Strategies for Designing Traditional Fine Arts-Based Intangible Cultural Heritage Research and Study Programs for School-Age Children from a Persuasive Gaming Perspective

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Abstract. Current design of traditional art-based intangible cultural heritage research and study programs for school-age children commonly suffers from fragmented curricula, lack of cultural immersion, and insufficient learning motivation. This paper focuses on the school-age population to explore feasible pathways for applying persuasive game theory to the design of traditional art-based intangible cultural heritage research and study programs. Through analyzing existing programs, the study identifies current design issues and assesses the compatibility of persuasive game theory with such product design. Finally, grounded in persuasive game theory and using the "cookbook" approach to persuasive game design as a practical framework, this study constructs a design process for traditional art-based ICH educational programs for school-age children. Taking Shengzhou bamboo weaving as a case study, it demonstrates concrete design practices, providing theoretical references and practical guidance for the living transmission of traditional art-based ICH and innovation in children's cultural education.

Keywords: School-age children, Traditional art-based intangible cultural heritage, Intangible cultural heritage research and study programs, Persuasive games

1 Introduction

From the establishment of "Cultural Heritage Day" in 2006 to the deepening of the "Intangible Cultural Heritage into Schools" policy in 2019, education authorities have dedicated efforts to integrating intangible cultural heritage awareness cultivation throughout all educational stages through specialized activities, distinctive curriculum development, and heritage base construction. Documents such as the "Opinions on Implementing the Project for the Inheritance and Development of China's Excellent Traditional Culture" [1],"Criteria for Designating ICH Research And Study-Program Bases" and the "Guidelines for Building ICH Research And Study-Program Curriculum Systems," explicitly emphasize initiating ICH awareness during the school-age education phase and advocate for concrete, contextualized educational strategies. Against this

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backdrop, children's ICH research and study program have emerged as a new educational format bridging school education and social practice. Among these, traditional arts-based ICH research and study programs, with their distinct visual and engaging characteristics, demonstrate broad prospects in the children's research and study programs market.However, due to the lack of systematic theoretical and methodological guidance, traditional art-based intangible cultural heritage research and study program for school-age children currently face a series of issues, including superficial learning experiences, deviation from the goal of living inheritance, and fragmented curriculum systems.Therefore, exploring a new research-based learning design paradigm that deeply integrates the cultural essence of intangible heritage, aligns with children's cognitive characteristics, and effectively guides positive transformations in their attitudes and behaviors has become an urgent theoretical and practical issue.

2 Compatibility Analysis of Persuasive Games with Traditional Art-Based ICH Research and Study Programs Design for School-Age Children

Persuasive Games, as a design paradigm integrating behavioral intervention with interactive experiences, derive their educational potential from their unique theoretical framework and practical model. This concept was formally introduced by Ian Bogost in his 2007 book Persuasive Games. Its core theory[2], "Procedural Rhetoric," emphasizes conveying perspectives through rule-driven interactive processes, enabling players to actively construct meaning within dynamic experiences.Therefore, addressing current challenges in traditional art-based intangible cultural heritage (ICH) research and study programs for school-age children—such as insufficient learning motivation, lack of ICH cultural immersion, and fragmented curriculum systems—the theory of persuasive games and its "cookbook" methodology offer targeted solutions across three dimensions: intrinsic motivation stimulation and research experience deepening, empathetic transformation of ICH preservation awareness, and systematic research design process construction:

2.1 Stimulating Intrinsic Motivation and Deepening Learning Experiences

Persuasive game theory evolves from the Fogg Behavior Model[3] proposed by its founder, Stanford University's Professor BJ Fogg . This model demonstrates that behavioral change requires simultaneous presence of motivation, ability, and triggers. Only when both motivation and ability reach sufficient levels can triggers stimulate the desired behavioral shift.The persuasive games employed in this study utilize gamified traditional art-based intangible cultural heritage as an incentive mechanism. Initially, external motivation is strategically applied through systems to guide children toward developing active participation habits in the short term.As children gradually perceive the charm of intangible cultural heritage within the gamified context, their motivational

structure shifts from external motivation to internal motivation, thereby achieving motivation internalization and deepening the learning experience.

2.2 Empathic Transformation of ICH Preservation Awareness

Building upon Ian Bogost's concept of persuasive games and research by other scholars, Valentijn Visch et al. integrated existing theories on persuasive technology, serious games, and gamification to propose a persuasive game design model[4] (Figure 1). This model posits that the immersion, enjoyment, and sense of accomplishment users experience within the game world will influence their behavioral choices and value judgments in the real world through "empathic effects."Thus, during research and study programs, school-age children can actively engage in intangible cultural heritage ICH preservation activities within virtual environments through gamified mechanisms like role-playing and scenario-based tasks. This process fosters their recognition of ICH cultural value.As the gaming experience deepens, the cognitive and emotional engagement within these virtual scenarios gradually internalizes into cultural awareness, which then externalizes into real-world preservation intentions and actions—such as actively disseminating intangible cultural heritage knowledge or participating in community-based heritage activities.

