

From Static Preservation to Living Inheritance: Investigating the Mechanisms of Display, Experiential Design, and Safeguarding Effectiveness in Majiayao Painted Pottery

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ABSTRACT

This study investigates the mechanisms through which living displays and experiential design drive audience engagement within the Majiayao painted pottery heritage in Lintao, Gansu. Drawing on the paradigm of Intangible Cultural Heritage (ICH) inheritance, an exploratory sequential mixed-methods approach was employed. Qualitative semi-structured interviews with ten key stakeholders were first conducted to identify contemporary safeguarding models. Subsequently, a structured questionnaire (N=351) was utilized to examine how interactive experiences influence inheritance effectiveness, measured by cognitive elevation, emotional identification, and communication intention. The results demonstrate that experiential displays foster substantive inheritance by facilitating the reconstruction of the audience's internal mental models through deep psychological resonance. These findings offer a theoretical framework for the psychological mechanisms of heritage transmission and provide strategic pathways for the sustainable revitalization of prehistoric ceramic culture.

Keywords: Majiayao Painted Pottery; Intangible Cultural Heritage (ICH); Living Display; Digital Communication; Experiential Learning; Safeguarding Effectiveness

INTRODUCTION

The 2003 *UNESCO Convention* for the Safeguarding of the Intangible Cultural Heritage represented a pivotal milestone in global preservation strategies by emphasizing dynamic transmission over traditional static archival methods. This paradigm shift underscores the necessity of integrating state-led policies with grassroots community involvement to ensure that cultural heritage functions as a sustainable catalyst for contemporary development. Within this evolving framework, Majiayao painted pottery serves as a quintessential representation of Neolithic Chinese civilization. The complex geometric motifs, which are characterized by fluid aqueous ripples and rhythmic whorls, provide a profound symbolic system for interpreting the cosmological perspectives and social structures of prehistoric populations in the upper Yellow River basin.

China's domestic legal framework has aligned with these international standards through the 2011 Intangible Cultural Heritage Law and subsequent 2023 directives on integrating heritage with the tourism sector. These policies mandate a shift from passive museum observation to immersive and participatory engagement. Despite this clear strategic direction, a critical scholarly challenge remains about how traditional craftsmanship can achieve sustainable transmission through the lens of modern interaction design?

Lintao County, particularly the Linjia site, serves as the critical empirical setting for this study. The recent identification of this region as one of China's "Top Ten Archaeological Discoveries" has catalyzed substantial institutional support, evidenced by a regional investment of approximately 8.998 billion RMB dedicated to the Majiayao Cultural Heritage Corridor. This large-scale fiscal commitment has facilitated the establishment of specialized research centers and heritage parks, effectively transforming the prehistoric settlement into a multifaceted platform for cultural transmission. By integrating systematic excavations with industrial revitalization, these initiatives provide a unique opportunity to examine how the transition from archaeological data to tangible heritage assets influences contemporary audience engagement.

Currently, the Majiayao Village artisans attempt to reconcile traditional techniques with contemporary market demands, creating a hybrid space where museums, workshops, and virtual exhibitions coexist. However, existing academic discourse remains largely confined to the domains of archaeology and art history, frequently overlooking the interactive mechanisms between exhibition strategies and public reception. This study addresses several critical research gaps. First, it evaluates how different exhibition modalities—ranging from static displays of ontological value to digital immersions—impact the public's understanding of cultural complexity. Second, it explores the role of experiential design in fostering emotional resonance and cultural identity among diverse audiences. Finally, the research examines how perceptual discrepancies among stakeholders influence the strategic pathways selected for heritage transmission.

To investigate these dimensions, the study adopts an exploratory mixed-methods approach. The qualitative phase involved in-depth interviews with ten key stakeholders, including curators from the Linjia Culture and Tourism Bureau, master inheritors, and specialized scholars. These dialogues provided a foundational understanding of the challenges facing transmission and the criteria for effective experience design. Subsequently, the quantitative phase utilized these insights to develop a structured survey for visitors at the Majiayao Research and Exhibition Center. Data analysis employs factor analysis and regression modeling to identify the causal relationships between experience design and transmission efficacy, thereby providing a robust empirical basis for future heritage policy.

By constructing an integrated framework of display, experience, and efficacy, this research contributes to both the theoretical expansion of heritage studies and the practical optimization of cultural policies. It offers a viable pathway for aligning the preservation of ancient crafts with the socioeconomic needs of contemporary society, facilitating the transformation of Majiayao pottery from a regional artifact into a globally recognized cultural legacy.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Scenes Theory

Scenes Theory provides a holistic framework for analyzing how the cultural atmosphere of a specific locale influences social behavior and value identification. Originally conceptualized by Terry Clark and his research team, this theory posits that a scene is not merely a physical location but a synergistic combination of neighborhood amenities, cultural activities, and diverse lifestyles. By emphasizing the holistic cultural style over isolated artifacts, the theory allows researchers to examine how specific situational contexts facilitate the transmission of intangible values. The justification for borrowing this urban sociology framework in heritage studies lies in its capacity to treat Majiayao pottery not as a static museum specimen but as a dynamic cultural asset that requires a specific social environment for its continued relevance.

The application of Scenes Theory in the field of Intangible Cultural Heritage (ICH) has evolved from simple descriptive mapping to the reconstruction of daily life ecosystems. Contemporary scholars like Chen (2020) have

systematically integrated the theory into ICH protection by suggesting that effective transmission requires the return of heritage to its original social spaces. Furthermore, Liu (2023) expanded this perspective by arguing that scene-based protection involves creating environments where ICH can be practiced and re-created through active participation. While previous studies by Wan (2023) and Song (2022) have explored scenes within traditional sports and subsistence cultures, the focus has increasingly shifted toward digital empowerment and the expansion of experience spaces through augmented reality.

Despite its growing influence, existing research on Scenes Theory within the ICH domain faces significant challenges regarding theoretical adaptation and empirical validation. Most studies remain concentrated on theoretical construction and lack long-term tracking or systematic evaluation of specific case efficacy. A critical limitation involves the potential for theoretical misalignment when applying Western urban models to prehistoric Chinese ceramic heritage, particularly concerning the boundaries between collaborative innovation and the loss of cultural authenticity. Consequently, there is an urgent need for research that moves beyond conceptual definitions to provide empirical evidence of how reconstructed scenes facilitate deep psychological resonance and cognitive elevation among modern audiences.

TOE Framework

The Technology-Organization-Environment (TOE) framework, proposed by Tornatzky and Fleischer in 1990, suggests that the adoption of technical innovation is influenced by internal organizational conditions and external environmental factors rather than technical superiority alone. Technical functions shape organizational structures, while organizations internalize technology based on their resources and culture amid external institutional pressures.

Originally used for information technology, the framework has expanded to green innovation, smart manufacturing, and ICH digitalization. Cao and Su (2025) noted that digital technology empowers ICH through recording, communication, and innovation, though its efficacy depends on organizational and environmental factors. Zhang (2024) analyzed the advantages of motion capture in preserving traditional choreography, while Gui (2025) highlighted the role of digital platforms in collaborative storytelling. Zhang (2025) identified organizational innovation as key in specific cultural studies, and Zhang (2025) proposed an integrated organizational system.

