

Exploring AI-Based Strategies for Primary Chinese Reading Instruction

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Abstract: In the era of information technology, artificial intelligence has emerged as the latest driving force behind the digital transformation of education, demonstrating distinctive pedagogical advantages across diverse educational contexts. As a foundational subject at the primary level, Chinese language arts has consistently remained at the forefront of instructional reform. To further advance technology-enhanced language education, it is imperative that practitioners actively explore strategies for integrating AI technologies into primary Chinese reading instruction. By harnessing the full instructional affordances of AI, a highly effective pathway for teaching reading can be established, thereby enriching and redefining pedagogical practice in primary Chinese reading instruction.

Keywords: artificial intelligence; Primary Chinese language arts; reading instruction

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1. Introduction

Reading constitutes the central priority of Chinese language arts instruction. In conventional pedagogical models, reading instruction is predominantly teacher-centered, with students passively receiving transmitted knowledge—a dynamic that often precludes the development of deep, meaningful engagement with textual content. In contrast, AI-powered reading instruction enables the construction of virtual reading environments and fosters immersive literary atmospheres, thereby not only diversifying the modalities through which reading lessons are delivered but also elevating students' learning experiences. This transformative approach lays a robust foundation for advancing students' reading proficiency. Accordingly, language arts educators should prioritize the construction of AI-enhanced reading instruction models as a means to cultivate both reading motivation and competence among learners.

2. Current Challenges in Primary Chinese Reading Instruction

Against the backdrop of deepening curricular reform in Chinese language education, primary reading instruction confronts a set of emerging challenges. The following issues demand urgent attention:

2.1 Limitations of Instructional Resources

Conventional primary Chinese reading instruction relies predominantly on textbook passages and a narrow selection of supplementary materials curated by individual teachers. These resources are constrained not only in quantity but also in terms of content richness, diversity, and currency of renewal. Given the substantial variability in students' reading interests and proficiency levels, such limited instructional resources prove inadequate for accommodating learners' diverse reading needs—a mismatch that frequently results in diminished reading motivation and a constricted literary horizon among a subset of students.

2.2 Absence of Personalized Reading Guidance

Within the framework of whole-class instruction, teachers typically adhere to a uniform instructional pace and apply undifferentiated pedagogical methods, rendering it exceedingly difficult to adequately address individual differences in reading speed, depth of comprehension, and domains of interest. Constrained by the temporal limitations of whole-class instruction, educators are rarely able to provide each student with targeted reading strategy guidance or carefully matched practice tasks. Over time, more proficient readers are prone to disengagement through repetitive learning, while struggling students may progressively lose confidence as they fall behind—a dynamic that exacerbates divergence in reading ability development.

2.3 The Narrowness of Reading Assessment

Extant approaches to reading assessment place disproportionate emphasis on the evaluation of rote memorization and surface-level comprehension, typically administered through standardized tests or written exercises. Such assessment practices are fundamentally ill-equipped to capture students' development across multiple critical dimensions—including critical thinking, aesthetic appreciation, cultural awareness, and reading habits. Furthermore, these evaluative frameworks tend to focus narrowly on the accuracy of final answers while largely neglecting students' cognitive pathways, affective responses, and strategy deployment throughout the reading process. This impoverished approach to assessment not only impedes teachers' ability to diagnose learning needs with precision but also undermines efforts to cultivate deep, sustainable reading literacy among students.

3. The Value of AI Integration in Primary Chinese Reading Instruction

The integration of artificial intelligence technologies into primary Chinese reading instruction is catalyzing a profound transformation of instructional paradigms. The core value of this integration manifests principally in the following dimensions:

3.1 Enabling Intelligent Integration of Educational Resources

Artificial intelligence technologies unlock fundamentally new possibilities for the construction of instructional resources. Drawing upon big data analytics and intelligent algorithms, AI-powered systems are capable of systematically curating and integrating diverse resource types—ranging from literary classics and popular science readings to current-affairs materials and multimedia content—into a coherently structured repository of reading materials. By establishing intelligent linkages between resource content, curriculum standards, and instructional objectives, such systems can provide teachers with precision resource retrieval and recommendation services, thereby substantially expanding the resource boundaries of reading instruction. Concurrently, these platforms support collaborative resource development and dynamic updating: teachers and students can share high-quality resources through the intelligent system, while the system continuously refines its repository in response to instructional feedback, giving rise to an open, evolving educational resource ecosystem. This mode of intelligent resource integration furnishes a robust material foundation and content infrastructure essential for delivering high-quality primary Chinese reading instruction.

3.2 Enabling the Creation of More Immersive Experiential Contexts

In primary Chinese reading instruction, the construction of pedagogical contexts constitutes a vital pathway for optimizing students' reading experiences and deepening their textual comprehension. However, constrained by technological limitations, the reading contexts conventionally created tend to be rudimentary, falling short of enabling students to attain genuinely immersive experiences. Artificial intelligence technologies possess the capacity to transcend the spatiotemporal constraints of the traditional classroom, constructing immersive reading environments that integrate multiple sensory channels. Through the deployment of virtual reality (VR), augmented reality (AR), and intelligent interaction technologies, static texts are transformed into dynamic, perceptible, three-dimensional scenarios.

