

# Innovative Applications of Chinese Character Information Processing Technology in Enhancing Teaching of Chinese Language and Literature

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**Abstract:** With the continuous advancement of educational information technology, the application strategies of Chinese character information processing technology in Chinese language and literature teaching have become increasingly sophisticated. This paper first explores the application strategies of mobile technology in Chinese character learning, emphasizing the importance of scientific application and how to innovate teaching methods by integrating online and offline approaches. Subsequently, it analyzes the use of multimodal technology in Chinese character recognition and writing, highlighting the significance of dynamically presenting stroke composition and integrating real-life contexts. Additionally, the paper examines the application of Chinese character structure theory and two-dimensional contour deformation technology in teaching, emphasizing their roles in helping students understand the structure and writing of Chinese characters. Furthermore, regarding the use of multimedia information technology, the study proposes the development of a micro-lesson upload platform to facilitate autonomous learning. It also discusses how to select appropriate learning platforms to enhance teaching interaction, enabling students to access richer and more personalized learning experiences while allowing teachers to effectively track and guide their progress. These strategies aim to improve the quality and efficiency of Chinese character teaching.

**Keywords:** Chinese character information processing technology; Chinese language and literature teaching; Chinese character learning; application

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## 1. Introduction

With the rapid development of mobile technology, the application of Chinese character information processing technology in Chinese language and literature teaching has become increasingly widespread. This technology enables students to learn Chinese characters anytime and anywhere, significantly enhancing the flexibility and efficiency of their learning processes. By fully utilizing its auxiliary functions, students can more accurately grasp

the pronunciation and writing of Chinese characters, thereby increasing their learning motivation <sup>[1]</sup>. Additionally, Chinese character information processing technology addresses the needs of diverse learners through personalized learning path design. It allows teachers to monitor student's learning progress and mastery levels in real time, intelligently recommend appropriate learning content and exercises, and help students acquire Chinese character knowledge more effectively. As a result, it substantially improves the efficiency and effectiveness of Chinese character learning.

## **2. The application strategy of mobile technology in Chinese character learning**

### **2.1. Scientific use of applications to fully explore auxiliary functions**

In the process of learning Chinese language and literature, students can achieve enhanced results with minimal effort by effectively utilizing mobile tools to assist their learning. In the Internet era, students are encouraged to adopt an open and inclusive mindset, actively engaging with application-based learning methods. This necessitates the scientific use of applications and a thorough exploration of their various functions in Chinese character learning <sup>[2]</sup>. For instance, many applications feature functionalities such as consolidation exercises, extracurricular enrichment, and cultural extensions, which collectively support effective learning before, during, and after class. During the post-class learning phase, students should utilize fragmented time to practice Chinese character strokes using these applications. This approach fosters good writing habits and further enhances their ability to learn Chinese characters. Consequently, students can not only engage in more efficient learning activities but also continuously improve their proficiency in the Chinese language and culture through consistent practice.

### **2.2. Implementation of online and offline teaching to innovate Chinese character teaching methods**

In offline teaching, educators should adapt and innovate teaching content based on actual circumstances, integrating application programs seamlessly into Chinese language and literature instruction. In online teaching, educators should emphasize student-centered approaches by participating in thematic training on application-based teaching, exploring tools that address students' needs, and selecting applications scientifically and judiciously. This proactive approach enables the innovation of Chinese language and culture teaching methods. Furthermore, educators should deepen their understanding of and expertise with application programs, balancing the integration of offline teaching, online teaching, and teacher-student interaction.

Additionally, educators must leverage various application functions to establish interactive and collaborative communication mechanisms with students. This approach enhances teacher-student relationships, improves the effectiveness of Chinese character learning, and enables educators to monitor students' progress. Based on this feedback, targeted adjustments to both online and offline teaching programs can be made, thereby laying a solid foundation for enhancing the quality of Chinese character instruction <sup>[3]</sup>.

