The cooperative model of learning management between local art museum and university in the new social era

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Abstract: Learning has become a part of social development and has strengthened lifelong learning in the new social era. Therefore, the cooperative model of learning management between local art museums and universities in West Fujian is the focus of lifelong learning in the new social era, and should be studied and researched. Based on these issues, the research objectives of the cooperative management model between local art museums and universities in West Fujian are as follows: (1) Study and analyze the cooperative model of learning management between local art museums and universities in West Fujian. (2) Analyze the methods and indicators for establishing cooperation between local art museums and universities in western Fujian to build a city of learning. (3) Create a cooperative management model between local art museums and universities in western Fujian to build a learning city by using a combination of qualitative and quantitative research methods. Qualitative research used literature reviews related to local art museums and universities in western Fujian, and collected data for analysis using baseline statistics. The quantitative research process employed survey methods, questionnaires, and interviews with experts. The population and sample used to answer the questionnaire and interviews included 288 people. The results showed that (1) the cooperative model of learning management between the local art museum and the university in West Fujian can jointly formulate the concept and vision of basic development. (2) Methods and indicators can be determined for establishing cooperation between local art museums and universities in West Fujian to build a city of lifelong learning in the new social era. (3) A cooperative management model and evaluation index can be established between local art museums and universities in Western Fujian to build a city for shared learning. However, based on the 288 questionnaires and samples collected, as well as interviews with experts and stakeholders, the overall picture can be summarized into six dimensions using descriptive statistics as follows: Cooperation Motivation has an average score and standard deviation (3.585□0.888), and Cooperation Content has an average score and standard deviation. (3.395□0.956), Cooperation Way has an average score and standard deviation. (3.464□0.990), Safeguard Measures has an average score and standard deviation (3.583□0.925), Promoting Function has an average score and standard deviation (3.402□1.037), and Constraining Factors has an average score and standard deviation (3.721□0.990). However, the results of this research study from the objectives and focus of the given goals can be used to study the collaboration between local art museums and universities in West Fujian for lifelong learning in the new social era.

Keywords: Cooperative model, Establishing cooperation, Evaluation index, Learning management, Strengthened lifelong learning.

1. Introduction

In August 2023, the Ministry of Education of the People's Republic of China issued a notice on the main mission to build a learning society. Strengthening the construction of a learning city in this new era is the main task of building a learning society [1]. The creation of a city of learning is an important

basis for cooperation between the Museum of Fine Arts and the University of Western Fujian Province as a result of the expansion of the concept. "Lifelong Learning" in Chinese Society. Such influence not only satisfies the pursuit of a high-quality life for the general public, but also satisfies the needs of the people. It can also meet the increasing need for a better lifestyle. At the same time, it promotes the sustainable development of cities. The main mission is to build a city of learning and a wider scope of education than traditional formal educational institutions. Educational learning should extend beyond the scope of school education to places where self-learning can be carried out, such as residences, workplaces, and science center's [2]. In response to the need to create a learning society and improve the quality of people, many cultural scholars have advocated the integration of museums into public educational institutions and the national education system. However, cooperation between museums and schools has increased. According to the development data of Chinese museums published by the State Administration of Cultural Heritage of China, 382 new museums will be registered in China by 2022. World. Likewise, more than 34,000 exhibitions have been held in an offline format, one of which is an educational event; almost 230,000 of them receive 578 million visitors. If considered in the form of non-formal educational institutions. Museums can make good use of their collections of scientific and other research because they have the advantage of personnel [3]. These personnel are able to perform their duties to the fullest extent so that visitors have the opportunity to be educated in many areas such as infrastructure, personnel allocation, exhibitions, and the development of higher education institutions as the main place of education in the system. Occupying a common space in the field of teaching and learning with non-formal education in museums. These organizations can also build effective partnerships and make projects achieve sustainable results under the concept of lifelong learning.

However, the focus on building learning cities for higher education should use the approach of laying the principles of basic learning competencies for the sustainable development of students' lifetimes as a basic requirement. It also highlights the outcomes of a variety of educational activities, such as stimulating students' interest and developing their ability to learn independently. Art museums are great partners in promoting the outcomes of higher education. The museum has transformed from a simple collection and exhibition facility into a complex social activity center with unique educational resources [4]. Art museums recognize the communication between the creation of works of art and acceptance of works of art. Promote public awareness of culture and the arts. Colleges and universities can effectively integrate art museum resources into their educational content. Establishing independent curricula or related learning guidelines to promote and reform sustainable development. The learning of art museums is developed in a specific context and directly related to the world of learners' experiences. This helps students understand society more deeply, supervise social development, and guide them to solve social problems with professional knowledge and awareness of knowledge transfer. At the same time, it is an important provider of art and culture communication, education, and research. Improving humanistic qualities and facilitating cultural inheritance and dissemination will help cultivate students' aesthetic abilities to realize their own worth.

In recent years, many art museums in China have actively organized and implemented various branded projects. Public education projects implemented through partnerships between museums and schools enable museums to serve society and the masses more effectively. According to a survey conducted over the years, public education programs have been implemented through progressive partnerships across the country. However, there are specific limitations in development due to different regional resources, so the development of museum-school cooperation is still in its infancy. To start the public education of art museums in China with the development of continuous and high-quality art education [5]. The importance of cooperation between museums and schools has become increasingly prominent. Collaboration between museums and schools has become a new research hotspot. Therefore, art galleries and schools across the country have begun to explore partnerships between museums and schools. Therefore, it is important to conduct research so that cooperation between art museums and higher education institutions can contribute to the creation of a better city for lifelong learning [6]. It also causes a change in local development to a developmental stage to improve the quality of life of society covering all areas.

