

THE APPLICATION OF TEAM-BASED LEARNING WITH MULTIMEDIA
TO IMPROVE CHINESE WRITING SKILLS OF GRADE 5 STUDENTS
IN SICHUAN PROVINCE, CHINA

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ABSTRACT

This study aimed to compare the Chinese writing skills of grade 5 students in China before and after using team-based learning with multimedia, and also to examine their satisfaction. This study employed cluster random sampling to select 30 grade 5 students from a primary school in Sichuan Province. The quantitative data were collected through Chinese writing skills tests (pre-test and post-test), and students' satisfaction questionnaire. And the qualitative data were collected through semi-structured interview to support the ideas. Through data analysis, a significant difference was found between the pre-test and post-test scores. Additionally, all responses on the students' satisfaction questionnaire were at the highest level. And the responses of the semi-structured interview showed that the students were highly satisfied with the application of team-based learning with multimedia to Chinese writing class. Therefore, the results of this study clearly demonstrated that the application of team-based learning with multimedia improved the Chinese writing skills of grade 5 students.

Keywords: Team-based learning with multimedia, Chinese writing skills, Students' satisfaction

INTRODUCTION

With the continuous development of education, the emphasis on Chinese writing has been continuously deepening, setting higher goals for primary school Chinese writing teaching. It requires students to write from real life, dare to express themselves, diverge in thinking, stimulate imagination, endow writing with vitality, and minimize the lack of novelty and flat narrative (Cao, 2019).

The comprehensive literacy, and Chinese writing skills are an important component of Chinese literacy. It can be seen that writing holds a significant position in Chinese teaching. Fifth grade students progress from recognizing characters to forming sentences, then to organizing ideas, and finally to essay writing. This is a developmental process from nothing to something, from easy to difficult. Writing has always been the focus of Chinese teaching which playing an important role in improving students' comprehension, logical thinking, and language expression abilities. It can reflect students' comprehensive Chinese language. (Wu, 2022).

In Chinese teaching, the cultivation of writing skills is one of the core objectives. Improving Chinese writing skills can help students master language tools more proficiently and enhance the accuracy

and fluency of their language expression. It can also cultivate students' ability to think critically, improve the logicity and coherence of their thinking. Furthermore, it can enhance students' self-cultivation and humanistic qualities. (Chen, 2023). However, primary school students' Chinese writing skills are generally low in China, leaving much room for improvement.

There are two main reasons. One the one hand, primary school students lack sufficient accumulated writing materials, and their thinking and expression abilities are not comprehensive or profound enough. When writing, they mostly interpret surface phenomena or express shallow understandings, lacking deep emotional expressions. (Sun, 2021). On the other hand, the insufficient ability of primary school students to revise their writing. Many teachers do not provide careful writing correction guidance but instead let students check their work on their own. And, students' abilities are not sufficient, and they do not know effective methods for revision, so they cannot identify their writing errors or have the opportunity to correct them (Ma, 2023). Therefore, it is necessary to use effective teaching methods to improve primary school students' writing skills.

RESEARCH OBJECTIVES

1. To compare the Chinese writing skills of grade 5 Chinese students before and after using team-based learning with multimedia.

2. To examine the students' satisfaction of grade 5 Chinese students through using team-based learning with multimedia for Chinese writing skills.

LITERATURE REVIEW

Chinese writing skills is one of the four major skills in the discipline of Chinese language studies, in order to improve the Chinese writing skills of primary school students, teachers have tried various methods in search of the most practical and effective writing teaching approach such as the observational method (Liu, 2022) and cooperative learning. It cultivates students' awareness of unity and cooperation while improving their Chinese writing skills (Wu, 2021) and creating mind maps.

Team-based learning emphasizes collaborative learning with cooperation at its core, and uses small groups as the basic organizational structure for teaching which offering both flexibility and practicality. Through the team-based learning, students

analyze and solve problems, learn to respect each other, work together, and engage in self-reflection. So as to enhance students' self-learning abilities, communication skills, and teamwork capacity, help them better understand their strengths, share willingly, and learn from others, improve their Chinese writing skills and promote their overall development, benefit them throughout their lives (Cao, 2023).

The multimedia is very suited for the present Chinese writing teaching. It can provide various forms of teaching resources for classroom teaching, such as pictures, videos, slides, music, etc., which integrates sound, light, color and other elements, and can make the presentation of knowledge vivid and profound (Zhou, 2021).

