



DEVELOPING COMMUNITY-BASED GRAY SCULPTURE EDUCATION: A PARTICIPATORY ACTION RESEARCH APPROACH TO CULTURAL HERITAGE PRESERVATION*

การพัฒนาหลักสูตรการศึกษาชุมชนด้านประติมากรรมฮุยซู : การวิจัยเชิงปฏิบัติการ
แบบมีส่วนร่วมเพื่อส่งเสริมการสืบทอดมรดกทางวัฒนธรรม



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Abstract

This study focused on the interactive relationship between the living inheritance of Cantonese Gray Sculpture (Hui Su) and community cultural development, conducted by the participatory action research (PAR) approach, and was conducted in the Longtou community, Huadu District, Guangzhou. Following three iterative cycles of planning–action–observation–reflection. The program collaborated with community residents, intangible cultural heritage inheritors, community workers, and researchers to continuously develop and optimize a community education curriculum on gray sculpture. The resulting curriculum was structured around a four-dimensional framework: cultural understanding – skill training – innovative application and community dissemination.

The findings revealed that the curriculum enhanced residents’ cultural understanding of gray sculpture, improved their skills, and strengthened their cultural identity. At the same time, it promoted more frequent cultural activities in the community, interaction with nearby communities, and fostered a collaborative cultural heritage network among residents, inheritors, and the community. This study confirms that a PAR-based gray sculpture community

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education curriculum can activate residents' cultural subjectivity and achieve mutual empowerment between the living inheritance of intangible cultural heritage and the accumulation of community cultural capital.

Keywords: Cultural Heritage; Sculpture; Architecture

บทคัดย่อ

การวิจัยนี้มุ่งเน้นความสัมพันธ์เชิงปฏิสัมพันธ์ระหว่างการสืบทอดที่มีชีวิตของประติมากรรมขลุ่ย (Gray Sculpture) กับการพัฒนาวัฒนธรรมชุมชน โดยใช้วิธีการวิจัยเชิงปฏิบัติการแบบมีส่วนร่วม (PAR) ในชุมชนหลงโถว เขตฮวาตู เมืองกว่างโจว การวิจัยดำเนินไปตามวงจรสามรอบของการวางแผน การปฏิบัติ การสังเกต การสะท้อนผล ร่วมกับผู้อยู่อาศัยในชุมชน ผู้สืบทอดมรดกภูมิปัญญาทางวัฒนธรรม ผู้ทำงานชุมชน และนักวิจัย เพื่อพัฒนาและปรับปรุงหลักสูตรการศึกษาชุมชนเกี่ยวกับประติมากรรมขลุ่ยอย่างต่อเนื่อง จนเกิดเป็นกรอบหลักสูตรสี่มิติ ได้แก่ ความเข้าใจทางวัฒนธรรม การฝึกทักษะ การประยุกต์เชิงนวัตกรรม การเผยแพร่สู่ชุมชน

ผลการวิจัยพบว่า หลักสูตรดังกล่าวช่วยเสริมสร้างความเข้าใจของผู้อยู่อาศัยเกี่ยวกับวัฒนธรรมประติมากรรมขลุ่ย เพิ่มพูนทักษะและเสริมสร้างอัตลักษณ์ทางวัฒนธรรม ขณะเดียวกันยังส่งเสริมให้มีกิจกรรมวัฒนธรรมของชุมชนที่ขึ้นและเพิ่มการมีปฏิสัมพันธ์ระหว่างเพื่อนบ้าน อันนำไปสู่การสร้างเครือข่ายการสืบทอดทางวัฒนธรรมที่เกิดจากความร่วมมือของผู้อยู่อาศัย ผู้สืบทอด ชุมชน การศึกษานี้ยืนยันว่า หลักสูตรการศึกษาชุมชนเกี่ยวกับประติมากรรมขลุ่ยที่พัฒนาบนพื้นฐานของ PAR สามารถกระตุ้นความเป็นเจ้าของทางวัฒนธรรมของผู้อยู่อาศัย และบรรลุการเสริมพลังซึ่งกันและกันระหว่างการสืบทอดมรดกภูมิปัญญาทางวัฒนธรรมที่มีชีวิตกับการสะสมทุนทางวัฒนธรรมของชุมชนได้