However, this study and research are expected to provide the basic concept of cooperative management to strengthen the theoretical basis of learning for cooperation between art museums and universities in the West Fujian region. Similarly, it can also define a cooperative management model between art museums and universities in West Fujian for participating in the construction of a city of learning. This is to guide the development of sustainable cooperation between museums and schools in Western Fujian. Creating management models and evaluation indicators for art museums and universities will contribute to the creation of a learning city. It can provide references and suggestions for cooperation between art museums and universities at home and abroad, and play a positive and constructive role in promoting the creation of a learning city. In the next section, the literature review, methodology, results, discussion, and conclusions are explained.

2. Literature Review

To understand the research status of the collaborative management model between local art museums and universities in West Fujian: A case study. Literature related to the collaboration between museums and schools to create a city of learning is described in detail as follows.

2.1. Art Museum

The concept of museums proposed by the International Council of Museums (ICOM) is a non-profit institution that serves society. Collect, protect, interpret, and exhibit tangible heritage, research, and intangibles. It is accessible to the public and inclusive, and promotes diversity and sustainability. The museum operates and communicates within an ethical framework and provides a wide range of educational experience. Admiration reflection and knowledge sharing with the participation of all sectors of society. The concept of the American Goode Public Museum sees education as an essential part of philosophy. In addition, in the early 20th century, works such as Benjamin Gilman (1918) [7], Ideal Purposes and Methods Pursued by Museums, Henry Kent (1949), Education as I See It, and the Great Task, as well as John Dana's New Museum Project (1920), demonstrated the importance of education in public museums with publications such as the Belmont Report of 1969, the AAM Report of 1984, Museums Committed to the New Century and the AAM Report of 1992 [8]. However, these works and reports recognize the importance of museum education at a very high level. For a long time, the theory of special education has not been created from a systematic and theoretical perspective. The debate on museum education does not establish an independent theoretical system, and the debate on this subject mainly relies on other theories such as psychological theory and adult education theory. In Psychological Theory, Piaget's theory of cognitive development designed a "participatory exhibition" based on the theory that "learning is the active creation of a subject and an environment with each other", and designed a model of "abstraction of concepts and sensory experiences" according to the theory. "Cognitive Development Steps" The most influential introduction of adult education theory in museum studies is the AMA report by Collins (1981) on Museums, Adults, and the Humanities [9].

In addition, in terms of the similarities and differences between the educational concepts of Western museums and Chinese museums, relevant researchers have also made introductions and comparisons [10]. Liu Wei (2011) presents the Constructivist Museum Educational Theory of American Wealthy. George. Ein Zheng Qinyan (2009) discusses educational research methods in American art museums and the relationship between museums of learning and aesthetic experience. Zhou Zhifei (2011) presents the concept of museum education in the United States. Developing the role of education and how it is considered a function of education and the goals of museums. Gao Cui (2012) presents the concept and status of social studies in the British Museum. Wei Jian (2012) examines the different types of museums in France and elaborates on the concept of "making young people do things" in museum exhibitions and activities. Qian Xueyuan (2007) presents the development and transformation of the educational function of the American Museum of Science and Technology [11]. The process and method of cooperation between the Museum of Science and Technology and the school. Lu Fangfang (2013) has introduced the main forms and methods of museum education in the United States comprehensively, as well as the general characteristics of public diversity research studies. However, the concept of museum

education shows that in addition to the connotations of education, there is also a need for museum education. International and Chinese research related to museum education theory [12]. Emphasis on the content of constructive psychology, the humanities, and other multidisciplinary disciplines. Reflecting changes in the international academic community in pursuit of the value of education. These studies provide visitors with learning environments and opportunities in museums that encourage collaborative thinking [13]. Museums will serve to create more important learning than just education for knowledge.

2.2. Art Museum in West Fujian

The West Fujian region has a culture and geography that is the main source of Hakka culture in West Fujian. This western Fujian region was centered in Dingzhou Province during the Ming and Qing dynasties and extended eastward to the west of the adjacent Zhangzhou Province, as shown in Figure 1. During the Ming and Qing dynasties, Tingzhou Province had administrative jurisdiction in eight counties: Changting, Liancheng, Yongding, Shanghang, Wuping, Ninghua, Qingliu, and Guihua [14]. The settlement of the Hakka people west of Zhangzhou mainly refers to some Hakka cities that exist in Nanjing District. Ping He and Yun Xiao in the administrative region of Zhangzhou City. As a result, Tingzhou is the capital of Hakkas in western Fujian and the home of their ancestors. In the 1950s, the administrative division of Fujian Province was revised [15]. The provinces of Changting, Liancheng, Yongding, Shanghang, and Wuping in the old Tingzhou Province merged with Longyan County and Zhangping County into one administrative region, thus becoming a special region. Later, it was changed to Longyan City; Guihua County was renamed Mingxi Province, along with Qingliu County and Ningbo County. All are under the administrative region of the city of Sanming, which formed the county, consisting of parts of Longyan City and Sanming City in the present-day Fujian Province.

Figure 1.
Fujian map and distribution of Hakka in Western Fujian.

Western Fujian has a long history during the Neolithic period, 6,000 years before human habitation, and is increasing in the region, giving rise to a rich cultural heritage. Western Fujian has a variety of structural and cultural characteristics. West Fujian culture has Hakka cultural resources, red cultural resources, ecological cultural resources, folk cultural resources, intangible cultural resources, etc [16]. Cultural heritage and contemporary cultural resources had six dimensions, as listed in Table 1.