Multimedia integrates audio, video, images, and other teaching resources which transforming abstract knowledge into tangible entities, and presenting rich resources to students in a vivid and intuitive manner. This lively and vivid teaching method can attract students' attention, enhance their observational skills, stimulate their senses, open up their minds, and expand their cognitive horizons (Wu, 2021). Additionally, multimedia can be

used to showcase excellent compositions, allowing students to read and appreciate them together, learning from the good expressions and techniques used to improve their own Chinese writing skills. (Zhao, 2023).

In summary, team-based learning with multimedia plays a significant role in improving students' Chinese writing skills, and it can significantly improve students' narrative writing skills and enhance their self-expression and interest in writing (Zheng & Zhang, 2019). Moreover, this teaching method has significantly improved students' writing fluency and thinking flexibility, and the teamwork and diversified feedback mechanism are helpful to improve students' writing level more comprehensively (Zhou, 2022). So, the researcher should place greater

emphasis on the application of team-based learning with multimedia in enhancing the fifth-grade students' Chinese writing skills and adopt scientific, reasonable methods to maximize its benefits.

CONCEPTUAL FRAMEWORK

In this study, the independent variable was the application of team-based learning with multimedia and the dependent variables were students' Chinese writing skills and learning satisfaction towards using team-based learning with multimedia. It mainly involved facilitating collaboration among group members and the effective use of multimedia, allowing students to learn and communicate within their teams. To study students' Chinese writing skills and learning satisfaction. Figure 1 illustrated the conceptual framework of this study.

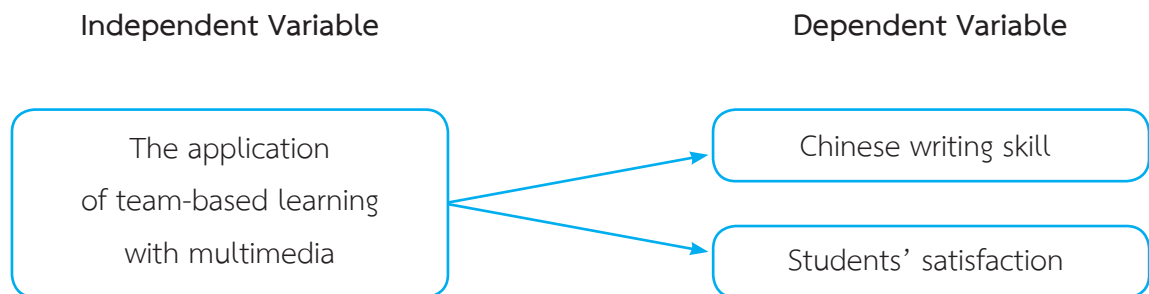


Figure 1 Relationship of variables

METHODOLOGY

1. Research Design

In this study, quantitative and qualitative research methods were applied to collect the data including pre-test and post-test to test the Chinese writing achievement while questionnaire and semi-structured interview used to investigate their satisfaction. The research design was showed in Figure 2.

3. Lesson Plans

The researcher designed four lesson plans, taking 30 students as samples, and taught the sample group for one month, one class a week. Each lesson plan used team-based learning with multimedia to teach Chinese writing for 80 minutes. The theme of the course was selected according to the school course content of the sample group, and it also need

