


Concept of Visual Representation into Calligraphy in Overseas Chinese Language Instruction

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Abstract

The development of Chinese calligraphy and Chinese characters has a deep-seated relationship. Chinese calligraphy contains an essential and traditional humanistic spirit which is representative of China's rich culture. Currently, as the desire to learn Chinese is expanding rapidly worldwide, this paper considers how the pictorial representation of Chinese calligraphy can assist language teaching. Based on a literature review, teaching observation, and analysis of cultural images, the authors propose integrating pictographic concepts into calligraphy to develop another approach for digital instructional methods in teaching Chinese language. This study is to investigate the impact of implementing tablet-based teaching of calligraphy in elementary schools on calligraphy learning effectiveness, learning attitude, and learning attention. The results were as follows: 1) The experimental group implementing tablet-based calligraphy teaching performed better than the control group implementing traditional teaching on learning effectiveness. The improvement in learning effectiveness was significant; 2) The experimental group implementing tablet-based calligraphy teaching showed better calligraphy learning attitude compared to the control group with traditional teaching. The enhancement of calligraphy learning attitude overall was significant; 3) The experimental group implementing tablet-based calligraphy teaching surpassed the control group implementing traditional teaching on calligraphy skill concentration. The increase in calligraphy skill concentration was significant overall.

Keywords

Chinese Calligraphy, Concepts of Pictorial Representation, Teaching of Chinese Written Language Overseas

1. Introduction

Chinese calligraphy, as the quintessence of Chinese culture, remains highly vibrant in the 21st century. Chinese characters, among the world's oldest scripts, possess enduring beauty and profound literary meaning. In this era of rapid dissemination of e-culture and the global enthusiasm for the Chinese language, the influence of Chinese characters continues to expand. Apart from the existing 1.3 billion Mandarin speakers worldwide, China is making significant efforts by establishing Confucius Institutes across the globe to disseminate traditional Chinese culture.

Until 2014, there are over 500 Confucius Institutes and 1000 Confucius Classrooms in 126 countries and regions, signifying a rapid growth of nearly one-third in numbers compared to 2007. Recognizing the importance of understanding Chinese culture in the context of China's rise, the United States is accelerating efforts to cultivate understanding and engagement with Chinese culture, considering it a top priority (Cai, 2018).

Chinese language learning in the United States has witnessed remarkable growth. From 2009 to 2018, the number of college students taking Mandarin increased 200-fold, making Chinese the second-fastest-growing foreign language option after Arabic. Currently, over 800 universities in the U.S. offer Chinese programs. According to the data provided by "Enrollments in Languages Other Than English in United States Institutions of Higher Education", the number of students studying Chinese at U.S. universities grew by 36% from 2007 to 2018. The growth rate of Chinese language learning in American primary and secondary schools from 2004 to 2018 was 200% (Song, 2000).

With a large and continuously growing number of Chinese language learners, this trend signals the popularization and internationalization of Chinese language education in the 21st century.

The relationship between calligraphy and Chinese characters is inseparable. As global interest in learning the Chinese language continues to grow, calligraphy has also come under the spotlight. In 2000, Peking University established the Institute of Calligraphy Art, which offers courses such as "Overseas Calligraphy and Cultural Dialogue" and "Globalization and the Export of Chinese Calligraphy Culture". These courses, with a cross-cultural perspective, aim to promote calligraphy culture internationally (Shi, 2000).

On the mainland, foreign language colleges and Confucius Institutes worldwide have incorporated calligraphy learning as an essential component of Chinese cultural education. The China Institute, founded in New York in 2008 by Hu Shi, an influential figure in Chinese cultural exchange in the 20th century, is actively contributing to this endeavor (Han, Tong, & Xie, 2000). The China Institute offers courses for K-12 students in the United States, as well as teachers. This initiative enables them to learn how to teach Chinese language and culture using calligraphy, fostering a deeper appreciation and understanding of Chinese calligraphy (Ke, 2001).

