From Chinese Traditional Culture to Emotional Companionship: MVP Validation and Business Model Revision for an AI Cultural-Tech Product for High School Students

Yi Hexue
Chengdu Golden Apple Jincheng No. 1 Secondary School, Chengdu, Sichuan, China

Abstract:Chinese traditional culture holds rich visual, historical, and social value, but as digital media and new modes of cultural consumption evolve, some traditional art forms are drifting further from young people's daily lives. Shuilu paintings are a key part of Chinese religious art and folk belief, depicting deities, guardian spirits, gods of wealth, and other figures that reflect ancient understandings of cosmic order, human values, and spiritual meaning. Yet this art form is largely unfamiliar to today's high schoolers: in a preliminary survey of nearly 1,000 students across the international departments of five Chengdu high schools, 99% said they had never heard of shuilu paintings and knew nothing of their history or cultural background. The problem is not that traditional culture lacks value, but that there is a clear gap between how it is transmitted and how young users actually consume information today.

Keywords: Shuilu Painting; AI Cartoonization; Cultural Heritage Transmission; Minimum Viable Product (MVP)

1. Introduction

Cultural heritage has traditionally been passed on through museums, books, and exhibitions, with audiences as passive viewers. In recent years, digital humanities scholarship has explored ways to turn viewers into participants (Giaccardi, 2012), but simply digitizing and preserving original images does little to lower the barrier to understanding for young users—the traditional style, complex cast of characters, and religious content of shuilu paintings are themselves obstacles to engagement. Building on this observation, this study proposes a product that combines traditional culture, AI, and a mobile app: drawing on nearly 3,000 authentic shuilu paintings collected by Professor Li Yuanguo, 30 representative deities were selected and converted into cartoon-style characters using AI image generation. Within the app, users draw a random "guardian deity of the day," and build a light-touch daily interaction through blessings, character stories, and introductions to the original artwork. Manovich (2018) notes that AI is reshaping how visual content is produced and presented; this study asks whether AI cartoonization can serve as a cultural translation tool that meaningfully lowers the barrier for young users to engage with traditional culture.

2. Literature Review

Cultural heritage transmission is shifting from institution-led delivery toward product design. Museums and exhibitions were once the main channel, with users as passive recipients; Giaccardi (2012) argues that digital media have turned viewers into participants, a shift that underlies the very possibility of cultural-tech products. But most existing digital heritage projects stop at "digital preservation," rarely addressing how such content becomes something users want to open repeatedly, let alone pay for.

AI's role here is first and foremost about cost. Manovich (2018) points out that AI is sharply lowering the barrier to producing visual content, letting small teams create content for niche audiences cheaply. This matters for a shuilu-painting deity card project: AI cartoonization is not just a "style transfer"—it directly determines whether the product can produce 30 or more character designs affordably and at scale, which is a basic condition for the product to work at all.

Whether the product actually works can't be assumed—it has to be tested. Ries's (2011) Lean Startup approach argues for using a minimum viable product (MVP) to gather real feedback quickly and judge direction; Blank (2013) further stresses that early-stage validation should come from real user interaction rather than building out a complete product first. This study follows that logic directly: build an app prototype, test it with high schoolers, and use real feedback to judge

whether "AI cartoonization + daily card draw" has any takers.

On the business side, Osterwalder and Pigneur's (2010) Business Model Canvas offers a framework for clarifying who the customer is, what's being sold, and how revenue is generated—a tool this study later uses to work out the product's positioning. Whether users keep coming back depends heavily on gamification. Deterding et al. (2011) define gamification as using game-design elements in non-game contexts to boost engagement; but Hamari et al. (2014) caution that its effectiveness varies by context and user group and is not universal. Most gamification research so far centers on education, health, and marketing—cultural heritage is nearly unstudied. Whether daily card-drawing and collection progress work for high schoolers is a question for testing, not assumption. Emotional value is another factor in retention. Positive psychology holds that positive emotional feedback boosts wellbeing and sustained engagement (Seligman, 2011), and self-affirmation theory (Steele, 1988) similarly supports the idea that positive feedback reinforces self-perception. The "deity blessing" feature borrows this exact logic—not religious prediction, but the kind of emotionally engaging retention device common to check-in and fortune-telling apps.

Taken together, AI lowers content production costs, Lean Startup offers a validation method, BMC offers a business-model tool, and gamification and emotional design explain retention—but these pieces are rarely combined and tested together in the specific context of "traditional culture + teenage users." That is the gap this study addresses.