In recent years, the Museum of Arts and Culture in West Fujian has made great progress, promoted high-quality museum public services and stimulated the vitality of the museum's industrial ecosystem

[17]-[18]. According to the 2023 National First, Second, and Third Level Museum Operation Evaluation, 12 third level and above museums in West Fujian have successfully passed the operation evaluation. In view of the construction of a smart museum with 270 online exhibitions in the recent years. 3D scans of the 1,139 precious cultural relics in the collection have been completed, and a number of more are still in progress. Local capital of 122,400 yuan was invested in the construction of this smart museum. Similarly, a public study of museums shows that regional museums have received 94,855 visits. During summer, 62,238 primary and secondary school students attended the event, accounting for 65.6%. This regional museum continues to develop its public service capabilities and create a platform for communication between museums and the public. It conducts activities with a variety of content and formats in the West Fujian Regional Art Museum. These cultural and artistic exhibition activities have made it possible for people in cities and rural areas to enjoy and promote prosperity and the development of local cultural and artistic affairs [19]. However, considering quality, art museums in West Fujian still have shortcomings that need to be further improved and developed. Similarly, art museums in West Fujian related to this study include the Longyan Art Museum, Longyan Art Museum, Peitian Art Museum, and Zhangping Art Museum.

Table 1.
Types of cultural resources in Western Fujian (Source: developed by the authors).

Cultural resource type	Cultural resource content	Representative examples
Hakka cultural resources	Including Hakka culture, Hakka historical relics, famous Hakka cities and towns, Hakka characteristic buildings, Hakka food culture, Hakka folk customs, Hakka folk music, Hakka dialect, etc.	The Li Family Ancestral Hall in Shanghang; Changting County, the capital of the Hakkas and a national historical city, Yongding County, the hometown of Hakka earth buildings; Peitian Village, Liancheng County, a national cultural relics protection unit in China.
Red cultural resources of the Communist Party of China	Refers to revolutionary sites, revolutionary historical events, revolutionary historical figures, revolutionary memorial sites, monuments and the revolutionary spirit they carry.	The site of the Gutian Conference in Shanghang County, a national revolutionary site and cultural relics protection unit; the National Key Revolutionary Memorial Building, the Monument to the Revolutionary Martyrs of Western Fujian.
Ecological and cultural resources	It refers to some natural landscapes full of ecological culture, folklore, mythology, and celebrity calligraphy and painting.	There are 2 Chinese national A-level nature reserves, Meihua Mountain and Liangye Mountain, 3 national 4A-level scenic tourist areas, 1 Liancheng Guanzhi Mountain, a national key scenic spot, and 3 national forest parks.
Folk cultural resources	Including local customs, language and customs, as well as unique Characteristic local dramas, folk songs, and dances are the cultural accumulation of a nation formed in the long history.	Western Fujian Han opera, Longyan folk opera, and Longyan Jingban are typical representatives of Longyan folk culture; Longyan tea-picking lantern dance has been treasured by the United Nations Cultural and Health Organization as a cultural heritage of mankind; ceramics, painting, sculpture, paint painting, paper-cutting, and embroidery, hand-made, bamboo weaving, rattan chair leather weaving and other folk crafts.
Intangible cultural	In 2005, Fujian Province	4 items of folk music: Yongding Hakka

heritage	announced the first batch of provincial intangible cultural heritage masterpieces with 101 items, including 13 items in western Fujian.	folk songs, Western Fujian Hakka Shifan music, Longyan folk songs, Silla Jingban music; 1 item of folk dance: Longyan tea lantern picking; 2 opera items: Western Fujian Han opera, Shanghang puppet show; folk acrobatics 1 item: folk skills of military civilians; 2 folk handicrafts: Yongding Hakka earth building construction technology, Liancheng Sibao carving technology: 1 production and trade custom: Western Fujian Hakka spring plowing custom; 1 seasonal festival item: Western Fujian Hakka Lantern Festival; and One item of cultural space related to the above-mentioned cultural expressions: Longyan Moderate Bon Festival Customs.
Contemporary cultural resources	It refers to the various existing cultural forms and cultural styles. It should include artistic creation resources, news media resources, cultural design resources, cultural festival resources, etc., covering a very broad area.	There are currently 2 colleges and universities in western Fujian, 1 art school, 1 art creation institution, 1 drama research institute, and 2 Hakka culture research institutions (Hakka Culture Research Center, Hakka Culture Research Institute).

Figure 2 (a) shows a good example of the continuous improvement in the cultural infrastructure construction of Longyan City. Promote the prosperity and development of Western Fujian literature and art for success. The opening of the Longyan Art Museum has become a new highlight of Western Fujian culture. It also promoted the implementation of Longyan City's strategy to effectively strengthen the city through culture. The Longyan Art Museum has an exhibition area covering an area of more than 5,000 square meters. It is located on the south side of the Municipal Government Building in People's Square, which is the core of Longyan City [20]. The Municipal Museum of Art is a public welfare cultural institution established by the local government. It is a place for mass cultural activities and a leading business unit responsible for the public cultural operations of local governments [21]. The Municipal Museum of Art enriches the cultural life of the people, publicizes the guidelines of principles and policies, and conducts studies in social aesthetics. Realize the cultural interests of the people and promote their all-round development.

Figure 2.
Longyan art museum and Peitian art museum (Source: developed by the authors).

Figure 2 (b) The Peitian Art Museum is located in the ancient village of Peitian, covering an area of 3,300 square meters, with an existing building area of 1,000 square meters. The Peitian Art Museum was established in December 2020 based on the 800-year-old Hakka Ancient Village under the guidance of the Longyan Literature and Art Federation, supported by the county government and related agencies. A group of nearly 100 cultural and artistic talents in the fields of photography, art, music, drama, ceramics, brewing, bamboo ware, etc., have been gathered to create an incubator and brand of traditional culture for the Hakka people, inheriting folk intangible cultural heritage.