## **3. The application strategy of multi-modal technology in Chinese character recognition and writing**

### **3.1. Dynamic presentation of stroke composition to enhance students' learning effect**

Strokes form the fundamental units of Chinese characters and are essential for students to effectively recognize

and write them. Therefore, in practical teaching, the advantages of multi-modal technology should be fully utilized to enable students to master the composition, writing, and categorization of strokes flexibly <sup>[4]</sup>. By combining narrative discourse with visual elements such as color, graphics, text, and digital modes, students' learning outcomes can be significantly enhanced.

For example, when teaching the Chinese character “Yong” (永), the teacher can position the character at the center of a visual presentation and use the color red to emphasize its structural importance. The structural components of “Yong” can then be disassembled and displayed around the central character, with the writing sequence demonstrated using digital annotations. The digital mode serves as a critical vector to guide students in understanding the correct stroke order, while color-based arrows can visually reinforce this guidance and explain the norms of stroke composition.

Furthermore, integrating the original character with its stroke order allows students to better understand the structure and meaning of the strokes. This multi-modal approach can make the presentation of stroke order more intuitive, enabling students to effectively combine and memorize characters. This method not only improves students' efficiency in recognizing and writing Chinese characters but also enhances their ability to produce visually appealing and well-formed characters <sup>[5]</sup>.

### **3.2. Combining real-life contexts to enhance Chinese character recognition**

Chinese character learning extends beyond achieving academic success; it also involves equipping students with the ability to recognize and utilize Chinese characters in daily life. To this end, educators should leverage available resources to connect the characters being taught with real-life contexts. By incorporating practical elements, students can better appreciate the relevance of Chinese characters in their daily lives, fostering a sense of familiarity and enthusiasm for recognizing and utilizing them <sup>[6]</sup>.

For instance, when teaching characters such as “street” (街), “road” (路), and “avenue” (大道), teachers can integrate mobile phone maps and street signs into their lessons. This approach activates students' interest by linking learning to recognizable urban landscapes, such as Tiyou West Road, Linhe West Road, or Lide Avenue <sup>[7]</sup>. Similarly, while teaching the character “day” (日), its extended meanings, such as “period” and “date,” can be explored. Teachers might display examples like “production date” or “shelf life” on product packaging to illustrate its practical applications.

By enabling students to apply the characters they learn in real-life contexts, their engagement and motivation for learning Chinese characters can be significantly enhanced. This strategy also encourages students to independently recognize and write the Chinese characters they encounter in their daily environments <sup>[8]</sup>.

## **4. Chinese character teaching strategy using Chinese character structure theory and two-dimensional contour deformation technology**

### **4.1. Rational use of Chinese character structure theory**

The effective application of Chinese character structure theory is crucial in the teaching process, as it aids students in understanding the principles behind the construction of Chinese characters. This approach not only helps students memorize and write characters more effectively but also provides insight into their underlying logic. For instance, by analyzing the radicals and overall structure of Chinese characters, students can better grasp their form and meaning. Teachers can guide students to identify common radicals across different characters, helping them discover internal connections and reinforcing their memory. This method not only improves

learning efficiency but also enhances students' interest in Chinese character learning.

Additionally, teachers can design interactive activities to enable students to apply the theory in practice. For example, Chinese character puzzles can be organized, where students combine different radicals to form new characters. Such activities not only enhance memory retention but also foster creativity and problem-solving skills. Moreover, modern technologies such as augmented reality (AR) or virtual reality (VR) can be utilized to create immersive learning environments. These tools allow students to observe the structure and evolution of Chinese characters in a virtual space, thereby deepening their comprehension of the characters' construction and historical development <sup>[9]</sup>.

