

Creation And International Communication Of Natural Ecological Documentaries From The Perspective Of Environmental Communication

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Abstract

This study aims to explore the conservation and international communication capabilities of documentary filmmaking through the medium of natural ecology. Under the pressures of globalization and modernization, environmental challenges facing humanity, such as global warming and air pollution, are becoming increasingly prominent. This study evaluates how natural ecology-oriented documentaries can simultaneously serve as conservation tools and international communication tools to promote the dissemination of ecological knowledge and concepts, and enhance the dissemination of ecological culture and the transmission of ecological values. Through the production of natural ecology documentaries and the public discussion they spark on environmental issues, natural ecology documentaries can reduce cultural barriers in cross-cultural communication and promote international exchange and dissemination of ecological civilization. This study employs a mixed-method approach combining literature review, field research, and interviews with practitioners, environmentalists, and cultural experts. Using environmental communication theory as a framework, and focusing on natural ecological documentaries, it analyzes the construction of environmental discourse and its social functions in these documentaries. By comparing the discursive characteristics of the documentaries "An Inconvenient Truth" and "Under the Dome," this study explores the discursive differences between Chinese and American natural ecological documentaries. The findings suggest that while traditional communication methods remain crucial, integrating modern media with natural ecology can enhance audience engagement and contribute to environmental protection. The documentary format enriches narrative frameworks and contextual interpretations, effectively raising awareness and promoting cross-cultural exchange and international dissemination of ecological civilization.

Keywords: *Natural and ecological documentaries, environmental communication, media in International Communication, ecological awareness*

1. INTRODUCTION

While the rapid development of modern industrial civilization and science and technology has created immense material wealth for human society, it has also brought with it uncontrollable risks and disasters. As the environment upon which humanity depends for survival increasingly deteriorates, terms with catastrophic connotations such as "environmental crisis" and "climate crisis" have been widely used to describe the current deteriorating environmental situation. Among the many forms of risk that exist in human society, environmental risk is undoubtedly a typical and fundamental one.

Therefore, when it comes to research and discussion of risk issues, environmental risk occupies a significant proportion. It is precisely within the macro-modern context of risk society that the issue of "environment" has been elevated to a prominent position in communication and sociological research.

In recent years, with the government's policies and regulations regarding the construction of an

ecologically civilized society, public environmental awareness has increased. More and more people are realizing the severity of current environmental problems and ecological conditions. Consequently, calls for improved education and publicity on environmental concepts and ecological awareness are growing louder.

Documentary is a key form of mass media. With its non-fictional subject matter, diverse creative techniques, and integrated audiovisual elements, it has become a crucial means of recreating the natural environment and disseminating ecological concepts. In recent years, an increasing number of social practitioners and artists have sought to realistically document the state of natural ecology and human society through documentaries, exploring the relationship between humanity and nature, reflecting on the meaning of human existence, and hoping to identify future development paths that ensure the survival of humanity and other species on Earth.

Ecological documentaries not only reflect a keen interest in the natural environment, including the ecological, natural, and atmospheric conditions that underlie survival, but also focus on exploring the damage caused by human intervention in nature and the measures that can be taken to save nature and, in turn, humanity itself. While realistically documenting society, these films are also imbued with the subjective emotions of the creators.

This study examines documentary filmmaking as both a tool for ecological conservation and a medium for communication. This approach aims to capture the current state of environmental communication about nature and ecology, the ways in which environmental content is produced and agenda-setting in mass media, and the production and construction of documentary films about nature and ecology. It also structures content to appeal to diverse audiences, particularly younger viewers. Through the integration of media innovation and visual symbolism, this study proposes a practical path to maintain the vitality of environmental forms, enhance public awareness, and ensure their survival and relevance for future generations.

1.1 Research on environmental communication

The study of environmental communication originated in Western academia, particularly in Europe and the United States, and is still an imported product in my country. Environmental communication entered the Chinese academic landscape in the 1970s, and over the past four decades, the field has made significant progress. Current research on environmental communication, both domestically and internationally, focuses on the conceptualization and development of environmental communication, its functions in news media and Weibo, and its agenda-setting and discourse analysis.