Drawing on extensive experience in calligraphy instruction and a deep concern for overseas Chinese language education, this study revealed the difficulties American students face when learning Chinese. It was found that merely guiding students in character recognition and reading offered limited progress (Tu, 2010). Many students perceived learning Chinese as time-consuming and challenging. According to the U.S. government's classification of foreign language learning, Chinese is considered one of the most challenging and time-intensive foreign languages. In cross-cultural calligraphy teaching for foreign students, it was observed that integrating calligraphy into Chinese language education could effectively stimulate students' interest and absorption in character recognition (Zeng, 2015; Ye, 2017; Ou, 2019). It is recognized that calligraphy serves as a vital channel for spreading Chinese culture. This study suggests incorporating the concept of combining text and images into calligraphy as part of Chinese language education, showcasing the essence of Chinese culture—calligraphy—as another gateway for the expansion of Chinese language education.

2. The Concept of Combining Text and Images in Calligraphy Instruction and Evaluation of the Current Status of Chinese Culture

The concept of combining text and images, or “graphic communications”, emerged as a new term, signifying the transmission of both visuals and text. In the era of high-tech information and digitalization, this approach brought about revolutionary changes in the complex integration and dissemination of text and images. The fusion of printing technology, graphic arts, and graphic communications facilitated the rapid integration, exchange, and sharing of information. The concept of graphic communications originates from the emerging term “Graphic Communications”, which refers to the transmission of images and text. With the high-tech and digitalization of our era, complex work related to integrating text and images, as well as modes of communication, has undergone a revolutionary transformation. The convergence of printing technology, graphic arts, and graphic communications has enabled rapid integration, exchange, and sharing of data (Li, 2013). The development of graphic communication technology can be divided into three stages: printing technology, graphic arts, and graphic communications. Printing technology underwent a revolutionary transformation due to the rise of computer technology, gradually shifting from text and image printing to computer-based information processing. With the application of networking and digital technologies, the ways in which text and images are presented continue to evolve, pushing graphic communication into new frontiers. In the realm of technological advancements, the era of networking and digitalization has brought forth significant changes in the complex integration and dissemination of text and images, allowing for global transmission (Zhang, 1980). This has resulted in structural changes in various industries. From integrated graphics to cross-process integration and media integration, scientific and technological progress in graphic communication significantly impacts societal culture, poli-

tics, economics, and technological development (Huang, 2020).

The following research questions:

- 1) What are the effects of tablet-based calligraphy teaching on students' calligraphy learning?
- 2) Do traditional calligraphy teaching and tablet-based calligraphy teaching affect students' attitudes towards learning calligraphy differently?

3. Method

The research subjects were 47 students from an elementary school in Spokane City, Washington, USA, consisting of two classes. One class was the experimental group receiving tablet-based teaching assessment, while the other class was the control group receiving traditional calligraphy teaching. Experimental group: Contextual reflective calligraphy teaching method was adopted for learning. Tablets were used for calligraphy teaching (see **Table 1**). The teacher first recorded demonstration videos with classical music and output them on tablets for students to watch the demonstration and write while listening to relaxing classical music to ease their moods. Students could pause and adjust based on their own writing paces. After finishing the first line, students could adjust the demo video themselves to check if their own writing positions and structures matched the teacher's demonstration. They could make adjustments and improvements when writing the second line based on the differences. After finishing one practice sheet, two teachers would provide feedback. The teaching materials were demonstrated by the researcher.

Control group: Traditional calligraphy teaching demonstration method was adopted. The teacher demonstrated using a visual presenter projected onto a TV screen for students to watch and follow. The instruction contents were also based on the materials demonstrated by the researcher.

The teaching content of this study demonstrates two five-character quatrains in semi-cursive script using a felt pen—"Wang Zhihuan Climbing Stork Tower" and "A Countryman's Song" by Ge Shu. The characteristics of semi-cursive script are vigorous and simple, with upright and powerful strokes and precise yet daring structures, which give it an elegant and vigorous style. The fact that it remains unsurpassed to this day shows the profound essence of calligraphy it contains.