3.3 Enabling More Personalized Self-Directed Learning

As curricular reform deepens, the centrality of students' learning agency has been increasingly foregrounded, positioning self-directed learning as the most essential mode of student learning. Yet, owing to students' underdeveloped capacities for autonomous learning, the outcomes of such self-directed efforts often remain suboptimal. Drawing upon big data analytics and adaptive learning technologies, artificial intelligence facilitates the construction of learner-centered, personalized reading support systems. By continuously tracking and analyzing students' reading behaviors, cognitive patterns, and ability development trajectories, the system can accurately identify each learner's "zone of proximal development" and, on this basis, intelligently recommend reading materials

and learning tasks that are appropriately calibrated in terms of difficulty and thematic relevance.

3.4 Enabling More Intelligent Assessment and Feedback

In primary Chinese reading instruction, assessment and feedback serve as critical drivers for optimizing both pedagogical practices and learning strategies. However, conventional approaches to assessment and feedback demand substantial teacher time and effort while inevitably entailing a degree of subjectivity—shortcomings that impede the optimization and reform of primary Chinese reading instruction. Artificial intelligence fundamentally transcends the outcome-oriented, methodologically narrow confines of traditional reading assessment, shifting toward an intelligent evaluation paradigm that spans the entire learning process and operates across multiple dimensions. AI-powered systems can capture, in real time, students' micro-level performance throughout the reading process—including gaze trajectories, annotation quality, interaction choices, and verbal expression—and employ natural language processing and learning analytics to conduct multidimensional analyses of their depth of comprehension, quality of thinking, and affective dispositions. Assessment outcomes are no longer reduced to mere numerical scores; instead, they are transformed into visualized developmental profiles and concrete, actionable recommendations, delivered promptly to both students and teachers.

4. Effective Strategies for Integrating AI into Primary Chinese Reading Instruction

4.1 Leveraging AI to Construct Immersive Contextual Environments

Teachers can substantially deepen primary Chinese reading instruction through the AI-enabled construction of immersive contextual environments. This endeavor should be systematically advanced across four dimensions: technology integration, resource architecture, interaction design, and assessment and feedback. In this process, teachers can integrate multimodal perception technologies—incorporating natural language processing, computer vision, and voice interaction functionalities—to construct perceptual environments spanning visual, auditory, and tactile modalities. Through such integration, abstract texts are transformed into interactive virtual scenarios, enabling a dynamic transition from textual symbols to embodied, situated contexts that provide deep cognitive scaffolding for language comprehension.

4.2 Process-Oriented Guidance Through Digital Tools

Teachers can guide students in undertaking reading activities via tablet computers, learning devices, and similar platforms, leveraging embedded intelligent annotation, note-taking, and commenting functions to capture, in real time, the questions, reflections, and key information that emerge during the reading process. These dynamically generated learning traces serve as the data foundation upon which AI systems conduct analysis and deliver feedback. Specifically, the system can perform semantic analysis on the key vocabulary students highlight and the challenging passages they mark, generating interpretative annotations informed by contextual cues. When students articulate specific difficulties, the system draws upon their annotation content and reading progress to identify knowledge gaps and cognitive impasses, subsequently recommending appropriately calibrated supplementary materials, comparative texts, or micro-lectures, thereby furnishing immediate learning support.

4.3 Strengthening Intelligent Guidance for Reading-Writing Integration

In primary Chinese language arts instruction, reading-writing integration constitutes a vital pathway for promoting the comprehensive development of students' linguistic competencies. Traditional approaches to integrated reading-writing instruction typically rely on one-on-one teacher guidance and feedback, a model constrained by inherent efficiency limitations. The introduction of artificial intelligence technologies furnishes systematic, personalized intelligent support for reading-writing integration, enabling students to forge closer and more effective connections between reading input and writing output.

4.3.1 Reading-to-Writing Transfer Guidance Through Thinking Visualization

AI systems guide students in constructing visualized thinking maps, thereby transforming the reading

comprehension process into a structured cognitive framework. Employing natural language processing techniques, the system intelligently identifies key information, affective cues, and logical relationships within the text, and directs students in conducting categorical annotation and relational analysis. Taking the instruction of *The Swallow* as an example, students, under system guidance, build an analytical map encompassing three dimensions—"physical features, behavioral characteristics, and emotional expression." The system automatically identifies "resting scenes" as a point of departure for writing expansion, generating specific writing tasks such as "Describe the tranquil scene of swallows at rest," while simultaneously recommending relevant lexical repositories and model sentence structures, thereby enabling a seamless transition from reading comprehension to writing expression.

