as irrelevant to their core work, lacking motivation to participate. Meanwhile, the lack of effective coordination mechanisms between academic research and public engagement hinders efficient conversion of research outcomes into accessible resources. Therefore, how to stimulate researchers' enthusiasm through policy guidance and support, while establishing effective linkage mechanisms between scientific research and public education, has become an urgent issue requiring resolution.

3.2.2. Teacher and Student Participation

Teachers and students, as vital components of the educational community, play pivotal roles in science popularization. Leveraging their teaching expertise and professional knowledge, educators can effectively integrate scientific concepts into classroom instruction, nurturing students 'scientific curiosity and literacy [3]. As primary audiences for science communication, students' participation in educational outreach activities not only enhances their scientific literacy but also influences families and society through the "hand-in-hand" approach. Current policies explicitly advocate engaging both teachers and students in science education through curriculum design and extracurricular programs [4]. However, implementation challenges persist: some schools underinvest in science education, reducing activities to mere formalities; meanwhile, teachers lack systematic training to deliver impactful lessons. Therefore, strengthening educators' science communication capabilities through policy support and designing more student-engaging activities have become critical directions for advancing public engagement in science education [17].

3.3. Professional Personnel Training Policy

3.3.1. Talent Training System

The cultivation system for science communication professionals spans multiple stages from academic education to vocational training, where the focus and coordination between these phases directly determine the quality and effectiveness of talent development. During the academic stage, universities and research institutions primarily shoulder the responsibility of nurturing such professionals. In recent years, some universities have introduced specialized programs or courses related to science communication, aiming to provide students with systematic theoretical knowledge and practical skill training [5]. However, current academic education still faces challenges such as curriculum design that disconnects from real-world needs and insufficient practical teaching components. At the vocational training level, relevant departments enhance the professional capabilities of in-service science communicators through organized workshops and advanced courses [4]. Nevertheless, uneven resource distribution persists, with limited training opportunities available in certain regions and fields. Therefore, optimizing the talent cultivation system, strengthening inter-stage coordination, and ensuring equitable

resource allocation have become critical factors in elevating the overall quality of science communication professionals.

3.3.2. Curriculum

Curriculum design constitutes the cornerstone of science communication education, where its scientific rigor and practical relevance directly determine educational outcomes. Current curricula primarily encompass three dimensions: theoretical frameworks, foundational communication studies, and hands-on skill development. Theoretical courses equip students with essential principles and methodologies for effective science communication, while communication studies programs cultivate media literacy and digital literacy to meet evolving demands in new media environments [5]. However, existing curricula exhibit notable shortcomings. Some courses remain overly theoretical without real-world case integration, while others lag behind technological advancements and societal needs due to slow updates [8]. Moreover, insufficient emphasis on practical training leaves students lacking hands-on experience. Therefore, optimizing curriculum design by incorporating cutting-edge technologies and increasing practical components has become a critical direction for enhancing educational systems [17].

3.4. Volunteer Service Construction Policy

3.4.1. Volunteer Recruitment

The recruitment channels and criteria for science popularization volunteers directly impact the quality and scale of volunteer teams. Currently, recruitment primarily occurs through multiple channels including social organizations, universities, and communities. Social organizations typically leverage their extensive network resources to attract individuals with specific skills or interests to join volunteer teams; universities mobilize students to participate in science popularization volunteer services through campus activities or social practice programs; communities utilize their proximity to residents to recruit enthusiastic public-spirited residents as volunteers [9]. However, challenges persist in the recruitment process. For instance, overly lenient recruitment standards result in uneven overall quality within volunteer teams; meanwhile, limited coverage of recruitment channels makes it difficult to attract more potential volunteers [10]. Therefore, establishing scientifically sound recruitment criteria and expanding diversified recruitment channels have become crucial measures to strengthen science popularization volunteer teams.

3.4.2. Volunteer Management and Motivation

The management mechanisms and incentive measures for science popularization volunteers are crucial factors in ensuring their long-term participation and effectiveness. In terms of management, relevant departments typically implement standardized management through task allocation, regular training, and performance evaluations. Task allocation aims to reasonably arrange work content based on volunteers 'expertise and interests to enhance efficiency, while regular training

helps improve their professional skills and service awareness [11]. However, current management mechanisms still have shortcomings. For instance, some volunteers face unreasonable task assignments that undermine their enthusiasm, and uneven distribution of training resources hinders skill development. Regarding incentive measures, material rewards and spiritual recognition are commonly used approaches. Material rewards can partially compensate for volunteers' time and financial costs, while spiritual recognition enhances their sense of achievement and belonging [12]. Nevertheless, existing incentive measures have limited effectiveness in fully motivating volunteers. Therefore, optimizing management mechanisms and designing more attractive incentive measures have become key directions to improve volunteer engagement.

