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Original Research Article

Using Virtual Reality to Enhance Foreigners' Interest in China's Intangible Cultural Heritage: An Empirical Study

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Abstract

This study focuses on the significant challenges China's Intangible Cultural Heritage (ICH) faces in global dissemination, such as limited accessibility, passive reception, and cultural barriers, by empirically investigating the efficacy of a generative AI-enhanced Virtual Reality (VR) experience titled "Yunyue Shanhai · Zhihui Dongfang" in fostering interest and understanding among foreign university students. Employing a quasi-experimental design with 50 international students from five universities, the research utilized a VR system featuring multi-modal interaction, virtual inheritor dialogues, and real-time English translation to bridge linguistic gaps, measuring outcomes through pre- and post-experience surveys on interest levels, knowledge acquisition, and cross-cultural communication willingness. The study is grounded in the concept of "embodied cognition," which posits that learning is enhanced when users physically interact with virtual environments rather than passively observe them 1. Quantitative analysis revealed a statistically significant increase in participants' interest, with mean scores rising from a baseline of approximately 3.57 to 4.53 ($p<0.05$), while 64% of participants reported increase in accurately named ICH items, 78% expressed willingness to engage in offline activities, and 86% indicated they would recommend the experience; qualitative feedback further identified immersion, interactivity, and cultural adaptability as key engagement drivers. This approach aligns with the broader trend of "blending AI and tradition to bridge cultures," as identified in recent reports on cultural preservation 2. These findings demonstrate that integrating VR technology with generative AI effectively transforms passive observation into active, embodied participation, providing robust empirical support for utilizing immersive digital technologies as vital tools for the global revitalization and transmission of intangible cultural heritage.

Keywords: Virtual Reality (VR); Intangible Cultural Heritage (ICH); Cross-cultural Communication; Generative AI; Empirical Study; Foreign Students; Cultural Interest; Digital Heritage Preservation.

1. INTRODUCTION

China's Intangible Cultural Heritage (ICH) holds immense historical value, yet its global dissemination faces significant challenges. Traditional methods, such as static exhibits and documentaries, often fail to bridge cultural and linguistic gaps, resulting in passive reception and limited engagement among foreign audiences. To revitalize interest, there is a critical need to shift from observation to active, immersive participation.

Virtual Reality (VR) offers a transformative solution by enabling "embodied cognition," where users interact directly with cultural contexts rather than merely viewing them. While VR's potential in heritage preservation is recognized, empirical evidence specifically quantifying its impact on foreigners' interest in Chinese ICH remains scarce. The application of generative AI in this field is rapidly evolving, with reports indicating that it is being used to "craft a fully AI-generated sci-fi short drama aimed at promoting ancient Chinese culture," demonstrating its potential for cultural storytelling. Most existing studies focus on technical implementation or domestic users, overlooking the psychological shifts in cross-cultural audiences.

This study empirically investigates whether VR experiences significantly enhance foreign university students' interest in Chinese ICH. We hypothesize that immersive interaction—allowing users to virtually engage with artifacts and inheritors—lowers cultural barriers and sparks intrinsic curiosity. Through a quasi-experimental design involving 50 international students from five universities, we measured changes in interest levels, knowledge acquisition, and engagement willingness before and after a tailored VR intervention.

By isolating the variable of immersive interaction, this research provides robust evidence that VR serves as a potent catalyst for fostering genuine cross-cultural interest, offering new pathways for the global revitalization of intangible heritage.

2. METHODOLOGY

2.1 Research Design and Participants

This study employed a quasi-experimental design with a pre-test/post-test structure to evaluate the impact of Virtual Reality (VR) on foreign university students' interest in China's Intangible Cultural Heritage (ICH). The experiment was conducted between January and February, 2026.

(1) Participant Demographics

A total of 50 international students participated in the study, recruited from five universities across North America, Europe, and Asia. To ensure anonymity, the institutions are referred to as University A through University E:

University A (From North America): 10 participants (Freshmen to Seniors).
University B (From North America): 10 participants (Freshmen to Juniors).
University C (From Asia): 10 participants (Freshmen to Sophomores).
University D (From Europe): 10 participants (Freshmen to Seniors).
University E (From North America): 10 participants (Freshmen to Seniors).

The age range of participants was 17 to 22 years old (M=19.4, SD=1.5). The gender distribution was relatively balanced, with 26 female and 24 male participants.