4.3.2 Intelligent Scaffolding Tailored to Individual Differences

Drawing upon the cognitive profiles students develop during the reading phase, the AI system constructs a differentiated writing support architecture. By analyzing the completeness, logical hierarchy, and linguistic characteristics of students' thinking maps, the system intelligently matches corresponding writing resources: for students who demonstrate keen observation yet insufficient expressiveness, it provides a rhetoric and figurative language toolkit; for those with lexical richness but weak logical organization, it supplies paragraph structure templates; for learners whose creativity stands out yet lack conventional discipline, it delivers micro-lectures on writing techniques. During the writing segment for *The Swallow*, the system tailors its support based on the characteristics of each student's initial draft, respectively recommending dynamic description techniques, spatial sequencing exemplars, or emotional integration methods, thereby actualizing precision guidance on a "one student, one strategy" basis.

4.3.3 Dynamic Assessment Mechanisms Grounded in Competency Development

The AI system establishes a multidimensional writing assessment framework that transcends the inherent limitations of conventional composition grading. The system conducts quantitative analysis across four dimensions—linguistic accuracy, content relevance, emotional expressiveness, and degree of creativity—while paying particular attention to the depth of connection between the writing output and the source reading materials. Upon completing the evaluation, the system automatically generates a feedback report containing specific revision recommendations and concurrently documents each student's developmental trajectory across successive writing tasks, constructing a personalized competency development profile. For instance, when a student writes, "The swallows lined up neatly on the electric wire," the system compares this against the original text's depiction of "several pairs of swallows, wearied from flight," prompting the student to recognize the discrepancy in the states conveyed by "lined up neatly" versus "wearied from flight," and suggesting a revision such as "clustered in twos and threes upon the wire, appearing somewhat fatigued yet utterly at ease." Simultaneously, the system performs relational analysis between the student's use of figurative expressions—such as "like black musical notes" and "the wire became a musical staff"—and the original text's metaphors, including "scissor-like tail," affirming the apt deployment of figurative language while encouraging the student to sustain this stylistic quality in subsequent writing.

This intelligently supported model of reading-writing integration ensures that the linguistic resources, cognitive strategies, and affective experiences accumulated during reading instruction are effectively transformed into foundational assets for writing expression, thereby generating a virtuous cycle in which input and output mutually reinforce one another. Through technological empowerment, reading-writing instruction shifts from a traditionally linear workflow to a multidimensional deep learning process, offering a novel practical pathway for cultivating students' core competencies in Chinese language arts.

4.3.4 AI-Supported Extracurricular Extension

In primary Chinese reading instruction, AI systems can effectively facilitate extracurricular extension activities, supporting students in undertaking diversified and personalized extended learning. Teachers can leverage intelligent

tools to excavate the cultural contexts, narrative arcs, and associated text clusters underlying the curricular texts, and, through big data analytics, integrate related multimedia resources—including texts, audio, video, and graphic materials—to guide students in thematic and inquiry-based exploration. To ensure the efficacy of extended learning, the AI system, drawing upon its analysis of students' language proficiency, reading preferences, and literacy performance, adaptively adjusts the difficulty level and modality of resources, thereby averting the cognitive overload that may arise from excessively challenging content or inappropriately matched formats, and achieving precision and adaptivity in resource recommendation. On this foundation, students are empowered to select extension directions and learning pathways suited to their individual interests, progressively broadening their cultural horizons and deepening their cognitive engagement through autonomous inquiry. This engenders a productive continuum extending from single-text reading to multi-text reading, and from in-class learning to extracurricular literacy cultivation.

5. Conclusion

In sum, artificial intelligence has ushered in a transformative new era for primary Chinese reading instruction. Through the implementation of strategies—namely, constructing immersive contextual environments, delivering process-oriented guidance via digital tools, strengthening intelligent scaffolding for reading-writing integration, and deploying AI-supported extracurricular extension—practitioners can effectively address longstanding challenges that have beset traditional instruction, including students' lack of access to real-time support, the absence of clear direction in extracurricular exploration, and the insufficiency of process-oriented assessment. Artificial intelligence functions not merely as a technological instrument, but rather as an intelligent intermediary that bridges students' cognitive profiles with instructional objectives, thereby steering reading instruction toward genuine personalization, depth, and systematic coherence. Looking ahead, educators should continue to explore at the intersection of technology and the humanities, harnessing AI to more effectively serve students' language construction, cognitive development, and cultural transmission, so as to ultimately realize the comprehensive enhancement of core competencies in Chinese language arts.

References:

- [1] Mukhallafi, A.R.T. Smart Classrooms-like Application: Using Artificial Intelligence for Developing English Language Teaching/Learning: An Analytical Study from University Students' Perspective [J]. *International Journal of English Linguistics*, 2020, 10(6):40.
- [2] Tafazoli, D. Exploring the potential of generative AI in democratizing English language education [J]. *Computers and Education: Artificial Intelligence*, 2024, 7100275-100275.
- [3] Xiufang L, Lv H, Jie L, et al. Reform of English interactive teaching mode based on cloud computing artificial intelligence—a practice analysis [J]. *Journal of Intelligent & Fuzzy Systems*, 2021, 40(2):3617-3629.