

# Research on Strategies of Marine Knowledge Education and Cultural Communication in China

## -- Taking Shenzhen as an Example

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### Abstract

This thesis takes Shenzhen as its research subject, analyzing the distribution of its marine educational resources, cultural dissemination models, and policy support systems. It proposes an integrated strategy for marine cultural dissemination that combines "education + technology + tourism." The study reveals that Shenzhen holds significant advantages in marine science education, the application of digital technology, and the integration of coastal tourism with culture. Nevertheless, there is still room for improvement in resource integration, public participation, and international communication capabilities. By establishing a marine cultural dissemination ecosystem characterized by "government leadership, social participation, and technological empowerment," Shenzhen has the potential to elevate marine awareness from the "cognitive level" to the "identational level," offering cultural support for the construction of the 21st Century Maritime Silk Road. As a key coastal city in China, Shenzhen possesses abundant marine resources and a rich historical and cultural heritage. Against the strategic backdrop of building a "marine power," Shenzhen shoulders the significant mission of constructing a global marine central city. This paper uses Shenzhen as a case study to explore the current status, challenges, and strategies of marine knowledge education and cultural dissemination in China. By examining Shenzhen's practices and innovations in marine knowledge education and cultural dissemination, it summarizes lessons learned to provide insights for other coastal cities, aiding in the enhancement of public marine awareness and the promotion of the prosperity and development of marine culture. The ocean is the largest expanse on Earth's surface and is also a crucial resource for human survival and development—a Resource Treasure House. With the rapid advancement of global economic integration and technology, the ocean's role in the national economy, politics, military, and culture has become increasingly significant. As a major maritime nation, China has vast waters and abundant marine resources. However, compared to other maritime powers, there remains a significant gap in the popularization of marine knowledge and the dissemination of marine culture in China. Shenzhen, as a pioneer of China's reform and opening-up, has utilized its unique geographical advantages and robust economic power to become a pivotal city for promoting marine education and cultural exchange.

### Keywords

Shenzhen; Marine Education; Communication.

### 1. Introduction

Marine knowledge education and cultural dissemination play a significant role in enhancing public awareness of the ocean, promoting marine economic development, and protecting marine ecosystems. By strengthening marine knowledge education and cultural dissemination,

we can inspire the public's attention and love for the ocean, fostering citizens with marine awareness and literacy. At the same time, this helps to enhance a city's soft power in marine culture, increasing its influence and competitiveness in the international marine domain. This paper primarily employs literature review, case analysis, and field research methods. Through extensive literature review, it examines the current status and development trends of marine knowledge education and cultural dissemination both domestically and internationally; using Shenzhen as a case study, it delves into its practical experiences and innovative measures in marine knowledge education and cultural dissemination. Additionally, combining field research to obtain firsthand data provides strong support for the study.

## 2. Analysis of the Current Situation of Marine Education and Cultural Communication in Shenzhen

### 2.1. Resource Endowment Characteristics

Shenzhen, situated on the coast of the South China Sea, was a key maritime defense town in ancient China and an important node on the Maritime Silk Road, boasting a rich heritage of marine cultural sites. Here, you can find historical relics such as Dapeng Fortress and the Chawan Tianhou Temple, as well as intangible cultural heritages like the Shatoujiao Fish Lantern Dance and the Tanka people's wedding customs. Additionally, Shenzhen boasts a coastline of 260.5 kilometers and a sea area of 2030 square kilometers, providing abundant natural resources for marine education and cultural dissemination<sup>[1]</sup>.

**Table 1.** The distribution of marine education resources in Shenzhen is as follows:

Resource type	Quantity	Representative cases
Ocean Museum	5	Shenzhen Ocean Museum, South China Sea Fisheries Research Institute
Ocean theme park	3	Shenzhen Xiaomeisha Ocean World, Happy Valley Ocean Park
Marine universities	4	School of Marine Science, Shenzhen University, Department of Marine Science, Southern University of Science and Technology
Binhai scenic area	12	East River, Yangmei Pit, Dapeng Peninsula National Geopark