3.5. Evaluation Incentive Mechanism

3.5.1. Evaluation Criteria

The evaluation criteria for science communication-related professional titles serve as crucial benchmarks for assessing the effectiveness of science communicators. The scientific rigor and comprehensiveness of these standards directly determine the fairness and guidance of assessment outcomes. Current evaluation frameworks primarily encompass three dimensions: scientific achievements, work ethic, and social impact. Scientific achievements are quantitatively measured through published articles, produced educational materials, and the quantity and quality of public engagement activities. Work ethic focuses on evaluating communicators' sense of responsibility and collaborative spirit, while social impact reflects their practical contributions to enhancing public scientific literacy [13]. However, existing evaluation standards still exhibit limitations. For instance, some indicators overemphasize quantitative results at the expense of qualitative assessments, while others fail to adequately account for regional and positional differences, resulting in compromised applicability [14]. Therefore, developing more scientifically sound evaluation criteria and introducing diversified assessment dimensions have become pivotal to refining the evaluation mechanism.

3.5.2. Incentive Measures

The effectiveness of incentive measures serves as a crucial safeguard for enhancing the work enthusiasm of science communicators. Currently, such measures primarily consist of material rewards and spiritual recognition. Material incentives are typically manifested through bonuses and allowances, which can partially satisfy the economic needs of science communicators. Spiritual recognition is conveyed via certificates of honor and public commendations, thereby strengthening their sense of achievement and belonging [15]. However, existing incentive mechanisms still exhibit limitations. For instance, material rewards often lack sufficient intensity to adequately compensate for the efforts invested by science communicators. Meanwhile, spiritual recognition formats remain monotonous, lacking innovation and appeal. Additionally, the coverage of incentive measures remains limited, with some grassroots science communicators struggling to benefit from

policy incentives. Therefore, designing more targeted and attractive incentive measures while expanding their reach has become a critical direction for boosting the work enthusiasm and creativity of science communicators.

4. Existing Problems in the Construction of Science Popularization Personnel Team

4.1. Implementation of Training Policies

The implementation of science communication training policies has significantly contributed to enhancing the overall competence of science communicators, yet numerous challenges remain unresolved. Firstly, there exists a notable disconnect between training content and practical needs. Current programs predominantly focus on basic scientific knowledge and traditional communication techniques, while underrepresenting emerging fields such as new media technologies, interdisciplinary integration, and public demand orientation [3]. This content design fails to adequately reflect the complexity and diversity of modern science communication work, making it difficult for trainees to directly apply acquired knowledge in real-world scenarios. Secondly, the absence of an effective evaluation mechanism further undermines policy effectiveness. Existing training initiatives often lack systematic assessment frameworks, failing to accurately measure participants 'improvements in scientific literacy and communication skills [8]. This not only hinders continuous quality enhancement but also prevents policymakers from optimizing training programs based on feedback data. These issues directly constrain the comprehensive development of science communicators' capabilities, leaving them ill-equipped to meet diversified public demands.

4.2. Collaboration Problems among Different Groups

In science communication initiatives, diverse participation from various groups injects multifaceted resources and perspectives into public education. However, the lack of effective collaboration mechanisms has hindered the full realization of synergistic effects among these groups. On one hand, researchers, educators, and media professionals often operate in silos during science outreach efforts, lacking unified coordination platforms or collaborative frameworks [4]. For instance, while researchers possess profound expertise, their findings frequently fail to be transformed into accessible content through educators or media practitioners, thereby limiting the reach and impact of science communication. On the other hand, policy measures promoting intergroup collaboration remain insufficient, failing to clarify roles and responsibilities among different groups [9]. This collaboration gap not only reduces the efficiency of science communication resource utilization but also weakens the overall effectiveness of public education initiatives, making it difficult to foster a society-wide participatory culture [17].

4.3. Professional Personnel Training

Although China has established a preliminary professional talent cultivation system

for science communication, there remains a significant gap between this framework and the diverse and complex demands of practical scenarios. First, there is a disconnect between university curricula and actual needs in science communication. Current courses in science communication majors predominantly focus on theoretical instruction while neglecting crucial competencies such as practical skills, interdisciplinary knowledge integration, and new media application [5]. This curriculum design results in graduates requiring extended adaptation periods before entering the workforce, making it difficult for them to quickly handle complex communication tasks. Second, the connection between vocational training and academic education is insufficiently integrated, failing to form an organic talent development chain [10]. Furthermore, the multifaceted nature of science communication demands professionals with capabilities in scientific communication, event planning, and resource integration—capabilities that the existing training system struggles to meet. This mismatch leaves science communication professionals ill-equipped to effectively address increasingly complex demands.