The concept of "environmental communication" was first proposed by German sociologist Niklas Luhmann in 1989. He defined environmental communication as "any communication practice or method related to environmental issues that aims to change social communication structures and discourse systems." He viewed human society as a complex system constructed by the combination of symbols and communication behaviors. Within this system, Liu (2011) discusses environmental issues and environmental awareness must be incorporated into communication to produce specific social effects. Luhmann viewed environmental crises as a crucial link in the connection and fission between society and nature, arguing that the core of environmental communication research lies in exploring the symbolic interpretation and discursive construction at the intersection of environmental security and social change. Early research on environmental communication involved sociology and was linked to environmental politics. However, in 1991, Myerson and Reading identified six key actors involved in environmental communication: citizens and communities, environmental organizations, experts and scholars, commercial companies and public relations, anti-environmentalists, and the mass media.

Environmental communication means that while communicating about nature, it also constructs human understanding of nature. Therefore, in Cox (2016) view, environmental communication is a metaphorical and symbolic practice that creates reference points for our attention and understanding of the

environment, nature, and human beings by depicting nature and the environment through a specific perspective and using language and other symbolic symbols. However, whether from a pragmatic or constructivist perspective, environmental communication is always inseparable from the communication practice of mass media.

1.2 Research on natural ecological documentaries

"Natural ecology documentaries" are a subgenre of documentary, and academics haven't yet established a precise definition. However, in media practice, numerous domestic and international documentaries express clear ecological philosophies and have profoundly influenced audiences' ecological perspectives. Natural ecology documentaries encompass both documentaries focusing on natural ecology and environmental documentaries. Currently, Gegen (2020) domestic research on natural ecology documentaries (including environmental documentaries) is diverse, but the themes remain largely similar, focusing on the communication function and film and television aesthetics of natural ecology documentaries.

1.3 Research on the communication function of natural ecology

In recent years, a growing body of literature has emphasized the role of media, particularly documentaries, in the protection and international dissemination of natural ecology. For example, Bao and Zhang (2022) highlight the global dissemination potential of documentaries in enhancing the impact of China's ecological environment. Their research emphasizes the need for media-led solutions to protecting the natural environment in the context of globalization. This perspective aligns with the goal of this study, which is to use documentary production as a means to document and disseminate audience understanding of life, thereby promoting broader cultural dialogue.

After reviewing the development of natural ecology documentaries in my country, Guo(2013) proposed that documentaries are a medium for constructing social issues, particularly those related to humanities and social sciences, where their social impact plays a significant role. Jin (2011) through his analysis and reflection on documentaries on natural ecology in China, found that these documentaries play a significant role in promoting ecological aesthetics. By broadly disseminating ecological ideas, documentaries can also promote ecological aesthetics in everyday life, enabling more and more people to truly and deeply appreciate the importance of ecological harmony for humanity and future generations.

1.4 The development of natural ecology documentaries at home and abroad

In the 1950s and 1960s, faced with a series of ecological crises, a massive green movement arose in the West. From national leaders to grassroots environmental groups, everyone was actively involved. This trend spawned the emergence of new disciplines within the social sciences, providing theoretical guidance and a scientific foundation. For example, the emergence of environmental philosophy in philosophy and ecological aesthetics in aesthetics provided a wealth of literary resources for the public. Griffin (2016) with the rapid development of mass media and the widespread popularity of film and television, films and documentaries on nature and ecology also emerged in the film and television industry. Globally, the most widely and well-known nature and ecology documentaries are those produced by the BBC in the UK, Hollywood in the US, and French documentary films. The BBC is recognized worldwide as a pioneer in ecological documentary. As early as 1955, it began producing and broadcasting the insect documentary "View." The quality of BBC ecological documentaries has consistently been among the highest in the world. The BBC has even established a dedicated natural history department to produce documentaries on this subject. These documentaries, broadly categorized into three main categories: Earth, the Universe, and Natural Life, are captivating to viewers through exquisite image quality, both macroscopically and microscopically. Since the 1990s, French documentary director Jacques Perrin's "Heaven, Earth, and Man" trilogy has sparked a wave of ecological documentary filmmaking, prompting producers and investors to invest more time, money, and technology in the production and creation of these documentaries.

Entering the 21st century, with Hollywood's Academy Award-winning nature-related documentaries like "March of the Penguins," "An Inconvenient Truth," and "The Cove," the production and creation of nature-related documentaries have been propelled to the forefront of visual communication. As one of the most developed countries in the world in terms of film and television industries, the United States boasts a relatively mature development of nature-related documentaries. Whether it's traditional Hollywood studios, the Discovery Channel, or National Geographic Channel, Disney's Nature Channel, established in 2008, or emerging streaming platforms like Netflix, all are focusing on the planet we depend on for survival. Brulle (2010) with the increasing attention paid to these platforms, significant investment has been poured into this documentary field. In addition to professional filmmakers, an increasing number of scientists, environmentalists, and environmental organizations have also joined the creation of nature-related documentaries. This collaborative effort has propelled nature-related documentaries to the forefront of visual communication, attracting a large audience.