3. Business/Market Context

3.1 Market Size

China's cultural and creative products market reached roughly $16.38 billion in 2023, up 13% year-on-year, with its share of the global market rising from 10.67% in 2020 to 11.56% in 2023 (Xinhuanet, 2024). Per-capita spending on education, culture, and entertainment reached ¥2,904 in the same period, up 17.6% year-on-year, showing that spending on cultural and spiritual goods is itself accelerating (Yanjing Biji, 2024). More directly relevant is the trendy-toy/blind-box market—currently the closest existing category to this product's "daily random draw + collection" mechanic. China's trendy-toy blind-box market was worth roughly ¥28–34.5 billion in 2024 (Qianzhan Industry Research Institute, 2024), with the broader trendy-toy market projected to exceed ¥110 billion by 2026 (Chinese Academy of Social Sciences, National Academy of Economic Strategy & China Society for Animation, 2024). Core users are aged 15–40, roughly 490 million people, with a penetration rate of about 6.2% and strong repeat-purchase behavior and user stickiness. This doesn't just show that the cultural-creative market is large—it shows that card-draw collection as a product format already has an established base of paying, engaged young users. This project doesn't need to educate users on the interaction model from scratch; the real risk lies in whether the shuilu-painting IP content can be carried by this already-validated mechanic.

3.2 Competitors

The closest benchmark is the "Cloud Tour Dunhuang" mini-program (Dunhuang Academy × Tencent, launched 2020): it pushed exclusive mural stories daily and drew over 2 million WeChat visits on launch day; a companion mini-program, "Dunhuang Poetry Scarf," attracted 3 million users and generated 250,000 DIY creations within a month of launch (China Daily, 2020; Tencent News, 2022). This shows that "traditional culture + digitization + light daily interaction" can work as a model. But Cloud Tour Dunhuang targets all ages, leans toward educational and appreciative content, has no collection or card-draw mechanics, and includes no design specifically for teenage emotional engagement. The Forbidden City's cultural-creative business runs on e-commerce and physical merchandise, with a revenue model based on unit sales rather than sustained in-app interaction. Pop Mart represents the other end: a purely commercial blind-box collection mechanic with very strong user stickiness, but content unrelated to cultural heritage—the appeal comes from randomness itself, not cultural identity. Compared across these three, the gap this project fills is a product that combines Cloud Tour Dunhuang's cultural depth, Pop Mart-level collection/gamification mechanics, and emotional design built specifically for teenagers—something none of the three currently offers.

3.3 Target audience

The core audience is Chengdu international-department high schoolers (ages 16–18), a group whose characteristics directly shape product design: their daily education is centered on English and Western culture, leaving a real gap in awareness of local traditional culture—which is exactly why 99% of the 1,000 students surveyed earlier didn't know what shuilu paintings were. Their digital habits are mature, favoring short, fast, highly visual content, with low tolerance for traditional long-form educational text and imagery. Overall, this group isn't the traditional audience for cultural heritage transmission (tourists, culture enthusiasts, researchers)—they're potential users with "mild curiosity plus a missing low-barrier entry point." That's why the core question for the MVP stage should be whether cartoonization and daily card-drawing actually lower the barrier to understanding, not an assumption that the mechanic will automatically work for them.

4. Research Methods

This study uses a Validated Learning approach, building a minimum viable product (MVP) and collecting real user feedback to test whether "AI cartoonization + daily card draw" improves high schoolers' understanding of, engagement with, and cultural interest in shuilu paintings (Ries, 2011). The research has two stages: a completed baseline survey (nearly 1,000 students across five Chengdu international-department high schools), which confirmed the research gap this study addresses—99% of respondents had never heard of shuilu paintings—and the MVP test, which is the focus of this section.

The MVP is built on nearly 3,000 authentic shuilu paintings collected by Professor Li Yuanguo. Thirty representative deities were selected and converted into cartoon-style characters using AI image generation, then built into an app prototype featuring daily random card draws, deity blessings, and cultural story introductions. For the test stage, three of the five schools from stage one that were willing to participate were selected, using convenience sampling to recruit volunteer students, with a target sample of 120 across grades 10–12, lightly stratified by grade to avoid results being dominated by a single grade's preferences. Participation required using the app prototype for 5–7 consecutive days—a single session wouldn't be enough to test whether the core "daily card draw" mechanic drives sustained engagement, the part of the product hypothesis most in need of multi-day data. It should be noted that convenience sampling only represents "students willing to try a new app" and cannot be generalized to the full international-department student population.

Students completed a short survey before starting, to establish baseline cultural awareness comparable with stage-one data, and a formal survey after 5–7 consecutive days of use. The formal survey covered four dimensions, each measured with 3–4 items on a 5-point Likert scale: whether AI cartoonization lowered the barrier to understanding the deity figures, whether the daily draw mechanic increased engagement and willingness to return, whether the deity blessings provided a positive emotional experience, and whether the story introductions increased interest in traditional culture. The survey also included business-related questions—expected usage frequency, willingness to pay for unlocking characters or removing ads, and comparisons with known products like Cloud Tour Dunhuang and Pop Mart—to test the product's market positioning rather than simply measuring how much users liked it. A set of open-ended questions was included at the end to capture suggestions not covered by the scaled items.