4.4. Volunteer Service Construction

As a vital complement to science communication efforts, volunteer services face challenges including high attrition rates and inadequate management/incentive mechanisms that undermine their effectiveness. First, the persistent volunteer attrition rate stands as a critical issue in volunteer service development. The lack of clear task allocation systems and sustained training support often leads volunteers to drop out during initial engagement due to unclear responsibilities or insufficient skills [11]. Second, ineffective management and incentive measures exacerbate this problem. Current volunteer management frameworks generally remain loose, lacking systematic task assignments and performance evaluation mechanisms, resulting in low work motivation and sense of belonging among volunteers [12]. Furthermore, monotonous and unappealing incentive programs fail to fully engage volunteers [16]. These issues not only diminish the practical contributions of volunteer services to science communication but also reduce public recognition and support for such initiatives.

4.5. Evaluation of Incentive Mechanism

The inadequacy of evaluation and incentive mechanisms constitutes another critical challenge in current science communication workforce development, primarily manifested through two aspects: overly simplistic assessment criteria and insufficient motivational measures to effectively motivate professionals. Firstly, existing evaluation standards predominantly focus on the quantity of research achievements or traditional dissemination outcomes, while overlooking the diversity and complexity inherent in science communication work [13]. For instance, the social impact and public engagement of new media-based science communicators 'content often remain excluded from evaluation systems, resulting in underappreciated professional value. Secondly, the singularity and limitations of incentive

measures further diminish their appeal to science communicators. Current reward mechanisms predominantly center around material incentives or professional title evaluations, lacking multi-dimensional approaches such as spiritual recognition and career development opportunities [14]. This incentive framework not only fails to fully engage science communicators' enthusiasm but also negatively impacts work quality and creativity enhancement, ultimately constraining the overall effectiveness of the science communication workforce.

5. Suggestions for the Development of the Team Building of Science Popularization Personnel

5.1. Optimize Training Content and Methods

Establishing a dynamically adaptive training system is a crucial measure to enhance the capabilities of science communicators. As science communication integrates multidisciplinary knowledge and dissemination skills, training content should be updated in real-time according to social needs and technological advancements [17]. For instance, with the rapid development of new media technologies, communicators need to master emerging communication methods like short video production and social media operations to better adapt to digital communication environments [3]. Simultaneously, training content should emphasize the integration of theory and practice, covering scientific knowledge, communication techniques, psychological foundations, and other aspects to ensure communicators can flexibly apply their knowledge in practical work. Moreover, adopting diverse training methods can significantly improve effectiveness. For example, blended teaching models combining online and offline approaches cater to different learners needs: offline sessions focus on hands-on drills and case studies, while online courses provide flexible learning schedules and abundant resources [15]. This diversified training approach not only stimulates learners' interest but also effectively expands coverage and participation rates.

5.2. Strengthen Communication and Collaboration among Groups

Establishing communication platforms to facilitate collaboration among diverse groups is a crucial approach to enhancing the overall effectiveness of science popularization efforts. Science communication involves multiple stakeholders including researchers, educators, students, and volunteers, each bringing unique strengths to public outreach initiatives. However, the lack of effective coordination mechanisms often leads to information asymmetry and resource waste [4]. To address this, cross-group collaboration networks should be established through policy guidance and technological support. For instance, internet-based platforms could create shared science communication resources, enabling researchers to transform their findings into accessible content that educators and volunteers can disseminate to the public [9]. Additionally, organizing regular cross-disciplinary events like science forums and workshops helps build mutual understanding and trust among groups, creating synergistic effects that collectively advance the

development of science communication initiatives.

5.3. Improve the Talent Training System

Tailoring curriculum design to practical needs and strengthening collaboration between educational institutions and science communication organizations serve as crucial safeguards for cultivating professionals adaptable to diverse public education scenarios. As the primary training ground for science communicators, universities should closely align their academic programs, program offerings, and course structures with market demands. For instance, they could develop specialized courses in science communication creation and new media dissemination, while incorporating hands-on components like internships or social practice projects to help students apply theoretical knowledge to real-world applications [5]. Furthermore, deep collaboration between educational institutions and science communication organizations is vital. Through joint laboratory development and collaborative course creation, these partnerships not only provide more practical opportunities for students but also facilitate the transformation of cutting-edge research findings in science communication into teaching resources [10]. This industry-education integration model helps cultivate versatile science communicators who possess both solid theoretical foundations and strong practical skills, thereby addressing society's urgent need for high-quality science communication services.