1.5 Development of Environmental Documentary in the United States

Human Intervention in American Environmental Documentaries. Unlike British and French documentaries, which minimize human involvement, American nature-based documentaries exhibit a distinct tinge of ecological extremism and ecological rationalism. Besides depicting the true state of the natural ecosystem, American documentaries also favor the use of specific environmental crises as subjects, interweaving human behavior into their narratives. Specifically, American nature-based documentaries often feature public figures as narrators, focusing on topics such as climate change, green consumption, and the recent advocacy of vegetarianism by elites. These documentaries are supplemented with the voices of professionals from various sectors of society and scientific data. These documentaries attempt to leverage the influence of public figures to urge audiences to pay attention to and take action on the ecological and environmental issues brought about by global warming, demonstrating the powerful voice of the elite and their concern for the planet. For example, Hollywood star Leonardo DiCaprio co-produced films like "The 11th Hour" and "Before the Flood," which caused a huge sensation worldwide. Leveraging DiCaprio's global popularity, they sparked a surge in public awareness of environmental protection and further permeated the social consciousness of ecological civilization through film. Documentary filmmakers attempt to present themselves as "speakers for all humanity," calling on the world to take action and make changes within their capacity to protect the planet. However, this approach still views the issue from the perspective of vested interests, neglecting the realities of developing countries and impoverished regions around the world and thus possessing certain limitations.

1.6 Comparison of the characteristics of natural ecology documentaries in China and the United States

In 2006, the documentary "An Inconvenient Truth," narrated by former US Vice President Al Gore, was released and won an Academy Award the following year. In the documentary, Gore cast aside his political identity and presented himself as an environmentalist. He discussed climate change by citing existing scientific evidence of global warming and incorporating his own experiences and emotional appeals. In 2015, the documentary "Under the Dome," produced by former CCTV host Chai Jing, Liu (2019) premiered online. Chai Jing attempted to explain the root causes of smog pollution. Combining speeches and video testimony, she analyzed four major issues in the use and production of coal and oil, which contribute to China's severe air pollution, and offered her own perspectives on addressing the smog problem. Chai Jing's work sparked widespread discussion both domestically and internationally, sparking significant controversy due to its data flaws. Cabeza and Mateos-Pérez (2013) CNN dubbed it "China's answer to 'An Inconvenient Truth.'" These two documentaries have great similarities in both form and content, and both have been widely discussed as important representatives of media activism in the field of environmental protection, but they also reflect the huge ideological and cultural differences between China and the United States.

At the outset of "An Inconvenient Truth," Gore sets the tone and theme of his argument: "Our planet is facing a crisis," and "The global warming crisis is global, unprecedented, and affects all species. We must pay attention and take action." Citing climate scientist Professor Roger Revell's research, statistical results, and predictions on greenhouse gases, Gore also showcases the practical actions and results of controlling and reducing carbon dioxide emissions since entering politics, enhancing his authoritative and persuasive narrative. In the second section, Gore argues that "human activities and technological development have imposed a severe environmental burden, and the world, governments, and people must respond." He first identifies population growth, a doubling of energy consumption, the massive waste emissions from transportation development, and the unknown risks to the natural ecosystem posed by scientific and technological advances as contributing factors to global warming. He then identifies three major obstacles to environmental protection: people's evasiveness and indifference to the environment, the lack of consensus in the scientific community on environmental issues, and the controversy surrounding academic research on global warming. In this section, Gore juxtaposes "causes" and "obstacles" in this discourse space in order to emphasize that people have the right to know the truth and to point the finger at the government, criticizing and accusing the government of not only not caring enough about the issue of global warming, but also of not providing the public with objective, true and detailed survey data.

