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Integration Practice and Innovative Paths of AI Technology in Classical Chinese Teaching in Primary School Chinese: A Case Study of "Waiting for Rabbits by the Tree Stump"

Xinmo Du*

Shenzhen Experimental School Bantian Campus, Shenzhen 518028, China

**Author to whom correspondence should be addressed.*

Abstract: Based on the AI-integrated teaching case of "Waiting for Rabbits by the Tree Stump" conducted in a third-grade primary school class, this paper explores the specific practices and innovative pathways for empowering classical Chinese teaching with generative artificial intelligence (AI) technology. To address the widespread challenges of comprehension difficulties and learning apprehension among primary school students in classical Chinese, a teaching model centered on "virtual scenario creation, intelligent text-to-image translation, and dual-track task-driven instruction" was constructed and implemented. By introducing an AI-generated virtual mentor, utilizing tools for text-to-image translation, and designing human-machine collaborative speculative activities, the ancient classical text was successfully transformed into a vivid and tangible exploratory journey for students. Practice has shown that this model can effectively stimulate students' learning interest, deepen their understanding of both textual content and allegorical meaning, and foster the preliminary development of their critical thinking skills. This research aims to provide a practical and referential framework for frontline teachers and to contribute insights for innovating traditional culture pedagogy through technological empowerment.

Keywords: Artificial intelligence; Classical Chinese teaching; Primary school Chinese; Generative AI; "Waiting for Rabbits by the Tree Stump"; Teaching innovation

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1. Introduction

Classical Chinese serves as an essential carrier of China's excellent traditional culture. Introducing students to classical Chinese at the primary school level plays a foundational role in cultivating their cultural identity, language literacy, and aesthetic capabilities [1]. However, the significant differences in vocabulary, syntax, and cultural context between classical Chinese and modern Mandarin pose considerable learning barriers.

Many primary school students commonly encounter difficulties such as incomprehension, lack of interest, and reluctance to engage, with learning apprehension becoming a key bottleneck that constrains teaching effectiveness [2]. The traditional teaching model, which often relies on character-by-character explication, struggles to bridge the historical-linguistic gap within limited classroom time and fails to adequately guide students in appreciating the intrinsic charm of classical texts.

Concurrently, emerging technologies represented by generative artificial intelligence, leveraging their powerful capabilities in content generation, contextual simulation, and intelligent interaction, are injecting new momentum into educational innovation [3]. These technologies can not only automate text processing but also, by constructing multimodal and immersive learning environments, make abstract knowledge concrete. This offers novel approaches to addressing the longstanding challenges in classical Chinese instruction [4]. Grounded in the author's practical experience with the AI-integrated lesson on "Waiting for Rabbits by the Tree Stump," this study aims to systematically examine the specific application scenarios, practical implementation models, and core value of AI technology in empowering classical Chinese teaching. It seeks to provide empirical evidence from the teaching frontlines to support the digital and intelligent transformation of primary school Chinese language education.

2. Theoretical foundation and core value of AI-empowered classical Chinese teaching

2.1. Theoretical foundation: Situated learning and multimedia cognition

The construction of this AI-integrated teaching model is rooted in established learning theories. Situated Learning Theory posits that knowledge is constructed through activities within authentic contexts [5]. AI technology can effortlessly create rich, historical, and cultural contexts that transcend time and space. For instance, by having "Han Feizi" appear in the classroom, students can be immersed in the allegorical world, transforming passive knowledge reception into active exploration. Multimedia Cognitive Theory indicates that presenting information simultaneously through multiple channels, such as text, images, and sound, can effectively reduce cognitive load and facilitate deeper meaning construction [6]. AI-driven methods like text-to-image translation and animated demonstrations align precisely with this principle, building visual scaffolds to aid in understanding abstract classical language.