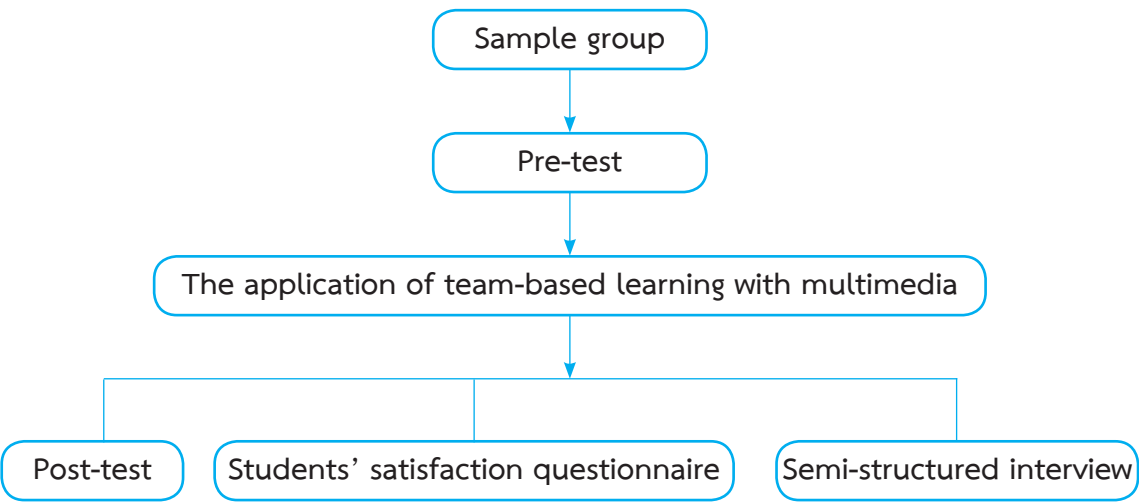


Figure 2 Flow of Research Design

2. Research Instruments

Both quantitative and qualitative research methods were adopted in this study. There were four main tools to collect data: lesson plans, Chinese writing skills test, students' satisfaction questionnaire and semi-structured interview.

the approval of teachers in related disciplines.

4. Chinese writing skills Test

The Chinese writing skills test was used to measure students' performance before and after team-based learning with multimedia lessons and to compare

their achievements intervention. In the Chinese writing test, there was a short description of the writing content, the writing topic and requirements were given. The students need to complete four writing, each of writing should be more than 100 words according to the topic. The test was evaluated according to the following four criteria: 1) Format, 2) Word count, 3) Means of expression, 4) Accuracy and coherence of language structure, and the total score of the writing is 80 points.

5. Questionnaire

The students' satisfaction questionnaire consisted of three parts: students' interest and motivation, engagement and efficacy, each with 5 questions, totally 15 questions. These statements were scored on a five-point of Likert scale from 1 to 5: (5) Strongly agree, (4) Agree, (3) Neutral, (2) Disagree, and (1) Strongly disagree.

6. Validity and Reliability

The definition of validity is the correctness and effectiveness of the measurement results of the study. The higher the validity, the more accurate and reliable the measurement results will be. The researcher found validity using Item-Objective Congruence (IOC). The IOC, developed by Rovinelli and Hambleton (1976), and it's a method used to assess whether the items in a test

or questionnaire align with the intended measurement objectives.

An IOC score of 0.67 to 1.00 indicated that the content validity of the scale was consistent and acceptable. If the IOC score was less than 0.67, the item would be considered unclear and required revision or deletion. In this study, all the research instruments were validated by three experienced primary Chinese teachers with the score which was higher than 0.67. The IOC result for the lesson plans was 1, Chinese writing skills test was 1, students' satisfaction questionnaire was between 0.67 to 1, and semi-structured interview was between 0.67 to 1. The reliability for the students' satisfaction questionnaire was 0.97 (Cronbach's Alpha).

7. Population and Sample

In this study, the target population was the fifth grade students from a primary school in Sichuan Province, China. The study population consisted of 10 classes in grade 5, with 30 students in each class, and a total of 300 students. They ranged in age from 10 to 11 years and varied in gender and ability. Using cluster random sampling one class (30 students) from grade 5 with varying levels of Chinese writing skills and mixed genders, including 15 females and 15 males.

8. Data Collection Procedures

The researcher obtained the approval of the primary school administration in Sichuan Province, China. Since the participants in this study were between the ages of 10 and 11, the researcher also sought permission from the school authorities and parents.

Before the researcher collected the data, the participants had been informed of all the information about each research procedure, including students' biological data, questionnaire responses, etc. And ensured the confidentiality of all data and information. After the study was completed, the researcher deleted all the data.

9. Data Analysis and results

In order to compare the test results of pre-test and post-test in Chinese writing skills. The results were analyzed through a paired sample t-test to define the students' achievement.

In order to analyze students' satisfaction, a questionnaire survey was used to collect data, and the standard deviation

and mean values were used to analyze the data collected in the questionnaire.

RESEARCH RESULTS

1. Chinese writing skills Test Scores

Figure 3 showed the scores of each participant in the pre-test and post-test, as well as the increase of scores and percentage difference. In the pretest, the total mean score was 46.40, and the students' test scores ranged from 36 to 60. In the post-test, the total mean score was 61.87, and the students' test scores ranged from 52 to 72. The total increase mean score was 15.47, and the total percentage increased by 19.34%. We could see that all the 30 participants' Chinese writing scores have improved significantly, with a minimum of 10 points (12.50%) and a maximum of 21 points (26.25%). It could be seen than all the students' scores have improved in the post-test. This showed that the application of team-based learning with multimedia was helpful to improve students' Chinese writing skills.