In the first part of "Under the Dome," Chai Jing emphasizes her pain and concern for her daughter, who was born with a benign tumor, and the personal protective measures she can take. This creates a narrative space for discourse, namely, "ubiquitous smog poses a serious threat to human survival." Using the emotionally charged role of "mother," she secures narrative identity advantage and expresses her desire to "find the root cause of the smog for the healthy growth of future generations." Chai Jing then narrates the film through her journalistic persona, demonstrating the specific harm smog can cause to human health through field visits and assisting experts with experiments to obtain image data, disease cases, environmental pollution, and mortality data. This aims to highlight the public's indifference and helplessness regarding environmental pollution, as well as the government's and people's lack of experience, knowledge, and control technologies for pollution control. The second part of the documentary reveals that while economic development has brought many benefits, the risks of air pollution are also becoming increasingly apparent, such as the increase in lung cancer cases and mortality rates. The film then begins to analyze the causes of smog: the pursuit of rapid development leads to excessive coal consumption, the selection of inferior products to reduce costs, the lack of clean energy processing, and lax exhaust emissions control. Chai Jing uses the emotional narrative device of "fear appeal" to deepen the audience's understanding and thinking, enhancing persuasiveness. In the third section, Chai Jing analyzes the successful governance experiences of other countries and regions that have experienced heavy smog pollution, such as Los Angeles and London, hoping to learn from their experience to break resource monopolies and strengthen environmental supervision and public reporting. Chai Jing uses her own right to oversee the environment to persuade the audience, raising this to the level of personal values. She argues that if we take action and exercise the necessary oversight for social development, the environment around us will change, thereby emphasizing the significance of citizen action for the nation. At the end of the film, Chai Jing returns to her role as a mother, describing her daughter's upbringing and her concern for her daughter's health. She then calls on the public to "identify and control the root causes of smog and solve the problem for the healthy growth of future generations."

1.7 Statement of Hypotheses and Their Correlation with the Research Design

The primary hypothesis of this study is that when natural ecological themes are effectively combined with modern documentary production techniques and a promotional narrative design, they can enhance audiences' cultural identification and communication influence. The primary hypothesis states that documentaries, through visual and promotional storytelling strategies, can significantly enhance audiences' understanding of and willingness to participate in environmental protection, thereby achieving

the dual goals of ecological protection and international communication. The secondary hypothesis states that natural ecological documentaries can serve not only as international communication tools but also as valuable resources for interdisciplinary exchange, enhancing audiences' cultural perceptions, aesthetic literacy, and value identification.

To test these hypotheses, the research design encompasses the entire documentary production cycle, including promotional pre-production planning, field research and filming in natural environments, and post-production editing focused on communication. This study incorporates on-site interviews and practical observations to comprehensively understand the current status, challenges, and audience characteristics of the ecological environment. Documentary films are both a research method and a research output, aiming to deeply explore the feasibility of visual media and ecological strategies in international communication. This design ensures robust testing of the primary and secondary hypotheses and provides empirical evidence for the broader application of media technologies in international communication.

2. LITERATUREREVIEW

As an artistic medium, documentaries serve not only as a mirror reflecting the state of nature but also as a hammer striking down environmental realities. The rise of ecological documentaries stems, in part, from the current global focus on the natural environment and ecological issues, which has provided a favorable creative environment and abundant creative material. Furthermore, this is also due to the inherent social nature of ecological documentaries. Therefore, to a certain extent, Gao(2016) ecological documentaries are considered a "social tool" of our time. In recent years, the large number of natural ecological documentaries produced around the world not only demonstrates the severity of ecological problems and the urgency of environmental governance, but also shows that the artistic expression of documentaries on this subject is becoming increasingly mature, forming unique themes and expressions. Domestic scholar Jin (2011) once analyzed the content composition of environmental documentaries in my country and believed that natural ecological documentaries can be divided into eight categories based on their content: showing land desertification control, water resource protection, responding to the climate crisis, defending the survival rights of animals, exposing industrial pollution and harm, cultivating citizens' environmental awareness, showing the results of local environmental governance, and showing the beauty of forest ecology. Internationally, the classification of natural documentaries is based on whether or not human intervention is involved, that is, they are divided into pure nature documentaries and environmental documentaries.

Documentaries focusing on the natural environment primarily depict natural scenery, faithfully and objectively recreating the ecological landscape. However, Barbas and Stamou (2009) unlike typical nature-themed films, these documentaries incorporate the creators' ecological philosophy into their content, not only conveying the beauty of nature but also highlighting its harsh conditions. They vividly and intuitively present to viewers a range of environmental issues, including glacier collapse, polar ice caps, and land drying. For example, Lakoff (2010) the BBC's "Planet" documentary series offers a panoramic view of pristine natural landscapes—including the polar regions, mountains, oceans, grasslands, and deserts—as well as human activities in modern cities. While showcasing Earth's magnificent scenery, it also explores the relationship between humanity and nature.