2.3. City of Learning

The concept of a learning city came from the Education Cities Initiative organized by the Organization for Economic Co-operation and Development (OECD) in 1973. In the same year, the International Conference on the Cities of Learning was held in Gothenburg. Sweden's "city of learning" officially appeared in the form of a professional term. The plan to build a learning city is included in the research agenda. Therefore, learning the city from the action plan to the conceptual vocabulary to the professional vocabulary, step-by-step, from abstract to concrete, has received great attention [22]. In 2010, according to a survey of five European countries, the OECD defined cities of learning as follows: The core of a learning city is innovation and learning, and the purpose of building a learning city is to seek sustainable economic and social development. Innovation and the creative use of information and communication technologies are part of building a learning city. The Beijing Declaration endorsed by the First International Conference on Learning Cities believes that, in the context of learning for all, priority should be given to the integration of urban prosperity and sustainable development. In 2015, the Mexico City Statement issued by the Second International Conference on Cities of Learning supported the promotion of lifelong learning worldwide. In particular, it is emphasized that young people should be a participatory group and service object in building a global learning city. This indicates that building a city of learning is an important path to achieving sustainable development. Emphasizing the importance of interdepartmental collaboration mechanisms for building learning cities [23].

However, it is important to create and develop a learning society and global learning city. This shows that the creation of a city of learning has the following characteristics. First, it emphasizes the importance and necessity of lifelong learning. Second, it emphasizes a wide range of participants. Third, it emphasizes the sustainability of the process. Fourth, it emphasizes the innovation of methods. According to the data of this study, it is found that the city of learning is a concrete reflection and embodiment of the learning society in urban areas under the background of the knowledge economy [24]. This is an inevitable product of the transition from an industrial economy to a knowledge

economy, as well as new forms and trends in cities based on inclusive and sustainable human development.

2.4. Cooperation Between Museums and Universities

Cooperation between museums and universities can be regarded as cooperation between the organization as a whole. Cooperation between museums and universities generally refers to activities undertaken jointly by museums and universities to achieve common educational goals [25]. The famous American expert on organizational behavior argues in the author's book organizational behavior that the most important point of cooperation between organizations is how efficiently different resources are allocated. This can effectively change collective behavior aimed at scarce resources. Therefore, cooperation between organizations means that both parties understand each other's specific behaviors, which can lead to the achievement of their own goals [26]. Cooperation between the Museum of Art and the University also has the following characteristics. First, the goal of cooperation was divided into two phases. In short, art museums and local universities can share resources and reinforce one another 's advantages. In the long term, there is a common mission to stimulate cultural heritage, build national cultural confidence, cultivate interdisciplinary talent, and disseminate the concept of lifelong education. Second, both sides have a desire to solve cross-border problems so that they can seek common ground while reserving differences, trust each other, and solve problems to achieve beneficial results in the cooperation process. Therefore, cooperation between the local art museum and the university is a joint activity involving the exchange of personnel and information [27]-[29]. Share resources for scientific research cooperation and other activities to meet the needs of both sides. The American Places Federation describes the partnership as "the most successful and enduring example of a place's interest and ability to build partnerships with other institutions to achieve common goals." In the next section, I explain the methodology of this study.

3. Methodology

The construction of a city of learning has the following research objectives of the cooperative management model between local art museums and universities in West Fujian: (1) Study and analyze the cooperative model of learning management between local art museums and universities in West Fujian. (2) Analyze the methods and indicators for establishing cooperation between local art museums and universities in western Fujian to build a city of learning. (3) Create a cooperative management model between local art museums and universities in western Fujian to build a learning city. From these objectives, the research process can be divided into the following stages.

Research Design: This study covers all aspects of museum art design management. The content was covered by the International Committee on Museum Personnel Training of the International Council of Museums. The curriculum is based on ICOM 2008, with a basic course guide. The reasons for choosing the course guide are as follows. First, the course guide is scientific, professional, authoritative, and internationally valid and has been recognized by the Executive Committee of the International Council of Museums. Second, the course manual covers the details of the provision of public activities, such as communication theory, education, publications, exhibitions, interpretation, and public service, as well as management content such as theoretical membership of human resources institutes, public affairs, construction business, market development funding, operation certification, and consulting. However, the course guide's content ranking is not based on hierarchical relationships or internal connections between the contents. Therefore, on this basis, various content can be prepared flexibly according to the actual needs of the study and research to avoid limitations and interference. Similarly, the course guide does not explain much specific course content, which is convenient for museum staff at different professional levels. The design of the training content was used only according to the actual situation and in a relatively independent and flexible area. The research process was divided into three stages.

Step 1: Analyse and distinguish the basic concepts and theories of the combination of museums, schools, and cities of learning. Summarize the theories, progress, historical contexts, and conclusions that represent them, and summarize the aspirations and experiences of art museums and schools at

home and abroad to contribute to the creation of a city of learning ready to formulate basic development concepts and visions.

Step 2: Create a questionnaire and design the questions with an update to IOC standards through a qualified person. Define the survey method and standard survey procedure and collect questionnaires in West Fujian urban area. Analyze the data using the synthesis of survey results and summarize the demand results, development with problems that hinder cooperation between art museums and universities in western Fujian.

Step 3: Apply the learning city theory and stakeholder theory to design and manage research as well as implementation. Create a management model and evaluation index for art museums and universities to contribute to building a learning city.

Population and Sample: This study is a combination of both qualitative and quantitative research. Qualitative research used in-depth interviews to explore the basic concepts and theories of the combination of art museums and universities for participation in building a city of holistic learning. In-depth interviews will focus on literature research, historical research, and other empirical data, as well as progress in historical contexts, with conclusions to gain an explanatory understanding of the behavior and semantic construction of the merger of art museums and universities. Quantitative research: In addition to in-depth interviews, this study also used a questionnaire-based questionnaire. The information in the questionnaire concerns the needs of the current situation and the existing problems of cooperation between museums and universities in West Fujian. The data were analyzed using descriptive statistics and references in combination with literature, as well as learning city and stakeholder theories. Therefore, the results created a management model and evaluation index for cooperation between art museums and universities in building a learning city. Similarly, Quantitative data collection and sample selection targeting three main groups included the first group of students, teachers, and administrators who participate in higher education. The second group comprises the staff and administrators of the art museum. The third group comprised visitors to art museums. As shown in Table 2, the total number of participants was 280. Therefore, the collected data reflect the basic cooperation between museums and universities in western Fujian.