4. Data Analysis Results

This session is divided into four sections. The first section is on valid samples, the second section is on Kappa consistency analysis, the third section analyzes the calligraphy learning effectiveness of the experimental group and control group, the fourth section analyzes the attitude towards using tablet computers for contextual reflective oriented calligraphy teaching (see **Table 2**).

4.1. Valid Samples

This study adopted a quasi-experimental pretest-posttest design with non-equivalent

Table 1. Teaching activity design.




Teaching Activity	Activity Content	Teaching Resources	Period (hour)	Assessment
	The poem line is: “The sun sets behind the mountains Students use tablets to watch the teacher’s model writing video.	Tablets, calligraphy worksheets		
	For the left-falling stroke, transition from thick to thin. Vertical strokes should slant to the right bottom. Turning strokes slant to the left bottom. Horizontal strokes use the left point and evenly distribute the white space, ending the stroke.	Tablets, calligraphy worksheets	2	Able to concentrate on the teacher’s explanation and watch the teacher’s model writing attentively.
	Write the characters smaller in the middle of the grid boxes. Make the vertical strokes slightly thicker. Vertical strokes are slanted straight and turning strokes. Use left-pointed horizontal strokes in the middle to evenly distribute the white space, ending strokes with short horizontals.	Tablets, calligraphy worksheets	2	Able to concentrate on the teacher’s explanation and watch the teacher’s model writing attentively.
	Left-falling strokes start from the left with the brush tip. Curved vertical strokes start with the brush tip slightly higher. Horizontal strokes use an upward brush with a slant. Right-falling strokes also start from the left. Vertical ticks start with the brush tip higher. Right-falling strokes start with the brush tip raised. Ending strokes extend to the right.	Tablets, calligraphy worksheets	2	Able to concentrate on the teacher’s explanation and watch the teacher’s model writing attentively.

Table 2. Meaning of Cohen’s kappa coefficient values.

Cohen’s kappa Value	Consistency efficient
<0.2	Slight
0.21 - 0.40	Fair
0.41 - 0.60	Moderate
0.61 - 0.80	Substantial
0.81 - 1.00	Almost Perfect

groups, with classes randomly assigned as the experimental group of 24 students and the control group of 23 students.

4.2. Kappa Consistency Coefficient Analysis

The scoring results of the two teacher raters consistent for the calligraphy assignments of the total 47 students in the control group and experimental group? Kappa consistency coefficient analysis was used to analyze the inter-rater reliability.

Cohen’s kappa coefficient analysis was used to analyze the scoring consistency between the two teacher raters on the two five-character quatrain calligraphy assignments for the 47 students. The results showed that the Cohen’s kappa coefficient for the scoring results between the two raters was 0.789, $p < 0.001$, indicating a strong level of agreement.

4.3. Analysis of Calligraphy Learning Effectiveness between the Experimental Group and Control Group

This section mainly analyzes the differences in calligraphy learning effectiveness between the experimental group taught using tablet computers for contextual reflective oriented learning and the traditionally taught control group. The independent variable is the learning method (whether tablet computers were used for calligraphy teaching). The dependent variable is the students' posttest scores on the calligraphy skills assessment. The covariate is the students' pretest scores on the calligraphy skills assessment. Analysis of covariance (ANCOVA) was conducted with learning method as the independent variable, posttest scores as the dependent variable, and pretest scores as the covariate.

4.4. Analysis of Attitudes towards Using Tablet Computers for Contextual Reflective Oriented Calligraphy Teaching

This section understands the analysis of attitudes towards using tablet computers for contextual reflective oriented calligraphy teaching between the control group and experimental group students.

After the experimental teaching, the 24 students in the experimental group who received the tablet computer contextual reflective oriented calligraphy teaching and the 23 students in the control group completed the Calligraphy Learning Attitude Questionnaire.

