# Digital Educational Translation of Chinese Traditional Culture: An Experimental Study on Primary School Art Teaching with the Example of Afu’s AI Collection Journey

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**Abstract：** Taking the art course Afu’s AI Collection Journey: Dynamic Ink-Wash Story Creation, implemented at Shenzhen Jinglian Primary School, as an example, this paper explores how Chinese traditional culture can be digitally translated into education through generative AI image technology. Within the framework of design-based research and case study analysis, it examines the practical pathways through which AI tools are integrated into traditional ink-wash teaching. By mapping the specific stages and operational procedures of AI integration in the classroom and combining lesson plans, student works, and teacher reflections, this study analyses the multi-dimensional outcomes of the teaching experiment. It also identifies problems encountered during implementation, such as hardware adaptation, cultural alienation, and teaching capacity, and proposes optimisation strategies from tool development and methodological innovation to teaching support. The research argues that digital media should serve as a channel for revitalising, rather than alienating, traditional culture in the contemporary context. By deeply integrating instrumental rationality and cultural rationality, it seeks to promote a shift in traditional cultural education from symbolic digitalisation to value-oriented digitalisation, offering both theoretical and practical frameworks for cultural transmission in the digital age.

**Keywords:** generative AI; traditional culture education; digital translation; ink-wash teaching; primary school art

**DOI**:10.69979/3041-0843.25.03.049

## Introduction

With the deep integration of artificial intelligence and education, the “digital educational translation” of traditional culture has become a central issue in cultural transmission and pedagogical innovation[1]. Current research reveals a cognitive bias towards “technology over culture”, resulting in numerous practical challenges in digital implementation[2]. Digital education is no longer simply the use of tools; it represents a systemic transformation encompassing cultural, technological, and educational dimensions[3]. This transformation brings both innovative opportunities and cultural risks arising from over-reliance on technology.[4]

Children’s ink-wash education in Shenzhen was pioneered in the early 1990s by art educator Hu Lubao, whose concept of the “spirit of brush and ink in childhood” continues to influence local art curricula. Against this backdrop, art teacher Chen Yin at Shenzhen Jinglian Primary School introduced AI image generation tools (e.g., Midjourney and Jimeng AI) into ink-wash teaching, developing the Afu’s AI Collection Journey course to explore the re-creation and digital translation of traditional cultural visual language.

This study poses a central question: In primary education, how can AI-assisted teaching render traditional culture into concrete, interactive, and narratable digital forms?

## 1 Theoretical Dimensions and Practical Features of Digital Educational Translation

### 1.1 Technological Integration and Digital Image Generation

In recent years, technologies such as AR/VR and generative AI have expanded the media boundaries of traditional art education. Platforms such as Midjourney can transform keyword prompts into images, lowering creative thresholds and enhancing children's participation and enthusiasm. In theoretical terms, technological integration has become a core practical pathway for digital translation[5]. AR/VR enables the transformation of traditional patterns and architectural elements into immersive, multi-modal interactive environments, shifting perception from flat cognition to spatial narrative. AI can also support students in constructing preliminary image-based narratives, enabling a shift from static images to dynamic videos.

### 1.2 Cultural Translation and Visual Re-encoding

The key to translating traditional culture in digital teaching lies in avoiding the "alienation" of cultural symbols. Generative AI can visually deconstruct and recombine motifs such as taotie patterns, cloud-and-thunder designs, and bronze artefact elements, giving them new "digital life". However, AI's neutrality can also lead to misinterpretations: for example, ink-wash "blank space" may be misread as digital "empty pixels", and the subtle texture of ceramic glaze cracks may be lost in digital smoothing. Through interactive narrative engines that construct branching storylines (e.g., Jingwei Filling the Sea, Gonggong Strikes the Mountain), learners can engage in cultural construction and interpretive storytelling, shifting from passive reception to active creation. Technology can also digitise traditional crafts (e.g., sunmao joinery, lacquer decoration) as 3D models, enabling embodied experiences that form a translation chain from image symbols to value perception.