2.2. Core value: Mitigating learning apprehension and fostering deep learning

Integrating AI into the classical Chinese classroom holds core value in shifting the paradigm from using technology merely as a tool to fostering a new teaching and learning ecology. Primarily, it directly addresses the mitigation of primary school students' learning apprehension towards classical Chinese. Through supports like instant translation, intelligent recitation feedback, and gamified interactions, AI can quickly clear initial comprehension obstacles at the lexical level, lower the entry barrier to learning, provide students with immediate positive feedback, and help rebuild their learning confidence [7]. Furthermore, it promotes deeper learning engagement. AI does not merely assist with "decoding" the text; it can also guide students through "close reading, critical speculation, and practical transfer" by constructing inquiry chains, simulating character dialogues, and connecting to extended readings. This facilitates a journey from understanding linguistic forms to appreciating cultural connotations [8].

3. AI-integrated instructional design for “Waiting for Rabbits by the Tree Stump”

This instructional design is based on the text “Waiting for Rabbits by the Tree Stump” from the second semester of the third-grade Chinese textbook (Ministry of Education edition). With the narrative framework of “Han Feizi’s Time Travel: Jointly Exploring the Allegorical Realm,” it incorporates six interlocking task levels, constructing a teaching structure characterized by “dual-track guidance and human-machine collaboration.”

3.1. Overall framework: Dual-track, scenario-based, task-driven instruction

(1) Virtual Track: A dynamic digital avatar of Han Feizi, generated using “Jimeng AI,” serves as the “virtual mentor” throughout the lesson. This avatar appears in video format at key instructional junctures (introduction, task launches, summary) to issue challenges and provide feedback in the first person. For example: “My young friends, will you join this old man today in stepping into the allegorical realm of ‘Waiting for Rabbits by the Tree Stump’ to unravel its wisdom?” This approach significantly enhances classroom coherence, narrative engagement, and student focus.

(2) Real-World Track: The classroom teacher acts as the “facilitator and guide,” responsible for organizing activities, clarifying difficult points, guiding speculative discussions, and culminating the learning with value-based reflection. These two tracks, virtual and real, intertwine and complement each other, jointly propelling the teaching and learning process forward [9].

3.2. Innovative application scenarios of AI technology integration

3.2.1. Scenario one: Virtual avatar empowerment, animating cultural context

During the pre-class preparation and lesson introduction phases, an AI-generated introductory video featuring Han Feizi is played. This “time-traveling” Legalist philosopher is transformed from a distant, abstract name in a textbook into a vivid and relatable storyteller. He guides students to examine the “Allegory Map” on the unit’s opening page, outlines the exploration mission, and instantly immerses students in the learning scenario. This generative AI-based personification of a historical figure vitalizes the cultural context, effectively sparking students’ curiosity and desire to inquire [10].

3.2.2. Scenario two: Intelligent text-to-image translation, overcoming comprehension hurdles

When tackling key sentences such as “ 因释其耒而守株 ” (Thereupon, he laid aside his plow and waited by the tree stump), which are typically taught through teacher explanation or static illustrations, this lesson employs the “Magic Painting Box” feature in the “Doubao” app through a three-step process:

(1) Student Description: Students verbally describe the scene they visualize based on their reading of the classical text.

(2) AI Generation: The teacher inputs the student’s description, prompting the AI to generate multiple corresponding illustrations in real-time for classroom projection.

(3) Comparative Analysis: Students are guided to critically compare the AI-generated images with the textual details. For instance, a student might keenly observe: “In the picture, the farmer’s hand is still on the farm tool, but ‘ 释 ’ means ‘to put down.’ The illustration is inaccurate.” The teacher then seizes this opportunity to reinforce the meanings of key terms like “ 释 ” (release/put down) and “ 耒 ” (plow).

This process transforms one-way textual decoding into an active exercise in visual construction and critical analysis. The “imperfections” in AI-generated images become valuable teaching moments, motivating students to re-engage with the text closely and pursue precise understanding, thereby shifting the dynamic from passive

reception to active inquiry [11].

3.2.3. Scenario three: Intelligent scaffolding support, deepening speculation and transfer

In the "Deep Speculation" phase, to help students internalize and transfer the abstract moral of "rejecting unearned gains" to real-life contexts, a "Persuade the Farmer" role-play dialogue is designed. Here, AI provides linguistic and cognitive scaffolding: on one hand, it draws upon its vast corpus to suggest persuasive sentence patterns for students struggling with expression; on the other, it can simulate various responses (e.g., the farmer's stubborn rebuttals), thereby stimulating multiple rounds of student reasoning and debate [12]. As an extended post-class activity, students use AI assistants to help create "Chinese and Foreign Fable Recommendation Cards," which involves synthesizing information and designing layouts, achieving a creative transfer of learning from the classroom to broader contexts.