## **4.2. Rational use of two-dimensional contour deformation technology**

The application of two-dimensional contour deformation technology in Chinese character teaching introduces an innovative perspective that aids students in understanding character structure and stroke order through dynamic visual adjustments. This technology can demonstrate the formation of Chinese characters by animating their strokes and structures. For example, using specialized software, teachers can illustrate how characters are built progressively from simple to complex forms. This approach enables students not only to observe the final character shape but also to comprehend the sequential role of each stroke in forming the character <sup>[10]</sup>.

Furthermore, two-dimensional contour deformation technology can be integrated into interactive learning games. For instance, a stroke-filling game can be designed where students match the outline of a character by filling in the correct strokes to complete its structure. Such gamified approaches enhance students' engagement and reinforce their memory of character composition. Additionally, the technology can offer personalized learning paths by adjusting the difficulty level and deformation speed based on the student's progress and proficiency. This tailored approach allows students to master the accurate writing of Chinese characters in alignment with their unique learning pace and needs <sup>[11]</sup>.

# **5. The application strategy of multimedia information technology in Chinese character learning platforms**

## **5.1. Creating a micro-lesson upload platform to promote students' independent learning**

The composition and stroke sequence of Chinese characters represents critical yet challenging aspects of Chinese character teaching, with smooth stroke transitions being an essential component. Traditional teaching methods often lack reproducibility and are constrained by the limited time and energy of teachers. To address this issue, teachers can develop micro-lesson videos that incorporate the content of Chinese character teaching and upload them to information learning platforms. These videos enable students to engage in self-directed learning. Micro-lessons can also expand the scope and depth of Chinese character instruction, catering to students' individualized learning needs to the greatest extent possible <sup>[12]</sup>.

Additionally, micro-lesson videos provide functions such as playback and slow-motion viewing, allowing for a more intuitive demonstration of the Chinese character writing process. These features help students tailor their learning process to their individual circumstances, achieving personalized teaching outcomes and implementing the principle of adapting teaching methods to students' unique needs. By enhancing their ability to learn Chinese characters independently, students are better equipped to develop proficiency in both stroke composition and overall character formation <sup>[13]</sup>.

## 5.2. Rational selection of learning platforms to facilitate interactive teaching

In the context of Chinese character teaching, once micro-lesson videos are prepared, teachers should upload these videos to appropriate learning platforms to foster effective teacher-student interaction. For instance, teachers may use platforms such as Classroom Pie, which operates via WeChat public accounts and eliminates the need for app downloads or website logins, thereby enhancing accessibility for students. Classroom Pie serves as a versatile hybrid platform that allows teachers to upload micro-lesson videos, teaching materials such as PowerPoint presentations, and various multimedia resources <sup>[14]</sup>.

Moreover, Classroom Pie supports a range of interactive functions, including real-time voting, quizzes, attendance tracking, and online homework correction. These features enable teachers to manage class activities efficiently, monitor student engagement, and provide timely feedback. Furthermore, the platform facilitates interactive teaching by allowing teachers to create discussion boards and quizzes, encouraging students to ask questions and share insights during the learning process.

In selecting an appropriate learning platform, teachers should prioritize interactivity, user experience, and functionality. Platforms like Classroom Pie not only enhance engagement but also streamline classroom management, making them effective tools for improving the efficiency and quality of Chinese character teaching.

## 6. Conclusion

In summary, Chinese language and literature, as a crucial discipline in colleges and universities, play a significant role in cultivating talent. With the rapid advancement of information technology, the application of Chinese character information processing technology in teaching has proven to not only enhance teaching effectiveness but also stimulate students' curiosity and improve their learning efficiency <sup>[15]</sup>.

To ensure the seamless integration of Chinese language and literature teaching with Chinese character information processing technology, educators should carefully consider the unique characteristics and practical needs of teaching Chinese language and culture. Additionally, teachers must adeptly utilize information processing technology while addressing challenges encountered in actual teaching scenarios. This approach will support the continuous development of Chinese language and literature instruction towards greater incorporation of information technology, ultimately improving students' proficiency and fostering their understanding of the Chinese language and culture.

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