Table 2.
Classification of questionnaire groups.

The occupation of the respondents	Quantity
Staff of art museum management department (Leading cadres and staff at all levels, volunteers)	40
Personnel of administrative departments of regional colleges and universities (Leading cadres and administrative personnel at all levels)	40
Regional college teachers	40
Regional college students	120
Art museum visitors	40
Total	280

Similarly, qualitative data collection and sample selection mainly use specific methods for issues related to cooperation between art museums and universities and relevant stakeholders, including art museums, universities, and students. The museum consists of officials, administrators, and staff. An executive officer mainly refers to the director and the person in charge of each department. Museum staff mainly refer to exhibition staff and professors who carry out specific educational projects and design staff who plan specific educational projects. For universities, including university administrators and university administrators, the university administrators here mainly refer to the principals and responsible persons who can significantly promote cooperation between the art museum and university. In addition, the main participants in the cooperation were students. Therefore, the target of the interview was the officials of both parties involved in the cooperation between the two parties, namely, library administrators, librarians, school administrators, and teachers. After the first round of interviews, additional sampling was conducted, based on the interview results. One of the relevant

officials was further recruited to find additional evidence of the results of the interviews. On the other hand, students who participate in university-museum cooperation activities will also be interviewed so that the problems of university-museum cooperation can be reflected in many aspects so that the research results can be more complete. Finally, a total of 8 interviewees interviewed in this study were 1 decision-maker, 1 supervisor, 1 museum manager and staff, 1 school administrator, 2 teachers, and 2 students.

Research Tools: The CNKI Research Platform is an online learning platform under China's National Knowledge Infrastructure (CNKI) that integrates integrated reading and management, in-depth research, retrieval and downloading of in-depth learning materials, writing knowledge, and publication support. It is mainly used for academic research, such as thesis writing and plagiarism detection.

(1) Interview: The qualitative and specific research methods adopted in this study are in-depth interviews. In-depth interviews refer to unstructured one-on-one interview formats. During the interviews, examiners with advanced interview skills conducted in-depth interviews with respondents to reveal the status quo of a particular issue, as well as the interviewees' potential motivations, attitudes, and emotions towards a particular issue. In-depth interviews can encourage interviewers to describe and reflect on their experiences in a way that rarely appears in everyday life to achieve an in-depth exploration of a specific problem or experience.

(2) Questionnaire: After the questionnaire design was completed, it used distribution through the WeChat group, QQ group, email network, and other channels. Based on the literature analysis, the survey questions and their associated structures were defined. The content of the questionnaire consisted of three parts: the first part was to collect basic information, the second part asked questions to determine the facts, and the third part explored attitudes and trends, which mainly examined the trends and motivations of cooperation between universities and museums.

(3) Analysis: A basic theoretical analysis developed by Barney Glaser from the University of Chicago and Anselm Strauss from Columbia University was used. It uses the process of comparative and theoretical exploration analysis based on detailed interview data using methods such as comparison and reasoning, gradually increasing the level of abstraction of concepts and cyclical relationships, and finally developing a theoretical model of the phenomenon studied. In addition, a SWOT analysis was used to identify strengths, weaknesses, opportunities, and threats. Finally, it uses PEST analysis, a model used to analyze four factors in the overall environment: political, economic, social, and technological.

However, quantitative research uses questionnaires to provide opinions and suggestions on relevant issues. The questions in the questionnaire were designed according to the following logical structure: (A) Verify the understanding and cognition of relevant personnel regarding public education in art museums, cooperation between art museums and universities, and cities of learning. (B) Review the assessment of public education in art museums, cooperation between art museums and universities, and learning cities. (C) Examine stakeholder expectations of public education in art museums, cooperation between art museums and universities, and cities of learning. (D) Examine stakeholder perspectives on public education in art museums, cooperation between art museums and universities, and the cities of learning.

Similarly, for qualitative research, in-depth interviews were used to collect the data. This procedure used in-depth interviews with survey respondents. This interview dealt with a particular issue, as well as motivation. Interviewee's potential attitudes and emotions towards a particular issue. The interview data collection process consisted of three parts: preparation before the interview, interview, and the end of the interview. (A) Preparation before the interview: The interviewee was contacted in advance to explain the purpose of the interview. The interviewee agreed to an appointment for the interview time and location. A quiet interview location is generally chosen to ensure that all interviews can be conducted in a continuous environment. (B) Interviews clarify the purpose of the interview, including the interview recording and documents provided. This interview will not be disclosed to third parties and will be confidential to provide an unbiased and truthful answer. In this interview process, an outline was prepared in advance so that the interview results were comprehensive according to the objectives. (C) The end of the interview summarizes the information carefully to ensure that the interview results

are objectively comprehensive, objective, and realistic. In the next section, the results of the study are described according to the elements of the established objectives.

4. Results and Discussion

According to the research objectives, the cooperative management model between the local art museum and the university in West Fujian consists of the following: (1) Study and analysis of the cooperative model of learning management between local art museums and universities in West Fujian. (2) Analyze the methods and indicators for establishing cooperation between local art museums and universities in West Fujian to build a city of learning. (3) Create a cooperative management model between local art museums and universities in West Fujian to create a learning city. The results of the research can be explained to answer various questions according to the following objectives:

Objective (1): To study and analyze a cooperative model of learning management between local art museums and universities in West Fujian. It was found that the cooperative model of learning management between local art museums and universities in West Fujian could significantly determine the concept and vision of common basic development.