5. Results

The MVP test collected 120 valid responses across three international-department schools (40 each), with 24 tenth-graders, 58 eleventh-graders, and 38 twelfth-graders. Baseline data showed that 114 of the 120 participants (95%) had never heard of shuilu paintings before the test, with only 5 having heard the name and 1 having some prior knowledge—closely matching the 99% figure from the earlier 1,000-student survey, suggesting the cultural awareness gap is a stable feature of this population rather than a sampling artifact.

Across the four core dimensions (1–5 scale), the understanding-barrier dimension scored highest (M=3.90, SD=0.85), followed by engagement/retention intent (M=3.75, SD=0.95) and emotional value (M=3.75, SD=0.96), with cultural interest scoring lowest (M=3.46, SD=0.99). All standard deviations were below 1.0, indicating broadly consistent feedback with no major divergence. At the item level, "I can describe this deity's background after reading their story" scored highest (M=4.14), while "I would want to search for more background on my own" scored lowest (M=3.33). This pattern suggests that AI cartoonization and story content

did lower the barrier to understanding the deity figures, but that this understanding didn't translate well into a desire to explore traditional culture further—there's a real gap between comprehension and curiosity.

Behavioral data showed participants opened the app an average of 3.73 times per week (SD=2.13), correlating moderately-to-strongly with the self-reported engagement/retention score (M=3.75) at r=0.66 (Pearson), indicating that stated engagement and actual usage were broadly consistent, without a major say-do gap—which also supports the validity of the scale.

On business-related questions, willingness to pay was generally low: 57.5% of students said they would not pay to unlock all characters, and among those willing to pay, most chose the lowest tier, ¥1–¥9 (32.5%). Willingness to pay to remove ads was even lower, at 74.2% unwilling. In terms of perceived positioning, 45.0% of students said the experience felt closest to a "tarot/horoscope" type product, rather than the originally expected "Pop Mart/blind-box collection" type (18.3%) or "Cloud Tour Dunhuang-style educational" type (30.0%)—suggesting students understood the product more as a daily ritual of emotional feedback than as pure cultural education or a collection game. On channel preference, 66.7% of students preferred a WeChat mini-program over a standalone app.

In open-ended feedback, "daily card draw" and "blessings" were the most-mentioned draws, but also the most-mentioned source of complaints—many students noted that the blessing content felt repetitive and that the limited number of characters led to high repetition. A request for social sharing features was also one of the most frequent suggestions, a need the scaled items did not directly capture—a clear gap in the survey design.

6. Discussion

Two core findings emerge from the MVP results. First, AI cartoonization improved understanding (M=3.90) but did little to build cultural interest (M=3.46)—suggesting AI solves the problem of "being understandable," not the problem of "wanting to learn more." This means the "cultural education product" value proposition doesn't currently hold up. Second, willingness to pay is low (57.5% unwilling to pay to unlock content), and 45.0% of students see the experience as closer to a "tarot/horoscope" product than a "Pop Mart" one—together, this suggests the product isn't failing to sell so much as it's naturally closer to an emotion-driven product monetized through ads, subscriptions, or institutional partnerships, rather than a collection game driven by in-app purchases. "Social sharing" was the most frequent new request in the open-ended responses but wasn't covered by the scaled items at all—a clear gap in survey design, and one that points to a concrete next step: a sharing feature could directly amplify the product's core appeal, its emotional feedback. This test did not validate the original hypothesis of "cultural education + blind-box collection," but it did validate a narrower, more workable positioning: a lightweight traditional-culture mini-program built around emotional feedback as its core value—one whose revenue model and content priorities need to be rebuilt around that positioning.

References

[1] Zheng Z ,Bie Y X ,Kim M J . AI-driven segmentation of outbound cultural tourists: clustering based on perceived benefits, concerns, engagement and trust toward AI cultural recommendations [J]. Information Technology & Tourism, 2026, 28 (1): 41-41.

[2] Saka E . Understanding Generative AI in a Cultural Context: Artificial Myths and Human Realities[M]. IGI Global: DOI:10.4018/979-8-3693-7235-7.

[3] Foka A ,Griffin G . AI, Cultural Heritage, and Bias: Some Key Queries That Arise from the Use of GenAI [J]. Heritage, 2024, 7 (11): 6125-6136. DOI:10.3390/HERITAGE7110287.

[4] Lee Y J . Negotiating cultural sensitivity in medical AI. [J]. Journal of medical ethics, 2024, DOI:10.1136/JME-2024-110037.

[5] WALKER J R . How Generative AI Endangers Cultural Narratives [J]. Issues in Science and Technology, 2024, 40 (2): 76-79.

[6] Cazzato ,Luigi . Vallorani Nicoletta ed 2016 Introduzione ai Cultural Studies UK USA e paesi anglofoni Roma Carrocci 209 pp [J]. Il Tolomeo, 2017, 19 (1)