However, the framework currently lacks sufficient inclusion of soft elements such as cultural sentiment and local knowledge. Furthermore, research has focused heavily on handicrafts, leaving a gap in studies regarding oral traditions or rituals that require living transmission.

Experiential Learning Theory

Experiential Learning Theory emphasizes learning through direct experience and reflection, viewing knowledge creation as a process of transforming experience rather than passive reception. Its application in heritage, rooted in Kolb's (1984) model, identifies a cycle involving concrete experience, reflective observation, abstract conceptualization, and active experimentation.

Scholars agree that ICH transmission is inherently embodied. Zhu (2024) used embodiment as a design principle for educational games to form bodily memories. Ma (2022) argued that effective experiential learning must reconstruct authentic cultural contexts to avoid losing vitality. In digital simulation, Tong (2025) and Wang (2020) used games and virtual reality to lower participation thresholds and stimulate interest. Gadhoke (2019) emphasized maintaining cultural agency in indigenous community learning to avoid exoticizing experiences.

Nevertheless, most research remains descriptive and lacks quantitative tools to evaluate long-term effects on cultural identity or skill mastery. There is also a need to balance digital enhancement with the risks of disembodiment and decontextualization.

Kolb Experiential Learning Cycle

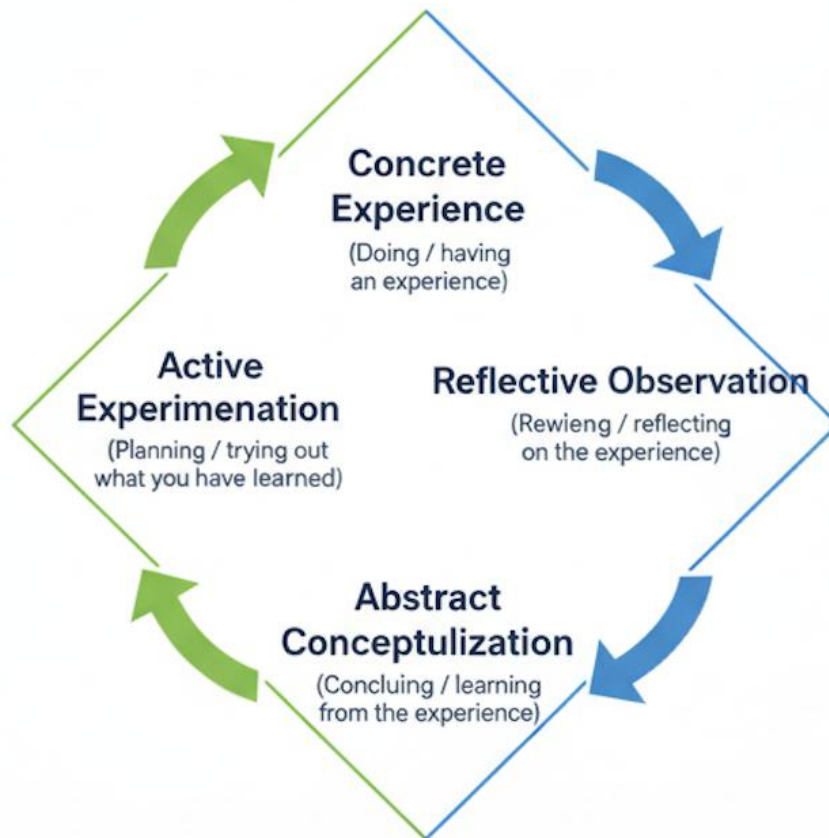


Figure 1. Kolb Experiential Learning Cycle

Evolution of ICH Exhibition

Research indicates that ICH exhibition has moved beyond presenting objects toward presenting people and processes. Static modes focusing on ontological value emphasize one-way information transmission. In contrast, living exhibitions emphasize interaction and situational construction, rooted in the Experience Economy theory of Pine and Gilmore (1999), which views personalized experience as central to modern consumption. This mode transforms audiences from passive viewers into active participants.

The shift in theoretical paradigms has driven innovation in exhibition practice. Kreps (2011) argued that traditional static models excel at showing material results but fail to convey tacit knowledge and cultural spirit. Living exhibitions address this by building a dynamic cultural field where inheritors demonstrate embodied knowledge, connecting skills with the natural environment and folk life. This pursuit ensures that ICH remains alive in the present, transitioning from information delivery to meaning sharing.

Majiayao Culture Communication Paradigms

Existing research on Majiayao culture indicates a paradigm shift towards a dual-integrated communication model: one that leverages high-precision digital visualization and interactive media to facilitate 'living diffusion' and enhance audience immersion, and another that employs a multi-stakeholder collaborative matrix—

comprising government-led initiatives, culture-tourism integration, and strategic social media engagement—to ensure the systematic preservation and contemporary resonance of this ancient heritage.

Conceptual Framework

The conceptual framework illustrates the causal pathways through which display modes and experiential design influence communication effectiveness. As shown in Figure 2, the model addresses the transition from external technological stimuli to internal psychological resonance within the context of Majiayao painted pottery.

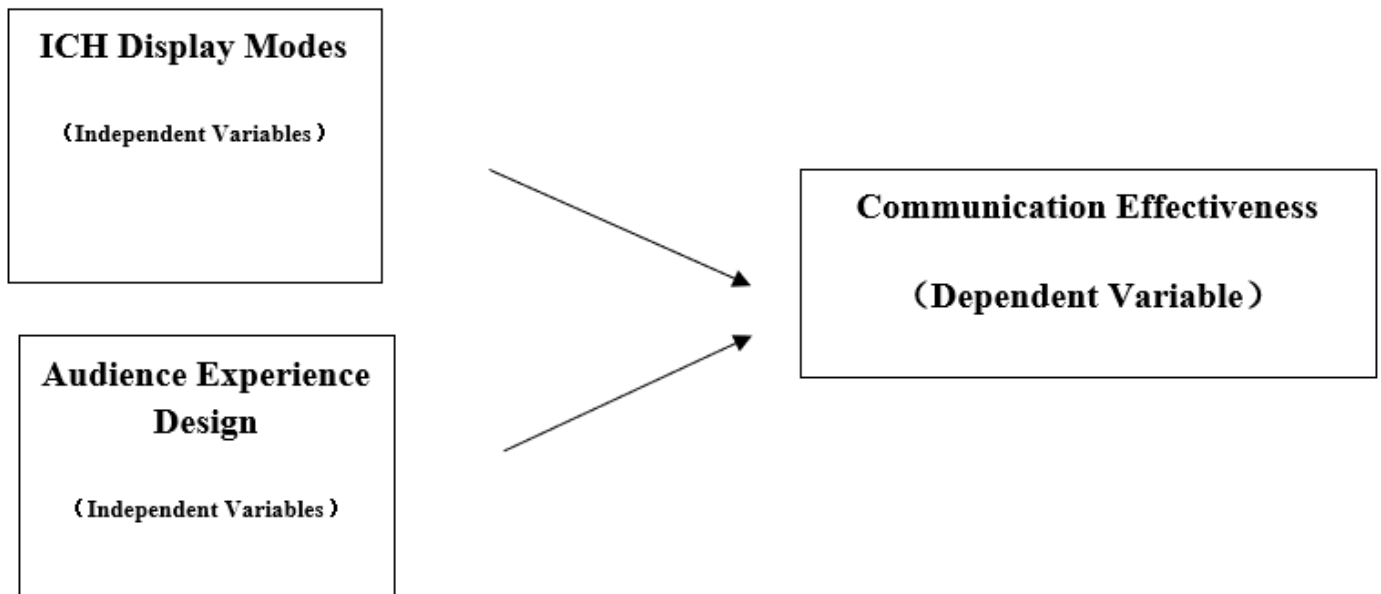


Figure 2. Triangular Framework of Variables

The independent variables comprise ICH Display Modes and audience experience design. To ensure the statistical validity of the structural equation modeling, these variables are operationalized as reflective constructs. The dependent variable, communication effectiveness, serves as the terminal construct and is measured by the increased willingness of audiences to disseminate heritage information and their consumption intentions.