### 2.2. Analysis of Communication Channels

Shenzhen has adopted diversified channels in the dissemination of Marine culture, covering the education system, new media matrix and cultural tourism integration. **Education System:** According to statistics from the Shenzhen Education Bureau in 2024, 98% of primary and secondary schools in the city have introduced marine-themed courses<sup>[2]</sup>. These courses not only cover marine science but also include topics such as marine ecological conservation and maritime rights. For example, the School of Marine Science at Shenzhen University has collaborated with multiple primary and secondary schools to develop a series of marine science textbooks. Through practical teaching and interactive experiences, these efforts aim to enhance students' understanding and interest in the ocean. In recent years, Shenzhen has actively explored marine knowledge education. For instance, Dapeng Central Primary School in Shenzhen focuses on building a "marine culture" feature, strengthening students' education in marine knowledge<sup>[3]</sup>. Additionally, Shenzhen has established several marine cultural awareness education bases, such as the Shajing Oyster Culture Museum and the Red Shell Display Hall, which conduct a variety of rich and colorful marine science activities to raise public awareness and conservation consciousness regarding the ocean.

**New Media Matrix:** Shenzhen has also achieved significant success in the dissemination of marine culture. The Shenzhen Municipal Planning and Natural Resources Bureau has established a "Marine+" cultural promotion brand through organizing World Oceans Day events, marine knowledge competitions, and the "Deep Blue Forum." Additionally, Shenzhen

actively hosts international marine creative design contests, coastal hiking and photography competitions, and other activities to spread marine culture in various ways. The official Weibo account of the Shenzhen Oceanic Administration has reached 1.23 million followers, with over 500 million views on its short video platform. These new media platforms attract a large number of public attention and participation by posting content such as marine science videos, marine protection initiatives, and Marine Cultural Festival activities. For example, during the 2023 Shenzhen Marine Cultural Festival, the total number of views for activity videos released on new media platforms exceeded 10 million, effectively enhancing public awareness of marine culture.

**Table 2.** Comparison Table of Shenzhen Marine Culture Communication Effect Data from 2020 to 2024

Aparticular year	Coverage of Marine themed courses (%)	Number of visitors to the Marine Museum (10,000)	Number of participants in the Ocean Culture Festival (10,000)	Number of tourists received by coastal tourism (10,000)	New media dissemination of Marine culture (10,000 times)
2020	85	120	50	1800	2000
2021	90	130	60	1900	3000
2022	92	140	70	2000	4000
2023	95	150	80	2100	5000
2024	98	160	90	2200	6000

Cultural and Tourism Integration: Shenzhens coastal tourism has developed rapidly, with 21 million visitors in 2023, accounting for 38% of the citys total tourism revenue. Coastal attractions like Dongxishui and Yangmeikeng not only offer abundant natural scenery but also incorporate elements of marine culture. For example, Dapeng Peninsula National Geopark attracts a large number of tourists through marine science lectures and ocean cultural festivals, enhancing public awareness of marine culture.

### 2.3. Existing Problems and Challenges

Despite significant progress in marine education and cultural dissemination in Shenzhen, several challenges remain. First, the integration of marine educational resources is insufficient, and the synergistic effects among these resources have not been fully realized. Second, public participation needs to be increased, particularly in marine conservation efforts. Lastly, Shenzhens influence in international marine cultural dissemination is limited, and there is still a gap compared to advanced international cities<sup>[4]</sup>. Although Shenzhen has made some achievements in marine knowledge education and cultural dissemination, public awareness of the ocean remains relatively weak. Many peoples understanding of the ocean is superficial, lacking a deep appreciation for marine ecosystems, marine economy, and marine culture. Currently, marine knowledge education in Shenzhen is mainly concentrated in some primary and secondary schools and educational bases, but a comprehensive marine education system has yet to be established. There are still shortcomings in curriculum design, faculty, and teaching resources, making it difficult to meet the publics demand for marine knowledge.

Although Shenzhen has held a variety of Marine culture dissemination activities, the communication channels are relatively limited, mainly focusing on large-scale activities organized by government departments and some media publicity reports<sup>[5]</sup>. In the era of new

media, how to make full use of the Internet, social media and other emerging channels to disseminate Marine culture is still an urgent problem to be solved.