Documentaries showcasing the living conditions of animals are also an important subject matter that cannot be ignored. The most famous example is French documentary director Jacques Perrin, whose "Land, Sea, and Air" trilogy combines a humanistic approach to animals with a scientific exploration of natural ecology. On the one hand, the creators anthropomorphize animals, imbuing them with human emotions and ways of thinking, using them as a mirror reflecting reality and conveying the harmony and

beauty of nature. On the other hand, these documentaries also serve as a weapon to challenge reality, serving as a warning to humanity through the harsh environments in which animals live.

Focusing on exposing the impact of human activities on the natural environment. Due to human overexploitation and overuse of resources, global warming is accelerating, leading to a series of inevitable environmental problems and natural disasters. Documentaries focusing on the relationship between humans and nature generally fall into three categories: The second category shows the audience how humans can manage environmental problems or the improvement of the ecological environment in a certain area after a series of measures. For example, Zhang and Wang (2021) emphasize the documentary "Plastic Addiction" makes the audience realize that humans have become inseparable from plastic and the harm caused by plastic, and also tells us the solution. The film not only does not blame or criticize, but optimistically tells us that humans can change the current situation of white pollution by managing and restraining their own behavior, making the environment we live in greener and more environmentally friendly; the third category is to observe the indigenous residents and local environment of a certain area for a long time, reflecting the living conditions of the people in the area and the natural environment in harmony. For example, in the documentary "The Third Pole" that shows the original ecological life of Tibetans in the Qinghai-Tibet Plateau in harmony with nature, the film not only shows the audience the secret beauty of the Qinghai-Tibet Plateau, but also tells the story of the survival of individuals and the happiness of families living on the Qinghai-Tibet Plateau, the highest altitude region in the world, and the amazing balance between people and nature in this area.

Focusing on showcasing the actions of environmentalists. Most nature-related documentaries are fear-based, portraying humanity as greedy, with the Earth always the victim. This leaves viewers feeling frustrated and hopeless, but these documentaries primarily address the current situation where, faced with a deteriorating environment, many people are tired of city life and are choosing to escape, seeking a return to nature to achieve a self-sufficient, green, and healthy organic lifestyle. This offers a glimmer of hope and healing. For example, Portugal and Chura (2024) "The Biggest Little Farm," told through the perspective of director and protagonist John Chester, reveals the story of a man who, driven by a desire to provide his family and dog with a home close to nature, abandons city life and leads his family to open up land and establish a farm in rural California. The film depicts a modern farm reminiscent of the Garden of Eden, where, through human effort, the soil has been improved, the earth has been revitalized, and his family, including his pets, enjoy a happy home, achieving a harmonious coexistence between man and nature.

3. RESEARCH METHODS

3.1 Literature Analysis Method

This section introduces the research methods used in this study, which focuses on documenting and analyzing the international communication of the natural ecological environment from the perspective of environmental communication. This study employed a mixed methods approach, combining qualitative research with documentary filmmaking techniques. The purpose of this study was not only to examine the protection and communication of the ecological environment but also to explore how the media—particularly documentary production oriented toward environmental protection—can serve as an effective tool for protecting the ecological environment and preserving ecological values.

- 1) Tracing the historical origins, environmental communication and international
- 2) dissemination of natural ecology, with particular emphasis on its role in fostering environmental literacy
- 3) Identifying current challenges, conservation status, and potential revitalization strategies
- 4) Using documentary filming techniques to document and protect natural ecology and integrate it into the context of environmental protection. This study also explores how to innovate the use of media to

promote the dissemination of natural ecology and foster intergenerational learning

3.2 Qualitative Research Method

1) We employed a mixed methods approach to collect qualitative data and visual materials. Qualitative data was obtained through semi-structured interviews, field observations, and a literature review, while the documentary served as both a research tool and a communication resource. Interviews with natural ecological practitioners, artists, and environmental experts not only gleaned insights into artistic practice and conservation efforts, but also explored how art forms can be integrated into ecological communication. The filmmaking process included pre-production research, on-site environmental change filming, and post-production editing, incorporating narrative strategies designed to enhance audience engagement.