Hypothesis Research

H1: Digital and living exhibition modes significantly enhance living transmission efficacy compared to static displays.

H2: The depth of experience design is positively correlated with transmission efficacy, with embodied participation enhancing immersion and social interaction driving word-of-mouth intention.

H3: Psychological transformation states, including cognitive understanding and emotional resonance, mediate the relationship between exhibition/experience and efficacy.

METHODOLOGY

Research Design

This study employs an exploratory sequential mixed-methods design, integrating qualitative stakeholder insights with CB-SEM and PLS-SEM quantitative analyses to systematically investigate and validate the transmission mechanisms of Majiayao painted pottery.

Quantitative Research

Sample

The target population consists of individuals who have directly engaged with Majiayao painted pottery displays or experiential activities. Data collection was conducted from August to November 2025 through on-site intercept and random invitation at the Lintao County Museum, the Majiayao Culture Research and Display Center, and various study tour locations. Screening questions were implemented to ensure respondents possessed basic experience with the heritage site. A total of 351 valid questionnaires were recovered, providing a robust sample for factor analysis, regression, and structural equation modeling.

Informed Consent

To uphold research ethics and ensure data quality, all participants were provided with comprehensive research disclosures prior to data collection. These disclosures covered the study's objectives, the nature of participation, potential risks and benefits, data utilization, anonymity measures, and the right to withdraw at any stage. Participation was predicated on "explicit consent", and all respondents were verified to be 18 years of age or older.

Data Collection

Integrating qualitative findings with the theoretical frameworks of Kreps, Kolb, and Giaccardi, this study developed a rigorous measurement instrument comprising four thematic sections and 66 items on a five-point Likert scale to facilitate subsequent structural equation modeling of ICH display modes, experience design, and communication effectiveness.

Ethical Review

The research strictly adhered to the principles of minimal risk and data minimization, collecting only information pertinent to the research questions. Sensitive personal identifiers were excluded. All data were anonymized during storage and analysis, with access restricted to the research team. The study protocol and data management plan were formally reviewed and approved by the Academic Committee of Lanzhou University of Finance and Economics (Reference: LZUFE10741-2025-0601).

Questionnaire Design

The measurement instrument was developed by synthesizing qualitative findings with the theoretical frameworks of Kreps, Kolb, and Giaccardi to ensure content validity and methodological transparency. This process operationalizes ICH display modes, experience design stages, and communication effectiveness through a rigorous cross-validation of literature and exploratory interviews. The final questionnaire comprises four thematic sections encompassing 8 demographic items, 22 perception items, 22 experience design items, and 14 communication items, all of which utilize a five-point Likert scale to facilitate subsequent structural equation modeling.

Pretest

A pilot study was conducted with 30 valid responses to verify item clarity and internal consistency. Reliability analysis was performed via SPSS, yielding an overall Cronbach's α of 0.877, indicating high internal consistency and confirming the instrument's suitability for formal data collection.

Instrument Development

This study operationalized three measurement dimensions namely intangible cultural heritage display, public experience, and communication paradigm identity into a five-point Likert scale based on key interview themes. Prior to formal testing, pilot data verified item intelligibility and internal consistency to establish a robust measurement foundation. Statistical analysis and data cleaning were primarily conducted using SPSS while structural equation modeling and robustness checks were performed via AMOS and SmartPLS respectively.

Qualitative Analysis

Sample

The qualitative phase employed a combination of purposive and information-rich case sampling to include stakeholders with critical knowledge of the Majiayao pottery value chain. Interviews were conducted in Lintao between June and September 2025 at locations including the Lintao County Museum and local workshops. Semi-structured interviews were completed with 10 participants, representing a spectrum of roles: 3 government tourism officials, 3 curators and educators, 2 representative inheritors, and 2 university scholars specializing in heritage and governance. All participants were informed of the voluntary nature of the study and the anonymity of the recorded data.

Validity Analysis

To mitigate researcher bias, a dual-path member-checking process was employed. Participants were provided with interview summaries and thematic frameworks to verify the accuracy of factual statements and professional terminology. This was supplemented by data triangulation, where interview data were cross-referenced with field observations and archival records. The analysis also actively sought out negative cases to refine thematic boundaries and ensure a balanced narrative.

Interview Instrument

The interview protocol was designed to explore the challenges, experiential needs, and evaluation criteria of Majiayao living inheritance. Researchers maintained field memos to record contextual information and emerging conceptual links during the transcription process. Thematic analysis was then applied to provide a credible and systematic extraction of findings.

Table 1 Profile of Interviewees and Interview Overview

Code	Interviewee Identity (Anonymized)	Stakeholder Type	Time	Interview Mode	Duration (Approx.)
P1	Deputy Director, Linyao County Bureau of Culture and Tourism; ICH Officer	Government Agency	September 2025	Face-to-face	78 minutes
P2	Project Executive Officer, Linyao County Bureau of Culture and Tourism	Government Agency	September 2025	Online interview	56 minutes
P3	Chief Curator, Majia Kiln Ceramics Research and Exhibition Center	Museum Institution	September 2025	Face-to-face	72 minutes
P4	Head of Research and Education Programs, Exhibition Center	Museum Institution	September 2025	Face-to-face	68 minutes
P5	Exhibition Center Docent	Museum Institution	September 2025	Online interview	78 minutes
P6	Provincial-level Representative ICH Inheritor	Heritage Bearer	June 2025	Face-to-face	83 minutes

P7	Township Craft Workshop ICH Inheritor	Heritage Bearer	June 2025	Face-to-face	83 minutes
P8	Scholar in Cultural Heritage Protection	University	September 2025	Online interview	78 minutes
P9	Scholar in Rural and Local Development Studies	University	September 2025	Online interview	66 minutes
P10	Scholar in Transmission Chains and Cultural Governance	University	September 2025	Online interview	65 minutes

Data analysis

Data were analyzed using SPSS and AMOS through a multi-stage statistical approach. This included descriptive statistics, normality testing, and discriminant analysis. To ensure the robustness of the conceptual framework, reliability analysis, CFA, and Pearson correlations were conducted prior to the implementation of Structural Equation Modeling (SEM) to investigate the structural relationships among variables.

Descriptive statistics analysis

Descriptive statistics serve to condense raw data into intelligible summaries that delineate the central tendency, variability, and distributional morphology of the sample, thereby providing the essential empirical groundwork for subsequent inferential analysis.

