The Effects of an Instructional Model Using Blended Learning Approach and Collaborative Learning Approach to Enhance the Mandarin Chinese Proficiency of PRC Students

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Abstract

This research consists purposes were 1. to compare the Mandarin Chinese proficiency within the experimental group before and after the experiment 2. to compare the Mandarin Chinese proficiency after the experiment between the experimental group and the control group and 3. to examine students' satisfaction with the instructional model implemented through the blended learning approach and collaborative learning approach. The sample of the study included 100 first-year undergraduate students majoring in Primary Education in a university in China (two classes of 50 each), using cluster random sampling. One class was assigned as the experimental group receiving instruction via the model using blended learning approach and collaborative learning approach, while the other was assigned as the control group taught by traditional method. A quasi-experimental design with a pretest–posttest approach was employed. Research instruments comprised eight 180-minute lesson plans for each group. These were evaluated by five experts, with mean appropriateness scores of 4.18 (experimental) and 4.03 (control). The Mandarin proficiency test, adapted from the PSC blueprint (reading words, reading passages, and spontaneous speech), was content-validated by five experts (final IOC = 0.80–1.00 after item revision). Internal consistency was acceptable. Two trained raters scored the speaking component. The findings indicated that 1) The experimental group showed a marked improvement in Mandarin Chinese proficiency from pretest to posttest, confirming the effectiveness of the instructional model 2) Students in the experimental group demonstrated significantly higher Mandarin Chinese proficiency than those in the control group at the .05 level, with a high effect size and 3) Students reported a very high level of satisfaction with all aspects of the instructional model, particularly in areas related to the integration of blended and collaborative learning methods.

Keywords: Blended Learning Approach, Collaborative Learning Approach, Mandarin Chinese Proficiency

Introduction

Mandarin Chinese (Putonghua) is the national common language of the People's Republic of China and a means of unifying people across regions with very different dialects and cultural traditions. It is used as an official language in education, public administration, and examinations, e.g., the Putonghua Proficiency Test (Putonghua Shuiping Ceshi, PSC). However, despite long-standing state support, many university students still experience difficulties with Mandarin. Common problems include lack of motivation, variation in proficiency levels, and challenges in using classroom knowledge in authentic communication.

In recent years, the blended learning approach has been introduced in Chinese higher education as one way to address these problems. Blended learning combines classroom teaching with digital resources, providing students with more flexibility and opportunities to personalize their learning. For example, the introduction of Small Private Online Courses (SPOCs) has made it easier for students to review course content independently and develop stronger autonomy in learning (Liu, Chai, & Wei, 2024). Rahim (2019) also notes that blended learning supports self-directed learning and gives teachers more room to adapt instruction according to student needs.

At the same time, the collaborative learning approach has gained attention for its ability to involve students more actively in the learning process. Activities such as group projects, joint discussions, and problem-solving tasks allow students to build knowledge together while practicing teamwork and critical thinking. This type of interaction has been shown to increase motivation and willingness to engage (Noh & Yusuf, 2018). More recently, Su, Sazalli, and Miskam (2024) found that combining collaborative learning with blended approaches produced stronger outcomes, especially in higher education language courses.

This study responds to the fact that relatively few models have been tested that systematically combine blended and collaborative approaches for Mandarin instruction at the university level. Its objectives are: (1) to compare proficiency results between an experimental group and a control group after the intervention, (2) to examine improvements within the experimental group before and after instruction, and (3) to explore student satisfaction with the model.

The Purposes

1．To compare the Mandarin Chinese proficiency within the experimental group before and after the experiment.

2．To compare the Mandarin Chinese proficiency after the experiment between the experimental group and the control group.

3．To examine students' satisfaction with the instructional model implemented through the blended learning approach and collaborative learning approach.

Literature Review

The researchers reviewed the relevant literature, which demonstrate the "knowledge gap" that has yet to be addressed as follows:

1. Blended Learning Approach

Blended learning has been taken up in many areas of higher education as a way to balance traditional classroom teaching with the use of digital resources. The main idea is not to replace teachers or face-to-face contact, but to give students additional tools and space for self-paced study. Scholars argue that this model offers greater flexibility and can be adjusted to suit different learning styles (Khalil, Abdel Meguid, & Elkhider, 2018). In the context of language education, Rahim (2019) notes that it helps students to become more self-directed, while also giving teachers room to adapt their methods.