A total of 47 questionnaires were collected. The questionnaire had 26 multiple choice questions, divided into four parts:

1) Attitudes towards liking calligraphy

There were 23 students in the control group and 24 students in the experimental group included in this analysis. The overall mean score on the Calligraphy Attitude Questionnaire for the control group was 82.48, with a standard deviation of 16.643. The overall mean score on the Calligraphy Attitude Questionnaire for the experimental group was 111.63, with a standard deviation of 11.390. The following:

Control group:

- *Number of students:* 23
- *Questionnaire mean score:* 82.48
- *Questionnaire standard deviation:* 16.643

Experimental group:

- *Number of students:* 24
- *Questionnaire mean score:* 111.63
- *Questionnaire standard deviation:* 11.390

This provides the descriptive statistics for the attitude questionnaire scores for the two groups. The experimental group had a higher mean score compared to the control group.

2) Attitudes towards the functions and importance of calligraphy

Independent samples t-test statistics:

Levene's test for equality of variances

$F = 0.731, p = 0.397 > 0.05$

Since $p > 0.05$, the null hypothesis of equal variances is accepted.

$t = -5.489, p = 0.000 < 0.05$

Since $p < 0.05$, there is a statistically significant difference between the groups.

In summary, the experimental group had significantly more positive attitudes towards using calligraphy in daily life compared to the control group. The results demonstrate the tablet computer contextual reflective oriented teaching method was effective in improving students' attitudes towards applying calligraphy practically in their daily lives compared to traditional teaching methods.

3) Attitudes towards calligraphy learning

Based on the information provided:

Control group:

- *Mean score on calligraphy attitude questionnaire:* 82.48
- *Standard deviation:* 16.643

Experimental group:

- *Mean score on calligraphy attitude questionnaire:* 111.63
- *Standard deviation:* 11.390

The control group had a lower mean score (82.48) with higher variability (SD = 16.643) on the calligraphy attitude questionnaire compared to the experimental group; the experimental group had a higher mean score (111.63) with lower variability (SD = 11.390) on the calligraphy attitude questionnaire compared to the control group. This suggests that students who received the tablet computer contextual reflective oriented calligraphy teaching (experimental group) had more positive attitudes towards calligraphy overall compared to those who received traditional teaching (control group). The higher mean and lower standard deviation in the experimental group indicates more consistently positive attitudes in that group. In a word, the descriptive statistics show more favorable calligraphy learning attitudes in the experimental group exposed to the new tablet computer teaching method compared to the traditional teaching control group.

4) Attitudes towards practical daily use of calligraphy

*Independent samples t-test statistics:**Levene's test for equality of variances*

$F = 1.990, p = 0.165 > 0.05$

Since $p > 0.05$, the null hypothesis of equal variances is accepted.

$t = -6.621, p = 0.000 < 0.05$

Since $p < 0.05$, there is a statistically significant difference between the groups.

In summary, the experimental group had significantly more positive attitudes towards calligraphy learning compared to the control group.

The results demonstrate the tablet computer contextual reflective oriented teaching method was effective in improving practical daily use of calligraphy towards learning calligraphy compared to traditional teaching methods.

5. Discussion

The study analyzes students' learning attitudes and concentration when implementing traditional teaching versus tablet-based situational reflection-oriented calligraphy instruction.

The analysis of students' learning attitudes and concentration in the two teaching approaches will inform the conclusions and recommendations regarding the effectiveness of using tablets and reflective learning to teach calligraphy.

The following shows

1) Effects of tablet-based situational reflection-oriented learning on calligraphy learning effectiveness.

There was a significant difference in "calligraphy skills assessment" scores between the two groups after the experiment. This indicates that tablet-based situational reflection-oriented calligraphy learning is superior to not using it. Possible reasons are that students can repeatedly play and watch learning at their own pace, paired with light classical music, which generates interest in learning, absorbs students happily, and enhances learning motivation for acquiring calligraphy skills during course activities.

2) Changes in students' attitudes towards calligraphy learning using tablet-based situational reflection-oriented learning.