### 1.3 Innovative AI-Assisted Teaching Models and Children's Art Cognition

The dual-teacher collaborative model, combining an AI "instructor" and an art teacher, creates a new teaching community. Supported by knowledge graphs, the AI teacher delivers precise cultural content and technical demonstrations, while the art teacher focuses on aesthetic guidance and emotional engagement. AI can serve as a "second teaching aid" in children's art education, enhancing creative expression and motivation, but attention must be paid to disparities in digital literacy and mismatches between course difficulty and student readiness. From designing campus cultural works to building virtual museums, such approaches strengthen learners' abilities in cultural interpretation and digital creation[6]. A multi-dimensional evaluation system integrates behavioural data analysis with qualitative assessments of artworks, combining AI-generated cultural cognition heat maps with teacher-written developmental feedback to maintain both objectivity and humanistic warmth.

## 2 Research Methods and Course Implementation

Methods

This study employs a combination of design-based research and case study methodology. Data sources include:

- Lesson plans and teaching design texts;
- Student works and dynamic video recordings;
- Teacher teaching logs and interviews;
- Student questionnaires and classroom observations.

Analytical approaches include content analysis, visual symbol analysis, and narrative analysis.

Course Overview: Afu's AI Collection Journey

- Initiator: Chen Yin, Shenzhen Jinglian Primary School
- Participants: Year 3–4 students
- Implementation Period: May 2024 – May 2025
- Teaching Philosophy: Continuing the "spirit of childhood ink" while exploring "AI + ink-wash + narrative" pathways.

The course comprises four stages: AI Generation → Ink-wash Hand Drawing → Dynamic Composition → Storytelling.

1.AI Generation – Students use Midjourney to generate traditional-style images based on keyword prompts.

2.Ink-wash Copying and Repainting – Applying traditional techniques such as "five shades of ink" for creative reinterpretation.

3.Dynamic Composition – Using Jimeng AI to create narrative-based moving images.

4.Storytelling and Presentation – Students record voice-overs and narrations for their works.

Lesson examples include:

•First Lesson: AI image generation and cultural creativity inspiration; introducing Afu picture book and "collection" as a cultural metaphor; training in traditional imagery keywords; analysing AI-generated "traditional narratives".

•Second Lesson: Ink-wash techniques and visual recreation; learning tonal variation and composition; reconstructing visual layers.

•Third Lesson: Dynamic storytelling and sound design; producing animated ink-wash narratives with sound effects and dialogue.

## 3 Practical Challenges and Causal Analysis

1. Balancing Technological Empowerment and Cultural Translation

AI tools lower technical barriers and stimulate curiosity for cultural elements, but without cultural context, they risk producing distortions (e.g., blurred patterns, misrepresented meanings). Many primary schools lack hardware capable of high-precision 3D modelling or real-time rendering, leading to pixelated reconstructions or lagging dynamic displays. Algorithmic biases towards mainstream cultural datasets marginalise minority traditions, leading to homogenised outputs rather than authentic diversity[7].

2. Implementation Challenges in Teaching

Balancing cultural interpretation, technical operation, and creative practice in limited class time often results in superficial engagement[8]. Teacher generational gaps manifest as "tech-strong but culture-weak" or "culture-strong but tech-weak" profiles, reducing the cultural transmission effectiveness of AI tools. Many schools' digital equipment cannot support high-intensity AI rendering tasks, and AI interfaces are often unsuitable for younger learners' cognitive levels[9]. Parents' emphasis on measurable academic outcomes and unfamiliarity with non-standard creative outputs also limits recognition of such projects[10].

## 4 Optimisation Strategies

### 4.1 Technology and Data Platform Development

Develop AI toolkits specifically for cultural education with modular features, such as AR-enabled digital brushes for real-time pattern analysis, lightweight 3D engines for joinery structure animation, and seasonal ink-wash keyword databases to improve semantic precision. Establish standards for cultural digital translation to prevent simplification and contextual loss, incorporating regional cultural modules (e.g., Su embroidery, lacquer techniques).

### 4.2 Teaching Support Systems

Create a three-dimensional evaluation system covering digital tool skills, traditional culture knowledge, and integrative innovation. Implement a dual-mentor model pairing AI experts with cultural heritage educators, supported by blended learning platforms. Strengthen home–school collaboration, enabling parents to engage with students' digital cultural creations and virtual exhibitions, enhancing recognition and emotional connection.

## 5 Conclusion

The introduction of AI image technology offers new pathways for traditional culture education but also exposes tensions between technological and cultural rationality. The Afu's AI Collection Journey project shows that only when technology acts as a cultural interpreter, teaching design integrates humanistic and technological dimensions, and home–school collaboration builds a unified cognitive framework, can traditional culture achieve a true "digital rebirth" and child-friendly expression.

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