The final sample comprised 351 respondents. Regarding demographic distribution, the sample exhibited a predominantly female composition ($M = 1.459$, $SD = 0.499$), with a slight right skew ($Skewness = 0.167$) given the coding (1 for female; 2 for male). The age distribution ($M = 2.345$, $SD = 1.354$) was positively skewed ($Skewness = 1.017$), suggesting a pronounced concentration of younger cohorts. Educational attainment was primarily centered between high school and undergraduate levels ($M = 1.766$, $Mdn = 2$), with a negative kurtosis (-0.817) indicating a relatively platykurtic distribution compared to a normal curve.

While ceramic production experience was largely limited to basic trials ($M = 2.011$), cultural venue visitation frequency ($M = 2.345$, $Mdn = 3$) showed a slight negative skew (-0.148), indicating that frequent visitors outnumbered infrequent ones. Overall, the Coefficient of Variation (CV) analysis highlights that information channel diversity (0.728) and age (0.577) represent the primary sources of sample variance, whereas gender (0.342) remained the most stable. These distributional characteristics and internal consistency metrics confirm the data's robustness for subsequent inferential analysis.

Table 2 Overall description of the results

Variable	N	Max	Min	Mean	SD	Mdn	Var	Kurt.	Skew.	CV
1. Your gender:	351	2	1	1.459	0.499	1	0.249	-1.984	0.167	0.342
2. What is your age?	351	6	1	2.345	1.354	2	1.832	0.118	1.017	0.577
3. What is your highest education level?	351	3	1	1.766	0.674	2	0.454	-0.817	0.318	0.381
4. What is the correlation between your occupation field and culture, art and creative industries?	351	3	1	1.986	0.794	2	0.631	-1.414	0.025	0.4
5. Before taking part in this survey, how well did you know Majiayao painted pottery?	351	4	1	2.014	0.902	2	0.814	-0.6	0.512	0.448

6. What channels did you learn about Majiayao painted pottery before? (Multiple choices are allowed)	351	63	1	20.84	15.17	20	230.134	-0.15	0.722	0.728
7. Have you ever had any experience in ceramic production? (Not limited to Majiayao painted pottery)	351	3	1	2.011	0.763	2	0.583	-1.28	-0.019	0.38
8. How often do you visit museums, non-legacy museums or related cultural exhibitions every year?	351	4	1	2.345	1.052	3	1.107	-1.368	-0.148	0.449

Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) is a deductive statistical approach utilized to verify the extent to which a pre-specified measurement model aligns with the observed data, the empirical results of which are summarized below to establish the study’s reliability and validity.

The results of the covariance analysis reveal significant positive associations among the latent constructs. Specifically, strong correlations were observed between ICH Display Modes and Public Experience Design (standardized estimate = 0.807), as well as between ICH Display Modes and Inheritance Efficacy (standardized estimate = 0.687). Furthermore, a particularly robust relationship was found between Public Experience Design and Inheritance Efficacy, with a standardized estimate of 0.894, indicating a high degree of interrelatedness between these dimensions.

Table 3 Factor Covariances

Factor A	Factor B	Unstd.	SE	z	P	Std.
ICH Display Modes	Audience Experience Design	0.226	0.028	8.069	0.000***	0.807
ICH Display Modes	Communication Effectiveness	0.193	0.025	7.679	0.000***	0.687
Audience Experience Design	Communication Effectiveness	0.248	0.025	10.048	0.000***	0.894

Note: *** $p < .01$, ** $p < .05$, * $p < .10$.

As evidenced by the CFA results, the measurement model demonstrates robust indicator reliability, with standardized factor loadings (λ) for ICH Display Modes, Public Experience Design, and Inheritance Efficacy primarily exceeding the 0.70 threshold at the $p < .001$ level. Regarding discriminant validity, the \sqrt{AVE} for most constructs surpassed their inter-construct correlations, although a strong conceptual synergy was observed between Display Modes and Experience Design ($r = .762$), which slightly exceeds the \sqrt{AVE} of the former (0.759). Conversely, Inheritance Efficacy remains statistically independent, showing negligible correlations with other latent factors. Overall, these distributional characteristics and factor structures provide a rigorous empirical foundation for the subsequent hypothesis testing.

Table 4 Confirmatory Factor Analysis Results

Factor	Item	Unstd.	Std.	z	S.E.	P
ICH Display Modes	9. Static display allows me to clearly observe the shape, ornamentation and color of cultural relics.	1	0.564	-	-	-
		1.099	0.654	9.923	0.111	0.000***
		1.059	0.627	9.648	0.11	0.000***

<p>10. Detailed text description or audio guide of static display is very important for me to understand the historical background of the exhibits.</p> <p>11. The quiet and solemn atmosphere created by the static display helps me to focus on the cultural relics themselves.</p> <p>12. Only through static display, I can hardly imagine the specific functions of these objects in ancient society.</p> <p>13. The purely static display mode makes me feel that there is a sense of distance from the cultural relics, and the interaction is weak.</p> <p>14. Watching the inheritor's live demonstration can help me intuitively understand the complex process and core know-how of intangible cultural heritage skills.</p> <p>15. The live demonstration makes the static cultural relics "live" and greatly enhances the cultural appeal.</p> <p>16. Communicating with the inheritors during the live demonstration can significantly enhance my visit experience.</p> <p>17. Living demonstration can effectively inspire me to explore the historical story behind this skill.</p> <p>18. Digital interactive technologies such as virtual touch and rotation can help me to deeply understand the structure of cultural relics.</p> <p>19. Immersive digital scenes such as historical environment restoration can make me feel the era in which cultural relics are located more vividly.</p> <p>20. Interesting digital interactive devices such as virtual lines can stimulate my interest in learning and make the process of knowledge acquisition more attractive.</p> <p>21. Overfancy digital effects sometimes distract me from the intrinsic value and aesthetic feeling of cultural relics.</p> <p>22. I think the organic combination of static display, live demonstration and digital experience is the most ideal way to display.</p> <p>23. It is very important for me to provide touchable imitations or material samples in the exhibition space.</p> <p>24. Cross-border comparison between the exhibition content and modern design or</p>	1.019	0.607	9.433	0.108	0.000***
	1.026	0.616	9.527	0.108	0.000***
	1.199	0.798	11.243	0.107	0.000***
	1.257	0.86	11.724	0.107	0.000***
	1.25	0.854	11.679	0.107	0.000***
	1.19	0.848	11.636	0.102	0.000***
	1.21	0.878	11.856	0.102	0.000***
	1.223	0.871	11.806	0.104	0.000***
	1.24	0.864	11.753	0.106	0.000***
	0.969	0.634	9.717	0.1	0.000***
	1.145	0.827	11.474	0.1	0.000***
	1.178	0.847	11.626	0.101	0.000***
	1.136	0.826	11.468	0.099	0.000***
	1.062	0.834	11.528	0.092	0.000***
	1.167	0.841	11.585	0.101	0.000***
	0.901	0.737	10.72	0.084	0.000***
	1.019	0.794	11.206	0.091	0.000***
	0.947	0.72	10.57	0.09	0.000***
	0.942	0.765	10.964	0.086	0.000***