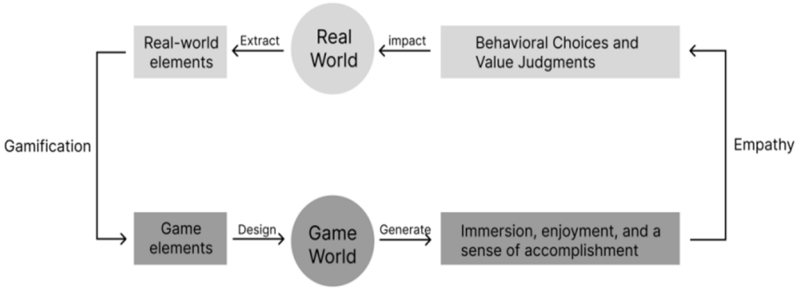

Fig. 1. Persuasive Game Design Theoretical Model.

2.3 Establishing a Systematic Research and Study Programs Design Process

The Persuasive Game Design "Cookbook" (Table 1)serves as a systematic, modular design tool, providing a structured and actionable process for traditional arts-based ICH research and study programs for school-age children. It effectively addresses the logical gaps and practical blind spots in existing research and study programs designs.The Persuasive Game Design "Cookbook"[5], proposed by Panote Siriaraya et al., comprises four core design phases: Defining Transfer Effects, Investigating the User World, Persuasive Game Design, and Effect Evaluation. Each phase is equipped with corresponding "ingredients" (design materials) and "cooking utensils" (design methods), forming a complete closed-loop from goal setting to outcome validation.

3 Design Practice of Traditional Art-Based ICH Research and Study Programs for School-Age Children Based on Persuasive Games

The Children's Bamboo Weaving Research Program at Shengzhou's Dangui Community Craft Energy House is part of the Better Life Co-creation Institute, a collaboration between Shengzhou's Sanjiang Subdistrict and Zhejiang University of Technology. The Craft Energy House within Dangui Community Neighborhood Center is a key initiative designed to enrich after-school activities for local children, promote their physical and mental development, and foster local cultural identity and belonging. Therefore, based on the The Persuasive Game Design "Cookbook" above, this paper conducts a design practice for the Shengzhou Dangui Community ICH bamboo weaving research and study program.

3.1 Defining Empathy Effects

Currently, most Shengzhou bamboo weaving research and study programs still follow the traditional teaching model of "teacher demonstration and student imitation." This approach features rigid processes, weak interactivity, and lacks engaging designs that sustain children's curiosity and creativity. Therefore, the author defines the enhancement of Shengzhou bamboo weaving knowledge and skills, along with the formation of cultural preservation awareness, as the empathy effect objectives for this research and study program. For school-age children, improving bamboo weaving knowledge and skills constitutes a behavioral change aimed at forming new habits, with its impact occurring during the research and study program and in the short term afterward.The formation of intangible cultural heritage preservation awareness also falls under the category of new behavioral change, but it should exert a lasting influence on school-age children after the activity concludes. Furthermore, the research and study program will be held at the Craft Energy House within the Dangui Community Neighborhood Center in Sanjiang Subdistrict, Shengzhou, which is a community-organized research and study program platform. When designing the research and study program, greater emphasis should be placed on subtly fostering a sense of cultural belonging and cultivating an immersive atmosphere.

3.2 Investigating the World of School-Age Children

The author employed participatory observation and in-depth interviews. By volunteering at the "Bamboo Fun, Handmade Moments" research and study program in Jiangyue Community, Sanjiang Subdistrict, Shengzhou, the author conducted participant observation of the program's operations and participants. This aimed to validate the gathered research data and delve deeper into the existing internal and external motivations of local school-age children.Handmade Moments" program in Jiangyue Community, Sanjiang Subdistrict, Shengzhou. By volunteering within the program, the author conducted participatory observation of the learning process and its participants. This aimed

to validate the research findings and delve deeper into the existing internal and external motivations of local school-age children.Based on the author's observational records of the children's behavioral patterns and emotional milestones during the program, a detailed analysis was conducted on their internal and external motivations, as well as the design requirements for the study-travel program:(1) Peak positive emotions during the program occurred primarily when watching animated bamboo weaving instructional videos and taking commemorative photos after completing weaving projects. Internal motivation stemmed mainly from children's innate curiosity about intangible cultural heritage bamboo weaving, coupled with the sense of accomplishment and desire for recognition experienced upon completing challenges and creating weaving pieces.(2) Due to the lack of clear external motivation in this program, children struggled to fully immerse themselves in the weaving process. Therefore, the study tour design should incorporate and strengthen external motivators, such as gaining recognition from parents, teachers, and peers; receiving tangible or symbolic rewards for bamboo crafts; and designing segments for social interaction with friends during the weaving process.