Objective (2): Methods and indicators for establishing cooperation between local art museums and universities in western Fujian to build a city for lifelong learning in the new social era. However, this research method has set the test point in question to establish a collaboration between the local art museum and the university in West Fujian to build a city of lifelong learning. Cooperation motivation, cooperation content, cooperation method, safeguard measures, promoting function, constraining factors. From all six dimensions, the analysis of the accuracy of the content in the quality questionnaire can be summed, and what is truly required can be measured through expert review of the research questionnaire. Evaluate whether each question in the questionnaire corresponded to the defined objectives with an accuracy value in the range of 0.616–0.701, which is considered reliable and compliant.

Objective (3): To establish a cooperative management model and evaluation index between local art museums and universities in West Fujian to build a city for shared learning. Similarly, this study conducted an exploratory factor analysis of the collected data. The analysis of the main elements is used to isolate the factors, and the right-angle rotation method is used. Obtaining a clearer and more interpretable factor structure. According to the results of the Kaiser-Meyer-Olkin (KMO) and Bartlett tests, the KMO value is 0.941, which is greater than 0.8, indicating a correlation between the variables. Bartlett's sphericity test provides a chi-square value 5744.374 (df=630, p<0.001). This shows a significant relationship between the variables and suitability of the factor analysis.

Similarly, Exploratory factor analysis isolated six co-factors with a specific value greater than one, representing a cumulative variance explanatory rate of 63.72%. From the rotating factor loading matrix, it can be observed that the load of the measurement indicator on all corresponding factors is higher. to 0.6, which reflects the validity of the convergence. At the same time, the load of the other factors was relatively low, which indicates the validity of good discrimination between factors. The list included in each factor has a corresponding meaning and is named cooperative content. Duties, Promotion, Cooperation Mode, Preventive Measures Motivation for collaboration, and limiting factors.

First factor: Collaborative content consists of seven indicators, accounting for 12.17% of the variance. Based on the indicators included in this factor, cooperation between art museums and universities is extensive, covering education. Exhibition audience, academic research, cultural and creative product development, talent cultivation, intellectual support. This suggests that museums and universities can collaborate in multiple dimensions by leveraging their strengths and achieving resource-sharing and complementary advantages.

Second factor: The promotion function consisted of six indicators and accounted for 11.08% of the variance described. This factor reveals the positive impact of collaboration between art museums and universities on the region's cultural and social development. Through cooperation, it is possible to enhance the cultural weaknesses of the region. Inheriting and promoting the distinctive culture of

Minxi. Improve public artistic knowledge; promote the development of industry, culture, and creativity; enhance urban influence; and create a learning society.

Third factor: The cooperation mode consisted of six indicators and accounted for 10.69% of the described variance. This factor reflects the organizational model and operational methods of cooperation between art museums and universities. Museums and universities should establish long-term, strategic cooperative relationships. Adopt a cooperation model according to the project to establish a cooperative management institution. Create a benefit-sharing mechanism, joint training mechanism, and resource-sharing platform.

Four factor: The preventive measure consisted of six indicators, accounting for 10.46% of the variance described. This underscores the importance of external support in facilitating cooperation between art museums and universities. Government policy support, financial investment, capacity assurance, law and regulatory reform, internal management reform, and strong communication and exchange are comprehensive cooperation prevention systems.

Fifth factor: synergistic motivation, consisted of six indicators and accounted for 10.26% of the variance described. The museum aims to increase its influence, expand its functions, and attract more audience members through partnerships with universities. The university strives to strengthen its teaching resources, cultivate student qualifications and improve its reputation.

Sixth Factor: The limiting factor consists of five indicators and accounts for 9.05% of the described variance. The main factors limiting cooperation between museums and universities include a lack of coordination and a high level of planning, imperfect operational mechanisms, differences in perception and demand, a shortage of professional talent, and insufficient funding.

Similarly, from the perspective of scores, the various dimensions of the cooperative management model between local art museums and universities in Minxi were found to be quite promising. However, there are also differences and gaps in improvement regarding collaborative motivation, with an average score of 3.585 with a standard deviation. 0.888. This indicates that the motivation for collaboration between museums and universities is clear. Both sides have a consistent understanding of the need for, and importance of, cooperation. However, the minimum value of 1.000 and the maximum value of 5.000 show that there is still a significant difference in motivation for collaboration between museums and universities. Some have strong motivation, while others are quite weak. This may involve factors such as the development phase, resource donation, and the strategic goals of museums and universities. However, in the future, when promoting cooperation between museums and universities, it is necessary to clarify and include the motivation for collaboration between both parties as well as to identify common ground and stimulate more enthusiasm for collaboration.

In terms of cooperation content, the average score was 3.395 with a standard deviation of 0.956, which was slightly lower than cooperative motivation. This indicates that the current content of cooperation between museums and universities is not diverse or in-depth. Museums and universities have many areas for cooperation, such as talent cultivation, scientific research cooperation, exhibition exchanges, and social services. However, the breadth and depth of cooperation today need to be expanded. In the future, efforts should be made to expand the scope of cooperation, devise ways of cooperation, and take advantage of the cultural resources of museums. In addition to the university's ability and intellectual advantages to fully achieve complementary strengths and resource sharing, it deepens the content of cooperation.

Regarding the cooperation way, the average score was 3.464 with a standard deviation. 0.990. between collaborative motivation and content. This indicates that the model of cooperation between museums and universities is flexible and diverse, but there is still room for further innovation. Currently, most cooperation between museums and universities is in the form of projects. However, institutional mechanisms and platform creation have not yet been sufficiently developed. In the future, efforts should be made to explore long-term cooperation mechanisms, establish cooperation platforms, and improve incentive policies to provide more favorable conditions and environments for in-depth cooperation between the two sides.