4. Reflection on teaching effectiveness and pathways for optimization

4.1. Analysis of practical outcomes

Post-implementation observation and surveys indicate that this model offers distinct advantages:

(1) Significantly Enhanced Learning Motivation: Classroom observations revealed a marked increase in student enthusiasm and concentration during task participation compared to standard classical Chinese lessons. Engagement was particularly high during AI-interactive segments, with visual attention rates exceeding 95%. The novelty and interactive nature of the technology successfully translated into stronger intrinsic motivation for learning.

(2) Deeper Textual Comprehension: Assessment data showed that students' accuracy in understanding core classical terms with modern semantic shifts—such as " 走 " (to run), " 冀 " (to hope), and " 释 " (to release)—improved from 58% in pre-tests to 92% in post-tests. The text-to-image translation inquiry process enabled students to move beyond vague paraphrasing to precise, evidence-based comprehension.

(3) Development of Higher-Order Thinking: Activities like "Persuade the Farmer" and comparative fable analysis demonstrated students' emerging capacities for dialectical thinking and logical expression. The technology facilitated a partial shift in the classroom dynamic from a mere "knowledge transmission space" to a "thinking cultivation ground" [13].

4.2. Identified challenges and optimization suggestions

The practice also surfaced specific challenges, pointing toward directions for future refinement:

(1) Balancing Technical Reliability and Instructional Flow: AI tool responsiveness can be affected by network latency, potentially disrupting teaching rhythm. Mitigation Strategy: Pre-generate and cache core visual materials as backups. Integrate non-technology-dependent alternative activities (e.g., small-group scripted role-play) into lesson plans.

(2) Maintaining Equilibrium Between "Human-Machine" and "Human-Human" Interaction: It is crucial to avoid having vibrant "human-machine interaction" overshadow essential "human-to-human dialogue" and moments for "quiet reflection." Mitigation Strategy: Consistently frame AI as a pedagogical tool. Deliberately design lesson plans to allocate sufficient, structured time for in-depth teacher-student and student-student dialogue, as well as individual contemplation.

(3) The Pivotal Role of Teacher Digital Literacy: The educational efficacy of technology is ultimately

contingent upon the teacher's instructional design and facilitation prowess. The skills to curate vast information and pedagogically integrate AI outputs present new professional demands. Mitigation Strategy: Strengthen school-based professional development through "AI + Instructional Design" workshops focused on concrete lesson examples, thereby enhancing teachers' competency in technology integration and teaching innovation [14].

5. Conclusion and future perspectives

This study, through the practical implementation of the "Waiting for Rabbits by the Tree Stump" lesson, demonstrates that the deep integration of generative AI into primary school classical Chinese teaching constitutes more than a simple addition of tools—it represents a significant innovation in teaching methodology. By creating immersive contexts, providing intelligent scaffolding, and redefining interaction patterns, it effectively lowers the psychological barriers and cognitive hurdles associated with classical Chinese learning, allowing ancient texts to resonate with new vitality in the digital age.

Looking forward, the exploration of AI-empowered classical Chinese teaching should advance in the following directions: First, evolving from single-lesson experiments to systematic curriculum integration, involving the strategic planning of differentiated AI application pathways across various grade levels. Second, progressing from consuming generic resources to building contextual models, which could involve developing lightweight, scenario-specific teaching assistant models tailored to primary school needs. Third, shifting focus from tool utilization to cultivating digital-humanistic literacy, guiding students to use AI rationally, critically, and creatively. The goal is for AI to become a partner in cultural heritage and intellectual inquiry, rather than an authority to be uncritically relied upon [15].

Genuine educational innovation lies not in pursuing the most sophisticated technology, but in harnessing technology to more thoughtfully and effectively ignite the spark of curiosity in students' eyes and to construct bridges connecting them to the millennial wisdom embedded within cultural traditions. This journey is undoubtedly just beginning.

Disclosure statement

The author declares no conflict of interest.

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