In China, blended learning has gradually moved from being an experiment to something more mainstream. Many universities have adopted Small Private Online Courses (SPOCs) alongside classroom teaching. Liu, Chai, and Wei (2024) reported that SPOCs provided more accesses to materials and gave students more independence in how they learned. Other studies also show benefits, such as better engagement and in some cases stronger academic outcomes (Su, Sazalli, & Miskam, 2024). At the same time, most of the research looks at blended learning in isolation. Less attention has been given to what happens when it is combined with collaborative methods, which is the focus of the present study.

2. Collaborative Learning Approach

Collaborative learning is a learner-centered approach that promotes communication, teamwork, and critical thinking through group discussions, projects, and problem-solving tasks (Noh & Yusuf, 2018). Yang (2023) identified four key paradigms effect, conditions, interaction, and design reflecting the growing complexity of collaborative learning in pedagogy and research. Despite its recognized educational value, assessment remains a challenge, as traditional evaluation methods often fail to capture the social dynamics and shared

responsibilities that are central to collaboration (Boud & Bearman, 2024). While collaborative learning is widely acknowledged, there is limited research on how it can be effectively integrated with blended learning to enhance Mandarin proficiency in university settings a gap this study seeks to address.

3. Mandarin Chinese Proficiency

Mandarin Chinese proficiency refers to a learner's standardized use of pronunciation, vocabulary, and grammar, commonly assessed through the Putonghua Shuiping Ceshi (PSC), which includes reading words, passages, and engaging in spontaneous speech. Proficiency is classified into three main grades (1–3), each with subgrades A and B, with Grade 1A being the highest. Beyond standardized testing, research has explored how learners apply Mandarin in real-world contexts. Wu and Roever (2021) found that interactional competence, such as managing refusals, improves with proficiency. Su and Ren (2017) discovered that advanced learners were more likely to use pragmatic structures that resemble those of native speakers when making requests. Sun, Tan, and Feng (2024) found that bilingual children who had limited Mandarin often used strategies like generalization and code-switching, highlighting the need to support both accurate language use and effective communication. Although the PSC provides a standard for evaluating language proficiency, there is still a need for more research on teaching methods that encourage both formal accuracy and natural language use, particularly among university students learning a second language—an area this study aims to address.

In theory, blended learning integrates face-to-face instruction with digital resources to increase flexibility, access, and learner self-regulation, while collaborative learning emphasizes socially mediated knowledge construction through small-group interaction, negotiated meaning, and shared responsibility. Although both approaches are well-supported, most prior studies examine them in isolation, focusing either on flexible delivery (blended) or on interactional processes (collaborative). Consequently, there is limited evidence on integrated designs that specify how online and in-class components should be sequenced and how collaborative tasks should be orchestrated to be mutually reinforcing—particularly in undergraduate Mandarin courses. The unresolved gap concerns actionable design principles that delineate who do what, when across pre-class preparation, in-class activities, and post-class consolidation, together with assessment criteria that capture both linguistic accuracy and interactional competence. Addressing this gap, the present study develops and evaluates a blended–collaborative instructional model for university-level Mandarin, providing empirical evidence on its effects on proficiency outcomes and student satisfaction.

Methodology

This study used a quasi-experimental design, involving pretests and posttests to compare groups that differed naturally. It combined both quantitative and qualitative methods to analyze the findings.

1. Population and Sample Groups

1.1 Population included first-year primary education students enrolled in the second semester of 2024, organized into 12 classrooms of approximately 50 students each, with varying levels of Mandarin Chinese ability.

1.2 Sample groups: An a priori power analysis using G*Power 3.1 (effect size = 0.85, α = 0.05, power = 0.95) indicated a minimum of 74 participants. Using cluster random sampling at the classroom level, two entire classrooms were selected (n = 50 each; N = 100). One class was the experimental group and used a mix of blended learning and collaborative learning during lessons. The other class was the control group and continued with the traditional teaching method.