คำสำคัญ: มรดกทางวัฒนธรรม; ประติมากรรม; สถาปัตยกรรม

Introduction

Cultural heritage refers to tangible and intangible assets of cultural, artistic, historical, or scientific value that have been passed down through history, including buildings, archaeological sites, traditional crafts, and festivals and customs. According to the Convention for the Safeguarding of the Intangible Cultural Heritage (UNESCO, 2003), cultural heritage can be divided into two main categories: tangible cultural heritage and intangible cultural heritage. Gray sculpture is a traditional craft that falls under the category of intangible cultural heritage. It uses lime as the main raw material, fermented with straw, paper, etc.,



and shaped with iron nails, copper wire, etc. as the skeleton, and then added with colors and paintings to form architectural decorative components. They are often located on the roofs, gables, etc. of ancestral halls, houses, and temples.

The research interest stems from the three major challenges facing gray sculpture in the era of modernization: 1. a decline in the transmission of traditional skills; 2. a shrinking range of practical applications; and 3. a weakening of public awareness and appreciation. Although gray sculpture as a cultural heritage holds significant historical and cultural value, its educational practices at the community level have not been systematically developed. From a social perspective, gray sculpture is not merely a craft; it is an important carrier of cultural identity and community memory in the Cantonese region. As the “smallest unit” of cultural inheritance, the educational function of the community plays an increasingly prominent role in the protection of intangible cultural heritage. “Community, group, and individual participation and identification” is a core principle of intangible cultural heritage protection. Community education is characterized by “locality”, “life-oriented” and “all-age”, making it especially suitable for intangible cultural heritage projects such as gray sculpture that are closely related to daily life scenes. However, there are three major pain points in the current curriculum development of gray sculpture at the community level: 1. The course content is out of touch with community needs. 2. The teaching method is out of touch with the participants. 3. The educational goal is out of touch with community development.

Hwang & Huang (2019) proposed that cultural background has an impact on students' ability to learn intangible cultural heritage, and pointed out that rebuilding the cultural ecosystem is very important for the sustainable inheritance of skills. Xiong & Lee (2020) pointed out that building a symbiotic system can provide long-term impetus for the sustainable development of rural traditional skills and intangible cultural heritage. Bao (2023) believe that integrating community education courses into regional culture will help to inherit excellent regional culture. Han (2018) explored and practiced the development of distinctive community education programs through an integrated approach encompassing three dimensions.



Therefore, the core issue this research aims to address is how to develop a community-based, participatory action research approach to create a gray sculpture education program that addresses community needs and empowers residents to take an active role.

Research Objectives

1. Collaborate with multiple community stakeholders to develop a gray sculpture community education curriculum system that is both culturally relevant, practical, and community-adaptable.
2. Evaluate changes in residents' understanding of gray sculpture culture, skill acquisition, and cultural identity after the implementation of the curriculum.
3. Analyze the impact of the curriculum on community cultural activities, neighborhood interactions, and the formation of cultural heritage networks.
4. Summarize the gray sculpture community education curriculum development model based on PAR, and provide practical suggestions for the inheritance and cultural development of intangible cultural heritage communities.

