An Action Research on Empowering In-depth Chinese Language Teaching in Primary Schools with Digital Teaching Resources

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Abstract: To address the dual dilemmas of insufficient depth and the abuse of digital resources in primary school Chinese teaching under the background of educational digital transformation, and to fulfill the requirements of cultivating core literacy in Chinese, this study adopted the action research method with fifth-grade students as participants. Based on two texts, *The Sun* and *The Destruction of the Old Summer Palace*, teaching plans were designed, and digital resources including 3D videos, interactive whiteboards, and AI were applied to conduct two rounds of practical exploration on empowering in-depth primary school Chinese teaching with digital teaching resources. The results show that students' reading scores improved significantly, their language application and thinking abilities were effectively enhanced, teachers' digital teaching competence and classroom design ability were notably improved, and independent inquiry and in-depth interaction became the normal state of classroom teaching. This study can provide references for in-depth Chinese teaching in primary schools.

Keywords: digital teaching resources; in-depth teaching; primary school Chinese reading teaching; action research

DOI:10.12417/3029-2328.26.03.004

1.Introduction

At present, the reform of primary school Chinese teaching is being strengthened continuously, yet many practical problems remain to be solved urgently. Although relevant theoretical and practical research on reform is increasingly abundant, phenomena such as mechanical drills and rote memorization are still prevalent in classrooms. Most frontline teachers still take knowledge imparting and exam-oriented intensive training as the core of teaching. While such methods can improve test accuracy in the short term, they lead to students' lack of higher-order thinking and problem-solving abilities when facing open-ended questions, and fail to genuinely promote students' core literacy and emotional development. Although practical exploration of in-depth teaching has been gradually promoted, the application of digital teaching resources still suffers from formalism and fragmentation, failing to fully exert their empowering value.

In response to the problems existing in primary school Chinese teaching, the reform of empowering in-depth primary school Chinese teaching with digital teaching resources has emerged, and classroom teaching will inevitably face challenges and reshaping under the new development logic of the digital era [1]. As an important approach to cultivating core literacy in Chinese, in-depth primary school Chinese teaching requires guiding students to deeply understand textual connotations, develop higher-order thinking, and inherit cultural values, so as to "achieve depth in the realization of teaching values and goals, depth in knowledge understanding and transformation, and depth in learning processes and methods" [2]. Against the background of educational intelligence, digital teaching resources, with their diverse presentation forms and flexible application scenarios, have become important carriers for empowering in-depth primary school Chinese teaching and realizing the cultivation of core literacy in Chinese. Digital teaching resources, which exist in digital form and serve education and teaching, can be divided into digital texts, graphics, animations, audios, etc., according to information presentation modes; and according to sources, they can be divided into specially designed resources (including mind mapping tools, Seewo Activity Platform, etc.) and

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utilizable resources (including electronic journals, thematic learning websites, etc.) [3]. The extensive application of these resources has brought new opportunities for the advancement of in-depth primary school Chinese teaching.

Although existing research on empowering in-depth primary school Chinese teaching with digital teaching resources is flourishing, obvious limitations still exist: first, most literature focuses on technical empowerment and situation creation, with few long-term phased classroom action cases, such as how digital tools specifically promote pupils' deep understanding of textual metaphors; second, some studies lean toward technical application itself without in-depth critical reflection based on the essence of the Chinese discipline; third, most studies take students' interest or short-term academic performance as effect indicators, paying little attention to the evolution of teacher-student interaction patterns, the generation of teachers' digital teaching wisdom, and the progressive development of students' literacy such as language appreciation in the integration process.

Accordingly, it is of great value to further strengthen research on empowering in-depth primary school Chinese teaching with digital teaching resources, promote the deep integration of technology and in-depth Chinese teaching, shift to a classroom-based action research paradigm, and provide frontline teachers with referable implementation paths for digital in-depth teaching as an exploration to solve problems in primary school Chinese teaching.