### 3. Innovation Strategies of Marine Culture Communication in Shenzhen

#### 3.1. Path of Education System Optimization

Constructing a "Marine Knowledge Graph" to develop a digital resource library for marine education at the K12 level, integrating knowledge from multiple fields such as marine science, ecological conservation, and maritime rights, forming systematic educational content. Through a digital platform, provide interactive learning experiences to enhance students understanding and interest in marine knowledge<sup>[6]</sup>. Incorporate marine knowledge into the basic education curriculum system, developing suitable marine education materials for different age groups of students. Offer courses in marine science, marine culture, and marine environmental protection in primary and secondary schools, improving students marine literacy through classroom teaching, practical activities, and extracurricular reading. Promoting collaboration between schools and enterprises, Shenzhen Port Group has partnered with vocational colleges to establish the "Smart Port College." Through a model of industry-academia-research cooperation, this initiative aims to cultivate technical professionals who meet the demands of marine economic development. Such collaboration not only provides students with practical opportunities but also offers intellectual support for corporate growth. Strengthening teacher training and implementing overseas research programs for marine teachers has covered 60% of subject teachers. Through international exchanges and cooperation, we aim to enhance teachers professional competence and teaching skills, ensuring the high-quality development of marine education<sup>[7]</sup>. We will also strengthen the training of marine education teachers to improve their knowledge of marine subjects and teaching abilities. Encouraging universities and research institutions to conduct marine education research and cultivate a group of specialized marine education talents is essential. Additionally, inviting marine scientists and experts in marine culture to campus to deliver specialized lectures for students is highly recommended.

#### 3.2. Digital Communication Innovation

**Table 3.** Shen zhen survey results

Question	Option	Frequency (people)	Percentage (%)
1. Do you understand the importance of Marine ecological protection?	yes	850	89.5
	deny	100	10.5
2. Have you ever participated in Marine science popularization activities?	yes	450	47.4
	deny	500	52.6
3. Do you think the ocean culture dissemination activities in Shenzhen are rich?	yes	600	63.2
	deny	350	36.8
4. Are you willing to participate in Marine conservation?	yes	750	78.9
	deny	200	21.1
5. Do you know about the Marine cultural heritage of Shenzhen?	yes	550	57.9
	deny	400	42.1

We should make full use of the Internet, social media, short video platforms and other emerging channels to carry out activities to spread Marine culture. We should expand the coverage of Marine culture dissemination by making short videos on Marine science popularization, live streaming lectures on Marine science popularization online, and holding online exhibitions of Marine culture.

The Shenzhen Bay Laboratory has developed a "virtual Marine Science Expedition" system based on VR technology, which enables users to experience the process of Marine science expedition in an immersive way and enhances the public's cognition and interest in Marine science. In the metaverse scene, Dapeng New Area has built China's first Marine culture metaverse experience center, which uses metaverse technology to build an immersive Marine culture experience space and provide the public with a new cultural experience. Blockchain certificate establishment Marine culture IP digital asset trading platform, using blockchain technology to ensure the security and traceability of digital assets, promote the transaction and circulation of Marine culture digital assets.

### **3.3. Innovation of Cultural and Tourism Integration**

Shenzhen hosts an annual Marine Culture Festival to build a festive brand and attract a large number of tourists. For example, during the 2023 Shenzhen Marine Culture Festival, the total number of views on activity videos released through new media platforms exceeded 10 million, effectively increasing public attention to marine culture. Combining Shenzhen's marine tourism resources, the city has developed marine-themed tourism routes, such as marine ecological tourism and marine historical and cultural tours. Through these tourism activities, visitors can gain a deeper understanding of marine culture through personal experiences and enhance their awareness of marine conservation. Ocean-themed parks and scenic areas in Shenzhen, such as Xiaomeisha Ocean World and Happy Valley Aquarium, attract a large number of visitors through rich displays of marine life and interactive experiences<sup>[8]</sup>. Coastal scenic spots like Dongxizhong and Yangmeikeng not only offer natural landscapes but also incorporate elements of maritime culture, enhancing visitors' understanding of oceanic culture. Shenzhen has rich Marine cultural heritage, such as Dapeng Fortress and Chawan Tianhou Temple. By protecting and revitalizing these cultural heritages, combined with modern tourism development, tourism products with cultural connotation can be created.

### **3.4. Policy Support and Guarantee**

Shenzhen Municipal Government has issued a series of policy documents, such as the Measures for the Administration of Special Funds for Marine Economic Innovation and Development Demonstration Projects in Shenzhen [8] and the Several Measures for Promoting High-quality Development of Marine Industry in Shenzhen which provide policy support for the dissemination of Marine culture.

The special fund for the dissemination of Marine culture will be established with financial support, with an initial scale of 50 million yuan, to support the dissemination of Marine education, culture and industry development. Through financial support, the implementation of Marine cultural dissemination projects will be promoted. Cross-departmental coordination has been established to form a cross-departmental coordination mechanism, with eight departments including culture and tourism, education and science and technology working together to jointly promote the dissemination of Marine culture.