Methodology

1. Research Design

This study employed PAR, emphasizing equal collaboration between researchers and participants. Through a spiral cycle of “planning-action-observation-reflection,” curriculum optimization and problem solving were achieved. The core of PAR is the principle that “practitioners are researchers.” This aligns closely with this study's goal of “activating residents' cultural subjectivity.” The research period is 16 months, consisting of three cycles: Round 1 (March - June 2024): Needs research and preliminary curriculum design. Interviews and discussions will be conducted to determine community needs for the gray sculpture course and develop a draft curriculum. Round 2 (July - December 2024): Curriculum implementation and adjustments. Pilot courses will be conducted to collect feedback and optimize content and methods. Round 3 (January - June 2025): Curriculum refinement and effectiveness evaluation. The full course will be implemented and its impact on residents and the community will be evaluated through multivariate data.



2. Sample Acquisition and Sample Size Determination

Research scope: The Longtou community in Huadu District, Guangzhou was selected. Survey data shows that there are 388 well-preserved buildings dating back to the Ming and Qing dynasties in the community. Most of these buildings have gray sculptures on their roofs, gables, and other locations, providing local resources for the inheritance of gray sculpture culture. The community has approximately 3000 permanent residents, mostly with local residency status (75%), and has a relatively high proportion of elderly residents (23% are over 60 years old). However, residents are highly motivated to participate in community cultural activities (average annual participation rate of 64%).

Participants: 1. Core Collaboration Group (12 people): including community representatives (6 people, covering the elderly, middle-aged and young generations), a gray sculpture inheritor (1 person), community neighborhood committee staff (2 people), community volunteers (2 people), and a researcher (1 person), responsible for curriculum development, implementation and evaluation; 2. Course participants (80 people): selected through voluntary registration, covering residents aged 12-75 years old, of which 45% are over 60 years old and 25% are 12-35 years old. The male-to-female ratio is about 1:1.3. Education levels range from elementary school to undergraduate, and occupations include retired, employed, and students, ensuring age and gender diversity of the sample.

Sample size was determined based on the core collaboration group size based on the principle of “small but effective” in PAR (10-15 people are suitable for in-depth collaboration); the sample size of course participants was determined based on the needs of quantitative analysis ($n=80$ to meet the statistical power requirements of the paired t-test, $\alpha=0.05$, $\beta=0.2$).

3. Research Instrument

A mixed tool of “quantitative + qualitative” is used to ensure the comprehensiveness and data triangulation.

3.1 Gray Sculpture Cultural Awareness Questionnaire: This questionnaire, developed by researchers, covers four dimensions: gray sculpture history (6 questions), craft characteristics (8 questions), cultural connotations (6 questions), and local gray sculpture in the community (5 questions). Each question uses a 5-point Likert scale (1 = completely unfamiliar, 5 = very familiar), with a



total score range of 25-125. The survey showed good validity with an $\alpha = 0.82$ reliability (construct validity was verified by factor analysis, KMO = 0.86).

3.2 Gray Sculpture Skill Assessment Scale: Developed by the inheritor, it assesses students' works from four dimensions: "material handling", "shaping ability", "pattern restoration", and "tool use". It is divided into three levels: "not mastered (1 point)", "initial mastery (2 points)", and "proficient mastery (3 points)", with a total score of 4-12 points.

3.3 Community Cultural Identity Scale: adapted from the Hoskin Cultural Identity Scale, it includes three dimensions: "cultural belonging", "cultural pride", and "inheritance willingness", 12 questions, 5-point Likert scale, and a total score of 12-60 points.

3.4 Semi-structured interview outline: 1. Designed for three types of subjects: Participants: Course participation experience, changes in perceptions of gray sculpture culture, and changes in neighborhood interactions; 2. Core Collaboration Group: Difficulties and solutions encountered in course development, community support, and suggestions for course optimization; 3. Community Workers: The impact of the course on community cohesion, cultural activities, and resident relationships.

3.5 Observation record sheet: record the frequency of residents' interactions during the course, their participation enthusiasm, and the number and type of participants in community cultural activities.

4. Data Collection

4.1 Questionnaire survey: Before the course and after the course, 80 participants were given a cognitive questionnaire, a skills assessment scale (the initial level was assessed through a "try-to-make" method before the course), and a cultural identity scale. 80 valid questionnaires were collected, with an effective recovery rate of 100%.