2.Principles for Empowering In-depth Primary School Chinese Teaching with Digital Teaching Resources

To ensure the precise adaptation of resource application to teaching scenarios, effectively improve core literacy, and promote the deep integration and synergistic effect of technology and Chinese teaching, four principles are proposed based on the disciplinary characteristics of primary school Chinese teaching, the developmental needs of students at different stages, and the practical logic of in-depth teaching.

2.1 Goal-oriented Principle

The selection and application of digital resources must strictly follow the stage objectives in the Chinese Curriculum Standards and unit teaching requirements, ensuring that resource content is deeply integrated with the essence of the Chinese discipline and giving full play to the supporting and deepening role of technology in achieving teaching objectives.

2.2 Age-appropriate Principle

Students at different stages have different learning characteristics, so students' age and cognitive level should be considered in resource integration. For lower-grade students, emphasis should be placed on cultivating imagination, so intuitive or interesting resources should be selected; for middle and upper-grade students, whose text comprehension and generalization abilities have been greatly improved, more comprehension-based, induction-based, and judgment-reasoning resources should be added to assist teaching.

2.3 Integration Principle

Rational use of a teaching model combining digital and traditional resources. In actual teaching, full use should be made of paper textbooks for theoretical explanation and multimedia courseware for vivid presentation; online platforms should also be used to extend learning after class, forming an internal-external linkage mechanism. Meanwhile, digital teaching resources from other related disciplines should be appropriately introduced to expand students' knowledge and improve their comprehensive quality.

2.4 Appropriate-use Principle

Excessive use of digital resources occupies students' time for quiet thinking and textual immersion, easily leading to superficial reading and mental laziness. The total duration of digital resource display in a Chinese class should not be too long, and at least two-thirds of the time should be reserved for paper text reading, teacher-student dialogue, and writing practice. Resource application should serve teacher-student and student-student interaction, rather than letting students study independently by staring at screens.

3.Action Research on Empowering In-depth Primary School Chinese Teaching with Digital Teaching Resources

Action research was carried out under the above principles to timely identify problems, adjust strategies, and accurately explore effective paths for digital resources to empower in-depth teaching. As we all know, fifth-grade students have a certain vocabulary and basic reading ability, and their thinking is in a critical period of transition from concrete image thinking to abstract logical thinking, which is the golden stage for implementing "in-depth teaching". Therefore, this study selected one class (42 students) of fifth-grade primary school students as research subjects, conducted two rounds of progressive action research around specific texts, and verified practical effects by combining quantitative data and qualitative materials.

3.1 First Round of Action Research

3.1.1 Planning

Taking *The Sun* from the textbook for Grade 5 Volume 1 of primary school Chinese as an example, teaching objectives were proposed: first, to use 3D videos for analogical discrimination, perceive the functions of illustrative methods such as listing figures and making comparisons, and apply them flexibly; second, to search for information about the sun with digital resources, judge the viewpoint that "the sun is extremely important to us", and cultivate rational spirit.

3.1.2 Implementation

Stage 1: Introduction – Stimulating Interest and Introducing the Topic

Teaching activities: A 5-minute micro-lecture *The Mysterious Sun* was presented via courseware.

Resource application: The 5-minute micro-lecture helped students initially perceive the mysteries of the sun, quickly focus their attention, and introduce the learning theme of expository texts.

Stage 2: Intensive Reading – In-depth Study

Teaching activities: After self-reading paragraphs 1–3, students watched a 2-minute 3D visual video to intuitively understand that the sun is 1.3 million times larger than the Earth and 150 million kilometers away from us. Based on textual information and visual presentation, students filled in a comparison table in the learning task sheet, sorting out similarities and differences between the sun and the Earth, and between the sun and Jupiter in terms of size, distance, and impacts on humans. Then, in groups, students discussed why the author chose the Earth for comparison and its advantages. Results were projected via Seewo Whiteboard, and it was concluded that when using the comparison method, familiar objects should be selected to make explanations clearer.

Resource application: 3D video demonstrations enabled students to intuitively perceive the volume difference between the sun and other celestial bodies. Seewo Whiteboard projection of tables helped students master illustrative methods and appreciate the rigor of expository language.