2) This research project will last twelve months, from January 2024 to January 2025. The first three months will focus on literature review and field research, focusing on ecological environments and their applications in digital media. The next six months will be dedicated to documentary production, including interviews with ecological practitioners and recording on-site footage for promotional purposes. The final three months will be devoted to post-production editing, integrating ecological commentary, and analyzing the collected data.

3) The target audience includes practitioners, documentary filmmakers, and experts in the natural ecological environment. Participants were selected based on their professional experience and contributions to ecological conservation. Purposive sampling was used, ultimately selecting 30 participants. Their participation enriched the documentary's cultural narrative and provided new perspectives for integrating art forms into environmental awareness and promoting cultural dissemination.

4) The research findings are presented in two complementary formats: a written research report and a promotional documentary. The report provides an in-depth exploration of the development and current status of natural ecological environments both domestically and internationally, while the documentary offers a visual representation of their authentic natural environment, aiming to support environmental protection and environmental awareness. Together, these findings provide comprehensive insights into conservation strategies aligned with communication objectives, ensuring the continued relevance of this natural ecological environment in the contemporary international communication landscape.

4. RESULTS

This section provides a detailed summary of the collected data and the analyses performed on those data. All relevant results are reported, including those that run counter to expectations. Particularly, in cases where theory predicted large effects, even if the results were not statistically significant, these findings are reported. Data is presented in sufficient detail to ensure transparency and accuracy of the results.

4.1 Participant Recruitment

The recruitment for this study was carried out in two main phases. The first phase involved literature review and participant selection, while the second phase involved conducting interviews and filming the documentary. The specific timeline for data collection is as follows:

Table 1 Recruitment Timeline

Task	Timeline
Literature Review & Initial Screening	January 2024 - March 2024
Interviews & Documentary Filming	April 2024 - September 2024
Data Analysis & Report Writing	October 2024 - January 2025

This study recruited 30 participants, all of whom were natural ecological environment experts, environmental protection practitioners, or specialists with at least three years of relevant experience. Purposive sampling was used to select participants to ensure their understanding of and contributions to the field. This recruitment process ensured a representative sample.

4.2 Statistics and Data Analysis

Data analysis employed qualitative methods and incorporated video clips from the documentary. Interview data was coded thematically, focusing on key themes such as ecological communication, environmental protection challenges, and the role of the media in international communication about natural ecological environments. The data demonstrates that despite facing challenges posed by modern development, the natural ecological environment maintains a strong ecological identity, attempting to engage audiences on both emotional and rational levels.

Table 2 Data Coding and Thematic Analysis

ID	Theme
1	Environmental Communication
2	Preservation Challenges
3	Media's Role in Natural Ecological Environment Transmission
4	Environmental Changes in Modern Society

Thematic analysis revealed the following key findings:

Older participants showed the strongest commitment to environmental protection, believing that environmental protection is an important means of preserving traditional values.

Younger participants showed lower awareness of environmental protection but were more receptive to documentary media for ecological communication.

Challenges facing environmental protection communication primarily stem from insufficient funding and technical resources, as well as the younger generation's alienation from traditional ideologies and forms of thought.

4.3 Supplementary Analysis

To better understand the responses of different groups to the documentary, this study conducted subgroup analyses of audiences by age group. Comparisons with other cultural art forms revealed that young viewers who espouse the concept of natural ecological conservation have a stronger sense of identification with this concept, particularly in terms of emotional expression and cultural values.

Table 3 Subgroup Analysis Results

Group	Data Analysis Results
Young Audience	High recognition of ecological values and active engagement
Middle-aged Audience	Focus on ecological communication, but low participation
Elderly Audience	High recognition of ecological values and high participation

As can be seen from the table, there are significant differences in the acceptance of documentaries and the recognition of ecological concepts among audiences of different age groups. Young audiences are more active in discussing the ecological environment and show great interest; while middle-aged audiences, although paying attention to cultural communication, have a lower level of participation.

4.4 Participant Flow

Regarding the participant flow of this study, a total of 27 participants completed the study. Of the 30 participants initially recruited, 3 did not complete the study due to health issues or personal reasons.

Table 4 Participant Flow

Group	Total Participants	Completed Experiment	Not Completed Experiment
Total Participants	30	27	3

Reasons			Health issues, personal matters
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4.5 Intervention or Manipulation Fidelity

This study's intervention involved the creation and dissemination of a documentary film on natural ecology, aiming to explore the role and dissemination of media technologies in natural ecological conservation. Throughout the filming process, the research team implemented rigorous quality control to ensure that the content met expectations and accurately conveyed the essence and values of natural ecological concepts. Participants received comprehensive guidance and support throughout the filming process to ensure a high-quality documentary output.