4.2 Semi-structured interviews: After each action cycle, a group interview (3 times in total) was conducted with the core collaboration group members (12 people). After the course, individual interviews were conducted with 20 trainees (stratified sampling, covering all age groups) and 2 community workers. Each interview lasted 30-45 minutes and was fully recorded and transcribed.



4.3 Participatory observation: The researchers participated in curriculum development meetings (8 times), course teaching (15 times), and community cultural activities (9 times), recording key events, residents' words and deeds, and interaction patterns, and forming field notes of approximately 20,000 words.

4.4 Document collection: Collect text materials such as course lesson plans, student works, community activity records, and news reports as the basis for data triangulation.

5. Data Analysis and Statistics Used to Analyze the Data

5.1 Quantitative analysis: SPSS software was used to conduct paired sample t-tests on the cognitive scores, skill scores, and cultural identity scores before and after the course to analyze the significance of the differences; descriptive statistics were performed on the residents' interaction frequency and participation rate in cultural activities.

5.2 Qualitative analysis: Braun & Clarke's six-step thematic analysis method was used to code the interview texts and observation notes: Step 1: Familiarize yourself with the data; Step 2: Generate initial codes; Step 3: Search for themes; Step 4: Review themes; Step 5: Define themes; Step 6: Write a report.

Results

Development results of gray sculpture Community Education Curriculum System

After three rounds of PAR, the final curriculum system consists of four modules (Table 1), embodying three major characteristics: 1. Localized content: Using existing gray sculptures in the community as examples, and combining them with residents' memories to design teaching themes; 2. Participatory approach: adopting the model of "demonstration by inheritors + mutual creation by residents + community display", 80% of the practical sessions are independently selected by students; 3. Diversified evaluation: Comprehensive evaluation is conducted based on work display, community voting, and comments from inheritors, rather than a single skill assessment.



Table 1 (Curriculum system)

Module Name	Core Content	Time(h)	Teaching Methods
Gray sculpture cultural cognition	The history of community gray sculpture, the meaning of patterns, and their connection to Cantonese life	3	Field trips and story sharing
Basic skills training	Material ratio, tool usage, and simple pattern shaping	6	Demonstration teaching
Theme creation practice	Combined with community scene creation	8	Project-based learning and inheritor guidance
Cultural communication and display	Works exhibition, Community lectures and short video production	3	Scenario simulation and results release conference

Changes in residents' cognition, skills, and cultural identity of gray sculpture

1. Significant improvement in cultural cognitive level

Before the course, participants' average cognitive score for gray sculpture was 42.3 ± 8.7 (out of 125 points), with only 12.5% able to identify three typical gray sculpture patterns. After the course, this score increased to 108.5 ± 9.3 , with 90% accurately describing the historical background of at least three gray sculpture sites in their community (Table 2). A paired-sample t-test revealed a significant difference in cognitive scores before and after the course ($t = -42.36$, $p < 0.001$).

Table 2 (Cultural cognition level before and after the course)

Cognitive Dimension	Before the course(M±SD)	After the course(M±SD)	The value of t	The value of p
History of gray Sculpture	11.5±3.1	28.6±3.5	-48.26	<0.001
Technical characteristics	13.2±2.8	32.4±3.2	-56.73	<0.001
Cultural connotation	9.0±2.5	27.8±3.0	-59.14	<0.001
Community local gray sculpture	8.6±3.2	20.7±2.9	-36.85	<0.001
Total score	42.3±8.7	108.5±9.3	-52.37	<0.001

2. Significant improvement in skills mastery

Before the course, all participants were at the “not mastered” level (skill score < 6 points); after the course, the mean skill score increased to 9.3 ± 1.5 (Table 3), with 65% of participants able to complete basic patterns independently (proficient), 30% able to complete complex patterns with guidance, and only 5% still at the initial mastery stage.