	<p>contemporary art can help me understand its aesthetic value.</p> <p>25. Telling the discovery and research of cultural relics or their connection with the life of the ancients through multimedia short stories can deeply attract me.</p> <p>26. Setting up AR scanning code recognition based on mobile phone to obtain extended information will increase my pleasure in visiting.</p> <p>27. I recognize the use of data visualization charts in the exhibition to present academic information such as the evolution and distribution area of decorative patterns.</p> <p>28. I think it is more attractive to restore ancient scenes, such as the life scenes of ancestors, than to display artifacts alone.</p> <p>29. Setting the audience's perception sharing wall at the end of the exhibition can enrich my exhibition experience.</p> <p>30. Providing customized tour route recommendations will make me feel more intimate.</p>					
<p>Audience Experience Design</p>	<p>31. I am very willing to participate in hands-on experience activities such as "making pottery blanks by myself" or "simulating painted pottery patterns".</p> <p>32. Experiencing the pottery-making process personally can make me have a deeper admiration for the wisdom and skill hardships of the ancients.</p> <p>33. Experiencing activities can transform abstract intangible knowledge into my personal memory, which makes the impression more profound.</p> <p>34. A successful hands-on experience will strongly stimulate my interest in visiting the culture again or learning more about it.</p> <p>35. I think it is worthwhile to pay a reasonable fee for the in-depth and guided cultural experience workshop.</p> <p>36. In the experience activities, clear and easy-to-understand on-site guidance or teaching demonstration is very important to me.</p> <p>37. It is best for the experience project to provide choices of different difficulty levels to adapt to participants with different foundations.</p> <p>38. Appropriate gamification or challenging elements in the experience, such as getting a</p>	<p>1</p> <p>1.07</p> <p>1.043</p> <p>1.067</p> <p>1.009</p> <p>1.008</p> <p>1.044</p> <p>1.049</p> <p>1.033</p> <p>1.08</p> <p>1.067</p> <p>1.145</p> <p>1.062</p> <p>1.037</p> <p>1.034</p> <p>1.024</p> <p>1.06</p> <p>0.986</p> <p>0.998</p> <p>1.006</p> <p>1.039</p> <p>0.887</p>	<p>0.785</p> <p>0.815</p> <p>0.798</p> <p>0.823</p> <p>0.798</p> <p>0.829</p> <p>0.821</p> <p>0.838</p> <p>0.817</p> <p>0.835</p> <p>0.746</p> <p>0.783</p> <p>0.764</p> <p>0.802</p> <p>0.758</p> <p>0.833</p> <p>0.828</p> <p>0.774</p> <p>0.794</p> <p>0.811</p> <p>0.794</p> <p>0.737</p>	<p>-</p> <p>17.417</p> <p>16.937</p> <p>17.64</p> <p>16.952</p> <p>17.82</p> <p>17.595</p> <p>18.085</p> <p>17.493</p> <p>18.015</p> <p>15.551</p> <p>16.538</p> <p>16.008</p> <p>17.066</p> <p>15.853</p> <p>17.934</p> <p>17.786</p> <p>16.295</p> <p>16.829</p> <p>17.301</p> <p>16.824</p> <p>15.3</p>	<p>-</p> <p>0.061</p> <p>0.062</p> <p>0.061</p> <p>0.06</p> <p>0.057</p> <p>0.059</p> <p>0.058</p> <p>0.059</p> <p>0.06</p> <p>0.069</p> <p>0.069</p> <p>0.066</p> <p>0.061</p> <p>0.065</p> <p>0.057</p> <p>0.06</p> <p>0.061</p> <p>0.059</p> <p>0.058</p> <p>0.062</p> <p>0.058</p>	<p>-</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p> <p>0.000***</p>

	<p>badge for completing a task, can increase my participation pleasure.</p> <p>39. Being able to bring home the fruits of experience activities, such as pottery made by myself, will significantly enhance my satisfaction.</p> <p>40. The environmental design of the experience space, such as lighting, music and decoration, should fully reflect the cultural characteristics and create an immersive atmosphere.</p> <p>41. I prefer the experience form of small groups in order to get more guidance opportunities.</p> <p>42. I hope that the experience activities can include teamwork and promote communication among participants.</p> <p>43. After the experience activities, I will provide online communities such as WeChat group for exchange and sharing, and I will be willing to join.</p> <p>45. I think it is very necessary to incorporate non-legacy experience activities into the curriculum system of quality education in primary and secondary schools.</p> <p>44. Providing online preview materials such as short video introductions will make the offline experience more effective.</p> <p>46. It is of great value to design a parent-child intangible experience project for parents and children to work together.</p> <p>47. It is a good way to deeply inherit the systematic short-term courses of non-legacy skills for the public.</p> <p>48. It is a convenient and effective way to provide online intangible experience courses with supporting materials.</p> <p>49. Holding small, low-cost workshops on non-legacy experience at community cultural centers on a regular basis is conducive to cultural communication.</p> <p>50. Experience activities should emphasize the cognition of raw materials and the spread of environmental protection concepts.</p> <p>51. I expect the experience project to lead us to think about the possibility of combining intangible cultural heritage with modern life.</p> <p>52. It is very important for me to make an appointment and sign up for the experience activities simply and quickly.</p>					
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Communication Effectiveness	53. I think the use of short video platforms such as Tik Tok and video number for creative communication is the key to attract young audiences' attention.	1	0.803	-	-	-
		0.999	0.815	17.871	0.056	0.000***
		1.073	0.809	17.687	0.061	0.000***
		1.028	0.806	17.587	0.058	0.000***
	54. Well-made and story-telling non-legacy documentaries or TV programs can effectively enhance the public's cultural awareness.	1.042	0.819	18	0.058	0.000***
		1.02	0.797	17.314	0.059	0.000***
		1.065	0.856	19.195	0.056	0.000***
	55. The recommendation of a blogger or domain expert (KOL) that I admire will increase my willingness to know something.	1.05	0.848	18.937	0.055	0.000***
		1.051	0.841	18.705	0.056	0.000***
		1.044	0.84	18.681	0.056	0.000***
	56. It is an efficient communication strategy to organically integrate intangible elements into popular cultural products such as film and television dramas, cartoons and video games.	1.013	0.829	18.33	0.055	0.000***
		1.037	0.838	18.595	0.056	0.000***
	57. I agree with the concept of "use is inheritance" and support the integration of intangible aesthetics into modern daily life through well-designed cultural and creative products.					
	58. After a satisfying unforgettable experience, I am happy to share my photos and feelings on social media.					
59. I will take the initiative to orally recommend outstanding intangible exhibitions or activities to my family or friends around me.						
60. I think encouraging and displaying the intangible experience content (UGC) created by the public can form a good communication effect.						
61. Non-genetic broadcasting should pay attention to digging and telling its close connection with local communities and people's lives.						
62. It is very important to carry out multilingual and cross-cultural non-genetic broadcasting for international audiences.						
63. Brand building and image building of intangible projects, such as designing IP image, are very important for expanding influence.						
64. Holding large-scale cultural activities such as cultural festivals and design weeks is an effective platform for centralized display and dissemination of intangible cultural heritage.						

Note: *** $p < .01$, ** $p < .05$, * $p < .10$.

Pearson Correlation Analysis

The Pearson correlation coefficient (r) is a bivariate parametric statistic used to measure the strength and direction of the linear relationship between two continuous variables.