The safeguard measures had an average score of 3.583 with a standard deviation of 0.925, which is equivalent to the motivation to cooperate. This indicates that relatively comprehensive preventive measures have been established for cooperation between museums and universities, such as signing cooperation agreements, establishing cooperation committees, and establishing regular communication mechanisms. These measures provide an important guarantee for smooth implementation of cooperation. In the future, efforts should be made to improve cooperative prevention measures, strengthen institutional building, and improve communication and coordination mechanisms to provide stronger support for cooperation.

In terms of promoting function, the average score was 3.402, with a standard deviation of 1.037, which was slightly higher than the cooperative content. This indicates that cooperation between the museum and university has a positive impact on the development of both parties. However, the breadth and depth of this effect require further improvement. Collaboration between museums and universities is beneficial for improving museums' research capacity and academic level. However, the current promotion function is still mainly concentrated in specific areas. In the future, efforts should be made to fully exploit the strengths of museums and universities, expand the radiation impact of cooperation, and promote the comprehensive development of both museums and universities.

Constraining factors had the highest average score of 3.721, with a standard deviation of 0.990, indicating that cooperation between museums and universities still faces many limitations and challenges. On the one hand, objective factors, such as differences in institutional systems, different evaluation standards, and limited resource conditions, limit the depth and breadth of cooperation. On the other hand, personal factors, such as lack of awareness of cooperation, different interests and needs, and ineffective communication and coordination also affect the effectiveness and quality of cooperation. This requires concerted effort from both the museum and the university. Improving the External Environment. Internal communication should be strengthened, differences and conflicts resolved, and practical cooperation fostered with an open and inclusive mindset.

However, from the quantitative analysis, a brief understanding of the current situation of cooperation between the university and museum was obtained. Based on qualitative research, the current situation of cooperation between museums and schools is further analyzed. Data were collected through selected random interviews. Obtaining complete and effective interview data to the highest extent is a necessary prerequisite to ensure the development of research. This study used line-by-line coding to name each line of data. According to this study, not all text or sentence information is valuable for research purposes. The reason for adopting progressive encryption is to avoid ignoring the data. However, interview information that is too simple or meaningless, such as "don't know," "difficult to say," "unclear," "very promising," "maybe," should be excluded from the coding process. This study assigned a text number using "the interviewee's coding and the original representative statement of the interviewee's interview." Third, we classified the open codes and created categories. In this study, the text is encoded line-by-line, and after repeated sorting, it is finally abstracted into 12 conceptual categories and four main categories, as shown in Figure 3.

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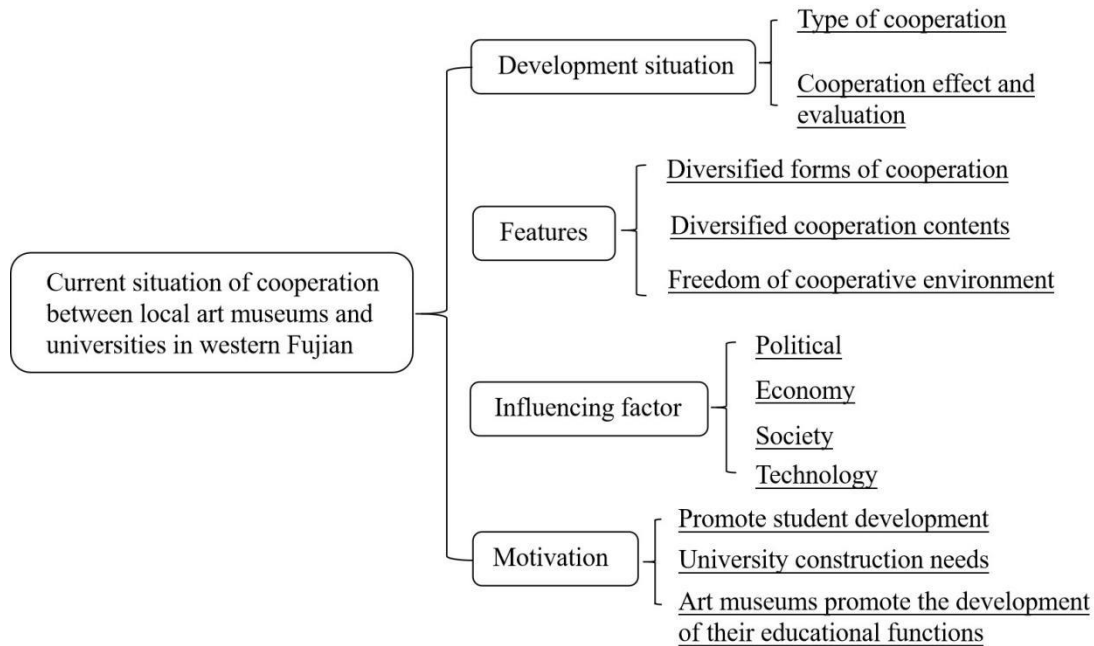
Figure 3.
Coding structure diagram.

Table 3.
Coding reliability of cooperation.

Coded content	Confidence (%)
Type of cooperation	88
Cooperation effect and evaluation	86
Diversified forms of cooperation	90
Diversified cooperation contents	85
Freedom of cooperative environment	91
Political	87
Economy	88
Society	89
Technology	90
Promote student development	86
University construction needs	83
Art museums promote the development of their educational functions	88

This section of the study uses evidence from coding by the authors to ensure the reliability of the research. Other individuals are invited to compare encryption resources and analyze the reliability of the encryption based on the results of different encryptions. Reliability analysis was performed by calculating the consistency of the encryption twice, before and after the calculation. The reliability of the encryption by the two researchers ranged from 83% to 91%. Therefore, it can be seen from the results that the encryption reliability is high and the encryption results are reliable as shown in Table 2.