**Table 3** (Skill mastery level before and after the course)

Skill Dimension	Before the course(M±SD)	After the course(M±SD)	Improvement (%)
Material Handling	1.2±0.4	2.8±0.3	133.3
Shaping ability	1.0±0.2	2.5±0.4	150.0
Pattern restoration	0.9±0.3	2.3±0.5	155.6
Tool Usage	1.1±0.3	2.7±0.4	145.5
Total score	4.2±0.8	9.3±1.5	121.4

3. Significant enhancement in cultural identity

After the course, residents' cultural identity scores increased from 28.5 ± 8.2 to 49.8 ± 7.7 (Table 4). 85% of participants indicated they would "actively explain the culture of gray sculpture to their families," and 70% expressed a willingness to participate in community gray sculpture restoration volunteer activities.

Table 4 (Cultural identity before and after the course)

Cultural Identity Dimension	Before the course(M±SD)	After the course(M±SD)	The value of t	The value of p
History of gray Sculpture	10.5±3.2	17.2±2.8	-15.23	<0.001
Technical characteristics	10.8±2.9	14.3±2.5	-9.76	<0.001
Cultural connotation	7.2±2.1	18.3±2.4	-32.61	<0.001
Community local gray sculpture	28.5±8.2	49.8±7.7	-23.87	<0.001

The role of the curriculum in promoting community cultural development

1. Increase in the frequency and types of community cultural activities

Before the course was implemented, the community held only one or two gray sculpture related activities annually, primarily static exhibitions. Participants were mostly elderly, and the activities had a limited impact within the community. After the course was implemented, the community's cultural activities saw both a boost in quantity and quality: an average of three to six activities were held annually, expanding to interactive and innovative formats like creative workshops, gray sculpture storytelling festivals, and youth study tours, reaching participants of all ages. For example, the "gray sculpture storytelling festivals" attracted over 200 community members and was also promoted on social media through short videos created by the participants, thus extending the impact of the community cultural activity beyond the immediate neighborhood.



2. Improvement in neighborhood interaction and community cohesion
Before the course, 31% of participants interacted with their neighbors more than three times a week; after the course, this proportion rose to 68%. In interviews, many residents and community workers mentioned that the course has brought about changes in neighborhood relationships. In the “theme creation practice” program, 70-year-old Auntie Huang and 35-year-old Ms. Li formed a collaborative group. This program created a space for cross-generational and cross-cultural exchange, allowing traditional arts and crafts to serve as a unifying force in rebuilding community relationships in modern society.

3. Forming a collaborative inheritance network

Through the course, the community has formed a three-level inheritance network of “inheritors-core students-ordinary residents”: inheritors are responsible for controlling the skills, core students are responsible for daily teaching and activity organization, and ordinary residents participate in learning and dissemination. Mr. Chen, a core member of the training program, volunteered to offer free gray sculpture workshops for teenagers at the community center during weekends, with the inheritors providing guidance. This “weekend interest class,” initiated by the core participants themselves, has become the best example of the effective operation of the three-level heritage transmission network.

Discussion

PAR, as a methodology emphasizing community participation and collaboration, is demonstrating its unique value in the field of intangible cultural heritage. This study developed a gray sculpture community education curriculum through PAR. The results not only proposed the core logic that “community education curriculum is the mediating variable connecting gray sculpture cultural heritage and community development”, but also revealed the dynamic interaction mechanism among various variables.