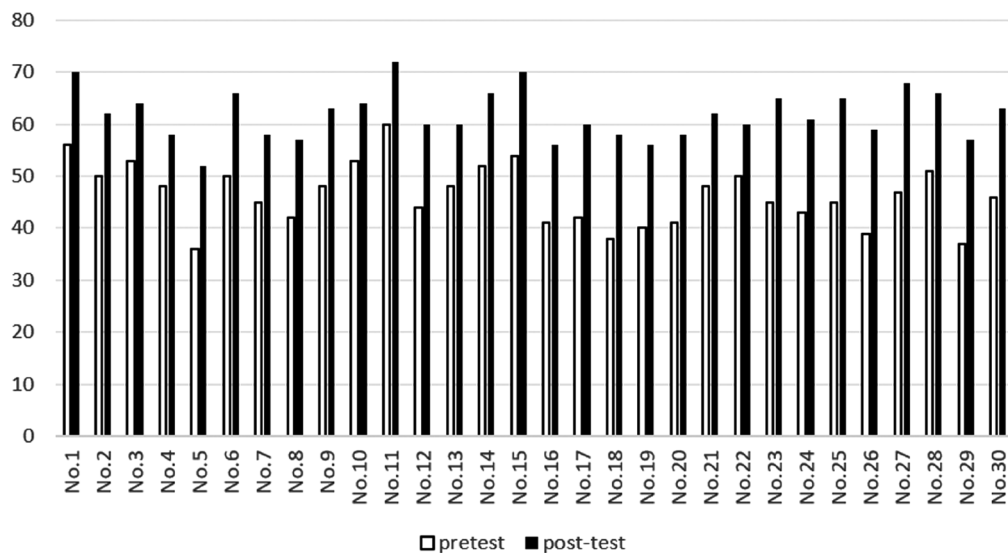


Figure 3 Pre-test and Post-test

As shown in Table 1, paired-sample analysis of the test scores showed positive results. The pretest mean score was 46.40 with a standard deviation of 5.89; the post-test mean score was 61.87 with a standard deviation of 4.74. The post-test increased in mean score and differ from the pretest was 15.47. The obtained significant value (p) was 0.01, which was lower than 0.05 ($p < 0.05$)

indicating a statistically significant increase in the post-test score compared to the pretest score for the sample group.

Figure 4 showed a comparison of the pre-test and post-test averages. The pretest average score was found to be 46.40, while the post-test average score was notably higher at 61.87. This showed that everyone had made progress and achieved better scores on the post-test.

Table 1 T-test Results of Students' Scores

	n	$\bar{X}$	SD	t	Sig.
Pretest	30	46.40	5.89	-26.275	0.000
Posttest	30	61.87	4.74		

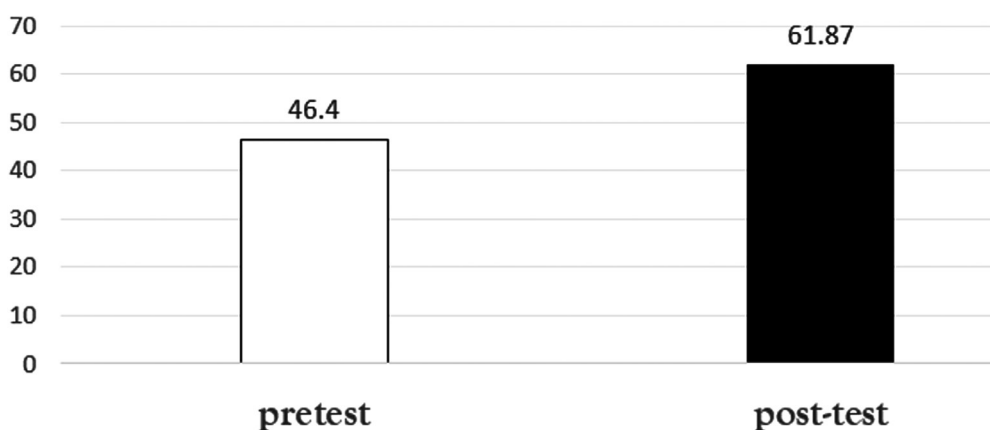


Figure 4 Average of Pre-test and Post-test

2. Satisfaction by Questionnaire

In order to collect quantitative data on students' satisfaction with learning through team-based learning with multimedia, a questionnaire survey was conducted on the sample group, which was divided into three parts. Part A - Students' Interest and Motivation, Part B - Engagement and Part C - Efficacy of Team-Based Learning with Multimedia in Teaching on Student Learning. It included 15 statements

and used a five-point of Likert scale: 1 means strongly disagree, 2 means disagree, 3 means neutral, 4 means agree and 5 means strongly agree. Descriptive statistics (mean and standard deviation) were used to analyze the survey results. In the mean interpretation, less than 1.00 was the lowest level, 1.01-2.00 was low level, 2.01-3.00 was medium level, 3.01-4.00 was high level, and 4.01-5.00 was the highest level.