2. Research Instruments

There were 3 research instruments as follows:

2.1 Lesson Plans: Eight lesson plans, which used a mix of blended learning and collaborative learning methods, were given to the experimental group. The control group used eight traditional lesson plans. Five experts checked both types of lesson plans to make sure they were suitable, using a five-point rating system. The lesson plans for the experimental group got an average score of 4.18, which is better than the 4.03 average score for the control group's lesson plans.

2.2 The Chinese Putonghua Proficiency Examination was the model for the Mandarin Chinese proficiency test. The test had four parts, including: reading single-syllable words, reading multi-syllable words, reading a passage, and speaking naturally. Five experts gave scores of the content validity ranging from 0.80 to 1.00. The scores were very consistent, with a Pearson correlation of 0.918.

2.3 The satisfaction form was made to check how satisfied students were with blended and collaborative learning. It covered eight main areas: learning outcomes, learning experience, working together, help with technology, teacher support, learning materials, general feedback, and open-ended questions. Each section had two or three questions that looked at students' views on the teaching methods and how they were assessed. Students answered using a five-point scale. Five experts checked the questions to make sure they were clear and useful. The questions matched the goals they were meant to measure, as shown by the Item-Objective Congruence (IOC) scores, which were between 0.80 and 1.00.

3. Data Collection: The data collection spanned eight weeks and included both the experimental and control groups. Week 1: a pre-test was administered to establish baseline Mandarin Chinese proficiency. Weeks

2–7: the experimental group received instruction based on the blended learning and collaborative learning approach using eight lesson plans implemented over twelve sessions (2 hours per session; 24 hours total). After each session, classroom observations and teaching reflections were recorded with support from two research assistants. Week 8: a post-test was conducted to assess proficiency gains, and students completed satisfaction questionnaires. The control group followed the same timeline (Weeks 1–8) and assessment schedule but was taught using a traditional teaching method with the same number of lesson plans; pre- and post-tests were administered at the same intervals to enable comparison of learning outcomes.

4．**Data Analysis:** Inferential statistics were used, specifically the dependent sample t-test, to compare the scores before and after the intervention within the experimental group. The independent sample t-test was used to compare the post-test scores between the experimental and control groups. Descriptive statistics, such as mean, standard deviation, frequency, and percentage, were used to describe the overall features of the data. Additionally, student satisfaction questionnaires were analyzed to understand how learners felt about the instructional model.

5. **Statistical Procedures:** The data was analyzed using SPSS version 27.0, which included both descriptive and inferential statistical methods. First, the Shapiro-Wilk test was used to check if the pre-test and post-test scores for both the experimental and control groups followed a normal distribution. Then, a dependent-samples t-test was conducted to compare the Mandarin proficiency scores before and after the intervention within the experimental group, to see how effective the instructional model was. To find out if there were differences between the groups, an independent-samples t-test was used to compare the post-test scores of the experimental and control groups. Additionally, descriptive statistics such as mean, standard deviation, frequency, and percentage were calculated to summarize students' responses to the satisfaction questionnaire, which showed what they thought about the instructional model.

Results

The researchers classified the research results as follows

1. Comparison of Pre-Test and Post-Test Scores Within the Experimental Group

To check how well the instructional model worked, the researcher looked at Mandarin proficiency scores from two groups. One group got instruction through the instructional model, while the other was taught using traditional method. A Shapiro-Wilk test showed the data followed a normal distribution ($p > .05$), which means we could use parametric tests. The table below shows the comparison of proficiency scores before and after the instruction for both groups.