The Pearson correlation analysis demonstrates that all constructs—Non-material Cultural Heritage (NCH) Exhibition Mode, Public Experience Design, and Inheritance Effectiveness—are significantly and positively intercorrelated ($p < 0.001$). The correlation coefficients range from 0.64 to 0.868, indicating moderate to high degrees of linear association among the variables. Notably, the strongest correlation is observed between Public Experience Design and Inheritance Effectiveness ($r = 0.868$), reflecting a robust synergy between these dimensions. While these significant associations provide preliminary support for the theoretical model, the high correlation magnitude (exceeding 0.85) between certain variables suggests that potential multicollinearity should be carefully scrutinized in subsequent structural testing.

Table 5 Discriminant Validity: Pearson Correlations and Square Roots of AVE

	ICH Display Modes	Audience Experience Design	Communication Effectiveness
ICH Display Modes	0.759		
Audience Experience Design	0.762(0.000***)	0.798	
Communication Effectiveness	0.64(0.000***)	0.868(0.000***)	0.825

Note: *** $p < .01$, ** $p < .05$, * $p < .10$.

The diagonal elements are the square roots of the AVE for each construct.

Item discrimination analysis

Item discrimination analysis is a critical psychometric procedure used to evaluate the extent to which individual items on a scale can effectively distinguish between respondents with different levels of the measured construct. It ensures that each item contributes to the scale’s sensitivity by showing significantly different response patterns between high-scoring and low-scoring participants.

Following the standard Critical Ratio (CR) method, the total scores were ranked to identify the high-score group (top 27%) and the low-score group (bottom 27%). An independent sample t -test was then conducted to compare the mean differences between these two extreme groups across all 46 items (Q9 to Q64).

The results indicate that all 46 items exhibited exceptional discriminatory power, with p -values for every item being less than 0.001. The absolute t -values (Critical Ratios) ranged from 19.908 to 28.912, well above the required threshold for statistical significance. For instance, Item 55 showed the highest degree of discrimination ($t = -28.912, p < 0.001$), while even the lowest t -value (Item 15, $t = -19.908, p < 0.001$) remained highly significant. These findings confirm that all items are highly sensitive and capable of differentiating the diverse perceptions of the respondents, warranting the retention of all items in the scale.

Table 6 Results of Item Discrimination Analysis

Results of Item Discrimination Analysis					
	Groups (<i>Mean ± SD</i>)			t	p
	0%-27%	27%-73%	73%-100%		
9. Static display allows me to clearly observe the shape, ornamentation and color of cultural relics.	2.905±1.001	4.062±0.242	5.0±0.0	-20.401	0.000***

10. Detailed text description or audio guide of static display is very important for me to understand the historical background of the exhibits.	2.905±0.864	4.019±0.136	5.0±0.0	-23.635	0.000***
11. The quiet and solemn atmosphere created by the static display helps me to focus on the cultural relics themselves.	2.916±0.871	4.037±0.19	5.0±0.0	-23.321	0.000***
12. Only through static display, I can hardly imagine the specific functions of these objects in ancient society.	2.895±0.831	4.031±0.174	5.0±0.0	-24.686	0.000***
13. The purely static display mode makes me feel that there is a sense of distance from the cultural relics, and the interaction is weak.	2.853±0.743	4.031±0.174	5.0±0.0	-28.158	0.000***
14. Watching the inheritor's live demonstration can help me intuitively understand the complex process and core know-how of intangible cultural heritage skills.	3.242±0.808	4.118±0.324	5.0±0.0	-21.194	0.000***
15. The live demonstration makes the static cultural relics "live" and greatly enhances the cultural appeal.	3.347±0.809	4.161±0.369	5.0±0.0	-19.908	0.000***
16. Communicating with the inheritors during the live demonstration can significantly enhance my visit experience.	3.316±0.762	4.186±0.391	5.0±0.0	-21.554	0.000***
17. Living demonstration can effectively inspire me to explore the historical story behind this skill.	3.411±0.751	4.174±0.38	5.0±0.0	-20.634	0.000***
18. Digital interactive technologies such as virtual touch and rotation can help me to deeply understand the structure of cultural relics.	3.432±0.724	4.174±0.38	5.0±0.0	-21.108	0.000***
20. Interesting digital interactive devices such as virtual lines can stimulate my interest in learning and make the process of knowledge acquisition more attractive.	3.305±0.745	4.118±0.324	5.0±0.0	-22.177	0.000***
21. Overfancy digital effects sometimes distract me from the intrinsic value and aesthetic feeling of cultural relics.	3.074±0.688	4.081±0.273	5.0±0.0	-27.293	0.000***
22. I think the organic combination of static display, live demonstration and digital experience is the most ideal way to display.	3.4±0.675	4.211±0.409	5.0±0.0	-23.111	0.000***

23. It is very important for me to provide touchable imitations or material samples in the exhibition space.	3.316±0.657	4.124±0.331	5.0±0.0	-25.001	0.000***
24. Cross-border comparison between the exhibition content and modern design or contemporary art can help me understand its aesthetic value.	3.337±0.694	4.075±0.263	5.0±0.0	-23.372	0.000***
25. Telling the discovery and research of cultural relics or their connection with the life of the ancients through multimedia short stories can deeply attract me.	3.547±0.649	4.149±0.357	5.0±0.0	-21.831	0.000***
26. Setting up AR scanning code recognition based on mobile phone to obtain extended information will increase my pleasure in visiting.	3.379±0.717	4.13±0.338	5.0±0.0	-22.029	0.000***
27. I recognize the use of data visualization charts in the exhibition to present academic information such as the evolution and distribution area of decorative patterns.	3.516±0.543	4.099±0.3	5.0±0.0	-26.636	0.000***
28. I think it is more attractive to restore ancient scenes, such as the life scenes of ancestors, than to display artifacts alone.	3.505±0.617	4.161±0.369	5.0±0.0	-23.625	0.000***
29. Setting the audience's perception sharing wall at the end of the exhibition can enrich my exhibition experience.	3.4±0.608	4.106±0.308	5.0±0.0	-25.63	0.000***
30. Providing customized tour route recommendations will make me feel more intimate.	3.568±0.613	4.112±0.316	5.0±0.0	-22.768	0.000***
31. I am very willing to participate in hands-on experience activities such as "making pottery blanks by myself" or "simulating painted pottery patterns".	3.537±0.561	4.199±0.4	5.0±0.0	-25.405	0.000***
32. Experiencing the pottery-making process personally can make me have a deeper admiration for the wisdom and skill hardships of the ancients.	3.474±0.599	4.168±0.375	5.0±0.0	-24.852	0.000***
33. Experiencing activities can transform abstract intangible knowledge into my personal memory, which makes the impression more profound.	3.484±0.599	4.168±0.375	5.0±0.0	-24.665	0.000***
34. A successful hands-on experience will strongly stimulate my interest in	3.495±0.599	4.155±0.363	5.0±0.0	-24.486	0.000***