However, the results of this study showed that qualitative and quantitative research is a combination of literature research, questionnaire surveys, in-depth interview surveys, and other methods. Cooperation between local art museums and universities in West Fujian can be studied according to the specified objectives. In addition to these models and methods, they also aim to promote

cooperation between art museums and universities in West Fujian and promote the construction of a complete and reliable city of learning.

5. Conclusion

The cooperative model of learning management between local art museums and universities in West Fujian is a part of the learning city, which is the key focus of lifelong learning in the new social era. Based on this focus, the research objectives of the cooperative management model between local art museums and universities in West Fujian were determined, including the following: (1) Study and analysis of the cooperative model of learning management between local art museums and universities in West Fujian. (2) Analyze the methods and indicators for establishing cooperation between local art museums and universities in western Fujian in building a city of learning. (3) Create a cooperative management model between local art museums and universities in western Fujian to build a city of learning. From this objective, the research and research methods are designed in detail, and the sample selection, survey, and data analysis are objectively described. The research methodology focuses on a combination of qualitative and quantitative research. Most research processes focus on covering the scope of research. Research design, methodology, tools, data collection, and analysis. The research scope focuses on the staff, school scholars, teachers, and students involved in building a city of learning through collaboration between the Art Museum and the University in West Fujian. It defines and conceptualizes the methods and structure of the survey using questionnaires and expert interviews. The population and sample used a questionnaire with distribution and collection for baseline statistical analysis of 280 people, and conducted direct interviews with eight other focused experts. This research analyzes the collaboration environment between art museums and universities in western Fujian to contribute to the creation of a city of learning. Clarify the idea and vision of the collaboration and establish a comprehensive cooperation evaluation system, strategic management model of research cooperation, and guidelines for the implementation of the research process. The results of this research will provide a scientific basis and guidelines for future cooperation between museums and universities. It also promotes the creation of cities for learning and sustainable urban development.

However, according to the research results of objective (1), it was found that the cooperative model of learning management between the local art museum and the university in West Fujian could significantly determine the concept and vision of common basic development. This covers the study and analysis of the cooperative model of learning management between local art museums and universities in western Fujian. Similarly, this research has set out 33 questions to establish a collaboration between local art museums and universities in western Fujian to build a city for lifelong learning. Cooperation Motivation, Cooperation Content, Cooperation Way, Safeguard Measures, Promoting Function, Constraining Factors. It can summarize the analysis of the accuracy of the content in a quality questionnaire and measure exactly what is needed through expert review of the research questionnaire. For this content fidelity analysis, IOC analysis and other comparative methods were used to evaluate whether each question in the questionnaire corresponded to the intended objectives, with an accuracy value in the range of 0.616–0.701, in accordance with the required standard. However, objective (2) can determine the methods and indicators for establishing cooperation between local art museums and universities in West Fujian to build a city of lifelong learning in the new social era. Therefore, it can be concluded that the determination of indicators and methods can meet prescribed objectives (3) Establish a cooperative management model and evaluation index between local art museums and universities in western Fujian to build a city of shared learning. From this research, the following questions can be summarized based on the following six dimensions:

The question of the six-dimensional management model of cooperation between local art museums and universities in Minxi was found to be quite promising. However, there is room for improvement in a variety of areas, including

Cooperation Motivation: It has an average score of 3.585 with a standard deviation of 0.888, which indicates that the motivation for collaboration between museums and universities is quite obvious but should be improved further.

Cooperation Content: It has an average score of 3.395, with a standard deviation of 0.956, which is slightly lower than the motivation for collaboration. This indicates that the current content of cooperation between museums and universities is not diverse and in-depth. In the future, the scope of cooperation should be expanded by devising methods of cooperation based on the advantages of the cultural resources of museums. As well as the university's ability and intellectual advantages to fully achieve complementary strengths and resource sharing and deepen the content of cooperation.

Cooperation Way: This has an average score of 3.464 with a standard deviation of 0.990, which falls between collaborative motivation and collaborative content. This indicates that the model of cooperation between museums and universities is quite flexible and diverse, but there is still room for further innovation. In the future, efforts should be made to explore long-term cooperation mechanisms, establish cooperation platforms, and improve incentive policies to provide more favorable conditions and environment for in-depth cooperation between the two sides.

Safeguard Measures: It has an average score of 3.583, with a standard deviation of 0.925, which is equivalent to the motivation for collaboration. In the future, efforts should be made to improve preventive measures and cooperation, and strengthen the creation of institutions. Improving communication and coordination mechanisms to support stronger cooperation.

Promoting Function: It has an average score of 3.402 with a standard deviation of 1.037, which is slightly higher than that of the cooperation content. This indicates that the cooperation between the museum and the university has a positive impact on the development of both parties. In the future, the strengths of museums and universities should be fully exploited. Expand the impact of collaboration and promote inclusive development of both museums and universities.

Constraining Factors: It highest average score of 3.721 with a standard deviation of 0.990, which indicates that cooperation between museums and universities still faces many limitations and challenges. This requires concerted efforts from both the museum and university to improve the external environment. Internal communication should be strengthened, and differences as well as conflicts should be resolved, while practical cooperation should be promoted with an open and inclusive mindset.

However, the results of this study from the given objectives and focus goals can be used in the study of cooperation between local art museums and universities in West Fujian. Similarly, from the given objectives, a model can be created to promote cooperation between art museums and universities in West Fujian and promote the construction of a city of learning. There are suggestions that should be improved, as described above, which are just perspectives that interested people and scholars should continue to develop to achieve more completeness.

Acknowledgment:

Copyright:

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