Table 1 Pre-Test and Post-Test Score Comparison for Mandarin Chinese Proficiency

Topics	Descriptive Statistics		Within-Subject Analysis	
	Pretest Mean (SD)	Posttest Mean (SD)	t-value (p-value)	Effect Sizes
Experimental Group				
Mandarin Chinese proficiency	56.62 (14.01)	79.45 (10.74)	11.839 (<.001)	1.798
Control Group				
Mandarin Chinese proficiency	56.47 (13.55)	69.68 (12.86)	7.482 (<.001)	0.258

* Statistically significant at the .05 level

The results in Table 1 The analysis revealed that students in the experimental group who received instruction through the integrated Blended Learning and Collaborative Learning model achieved significantly higher post-test scores in Mandarin Chinese proficiency (M = 79.45, SD = 10.74) compared to their pre-test scores (M = 56.62, SD = 14.01), t(49) = 11.839, p < .001, with a large effect size (1.798). This indicates the effectiveness of the developed instructional model. Meanwhile, the control group, which received traditional instruction, also showed improvement, but with a noticeably smaller effect size (0.258), suggesting that the instructional model used in the experimental group had a greater impact on enhancing Mandarin Chinese proficiency.

2. Comparison of Post-Test Scores Between the Experimental and Control Groups

The Independent Samples t-test was then used to compare post-test scores between the two groups, with results presented in the following table.

Table 2 A Comparative Analysis of Post-test Scores in Mandarin Chinese Proficiency Between the Experimental and Control Groups

Topics	Descriptive Statistics	Between-Subject Analysis	
	Posttest Mean (SD)	t-value (p-value)	Effect Sizes
Mandarin Chinese proficiency			
Experimental Group	79.45 (10.74)	4.124 (<.001)	0.825
Control Group	69.68 (12.86)		

* Statistically significant at the .05 level

The results in Table 2 indicate a statistically significant difference in post-test scores between the experimental group (M = 79.45, SD = 10.74) and the control group (M = 69.68, SD = 12.86), with a t-value of 4.124 and p < .001. This suggests that the instructional model integrating Blended Learning and Collaborative Learning significantly enhanced students' Mandarin Chinese proficiency. The effect size (Cohen's d = 0.825) indicates a large effect, demonstrating the practical effectiveness of the model in improving learning outcomes.

3. Results of Students' Satisfaction Toward the Instructional Model by Using Blended Learning Approach and Collaborative Learning Approach

After the experimental group received instruction using the Blended Learning Approach and the Collaborative Learning Approach to enhance the Mandarin Chinese proficiency of students in the Primary Education program, the researcher collected data using a satisfaction questionnaire regarding the instructional model based on these two approaches. The results of the analysis are presented in the following table.

Table 3 Summary of Student Satisfaction with the BCL Instructional Model Based on the Blended Learning and Collaborative Learning Approaches

Assessment Items	$\bar{x}$	S.D.	Interpretation
1. Learning Outcomes			
1.1 The current the Mandarin Chinese teaching model has effectively improved my Mandarin proficiency.	4.70	0.46	very high
1.2 I have better mastered the Mandarin Chinese phonetics, intonation, and grammatical rules.	4.66	0.47	very high
Total average mean score: Learning Outcomes	4.68	0.47	very high
2. Learning Experience			
2.1 enjoy the current Mandarin Chinese teaching model, which combines online and offline learning.	4.64	0.59	very high
2.2 The current teaching model provides me with more opportunities to practice the Mandarin Chinese.	4.52	0.57	very high
Total average mean score: Learning Experience	4.58	0.59	very high
3. Collaborative Learning			
3.1 Group activities help me better understand and retain the content learned.	4.60	0.60	very high
3.2 Interaction and communication with classmates have improved the Mandarin Chinese communication skills.	4.56	0.61	very high

Total average mean score: Consistency in Rating Scales	4.58	0.60	very high
4. Technical Support			
4.1 The online learning platform is easy and convenient to use.	4.54	0.64	very high
4.2 Online resources (e.g., videos, audio files, exercises) are very helpful for my learning.	4.56	0.61	very high
Total average mean score: Technical Support	4.55	0.62	very high
5. Teacher Guidance			
5.1 The teacher is able to answer my questions promptly both online and offline.	4.74	0.48	very high
5.2 The feedback provided by the teacher is very helpful for improving my Mandarin Chinese proficiency.	4.68	0.51	very high
Total average mean score: Teacher Guidance	4.71	0.50	very high
6. Learning Resources			
6.1 The course provides high-quality and diverse learning materials.	4.74	0.48	very high
6.2 The variety of learning resources meets the needs of different learning styles.	4.54	0.67	very high
Total average mean score: Learning Resources	4.64	0.59	very high
7. Overall Evaluation			
7.1 Overall, the current Mandarin Chinese teaching model has increased my efficiency in learning the Mandarin Chinese.	4.66	0.51	very high
7.2 I believe the current Mandarin Chinese teaching model is more effective than purely online or offline teaching.	4.74	0.44	very high
7.3 I hope that future the Mandarin Chinese courses will continue to use the current Mandarin teaching model.	4.58	0.57	very high
Total average mean score: Overall Evaluation	4.66	0.51	very high
8. Open-Ended Questions			
8.1 What do you think is the greatest advantage of the current Mandarin Chinese teaching model?	4.70	0.54	very high
8.2 What aspects of the current Mandarin Chinese teaching model need improvement? Please provide specific suggestions.	4.74	0.44	very high