visiting the culture again or learning more about it.					
35. I think it is worthwhile to pay a reasonable fee for the in-depth and guided cultural experience workshop.	3.526±0.562	4.155±0.363	5.0±0.0	-25.56	0.000***
36. In the experience activities, clear and easy-to-understand on-site guidance or teaching demonstration is very important to me.	3.632±0.566	4.168±0.375	5.0±0.0	-23.568	0.000***
37. It is best for the experience project to provide choices of different difficulty levels to adapt to participants with different foundations.	3.558±0.614	4.155±0.363	5.0±0.0	-22.894	0.000***
38. Appropriate gamification or challenging elements in the experience, such as getting a badge for completing a task, can increase my participation pleasure.	3.568±0.577	4.161±0.369	5.0±0.0	-24.179	0.000***
39. Being able to bring home the fruits of experience activities, such as pottery made by myself, will significantly enhance my satisfaction.	3.589±0.61	4.186±0.391	5.0±0.0	-22.534	0.000***
40. The environmental design of the experience space, such as lighting, music and decoration, should fully reflect the cultural characteristics and create an immersive atmosphere.	3.526±0.633	4.143±0.351	5.0±0.0	-22.686	0.000***
41. I prefer the experience form of small groups in order to get more guidance opportunities.	3.305±0.685	4.124±0.331	5.0±0.0	-24.103	0.000***
42. I hope that the experience activities can include teamwork and promote communication among participants.	3.284±0.739	4.112±0.316	5.0±0.0	-22.632	0.000***
43. After the experience activities, I will provide online communities such as WeChat group for exchange and sharing, and I will be willing to join.	3.358±0.683	4.106±0.308	5.0±0.0	-23.439	0.000***
44. Providing online preview materials such as short video introductions will make the offline experience more effective.	3.4±0.675	4.106±0.308	5.0±0.0	-23.111	0.000***
45. I think it is very necessary to incorporate non-legacy experience activities into the curriculum system of quality education in primary and secondary schools.	3.558±0.648	4.168±0.375	5.0±0.0	-21.702	0.000***

46. It is of great value to design a parent-child intangible experience project for parents and children to work together.	3.558±0.52	4.155±0.363	5.0±0.0	-27.023	0.000***
47. It is a good way to deeply inherit the systematic short-term courses of non-legacy skills for the public.	3.505±0.563	4.168±0.375	5.0±0.0	-25.898	0.000***
48. It is a convenient and effective way to provide online intangible experience courses with supporting materials.	3.526±0.599	4.137±0.345	5.0±0.0	-23.995	0.000***
49. Holding small, low-cost workshops on non-legacy experience at community cultural centers on a regular basis is conducive to cultural communication.	3.537±0.58	4.13±0.338	5.0±0.0	-24.588	0.000***
50. Experience activities should emphasize the cognition of raw materials and the spread of environmental protection concepts.	3.558±0.52	4.186±0.391	5.0±0.0	-27.023	0.000***
51. I expect the experience project to lead us to think about the possibility of combining intangible cultural heritage with modern life.	3.484±0.616	4.149±0.357	5.0±0.0	-23.965	0.000***
52. It is very important for me to make an appointment and sign up for the experience activities simply and quickly.	3.621±0.488	4.211±0.409	5.0±0.0	-27.559	0.000***
53. I think the use of short video platforms such as Tik Tok and video number for creative communication is the key to attract young audiences' attention.	3.547±0.541	4.168±0.375	5.0±0.0	-26.159	0.000***
54. Well-made and story-telling non-legacy documentaries or TV programs can effectively enhance the public's cultural awareness.	3.547±0.5	4.161±0.369	5.0±0.0	-28.295	0.000***
55. The recommendation of a blogger or domain expert (KOL) that I admire will increase my willingness to know something.	3.411±0.536	4.186±0.391	5.0±0.0	-28.912	0.000***
56. It is an efficient communication strategy to organically integrate intangible elements into popular cultural products such as film and television dramas, cartoons and video games.	3.484±0.543	4.155±0.363	5.0±0.0	-27.203	0.000***

57. I agree with the concept of “use is inheritance” and support the integration of intangible aesthetics into modern daily life through well-designed cultural and creative products.	3.558±0.578	4.217±0.414	5.0±0.0	-24.307	0.000***
58. After a satisfying unforgettable experience, I am happy to share my photos and feelings on social media.	3.442±0.56	4.093±0.292	5.0±0.0	-27.137	0.000***
59. I will take the initiative to orally recommend outstanding intangible exhibitions or activities to my family or friends around me.	3.526±0.523	4.155±0.363	5.0±0.0	-27.479	0.000***
60. I think encouraging and displaying the intangible experience content (UGC) created by the public can form a good communication effect.	3.537±0.542	4.13±0.338	5.0±0.0	-26.309	0.000***
61. Non-genetic broadcasting should pay attention to digging and telling its close connection with local communities and people’s lives.	3.537±0.542	4.161±0.369	5.0±0.0	-26.309	0.000***
62. It is very important to carry out multilingual and cross-cultural non-genetic broadcasting for international audiences.	3.547±0.521	4.18±0.385	5.0±0.0	-27.164	0.000***
63. Brand building and image building of intangible projects, such as designing IP image, are very important for expanding influence.	3.6±0.554	4.161±0.369	5.0±0.0	-24.652	0.000***
64. Holding large-scale cultural activities such as cultural festivals and design weeks is an effective platform for centralized display and dissemination of intangible cultural heritage.	3.579±0.538	4.199±0.4	5.0±0.0	-25.768	0.000***

Note: *** $p < .01$, ** $p < .05$, * $p < .10$.

Structural Equation Mode (SEM)

Structural Equation Mode (SEM) is a multivariate statistical framework that integrates factor analysis and path analysis to simultaneously examine complex, multi-layered relationships between latent constructs and their observed indicators.

The structural equation model confirms the reliability and validity of the links between ICH Display Modes, Audience Experience, and Communication Effect, with all standardized factor loadings ($\lambda=0.564$ to 0.878) being statistically significant at the $P<0.001$ level. Results indicate that digital interactivity ($\lambda=0.878$) and immersive restoration ($\lambda=0.871$) are the primary drivers of display efficacy, while gamification ($\lambda=0.838$) and atmospheric design ($\lambda=0.835$) significantly enhance audience engagement. These factors ultimately facilitate organic

dissemination, most notably through oral recommendations ($\lambda=0.856$) and user-generated content ($\lambda=0.848$), validating a strategic pathway from technological mediation to socially-driven communication.