## **4. International Experience Reference and Implementation Guarantee**

### **4.1. International Case Comparison**

Singapore: Integrating Marine Knowledge into the National Education System Singapore has integrated marine knowledge into its national education system, fostering students' awareness

of the ocean and their scientific literacy through systematic curriculum design, starting from the primary education stage. Marine science courses are widely offered in primary and secondary schools, combining field trips with laboratory instruction to enhance students understanding and interest in the ocean. Additionally, Singapore promotes public awareness of marine culture through events such as the Marine Culture Festival and marine science exhibitions.

inspiration

Shenzhen should learn from Singapore's experience and further improve its Marine education system by incorporating Marine knowledge into compulsory courses in primary and secondary schools as well as higher education, so as to enhance the public's Marine cultural literacy through systematic curriculum design. Sydney: Annual Marine Culture Festival Sydney hosts the Marine Culture Festival annually, creating an internationally influential marine cultural brand through a rich array of activities and broad public participation. The festival includes various formats such as marine science lectures, marine art exhibitions, marine-themed concerts, and marine sports competitions, attracting a large number of domestic and international tourists. Additionally, Sydney expands the influence of the Marine Culture Festival through new media platforms and social media, enhancing public attention to marine culture. Shenzhen can learn from the experience of Sydney to further enhance the brand influence of the Marine Culture Festival, attract more public participation and enhance the communication effect of Marine culture by enriching the content of activities and innovating the communication methods. Rotterdam: Revitalizing Port Cultural Heritage Through the revitalization of port cultural heritage, Rotterdam has transformed industrial relics into tourism resources, creating distinctive maritime cultural experience zones<sup>[9]</sup>. The port cultural heritage projects in Rotterdam include the protection of historical buildings, renovation of industrial sites, and the construction of marine-themed museums. These initiatives not only preserve the city's historical memory but also provide the public with rich cultural experiences.

Shenzhen can draw on the experience of Rotterdam to further revitalize marine cultural heritage sites such as Dapeng Fortress and Chawan Tianhou Temple. By integrating modern tourism development, it can create culturally rich tourism products and enhance the influence of marine culture. Strengthening cooperation with international marine cultural institutions, Shenzhen can host events like the International Marine Culture Festival and marine academic conferences. Through international collaboration, it can introduce advanced concepts and technologies for marine cultural dissemination, thereby boosting the international influence of Shenzhen's marine culture.

#### **4.2. Policy Guarantee Mechanism**

Shenzhen should formulate the "Special Plan for the Development of Marine Culture in Shenzhen (2025-2030)" to clarify the goals, tasks, and key directions for marine cultural development. The special plan should cover multiple areas such as marine education, cultural dissemination, and the integration of culture and tourism, providing systematic policy guidance for the development of marine culture. The government should increase financial support for marine knowledge education and cultural dissemination, establishing a special fund for the development of marine education courses, teacher training, educational base construction, and the organization of cultural dissemination activities.

Relevant policies and measures will be formulated and improved to encourage social forces to participate in Marine knowledge education and cultural communication. Through policy guidance, more enterprises, social organizations and individuals will be attracted to participate in Marine culture, forming a good atmosphere of participation by the whole society. A special fund for the dissemination of Marine culture has been set up with an initial scale of 50 million yuan to support Marine education, cultural dissemination and industrial development. Through

financial support, the implementation of Marine cultural dissemination projects will be promoted and the influence of Marine culture will be enhanced. Establish a cross-departmental collaborative working mechanism. The collaboration involves eight departments including culture and tourism, education, and science and technology, forming a united front to jointly promote the dissemination of marine culture. Through inter-departmental cooperation, resources can be integrated to enhance the efficiency and effectiveness of marine cultural dissemination. A coordination mechanism among government departments should be established to integrate resources and form a cohesive force. The education sector, cultural sector, and marine management departments should strengthen their cooperation to jointly advance the development of marine knowledge education and cultural dissemination.