3.3 Persuasive Research-Based Game Design

The author positions the activity game as an adventure-based quest game, structuring the research content—including historical background, cultural significance, and weaving techniques of Shengzhou bamboo weaving—into sequential levels. This approach facilitates school-age children's learning of Shengzhou bamboo weaving.

The game leverages one of the four defining features of Shengzhou bamboo weaving—bamboo-woven animals—to create a fictional narrative where players help these creatures bring bamboo crafts back into the daily lives of Shengzhou residents. School-age children assume the role of "Bamboo Weaving Guardians," safeguarding bamboo weaving culture and protecting endangered bamboo animals by reviving memories of Shengzhou's bamboo weaving heritage and reintroducing the craft to the community.The program requires 10 school-age children to complete four task stages: adopting a bamboo animal (by tracing its outline),awakening bamboo weaving memories (short quizzes), restoring bamboo weaving blueprints (spot-the-difference corrections), and creating bamboo animals (designing animal patterns + weaving bamboo animals). Successfully reintroducing Shengzhou's bamboo animals into daily life earns the children the animals' recognition and the title of "Guardian of Bamboo Weaving," concluding the game and awarding them a Guardian of Bamboo Weaving medal.

The material design for the "Little Bamboo Weaving Guardian" activity comprises three components: IP design, research maps and medal design, and a research handbook.The author designed two IP characters: "Bamboo Guardian" and "Bamboo Lion," inspired by traditional Chinese attire and the Shengzhou bamboo weaving masterpiece "Lion Veneration." The design style references children's cartoon picture books favored by school-age children, providing IP assets for subsequent research-related materials.The study map was designed based on the gamified concept developed in the design phase, featuring dynamic illustrations of the Bamboo Guardian and Bamboo Lion IPs, narrative background text, and level summaries. Guardian badges, derived from the Bamboo Lion IP, serve as rewards for school-age children upon completing the

research and study program.The research and study program handbook details specific game content and rules for each level, and includes basic materials such as bamboo strips and blueprints for each level.

3.4 Verification and Evaluation

The author administered a user satisfaction scale test to school-age children after the program concluded.(Table 1)

Table 1. Customer Satisfaction Results Table.

CATEGORY	SPECIFIC EVALUATION ITEMS	AVERAGE SCORE
User Experience Satisfaction Assessment	1. My Attitude Toward the Research and Study Process	4.6
	2. The Exquisite Craftsmanship of Bamboo-Woven Animals I Experienced During the Program	4.0
	3. The Enjoyable Nature of Bamboo Weaving I Discovered During the Program	4.5
	4. The Richness of Shengzhou's Bamboo Weaving Culture I Observed During the Program	4.6
	5. My Belief That Shengzhou Bamboo Weaving Deserves Attention and Preservation	4.8
	6. My Attitude Toward “Encountering Bamboo-Woven Animals”	4.2
	7. My Attitude Toward “Reviving Bamboo Weaving Memories”	4.2
	8. My Attitude Toward “Recreating Bamboo Weaving Patterns”	4.0
	9. My Attitude Toward “Creating Bamboo-Woven Animals”	4.2

The rating scale was a five-point scale, with 1 indicating ”very dissatisfied“ and 5 indicating ”very satisfied." The user experience satisfaction evaluation results indicate that after completing the Little Bamboo Weaving Guardian program, most participants scored above 4.0. Satisfaction with the program flow and the perceived fun of weaving also exceeded 4.5. This suggests that the relevant elements and overall process of the Shengzhou bamboo weaving program design are well-received by school-age children, achieving high user experience satisfaction.

4 Conclusion

This paper focuses on persuasive game theory to explore its integration into the design of such programs.Through systematic analysis of existing research and study program deficiencies and drawing upon persuasive game theory and its "cookbook" design methodology, the study constructs a five-stage design process: defining empathy effects, investigating the world of school-age children, gamified concept design, study

material design, and validation and evaluation. This process is demonstrated through a concrete design practice using Shengzhou bamboo weaving as a case study.This research not only provides theoretical support and practical pathways for the living transmission of traditional art-based intangible cultural heritage but also offers an actionable methodological reference for innovative cultural education for school-age children and the systematic development of educational programs for traditional art-based intangible cultural heritage.

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