Stage 3: Summary – Transfer and Application

Teaching activities: Students chose daily objects to introduce their characteristics using different illustrative methods. Collective evaluation was conducted using the *Evaluation Form for the Application of Illustrative Methods* (Table 1), and selected group writings were uploaded to an intelligent writing assistant for exchange and analysis.

Table 1 Evaluation Form for the Application of Illustrative Methods

Evaluation Content	Collective Evaluation
Clearly describe one main feature of the object	★★★
Use appropriate illustrative methods	★★★
Use multiple illustrative methods to describe two or more main features clearly	★★★

Resource application: Instantly verify learning effects and help students transfer from "learning" to "using"

illustrative methods in texts.

3.1.3 Observation

Digital resources were used for 12 minutes, complying with the appropriate-use principle. 32% of students could accurately state the advantages of illustrative methods, 58% could only retell video content, and 10% had no clear ideas; 30% of students focused on 3D models rather than teacher instructions. Among 6 interviewed students, 5 approved the intuitiveness of resources, and 4 thought time was wasted; in short writings, 65% of students used illustrative methods but lacked vivid language and over-relied on digital resources.

3.1.4 Reflection

Digital resources can enhance teaching vividness. Combining the introduction of the sun with VR animations showing its movement presents dynamic processes, allowing students to observe intuitively. Meanwhile, task sheets and group discussions bring flexibility and expansibility to learning. However, purely demonstrative resources should be reduced, and the strong correlation between resources and Chinese learning should be strengthened to prevent students from focusing on resources themselves and neglecting language appreciation.

3.2 Second Round of Action Research

This round was deepened on the basis of the first, focusing on optimizing and innovating student guidance, reducing the application of purely demonstrative teaching resources, guiding students to think independently before targeted teaching guidance, and strengthening the deep connection between teaching resources and Chinese teaching to closely integrate resources with close reading.

3.2.1 Planning

Taking *The Destruction of the Old Summer Palace* from the textbook for Grade 5 Volume 1 as an example, in-depth teaching objectives were proposed: first, to understand the sharp contrast between "glory" and "destruction" with digital restoration resources and historical documents, enhancing students' patriotism; second, to share learning insights via online discussion platforms, improving students' language expression and emotional resonance. Based on reflections from the first round, resources such as sliding erasure effects of virtual restoration images and AI panoramic roaming restoration were selected to create AI situational role-playing and historical data package independent inquiry tasks, avoiding bloody and violent video materials.

3.2.2 Implementation

Stage 1: Introduction – Stimulating Interest and Introducing the Topic

Teaching activities: Situations were created; students first appreciated 3D restoration animations of the digital Old Summer Palace and visited thematic learning websites to appreciate its former glory; then they reported pre-class self-study gains, described initial reading feelings with keywords, and established an emotional tone.

Resource application: 3D restoration animations intuitively reproduced the original appearance of the Old Summer Palace, narrowing the distance between students and historical texts and laying a foundation for emotional preparation and text learning.

Stage 2: Intensive Reading – In-depth Study

Teaching activities: Taking paragraph 5 as the entry point, students read freely, collected materials to understand the crimes committed by the Anglo-French Allied Forces, grasped words to perceive emotions, and understand why the Old Summer Palace was destroyed; they drew mood maps to feel psychological fluctuations during reading, displayed pre-collected materials on the big screen, and shared and discussed with classmates to achieve emotional sublimation.

Resource application: Students fully perceived the magnificence of the Old Summer Palace; mood fluctuation charts deepened their understanding of the text, developed thinking and dialectical abilities progressively, and learned to think from different aspects and levels.

Stage 3: Summary – Emotional Sublimation

Teaching activities: In the classroom summary stage, students read excerpts from *Song of the Seven Sons* and *Peace Proclamation*, and conducted dialogues with virtual guardians of the Old Summer Palace through situational role-playing, forming a value consensus of cherishing peace, studying hard, and practicing the mission of strengthening the country.

Resource application: Cross-temporal emotional dialogue was realized through situational role-playing, strengthening students' emotional resonance and helping them deeply understand the historical truth that "backwardness leads to being beaten".