Table 2 Part A: Students’ Interest and Motivation

Students’ Interest and Motivation	$\bar{X}$	SD	Interpretation
1. The application of team-based learning with multimedia in teaching was fun.	4.90	0.64	High
2. The media in teaching were interesting.	4.80	0.66	High
3. I could understand the lesson better with team-based learning with multimedia.	4.50	0.73	High
4. I would like to participate in the course with team-based learning with multimedia.	4.70	0.68	High
5. The application of team-based learning with multimedia can stimulate my motivation to learn Chinese writing.	4.90	0.70	High
Average	4.76	0.68	High

In Table 2, it showed the item scores and mean scores of students’ satisfaction with Part A - Students’ Interest and Motivation. Item 1 - “The application of team-based learning with multimedia in teaching was fun” and item 5 - “The application of team-based learning with multimedia can stimulate my motivation

to learn Chinese writing” had the highest mean score of 4.90 (SD=0.64 and 0.70), at the highest level. Item 3 - “I could understand the lesson better with team-based learning with multimedia.” had the lowest mean score of 4.50 (SD = 0.73), at the highest level.

Table 3 Part B: Student Engagement

Students' Interest and Motivation	$\bar{X}$	SD	Interpretation
6. All activities related to the application of team-based learning with multimedia engaged me to participate in the course.	4.60	0.68	High
7. I had more opportunities to interact with classmates during the class.	4.70	0.72	High
8. The contents of team-based learning with multimedia made me feel easier to concentrate in writing class.	4.90	0.66	High
9. I could share my writing with multimedia efficacy.	4.80	0.65	High
10. The application of team-based learning with multimedia helped me take the initiative to learn Chinese writing.	4.80	0.68	High
Average	4.76	0.68	High

In Table 3, it showed the item scores and mean scores of students' satisfaction with Part B - Engagement. The highest mean score was 4.90 (SD = 0.66) for item 8 - "The contents of team-based learning with multimedia made me feel easier to concentrate in writing class."

at the highest level. The lowest mean score was 4.60 (SD = 0.68) for item 6 - "All activities related to the application of team-based learning with multimedia engaged me to participate in the course." but it still remained at the highest level.

Table 4 Part C: Efficacy of Team-Based Learning with Multimedia in Teaching on Student Learning

Students' Interest and Motivation	$\bar{X}$	SD	Interpretation
11. The application of team-based learning with multimedia helped me to improve my writing skills.	4.90	0.72	High
12. I could be more confident in writing class.	4.90	0.72	High
13. I could apply the media to learn with the other skills.	4.80	0.64	High
14. The application of team-based learning with multimedia in teaching helped me to solve problems and difficulties.	5.00	0.65	High
15. I understood the principles of writing better with team-based learning with multimedia.	4.90	0.63	High
Average	4.72	0.48	High

In Table 4, it showed the item scores and mean scores of students' satisfaction with Part C - Efficacy of Team-Based Learning with Multimedia in Teaching on Student Learning. The highest mean score was 5.00 (SD=0.65) for item 14 - "The application of team-based learning with multimedia in teaching helped me to solve problems and difficulties in writing more effectively." at the highest level. The lowest mean score was 4.80 (SD = 0.64) for item 13 - "I could apply the media to learn with the other skills." but it still remained at the highest level.

3. Semi-Structured Interview

The researcher collected valuable ideas and suggestions about students' satisfaction through semi-structured interview in a short time. In addition, the data from semi-structured interview was analyzed to complement and support the data collected by questionnaire, and provided a more comprehensive understanding of students' views.

After using team-based learning with multimedia to teach Chinese writing, the researcher selected six students

from 30 participants by simple random sampling and divided them into three groups, with two students in each group, namely high score, medium score and low score, and conducted semi-structured interview with them. The participants selected to answer six questions through semi-structured interview, and the researcher analyzed the collected answers according to three topics.