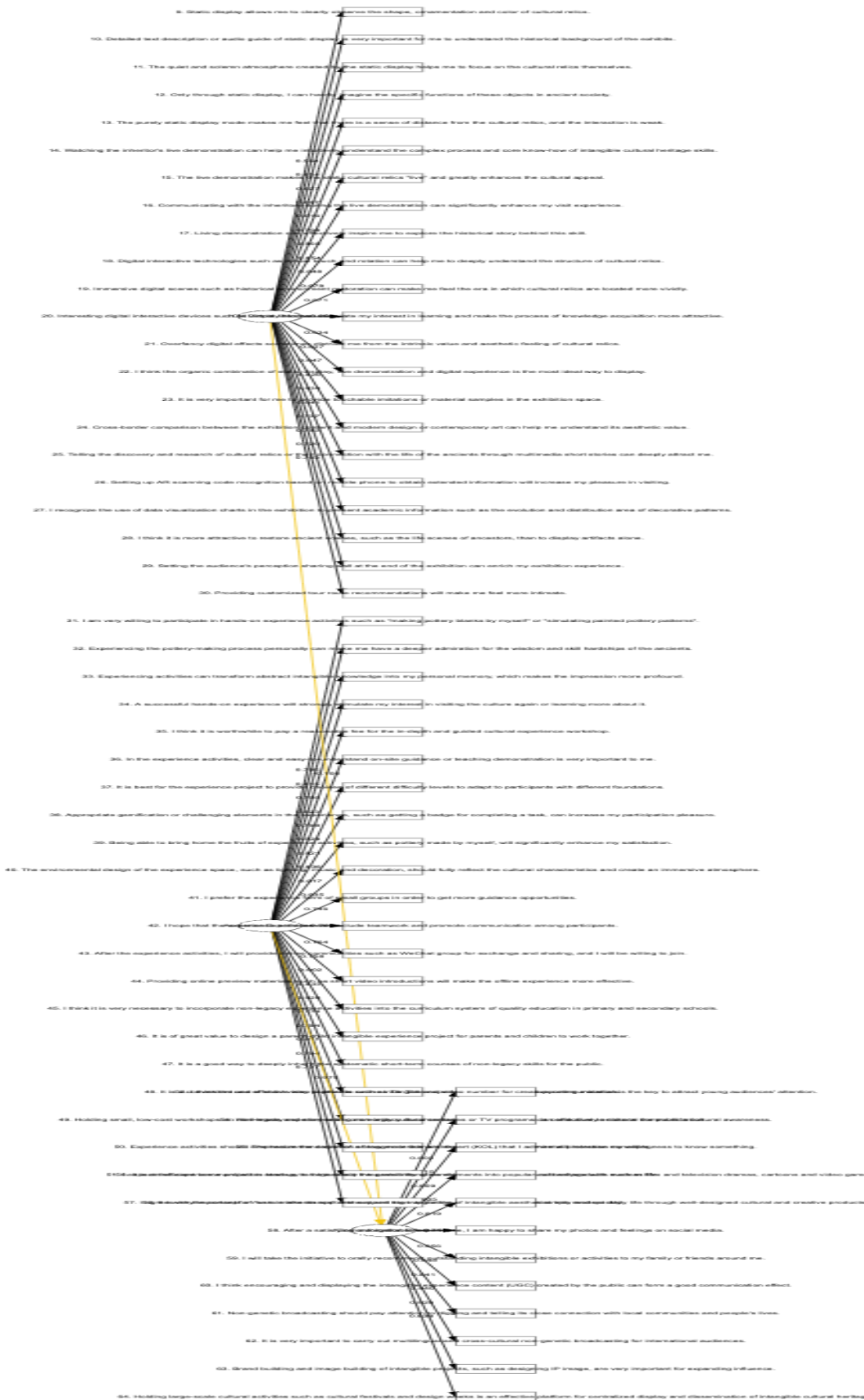


Figure 3. Structural Equation Model Path Diagram

Thematic Analysis of Interview Transcripts

Table 7 Hierarchical Thematic Coding of Interview Data

serial number	class A	secondary	three-level
1P1	Of course, the attraction of cultural tourism is important, but it has to be “mutually successful” with education: if you make your knowledge clear, it will be more attractive; But you overdo it for drainage, and the explanation later is very passive.	Education and communication promote each other.	Explain supply
1P2	We are now more inclined to “base the timeline and add local clues”. If you simply talk about staging and chronology, many people will drift and can’t get in; But if you tell the story completely, it’s easy to go astray.	Timeline bottoming and local clues	
1P3	The most common thing is to ask “what does this mean” and want a unique answer.	Implied Expectation and Unique Answer Preference	
1P4	Facts first, then common explanations, and finally remind the boundaries of evidence.	Boundary prompt three-stage	
1P5	The platform prefers strong conclusions, but it should prompt consensus/possible explanation/controversy.	Uncertainty expression	
1P6	Leave “source” and “further entrance” in the short content.	Provenance and entrance reservation	
2P1	Online is “shorter and brighter”, while offline is “systematic and stable”.	Division of labor between online entrance and offline precipitation	Scene undertaking
2P2	It's hot online but it doesn't take people offline, and the entrance information is unclear.	Missing diversion interface	
2P3	Can he say it after reading a point? Just saying that it looks good means that there is no teaching method.	Repeatability test comprehension	
2P4	Finally, we must let him speak a word. If he can't speak it, it's basically a waste of time.	Learning exit settings	
2P5	The most important thing is to correct mistakes, which is very simple without explaining the difficulties.	Error correction feedback mechanism	
2P6	The precipitation output cannot be shared, and the reflux lacks a template.	Missing reflow template	
3P1	Local work is very realistic, and many times it is “as soon as the project arrives”.	Project rhythm	Collaborative governance
3P2	What is really difficult is to leave the mechanism behind: material library, curriculum system and teaching staff.	Mechanism precipitation gap	
3P3	We should go over the foreign cooperation again, preferring to be conservative rather than conclude the speculation.	External control process	

3P4	Person-times, times and exposure are not equal to inheritance.	Index mismatch	
3P5	I'd like to see if I want to come again and if I can say two or three words.	Review and retelling index	
3P6	It will definitely be misleading to "finish" an online clip in three minutes.	Slice propagation compression evidence	

DISCUSSION AND CONCLUSIONS

Research Significance

This study develops an integrated framework that links heritage exhibition strategies, experiential learning, and the evaluation of intangible cultural heritage transmission to explain how heritage protection can shift from static preservation toward dynamic social integration. Using Majiayao painted pottery as a case study, the findings demonstrate that participatory and digitally supported exhibition modes can translate archaeological value into contemporary cultural identity. By strengthening cognitive engagement and emotional resonance, experience oriented exhibition design encourages audiences to move from passive observation to active support for heritage transmission. The results provide practical implications for policymakers and practitioners by highlighting how optimized exhibition planning and resource allocation can balance cultural value with sustainable economic development.

Discussion

Empirical analysis confirms that exhibition modes and experience design operate as key external drivers of transmission efficacy. Digital and living exhibitions enhance immersion and understanding, while psychological processes such as cognitive comprehension and emotional identification mediate the relationship between exhibition stimuli and transmission outcomes. In addition, moderating effects of audience characteristics indicate that effective heritage communication requires segmented strategies tailored to age and prior knowledge. These findings emphasize that successful heritage display depends on aligning technological tools with audience centered experience design.

Research Limitations

Several limitations should be acknowledged. The cross sectional design restricts strong causal inference, and the sample, largely drawn from visitors to a specialized research center, may involve selection bias. The geographic and thematic focus on painted pottery exhibitions also limits the generalizability of the framework to other forms of intangible cultural heritage. Furthermore, qualitative interpretation may be influenced by researcher positionality and the adopted coding framework.

Future Research

Future studies should employ longitudinal or experimental designs to strengthen causal claims and expand sampling across regions and heritage categories to test external validity. Incorporating multiple analytical perspectives and independent coders would further enhance transparency and reliability in qualitative analysis.

Concluding Summary

Overall, the study shows that heritage exhibition should extend beyond visual display to foster a progression from participatory experience to cognitive understanding, identity formation, and sustained transmission behavior. By articulating a testable exhibition experience transmission mechanism, this research provides a

foundation for developing replicable evaluation tools and optimization strategies for Majiayao pottery and related heritage initiatives.

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