Total average mean score: Open-Ended Questions	4.72	0.55	very high
Total average mean score	**4.64**	**0.44**	**very high**

The results in Table 3 The analysis of student satisfaction with the BCL instructional model integrating the Blended Learning and Collaborative Learning Approaches revealed an overall high level of satisfaction across all assessment categories. The highest scores were observed in "Teacher Guidance" ($\bar{x}$ = 4.71), followed closely by "Open-Ended Questions" ($\bar{x}$ = 4.72), indicating students highly valued personalized support and opportunities for reflection. All components received mean scores above 4.50, reflecting a consistent "very high" satisfaction level. These results suggest that the instructional model effectively supports student engagement, learning outcomes, and language development in Mandarin Chinese.

Conclusion

This research can summarize the results of the research study according to the following objectives

1. Comparison of Mandarin Chinese Proficiency Before and After the Experiment within the Experimental Group

The findings revealed that the blended–collaborative learning model significantly enhanced students' Mandarin proficiency. The post-test mean score of the experimental group was considerably higher than the pre-test mean, indicating a statistically significant improvement ($t(49) = 11.839$, $p < .001$) with a large effect size ($d = 1.798$). This suggests that the model effectively supported students' linguistic development by integrating online learning flexibility with peer collaboration, which stimulated motivation and engagement in the language learning process.

2. Comparison of Mandarin Chinese Proficiency after the Experiment between the Experimental and Control Groups

The post-test results demonstrated that the experimental group outperformed the control group (M_{exp} = 79.45, SD = 10.74; M_{ctrl} = 69.68, SD = 12.86; $t = 4.124$, $p < .001$), with a large effect size (Cohen's d = 0.825). These findings confirm the superior effectiveness of the blended–collaborative learning model compared to traditional teaching methods. The integration of blended delivery and collaborative strategies provided students with increased opportunities for interaction, feedback, and independent learning, thereby producing more substantial proficiency gains.

3. Student Satisfaction toward the Instructional Model Using Blended and Collaborative Learning Approaches

Student satisfaction was rated at a "very high" level (overall mean = 4.64, SD = 0.44). The highest-rated dimension was Teacher Guidance (mean = 4.71), reflecting students' appreciation for the instructor's timely support and facilitation. Qualitative responses highlighted improved communication, active participation, and a positive classroom atmosphere that encouraged shared responsibility for learning. These results indicate that the model successfully created a supportive learning environment fostering interaction, self-expression, and motivation in Mandarin learning.

Discussion

This Research The researcher can discuss the research results as follows

1．Comparison of Mandarin Chinese Proficiency Before and After the Experiment within the Experimental Group

The study found that the post-test scores of the experimental group (M = 79.45, SD = 10.74) were significantly higher than their pre-test scores (M = 56.62, SD = 14.01), with a t-value of 11.839 (p < .001) and a very large effect size of 1.798. This clearly demonstrates the effectiveness of the developed instructional model in enhancing students' Mandarin Chinese proficiency during the course of the intervention. It is likely that the learner-centered design, combined with a variety of activities both in the classroom and online, as well as collaborative participation, helped increase students' motivation and deepen their learning ultimately resulting in a marked improvement in language performance.