3.2.3 Observation

In the in-depth study stage, students truly understood the destruction of the Old Summer Palace and engaged in deep thinking; learning effects in historical background and critical thinking were significantly improved; in the summary stage, students could rationally express the core understanding that "backwardness leads to being beaten".

3.2.4 Reflection

A clear implementation path of digital in-depth teaching was formed in this round. However, individual differences exist in students' thinking depth. How to build more concrete thinking scaffolds (such as thinking angle prompt cards and core keyword lists) for some students to help them transition from superficial thinking to in-depth inquiry is a key issue to be explored in subsequent teaching.

3.3 Effect Analysis of Empowering In-depth Primary School Chinese Teaching with Digital Teaching Resources

This part analyzes the effects of action research from quantitative and qualitative dimensions to ensure objectivity and comprehensiveness.

3.3.1 Quantitative Analysis: Improved Student Reading Scores and Core Competencies

The post-test included two reading comprehension tasks: sentence rewriting understanding of expository texts and scenario appreciation plus sentence function analysis of prose texts, with the same question types and difficulty as the pre-test. For overall scores (total 45 points), the pre-test average was 28, and the post-test average was 31.6, an overall increase of 3.6 points. For core competencies: the full score for illustrative method comprehension was 12, with a pre-test average of 7.6 and post-test average of 8.9 (an increase of 1.3); the full score for emotional perception was 13, with a pre-test average of 7.1 and post-test average of 8.2 (an increase of 1.1). Both core competencies improved, indicating that digital teaching resources effectively enhance students' higher-order reading abilities.

SPSS analysis shows that the Sig. (2-tailed) value of pre- and post-tests was less than 0.05, indicating a significant difference. The standard deviation decreased from 4.20 to 4.10, with more concentrated scores and improved overall performance. Specific data are shown in Table 2.

Table 2 Data Analysis of Pre-test and Post-test

Stage	Number	Mean	Std. Deviation	F	Sig	t	Sig. (2-tailed)
Pre-test	42	28	4.20	17.23	.303	7.29	.006
Post-test	42	31.6	4.10			7.29	.006

Note: $p < 0.05$, significant difference; F = intra-group variance.

3.3.2 Qualitative Analysis: Multi-dimensional Optimization of Teacher-Student Development and Classroom Patterns

（1）Development of Students' Core Literacy: Significant Improvement in Language Application and Thinking Ability

A total of 42 classroom writing assignments were collected after action research: 31 fully met requirements, 9

partially met, and 2 failed to meet standards. Overall, most students could accurately grasp main features of surrounding objects and use appropriate expository expressions, with improved language and thinking abilities. In addition, 85% of students believed that information-based teaching methods helped them better understand textual emotions and connotations. They could flexibly use illustrative methods such as listing figures and making comparisons in expositions, breaking away from the previous fixed routine of data piling, with significantly improved logicality and vividness of language.

（2） Teachers' Professional Development: Effective Improvement in Digital Teaching Competence and Classroom Design Ability

According to teachers' reflection logs, teaching concepts and abilities were greatly updated and developed. Teachers could use Seewo Whiteboard, AI situational role-playing, etc., for real-time display, with more vivid PPT presentations; classroom interactions tripled, and lesson preparation time was reduced by 30%. Obvious progress was made in selecting and producing digital resources, effective questioning, and accurately grasping students' learning status.

（3）Transformation of Classroom Patterns: Independent Inquiry and In-depth Interaction Become Normal

Independent inquiry, group discussion, thinking expansion and other activities became important teaching methods. The traditional one-way lecturing mode gradually shifted to multi-dimensional interaction between teachers and students, and among students. Teaching activities also transformed from superficial imparting to in-depth construction.

4.Conclusion

Aiming at the dual dilemmas of insufficient depth and abuse of digital resources in primary school Chinese teaching, action research on empowering in-depth primary school Chinese teaching with digital teaching resources was carried out based on the principles of goal orientation, age appropriateness, integration, and appropriate use. It can not only effectively improve students' reading ability and core literacy, but also promote the professional development of teachers' teaching ability, realizing the two-way coordinated development of teachers and students. This study can provide references for in-depth Chinese teaching in primary schools.

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