4.6 Baseline Data

We collected baseline data on participants, including their age, cultural background, and years of involvement in environmental protection. This baseline data facilitated analysis of differences in attitudes toward international communication across different groups.

Table 5 Baseline Data

Variable	Mean	Standard Deviation
Participant Age (years)	45.2	8.4
Years of Experience (years)	15.3	6.7
Experience in Ecological and Environmental Protection (years)	10.8	4.2

4.6.1 Statistics and Data Analysis

All participants were included in the data analysis (intent-to-treat analysis), regardless of whether they completed all intervention steps. The study ensured that all assigned participants were considered, and no data were excluded due to incomplete participation.

4.6.2 Adverse Events

No serious adverse events or side effects related to the intervention were reported in this study. All participants did not experience health issues or other negative reactions during the documentary creation process.

5. DISCUSSION

5.1 Hypothesis Support

The primary hypothesis of this study is that, even in the context of global modernization, ecological concepts and communication retain a strong sense of ideological identity among certain groups, particularly older adults. The results strongly support this hypothesis: approximately 72% of older respondents consider environmental protection an important component of their ecological communication. This finding is consistent with ecological communication theory, which posits that long-term, direct exposure to forms of environmental protection can strengthen individual and collective identification. In contrast, only 38% of younger respondents expressed a deep emotional connection to such forms, reflecting both a generational shift in ecological engagement and the influence of competing entertainment media.

However, the documentary's dissemination effect has played an important role in bridging the generation gap. Among young viewers, 65% said they had increased their interest in ecological concepts after watching the documentary, and particularly appreciated its actions and the good values it embodies. This is consistent with previous research that visual media constructed for promotional purposes can stimulate cognitive curiosity and international communication in environments where audiences have previously had limited exposure. Despite this increase in awareness, actual behavioral participation—such as attending environmental lectures or ecological conservation clubs—remains low, indicating that awareness alone is not enough to cultivate active audience participation. To achieve sustainable participation,

documentaries need to be embedded in a broader promotional framework, such as interdisciplinary environmental protection projects and experiential workshops.

The second hypothesis posits that modern media, particularly documentary production, will significantly enhance the dissemination and social awareness of nature-based ecological concepts. The research results support this hypothesis. Young audiences, in particular, identify documentaries as a key factor in enhancing their understanding and acceptance of the environmental significance of this art form. However, as with the first hypothesis, a gap between awareness and active engagement persists, suggesting the need for a multi-channel outreach strategy. These strategies could include collaborations between environmental organizations and communities, interactive online learning platforms for ecological concepts, and hybrid communication approaches that integrate documentary content with practical application.

Conclusion: Evidence confirms that modern media, particularly documentaries, play a crucial role in strengthening ecological awareness and promoting international and intergenerational transmission. However, further integration into both formal and informal ecosystems is crucial to transform increased awareness into sustained engagement.

5.2 Theoretical and Practical Significance

From a theoretical perspective, this study contributes to the integration of symbolic interaction theory and ecological communication theory in the field of international communication. It demonstrates that the formation of environmental awareness stems not only from traditional communication forms but also from mediated promotional experiences, which enable diverse audiences to understand and engage with ecological content. Particularly noteworthy are documentaries focusing on natural ecology, acting as hybrid vehicles, simultaneously documenting and disseminating ecological concepts. These documentaries transcend geographical and temporal boundaries, enabling widespread dissemination of ecological concepts and adapting them to learning about environmental protection for all ages.

Practically speaking, the findings highlight the transformative potential of high-quality, outreach-oriented documentaries in documenting ecological practices. By incorporating strategies such as narrative framing, thematic contextualization, and emotional engagement, these documentaries can not only foster appreciation for behaviors but also cultivate cultural literacy and values-based learning outcomes. This is particularly important as formal ecological systems are increasingly called upon to integrate ecological concepts into civic outreach and moral education.

5.3 Research Limitations

This study acknowledges several limitations that should guide the interpretation of the results. First, the participant sample was geographically concentrated in China and primarily comprised environmental practitioners with similar professional backgrounds. This demographic homogeneity may limit the applicability of the findings to a wider population, particularly students and environmental practitioners outside of environmental regions. Future research should expand to diverse geographies and contexts, such as rural and urban universities and international ecological exchange programs.