5.4. Improve Volunteer Management and Motivation

Optimizing volunteer management mechanisms and refining incentive measures are crucial for enhancing volunteers' enthusiasm and participation. While volunteers play a vital role in science communication, their high attrition rate has become a prominent challenge hindering the development of volunteer services [11]. To address this, we should establish a systematic and human-centered management model covering recruitment, training, and task allocation. For instance, during the recruitment phase, we can attract more dedicated individuals through community outreach and campus partnerships. In the training phase, targeted courses should be designed to help volunteers quickly master essential skills and service standards [12]. Moreover, comprehensive incentive measures are equally vital. Beyond traditional material rewards, recognition programs and career development opportunities can effectively boost volunteers' sense of belonging and achievement. For example, establishing "Outstanding Science Communicators" awards or providing professional development opportunities can motivate volunteers to actively engage in science communication activities.

5.5. Build a Scientific Evaluation and Incentive System

Establishing comprehensive and diversified evaluation criteria along with multiple incentive mechanisms is a core strategy to stimulate the enthusiasm and creativity of science communicators. Currently, evaluation standards for science communication remain overly simplistic, focusing primarily on quantity of achievements

while neglecting quality and impact, which has somewhat diminished their motivation [13]. Therefore, it's essential to develop a multi-dimensional assessment system encompassing scientific outcomes, professional attitude, and public feedback to holistically reflect practitioners' actual contributions. For instance, incorporating public satisfaction survey results into evaluations could motivate communicators to prioritize communication effectiveness and service quality [14]. Simultaneously, diversified incentives can achieve twice the result with half the effort. Beyond material rewards, recognizing honorary titles and providing career development opportunities can address communicators 'spiritual fulfillment and professional growth needs. This multi-tiered incentive system not only fully mobilizes practitioners' enthusiasm but also provides sustained motivation for their long-term commitment to science communication endeavors.

6. Conclusions

6.1. Research Summary

This study conducts a systematic analysis of policies governing science communicators under the revised Science Communication Law, aiming to provide theoretical support and practical guidance for improving the policy framework through policy interpretation, problem analysis, and targeted recommendations. In the policy interpretation section, we thoroughly examine the objectives, content design, and implementation methods of science communicator training policies, clarifying the core goals of enhancing scientific literacy and communication skills while evaluating the comprehensiveness and practicality of existing training systems [1]. Additionally, we analyze the role positioning and advantages of researchers, teachers, and students in science communication work, emphasizing the importance of policy guidance for collaborative efforts [2]. The study further delves into the system construction and curriculum design of professional talent cultivation policies, highlighting their insufficient alignment with diverse science communication scenarios. Regarding volunteer service development policies, it explores current practices and optimization directions for volunteer recruitment, management, and incentive mechanisms. Finally, through evaluation of incentive mechanisms, the research reveals issues of oversimplified standards and inadequate incentives, underscoring the necessity for establishing a scientific and rational evaluation system.

6.2. Research Significance

Refining policies for science communicators serves not only as a vital measure to enhance public scientific literacy but also as a crucial safeguard for advancing the high-quality development of science communication initiatives. With rapid technological progress, the significance of science outreach has grown exponentially. As the core force in public education, the quality of science communicators directly determines both the effectiveness and societal impact of these efforts [3]. By optimizing training content and methodologies, strengthening cross-sector collaboration,

improving talent development systems, enhancing volunteer management and incentive mechanisms, and establishing scientific evaluation frameworks, we can effectively boost professionals expertise and motivation, thereby meeting society's demand for premium science communication services [4]. Furthermore, this study underscores the importance of policy coordination, advocating multi-agency collaboration and resource integration to foster specialized and diversified development of science communicators, ultimately contributing to comprehensive improvements in public scientific literacy.

6.3. Research Outlook

While this study provides a comprehensive analysis of policies governing science communicators, several areas warrant further exploration. First, future research should prioritize policy synergy, particularly the coordination between different policy instruments and target dimensions, to enhance overall implementation effectiveness [5]. Second, tracking and evaluating policy outcomes requires strengthening through quantitative analysis methods and establishing long-term monitoring mechanisms to dynamically assess practical results and improvement potential. Additionally, with the widespread adoption of new media technologies, the formats and content of science communication are undergoing profound transformations. Future studies should explore how modern information technology can optimize training and management models for science communicators to meet contemporary needs. Finally, drawing on international experiences while innovating locally remains crucial. Comparative analyses of domestic and international policies regarding science communicators 'characteristics and effectiveness could provide valuable references for optimizing China's science communication strategies.

Conflicts of Interest

The author declares no conflicts of interest.

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