Part A: Students' Interest and Motivation. According to students' feedback, they were satisfied with learning Chinese writing by using team-based learning with multimedia. Most participants felt that learning Chinese writing through team-based learning with multimedia is very interesting and motivating. Moreover, the content of team-based learning with multimedia presentation made them more confident in Chinese writing learning.

Part B: Engagement. Most students found team-based learning with multimedia in teaching is very helpful for them to learn Chinese writing. They were very willing to participate in class activities and had interactive discussions with their classmates, because this will make them more actively participate in writing learning and speak freely. And videos, pictures, documentary, Power Point and audio visual displayed

by multimedia made students more easily integrated into the classroom.

Part C: Efficacy of Team-Based with Multimedia. Most students thought that learning Chinese writing with team-based learning with multimedia is not only easier to understand, but also has obvious effects and advantages. The application of team-based learning with multimedia has improved students' expressive ability, language organization ability and imagination ability, and also significantly improved their Chinese writing skills.

RESEARCH CONCLUSIONS

The Results of Pre-test and Post-test Data Analysis

The higher mean score of the post-test indicated that the application of team-based learning with multimedia in Chinese writing teaching played a positive role in improving Chinese writing skills. The analysis of the above quantitative data showed that students' post-test scores had improved obviously. Therefore, the results of this study showed that the application of team-based learning with multimedia can effectively improve the Chinese writing achievement of the fifth-grade students.

The Results of Students' Satisfaction Questionnaire Analysis

According to the data in part A of the questionnaire, it showed that students had the highest level of interest and motivation in the application of team-based learning with multimedia.

According to the data in part B of the questionnaire, it showed that students had the highest level of engagement in the application of team-based learning with multimedia.

According to the data in part C of the questionnaire, it showed that students had the highest level of effectiveness in the application of team-based learning with multimedia.

DISCUSSIONS AND RECOMMENDATIONS

This study confirmed that team-based learning with multimedia significantly improved fifth-grade students' Chinese writing skills in Sichuan. The post-test scores increased by 15.47 points (19.34%), demonstrating its effectiveness. Michaelson & Fink (2004) pointed out that team-based learning with multimedia promoted collaborative learning, which can improve critical thinking and problem-solving skills. Multimedia elements, structured learning, and peer collaboration fostered engagement, critical thinking, and confidence.

Students showed high satisfaction (mean scores: 4.76–4.90), with multimedia making lessons interactive and enjoyable. The integration of visual and auditory materials captured students' attention, reducing writing anxiety and enhancing motivation. Collaborative learning encouraged idea-sharing, deeper comprehension, and improved writing proficiency (Vygotsky, 1978). Additionally, we can see that multimedia-assisted learning significantly improved students' critical thinking and problem-solving skills in writing.

In conclusion, team-based learning with multimedia boosted writing skills, engagement, and confidence, creating a supportive learning environment. The combination of structured guidance, multimedia, and peer interaction fostered motivation and skills development. Future research should explore long-term impacts and broader applications of this approach.

Implementation

Through the above analysis, we found that team-based learning with multimedia teaching method has played a positive role in the Chinese writing skills of the fifth-grade students in China:

1. Team-based learning with multimedia teaching method in this study

has effectively improved Chinese writing skills of the fifth-grade students in China. Therefore, this teaching method should be implemented in Chinese writing courses at other schools.

2. Fully integrated team-based learning with multimedia to stimulate students' interest and motivation in learning, deepened their understanding of key concepts, and improved their Chinese writing skills.

Future research

Considering some limitations of this study, the researcher suggested the following for further research:

1) The study was limited to 30 fifth-grade students in China, and the duration was only four classes for one month. Therefore, in future research, researchers could expand the scope of the study to different grades in various schools across China, with a larger sample size

and more class hours, so as to collect more comprehensive data and improve the reliability of the research results.

2) The focus of this study was to improve students' Chinese writing skills, so it was recommended that future researchers try to expand team-based learning with multimedia teaching method to other aspects of Chinese instruction, such as listening, speaking, and reading.

All the details of this study had been presented. In a word, the application of team-based learning with multimedia can effectively improve students' Chinese writing skills, and play a positive role in improving students' learning interest, participation, problem understanding and solving ability. It has provided an excellent learning tool for Chinese teachers and students in China. And it can be effectively applied to the teaching of Chinese writing and other related fields.

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