From the dimension of cultural heritage, the curriculum's impact on residents' cognition, skills, and identity demonstrates the crucial role of “practical participation” in intangible cultural heritage education. The PAR model in this study achieves three transformations through the full participation of residents in curriculum design: 1. From “knowledge infusion” to “meaning construction”:



Residents transformed gray sculpture culture from abstract “intangible cultural heritage knowledge” into “community memory” related to their own lives. This “localized cognition” is consistent with Smith (2006) view that “cultural heritage must be embedded in the local context.”² From “skill imitation” to “innovative expression”: The transformation of students’ works from copying traditional patterns to integrating community elements shows that when residents are given creative autonomy, intangible cultural heritage skills will naturally combine with contemporary life needs, finding new application scenarios for gray sculptures, responding to the proposition of “the re-creation of tradition in social practice and cultural transmission” proposed by Assmann (2008). 3. From “passive acceptance” to “active inheritance”: The significant increase in cultural identification and willingness to inherit confirms that a sense of participation is the core motivation for inheritance, which echoes Nick Stevenson (2001) theory of “cultural citizenship.”

From the dimension of community development, the curriculum's promotion of cultural activities, neighborhood interaction, and cohesion reveals the unique value of intangible cultural heritage education as a “social capital incubator.” This study found that: Through “common goal-oriented” activities like collective creation and exhibition planning, the course not only strengthens the bonding capital of homogeneous groups (such as mutual assistance among elderly participants) but also cultivates bridging capital (such as cross-generational collaboration between young people and the elderly). This “dual capital” accumulation effect is more effective than typical community activities in breaking down group barriers. This is consistent with Narayan (1999) conclusion that “cultural activities can promote the integration of diverse groups.”

The transformation of community cultural activities from “community-led” to “student-independent planning” reflects the improvement of the community's self-organizing ability. This confirms Kretzmann & McKnight (1993) theory of “asset-based community development.”



Body of Knowledge

The internal relationship between the research variables can be summarized as a “three-dimensional driving model”: Cognition-Skill improvement is the foundation, providing capacity support for residents to participate in cultural heritage; emotional identification is the driving force, prompting residents to transform personal interests into collective actions; social network is the guarantee, through the collaboration of inheritors, residents, and community organizations, ensuring that cultural activities are sustained and embedded in community governance. The three mutually reinforce each other: skill improvement strengthens identity, identity drives network formation, and the network provides a platform for both skill improvement and deepening identity.

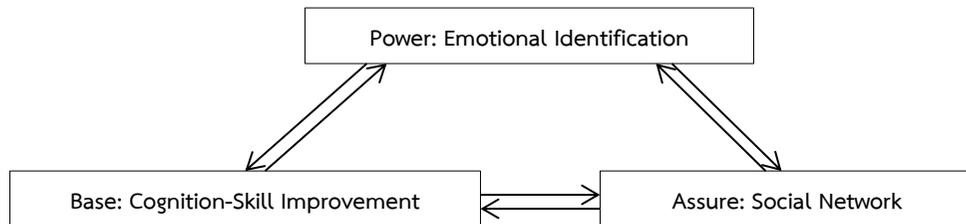


Figure 1: Three-Dimensional Driving Mode

1. Methodologically, PAR was applied to gray sculpture community education for the first time, breaking through the traditional model of “researcher-led” and proving that residents are not only the objects of education but also the subjects of curriculum development. 2. Practical level, a sustainable inheritance path of “from curriculum to network” was constructed, solving the problem of “end of inheritance when the course ends” in intangible cultural heritage community education. 3. Theoretical level, the mutually constructed relationship between intangible cultural heritage education and community development was revealed, and the micro-mechanism of the transformation of “cultural capital-social capital” was proposed, providing empirical evidence for “cultural empowerment of community”.



Recommendations

At the theoretical level, this research aims to expand the “cultural capital-social capital” framework, explore the interaction mechanisms between cognition, emotion, and social networks, and deepen the application of PAR in intangible cultural heritage education.

In practice, we should strengthen the leading role of residents in design, teaching, and dissemination, and establish a long-term mechanism that combines “resident-led initiatives, expert guidance, and researcher support.”

At the policy level, a scientific curriculum evaluation system and a certification mechanism for inheritors of intangible cultural heritage should be established to standardize and improve the quality and professionalism of intangible cultural heritage education.

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