### 4.3. Data Support and Empirical Analysis

According to the latest statistical yearbook data from Shenzhen, as reported in the "Shenzhen Statistical Yearbook 2024," Shenzhen has made significant progress in marine economic development and the dissemination of marine culture. In 2023, the total output value of Shenzhen's marine economy reached 150 billion yuan, representing a year-on-year increase of 12% [12]. Coastal tourism received 21 million visitors, accounting for 38% of the city's total tourism revenue. Additionally, the coverage of marine science education in Shenzhen continues to expand, with 98% of primary and secondary schools offering marine-themed courses. The case study of the Ocean Culture Festival is illustrated by the 2023 Shenzhen Ocean Culture Festival. During the event, videos released on new media platforms garnered over 10 million views, attracting a large number of public participants<sup>[10]</sup>. The festival enhanced public awareness and interest in marine culture through activities such as marine science lectures, marine art exhibitions, and marine-themed concerts. Additionally, by collaborating with international marine cultural institutions, the festival introduced advanced international concepts and technologies in marine culture, further boosting Shenzhen's international influence in marine culture.

### 4.4. Implementation of Safeguard Measures

Under the comprehensive leadership of the Municipal Party Committee and Municipal Government, and with the overall coordination of the Shenzhen Marine Management Committee, the Municipal Culture, Radio, Television, Tourism, and Sports Bureau, the Municipal Marine Fisheries Bureau, and other relevant departments are specifically responsible for coordinating and advancing the implementation of the planning tasks, guiding the whole society to participate in and promote. By strengthening supervision and evaluation of the implementation of the plan, we ensure the smooth implementation of the special planning for marine cultural development. Implementing tourism transportation policies in line with the "Shenzhen Coastal Zone Comprehensive Protection and Utilization Plan (2018-2035)," increase investment in infrastructure construction, and enhance the supply of tourism transportation along the coastal scenic and leisure tourism belt. Support the development of new tourism transportation and distinctive tourism transportation. Promote the construction of a passenger terminal in Qianhai, and launch routes connecting Qianhai to cities in the Greater Bay Area and Hong Kong and Macao, forming a three-dimensional transportation network by land, sea, and air. By optimizing the transportation network, improve the convenience and appeal of coastal tourism. Cultivate marine professionals and improve the talent training mechanism, increase efforts to train specialized talents in marine culture, sports, and tourism, and establish a comprehensive talent development system for marine culture, sports, and tourism with marine enterprises as the main body, vocational colleges as the foundation, and government promotion combined with social support. Form Shenzhen Ocean University according to procedures to nurture high-quality, professional marine culture, sports, and tourism talents. By strengthening personnel training, we can provide intellectual support for the dissemination of Marine culture.

## 5. Summary

Shenzhen, an important coastal city in China, has achieved certain milestones in marine knowledge education and cultural dissemination, yet it still confronts numerous challenges. By bolstering the construction of marine knowledge education systems, innovating methods for marine cultural dissemination, and reinforcing policy support and guarantees, the city can effectively elevate its marine knowledge education and cultural dissemination capabilities, laying a solid foundation for the establishment of a global maritime central city. Concurrently, Shenzhen's practical experience offers valuable insights for other coastal cities, contributing to the comprehensive development of China's marine knowledge education and cultural dissemination endeavors. The theoretical contribution of this study lies in constructing a comprehensive theoretical framework for the dissemination of marine culture, integrating theories from communication studies, education, and cultural geography, providing a novel perspective for research on the dissemination of marine culture. Additionally, through empirical analysis, this study presents practical paths and policy recommendations for the dissemination of marine culture in Shenzhen and other coastal cities, with significant practical implications.

To build an ecological environment for the dissemination of marine culture with government leadership, social participation, and technological empowerment, the government should assume a leading role in promoting the implementation of marine cultural communication projects by formulating special plans, establishing special funds, and setting up cross-departmental coordination mechanisms. Strengthening international exchanges and cooperation, by drawing on international advanced experience, enhancing cooperation with international marine cultural institutions, and introducing international advanced marine cultural concepts and technologies. By hosting international marine culture festivals, marine science popularization lectures, and other activities, the international influence of Shenzhen's marine culture can be enhanced.

Despite achieving certain results in theoretical construction and empirical analysis, this study still has some limitations. For example, the research primarily focuses on Shenzhen, with a lack of in-depth analysis of marine cultural dissemination in other coastal cities. Moreover, the evaluation of the effectiveness of marine cultural dissemination is mainly based on qualitative analysis, lacking systematic quantitative assessment methods. Future research can expand its scope to include more coastal cities and develop quantitative evaluation models to conduct more thorough analyses of the effects of marine cultural dissemination. Simultaneously, with the rapid development of digital technology, future research can explore the application of emerging technologies in marine cultural dissemination, offering new ideas and methods for this field.

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