This research examined students' attitudes across four aspects: liking calligraphy, perceiving calligraphy's functions and importance, attitudes toward calligraphy learning, and attitudes toward daily practical use of calligraphy. Comparing the control and experimental groups' responses to the calligraphy learning attitude questionnaire revealed significant differences in calligraphy learning attitudes after the experimental teaching. Students participating in the experimental teaching showed improved attitudes in all four aspects by the experiment's conclusion. This demonstrates tablets provided an appealing learning platform.

3) Changes in students' concentration using tablet-based situational reflection-oriented calligraphy learning

Comparing the control and experimental groups shows students in the experimental group had significantly higher concentration scores. This indicates the situational reflection-oriented calligraphy learning videos effectively attracted students' attention and maintained engagement, enhancing their concentration. In a word, the tablet-based situational reflection-oriented approach positively impacted students' calligraphy learning effectiveness, attitudes, and concentration.

Overall, students in the experimental group showed significantly improved concentration after the experiment compared to the control group. Tablet-based situational reflection-oriented calligraphy learning positively impacted learning outcomes, attitudes, and concentration. Tablets provide an engaging learning platform.

6. Conclusion

Core literacy-based calligraphy teaching should not only focus on students' mastery of knowledge and skills, but also their ability to solve problems and

transform their lives in real-world contexts. Students' creative works best demonstrate this ability and reflect their integrated performance in core literacy. Improving and perfecting works is an important part of calligraphy creation and a key way to enhance creative level, especially important for middle and primary school students learning calligraphy. However, traditional calligraphy teaching often ends the learning of a stage after students complete and get their works evaluated, without emphasizing the learning process of improving works. To address the issues of traditional calligraphy teaching, the study has attempted to use action research in middle and primary school calligraphy teaching and exploration, to develop a teaching model integrating pre-class independent inquiry, in-class evaluation-based improvement, and after-class extension. Building on students' consolidated knowledge, teachers can guide peer evaluation of pre-class basic stroke and character copying assignments to identify problems. For students' uneven mastery of skills, teachers can facilitate peer learning for advanced students to help others through experience sharing, demonstration, and hands-on guidance. Teachers should timely discover and correct problems through presentations and patrols. For common mistakes, teachers can demonstrate and instruct students to learn by doing, comprehending features and rules of regular script, and mastering skills. Enhanced skills lay the foundation for students to improve works. Teachers can guide students to evaluate pre-class creative works regarding content, strokes, structure, composition, style, overall effect, etc., and identify problems. By facilitating improvement through evaluation during class, teachers enabled students to master methods for refinement, paving the way for after-class extension.

After class, teachers can support continued action research through student work exhibitions and online spaces. Students can absorb feedback, explore improvements collaboratively, perfect works through targeted strategies, and achieve spiral ascension through self-reflection. Teachers can also guide students to create works for real-life contexts, learning to apply calligraphy knowledge and skills.

In addition to abundant language learning materials, cultural learning is also an important part of Chinese language curriculum. More attention and effort on related teaching materials and curriculum design from scholars is needed.

This paper uses teaching observation method and proposes strategies of integrating pictographic concepts into calligraphy for Chinese language teaching:

- 1) Activating pictographic visual thinking of Chinese characters culture, and combining calligraphy with Chinese language teaching. Using ancient scripts and pictographic concepts to integrate calligraphy into Chinese character teaching can help enrich cultural implications for learning Chinese, and become an important cultural and creative resource aligned with internationalization.
- 2) Using metacognitive construction to develop pictographic calligraphy integrated Chinese language teaching plans. From a metacognitive perspective, explore the evolution of Chinese characters from pictographs, symbols to abstract concepts. Using static cognitive thinking to analyze the frame structure of Chi-

nese characters, and supplementing with dynamic pictographic animations can enhance learning.

Integrating pictographic concepts into calligraphy for learning Chinese characters, supplemented by online learning and digital information technology, can strengthen metacognitive abilities in appreciating the beauty in the meaning, pronunciation, and form of Chinese characters. It is hoped this digitalized pictographic integration perspective can provide forward-looking development for globalized Chinese language education combined with calligraphy culture, and comprehensively promote Chinese language and culture to the world stage.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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