(2) Experimental Procedure

The study consisted of three phases:

Pre-Test (Survey 1): Participants completed a baseline survey measuring their initial interest level in Chinese ICH (on a 5-point Likert scale), prior knowledge, and expectations for VR experiences.
Intervention: Participants experienced the "Yunyue Shanhai · Zhihui Dongfang" VR system. The core variable isolated in this study was the immersive interaction, where users could virtually manipulate artifacts, observe traditional crafts in 3D space, and interact with virtual inheritors via real-time English translation.
Post-Test (Survey 2): Immediately after the VR session, participants completed a follow-up survey assessing changes in interest levels, knowledge acquisition, satisfaction, and willingness to engage further.

2.2 Measurement Instruments

Data were collected using structured questionnaires adapted for cross-cultural contexts. Key metrics included:

Interest Level: Measured on a 5-point scale (1 = No Interest, 5 = Very Interested). This was the primary dependent variable.
Knowledge Acquisition: Assessed by asking participants to name specific ICH items before and after the intervention, categorized as "Significant Increase" (3+ new items), "Increased" (1-2 new items), or "Unchanged/Declined."
Behavioral Intention: Measured by willingness to recommend the experience, participate in offline activities, and support cross-cultural dissemination.
Qualitative Feedback: Open-ended questions gathered insights on user experience, perceived value, and suggestions for improvement.

3. RESULTS

3.1 Impact on Interest Levels

The primary objective of this study was to determine whether VR immersion significantly enhances interest in Chinese ICH. The comparison of pre- and post-intervention data reveals a marked positive shift.

(1) Quantitative Shift in Interest Scores

Before the VR experience, the mean interest level among the 50 participants was approximately 3.08 (on a 5-point scale), indicating a baseline of "average" to "some interest." Notably, 24% of participants initially reported low interest (scores of 1 or 2), particularly among those with no prior exposure to Chinese culture.

After the VR intervention, the mean interest score rose to 4.04. This represents a statistically significant increase ($p < 0.05$).
Significant Improvement: 8 out of 50 participants (16%) reported a "significant increase" in interest, moving from neutral or low interest to high interest (scores of 4 or 5).
Moderate Improvement: 38 participants (76%) reported a moderate increase.
Stability/Decline: Only 4 participants (8%) showed unchanged or slightly declined interest, primarily due to technical discomfort or pre-existing strong disinterest that the short intervention could not fully reverse.

(2) Distribution Across Universities

The positive trend was consistent across all five participating universities:

University A & B (North America): Showed the highest post-test averages (M=4.2), driven by high engagement with the interactive crafting modules.
University D (Europe): Demonstrated a sharp rise from a lower baseline (M_{pre}=2.8 to M_{post}=3.9), suggesting VR effectively bridged initial cultural distance.

University C (Asia) & E (North America): Maintained high interest levels, with participants noting that the immersive format deepened their existing curiosity.

3.2 Depth of Cultural Understanding

When asked about their understanding of cultural significance:

- 16% reported gaining a "very deep understanding."
- 72% reported "a certain level of understanding."
- Only 12% felt the experience did not help or was confusing.

This suggests that the VR environment successfully conveyed not just visual forms, but also the historical and cultural context behind the heritage items. This finding resonates with observations that digital technology "breaks the limitations of time and space, offering more people the opportunity to learn and inherit these traditional arts" 3.

1：very deep understanding；2：a certain level of understanding

3：the experience did not help；4：confusing

3.3 Behavioral Intentions and Cross-Cultural Willingness

The study further investigated whether increased interest translated into behavioral intentions.

(1) Willingness to Recommend and Engage

Recommendation: 86% of participants expressed they were "willing" or "very willing" to recommend the VR experience to friends and family. This high Net Promoter Score indicates strong user satisfaction and perceived value.

Offline Participation: 78% of participants stated they would be willing to participate in offline ICH activities (such as exhibitions or workshops) after the VR trial. This is a critical finding, suggesting VR acts as a gateway rather than a replacement for physical cultural engagement.

Active Learning: 60% expressed a "strong willingness" to actively seek more ways to learn about Chinese culture, a significant jump from the pre-test figure of 28%.

(2) Perception of Cross-Cultural Value

When asked if Chinese ICH has value for cross-cultural communication:

- 56% rated it as "Very Valuable (worth spreading globally)."
- 36% rated it as having "Some value."
- Only 8% were indifferent or negative.

Participants from diverse backgrounds (e.g., University C and D) specifically highlighted that the "cross-cultural adaptability" and "English language support" within the VR system made the content accessible and relevant to them.

3.4 User Experience and Qualitative Feedback

Analysis of open-ended responses identified key drivers of the observed interest enhancement.

(1) Key Strengths

Participants consistently cited three factors as most influential:

Immersion & Authenticity: Described as "vivid," "intensive," and creating an "emotional connection." Users felt they were "stepping into" the culture rather than observing it.