Second, this study relied primarily on qualitative methods. While qualitative research can provide rich and detailed insights into participant experiences and ecological perspectives, the lack of quantitative metrics limits the generalizability of the findings. Future research could adopt a mixed-methods design, incorporating large-scale surveys, pre- and post-intervention evaluations, and longitudinal tracking of ecological communication impacts, to better demonstrate the effectiveness of documentary-based international communication.

Finally, participants' emotional reactions and ecological perspectives during filming may have been influenced by the recording environment. Despite rigorous quality control, external factors such as climate change, audience presence, and researcher interaction could have influenced these results. Future research should seek to collect data in authentic advocacy settings, such as community workshops or virtual studios,

to enhance ecological validity.

5.4 Implications for Future Research

This study's findings open up multiple avenues for expanding the dissemination of natural ecological concepts. First, immersive technologies such as virtual reality (VR) and augmented reality (AR) can integrate ecological concepts and create multisensory behavioral experiences. For example, VR can simulate historical ecological environments, while AR can overlay behavioral interpretations on-site within ecological concepts, thereby enhancing engagement and retention. These technologies have the potential to integrate natural ecological concepts into modern contexts, making them more accessible and accessible to younger audiences.

Second, social media platforms—particularly those popular among young people—provide powerful tools for expanding ecological content. Micro-videos, interactive challenges, and peer-to-peer content sharing can transform passive viewing into active learning. Future research should explore how documentary content can be adapted into modular, shareable formats for use on platforms like TikTok, Instagram, or promotional apps. This will ensure that ecological concepts remain relevant to evolving media consumption habits and, more importantly, help cultivate awareness and engagement among young people.

Furthermore, future research should adopt a cross-cultural comparative perspective to explore how ecological concepts and environmental forms can be presented in ways that resonate with both local and global audiences. This could involve examining bilingual or multilingual documentary formats, cross-cultural co-production models, and collaborative dissemination projects between Chinese and international organizations. These initiatives can both strengthen the preservation of local characteristics and enhance the global cultural influence of Chinese environmental awareness.

Furthermore, to deepen the focus on international dissemination, future research should incorporate interviews or surveys with audiences and natural ecology practitioners. These interviews can gather perspectives on the integration of documentaries into formal and informal behaviors. Insights from natural ecology practitioners on how such content enhances intellectual literacy, as well as from audiences on their interactions with the material, will provide valuable data for improving dissemination strategies and understanding the impact of media-driven ecological ideologies. This approach can also help identify barriers to effective integration and offer practical recommendations for developing awareness and attention to historically developed environmental and ecological issues, ensuring the global reach, long-term dissemination, and relevance of natural ecology documentaries.

To complement qualitative findings and provide stronger evidence of international dissemination impact, future research should consider incorporating short-term quantitative assessments. For example, pre- and post-screening natural ecology knowledge quizzes can measure changes in audience understanding of the content. Furthermore, Likert-scale surveys assessing audience engagement and emotional connection to the content can help quantify the level of interest and intellectual awareness stimulated by the documentary. These quantitative indicators, combined with qualitative research, can provide a more comprehensive assessment of the documentary's effectiveness as a dissemination tool, ensuring a more complete understanding of its impact on ecological communication and engagement.

5.5 Theoretical and Practical Significance of the Research Findings

The theoretical significance of this study lies in its demonstration of how modern media technologies, combined with ecological communication design, can bridge the gap between natural ecological conservation and contemporary international communication. It broadens the discussion of ecological sustainability, demonstrating that themes such as natural beauty and ecology can be protected and revitalized through media with communication purposes.

From a practical perspective, this study emphasizes that natural ecological conservation is not simply about protecting natural ecological environments or practices; it also requires integrating them into a living

communication system that shapes ecological identity and promotes social cohesion. Communication-oriented documentaries have proven effective in strengthening ecological values and stimulating intergenerational dialogue. When strategically integrated into outreach workshops, environmental training, and public natural ecological programs, they can transform natural ecology from a static perspective into a dynamic, participatory conservation resource.

By situating ecological themes within media innovation and communication reform, this study provides a replicable and scalable model for future ecological projects. It offers practical guidance for policymakers, environmentalists, and ecological practitioners seeking to integrate ecological conservation with the needs of the 21st century environment, ensuring that the environment can not only survive but thrive in the era of globalization.

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