These findings match what Liu, Chai, and Wei (2024) discovered, showing that blended learning environments along with Small Private Online Courses (SPOCs) help increase student involvement and academic success. In a similar way, Su, Sazalli, and Miskam (2024) looked at various studies and found that blended learning methods were highly effective for improving English learning results, and they also suggest these methods can help with other foreign languages in Chinese higher education settings.

2．Comparison of Mandarin Chinese Proficiency after the Experiment between the Experimental and Control Groups

The study found that the experimental group, which used a blended and collaborative learning approach, scored higher on the post-test with an average of 79.45 and a standard deviation of 10.74, compared to the control group, which had an average of 69.68 and a standard deviation of 12.86. The difference between the two groups was statistically significant, with a t-value of 4.124 and a p-value less than 0.001. The effect size was

large, as indicated by Cohen's d of 0.825. These results indicate that the instructional model helped improve students' Mandarin Chinese skills. The blend of active participation, technology-enhanced learning, and teamwork probably helped students understand the material more deeply, practice the language more meaningfully, and build greater confidence and ability in using Mandarin.

This finding matches the study by Zaraii Zavaraki and Schneider (2019), who found that using a blended learning approach improves learning results, especially for students from different backgrounds. It also supports Bhat et al. (2020), who saw that working together in groups helps students understand things better and improve their communication skills through interacting with peers. Furthermore, Yu et al. (2019) pointed out that learners' native languages influence how well they learn Mandarin tones, suggesting that combining blended and collaborative teaching methods can help overcome these challenges and make learning more effective.

3. Student Satisfaction toward the Instructional Model Using Blended and Collaborative Learning Approaches

The study on student satisfaction revealed a very high level of overall satisfaction (M = 4.64, SD = 0.44). The highest scores were in "Teacher Guidance" (M = 4.71) and "Open-Ended Questions" (M = 4.72), showing that students really valued getting support from instructors on time and having chances to share their thoughts freely. These findings suggest that a learning environment that encourages sharing ideas and offers steady guidance from teachers helped students feel more valued, confident, and capable of learning in a deeper and more meaningful way.

These findings match what Khalil, Abdel Meguid, and Elkhider (2018) found, which was that blended learning helps improve how teachers and students interact, whether they're online or in person. Boud and Bearman (2024) also noted that having good assessment systems in collaborative learning settings helps students stay involved and develop their skills. Noh and Yusuf (2018) and Sun, Tan, and Feng (2024) also discovered that doing group activities together can help improve language skills in real-life situations, which in turn boosts learners' confidence and ability to communicate in Mandarin Chinese.

Discoveries or New Knowledge

The study led to the development of an instructional model that blends blended learning and collaborative learning to boost Mandarin Chinese proficiency and enhance student satisfaction. This model merges in-person instruction with online tools, discussions, personalized learning paths, and practice, while highlighting collaborative aspects like mutual support, shared responsibilities, and practical applications. The

model's execution relies on thoughtful planning, continuous monitoring, feedback mechanisms, and adaptable, student-focused strategies.

The teaching process is divided into three stages: before class, where teachers assign tasks, keep track of progress, and hold Q&A sessions; during class, which includes discussions, teacher support, group activities, and checking student understanding; and after class, which involves helping students who need more help, offering online assistance, and reviewing their work. This method encourages students to be more involved, use the language in real situations, and think deeply about what they're learning, which helps them improve their language skills and enjoy the learning process more.

Suggestion

1. Suggestions for Use

Combining online classes with group activities through a blended learning approach greatly enhanced the Mandarin Chinese language skills of undergraduate students. Therefore, schools should use this way to help students stay involved and participate more actively. Teachers should have appropriate training to manage both online and in-person classes well and handle group activities smoothly. Schools need to make sure students have access to good digital tools and easy-to-use learning platforms. Regular check-ins and timely feedback can guide how teachers plan lessons and support students as they progress in their studies.

2. Suggestions for Future Research

Future research should apply this model to other educational levels to test its generalizability. Comparative studies with other instructional approaches like flipped classroom or task-based learning could identify the most effective methods. Qualitative studies, such as interviews or classroom observations, would offer deeper insight into learner motivation and interaction. Longitudinal research is also recommended to explore the model's long-term impact on language retention and learner autonomy.

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