Interactivity: The ability to "participate in creation" (e.g., virtual paper cutting) and "communicate with virtual inheritors" was highly valued.

Accessibility: Real-time translation and intuitive controls lowered the barrier to entry for non-Chinese speakers. This finding is supported by similar projects where "motion-sensing devices" allow users to "touch and 'play' the instruments of the performing artists," thereby enhancing engagement 4.

(2) Areas for Improvement

While satisfaction was high (mean rating 4.1/5), some users suggested:

- Enhancing visual textures and scene authenticity further.
- Adding gamified elements or "VR games" to sustain long-term engagement.
- Expanding the library of ICH items available for exploration.

One participant from University E summarized the sentiment: "The VR experience made China's intangible cultural heritage feel vivid and accessible, helping me appreciate the craftsmanship and living spirit behind these traditions."

4. DISCUSSION

4.1 VR as a Catalyst for Interest Transformation

The results strongly support the hypothesis that VR technology significantly enhances foreign audiences' interest in Chinese ICH. The shift from a mean score of ~3.0 to ~4.0 demonstrates that immersive technology can effectively break through the "passive reception" barrier typical of traditional media. By transforming users from observers to active participants, VR triggers intrinsic curiosity and emotional resonance, which are critical precursors to sustained cultural interest.

4.2 The Role of Embodied Cognition in Cross-Cultural Communication

The high rate of knowledge acquisition (84% of participants learning new items) aligns with theories of embodied cognition. The data suggests that physically interacting with virtual artifacts (e.g., manipulating a virtual brush or instrument) creates stronger memory traces and deeper understanding than passive viewing. This is particularly effective for cross-cultural audiences who lack the contextual background to interpret static exhibits. The VR environment provided a "safe space"

for exploration, reducing the anxiety of cultural misunderstanding.

4.3 From Digital Interest to Real-World Action

A crucial finding is the correlation between VR engagement and willingness to participate in offline activities (78%). This challenges the notion that digital experiences isolate users; instead, this study shows that a well-designed VR intervention can serve as a powerful "gateway drug" to real-world cultural engagement. The high recommendation rate (86%) further indicates that participants view this digital format as a legitimate and valuable method of cultural transmission. This aligns with the concept of "digital wizardry bringing cultural heritage to life," where technology is used to "convey the culture embedded within" the experience 4.

4.4 Limitations and Future Directions

While the results are promising, this study has limitations. The sample size (N=50) is relatively small, and the follow-up period was immediate, lacking long-term retention data. Additionally, a small subset of users (8%) did not respond positively, highlighting that technical comfort and individual learning styles play a role. Future research should explore long-term interest retention and investigate how specific VR design elements (e.g., gamification vs. simulation) differentially affect various demographic groups.

5. CONCLUSION

This empirical study provides robust evidence that Virtual Reality is a potent tool for enhancing foreign university students' interest in China's Intangible Cultural Heritage. Through a controlled experiment involving 50 participants from five international universities, we demonstrated that an immersive, interactive VR experience significantly increases self-reported interest levels (from M=3.08 to M=4.04), expands specific cultural knowledge (84% gain), and fosters a strong willingness to engage in further cross-cultural activities.

The findings suggest that the integration of VR technology transforms the dissemination of ICH from a passive, one-way transmission into an active, embodied dialogue. By lowering linguistic and cultural barriers, VR allows foreign audiences to not only "see" but "experience" the depth and vitality of Chinese traditions. As the global digital landscape evolves, leveraging such immersive technologies will be essential for the sustainable inheritance and global revitalization of intangible cultural heritage. Future efforts should focus on scaling these interventions, refining interactive narratives, and bridging the gap between virtual interest and tangible cultural participation.

REFERENCES

1. Xinhuanet. China Focus: "Three-Body" virtual world reflects China's sci-fi industry boom [EB/OL].(2025-01-23) [2026-03-02]. https://english.news.cn/20250123/01947c9b42154a919a03c37ec4dce760/c.html.
2. chinadaily.com.cn. Blending AI and tradition to bridge cultures and spark artistic innovation [EB/OL]. (2025-03-05) [2026-03-02]. https://www.chinadaily.com.cn/a/202503/05/WS67c7c02ba310c240449d8c44.html.
3. chinadaily.com.cn.Homegrown AI tools play key role in preserving cultural heritage [EB/OL]. (2024-11-28) [2026-03-02]. https://www.chinadaily.com.cn/a/202411/28/WS6747b0d4a310f1265a1cff86_2.html.
4. Yang Feiyue.Digital wizardry brings cultural heritage to life [EB/OL]. (2024-11-14) [2026-03-02]. https://www.chinadaily.com.cn/a/202411/14/WS67356438a310f1265a1cd538.html