

Development of Listening Comprehension and Pronunciation of Pinyin Characters in Mandarin Chinese Through Online Language Teaching: A study on Chinese Language Students at the Faculty of Education, Uttaradit Rajabhat University

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Abstract

This study explores the effectiveness of online Chinese language courses, focusing on the development of listening comprehension and Mandarin pinyin pronunciation skills among Chinese language students at the Faculty of Education, Uttaradit Rajabhat University. Utilizing a systematic approach, the research employed a pre-test and post-test design to evaluate the impact of the instructional methods on students' language abilities. Significant improvements were observed in both listening comprehension and pronunciation skills post-intervention, as evidenced by statistical analysis. Moreover, the study gauges students' satisfaction with the online learning experience, revealing high levels of contentment regarding course content, accessibility, and instructional delivery. The research outcomes have demonstrated a statistically significant improvement in the skills assessed. Students' scores in listening comprehension and Mandarin pinyin pronunciation substantially increased from pre-instruction to post-instruction. Specifically, the average scores in listening comprehension improved from 16.45 to 24.50, while pronunciation scores rose from 10.85 to 16.30, both evidencing significant advancements with a significance level of 0.05. These results underscore the effectiveness of the online Chinese language courses in enhancing students' linguistic capabilities.

Keywords: online language teaching, Mandarin Chinese, listening comprehension, pinyin pronunciation, student satisfaction

1. Introduction

Currently in Thai society, Chinese is the most chosen foreign language to learn, from primary and secondary education to higher education levels. The use of Chinese for communication with Chinese people or those who use Chinese, according to Draper (2019), serves various purposes such as education, international business, tourism, strengthening relationships, and cultural exchange, as well as public and private sector collaboration. The origin of foreign language learning is education (Baker & Jarunthawatchai, 2017). However, entering the workforce and professions signifies living with an economy, having jobs, and earning income, as well as lifelong learning, considered as self-development for stability, which is part of national economic development, securing the life and well-being of citizens in today's and future global society.

Therefore, Chinese has become a foreign language of significance due to economic influence, popular globally and one of the United Nations' languages. The learning of Chinese by Thais is necessary to enhance communication abilities with both China's population and the global community (Kirkpatrick & Liddicoat, 2017). Chinese is not only used within China but also widely globally, being one of the most popular languages. Promoting Thai people's ability to use Chinese will improve the country's competitive capability on the international stage and foster good relations with the People's Republic of China (Swatevacharkul & Boonma, 2020).

Skills and proficiency in foreign languages are crucial for communication; thus, Chinese in Thailand is not only a response to economic and social demands but also enhances communicative potential and mutual understanding between China and the global community. In terms of Chinese language learning, listening

comprehension and pronunciation reading are essential parts, enabling learners to communicate effectively (Sukjairungwattana, 2023). Hence, teaching listening comprehension and pronunciation in Chinese, starting from the phonetic level, is significantly necessary in language classrooms (Sukjairungwattana, 2023).

The learning management of Chinese for first-year students in the Chinese Language Department at the Faculty of Education, Uttaradit Rajabhat University, reveals that the main problem is the pronunciation of Pinyin syllables in Mandarin, which students cannot pronounce accurately and clearly. This shows that beginners in Chinese face difficulties in pronunciation, including incorrect consonants, vowels, and tones, and are unable to spell Pinyin correctly, leading to confusion between Pinyin and English letters, largely because most are unfamiliar with Chinese phonetics. Another issue is students' inability to listen and differentiate certain Chinese sounds, leading to misunderstandings of the intended meanings, affecting communication and future Chinese language teaching.

In the 21st century, learning has evolved with economic and social contexts, increasing the role of technology in teaching, particularly in teaching Chinese (Harnkaew, Insan, & Somnam, 2022; Zhang & Zou, 2022). Technology enhances teaching and learning efficiency through online lesson presentations, allowing learners to improve their learning abilities independently and promote interactive engagement with lessons (Shadiev & Yang, 2020). Furthermore, online learning stimulates learners' interest through colors, sounds, images, and engaging design, enabling them to develop a positive attitude towards the lessons and independently conceptualize new knowledge (Godwin-Jones, 2017; Phupunna, 2023). Therefore, using computer-aided online lessons is a vital method for developing Chinese language skills.

The incorporation of various technologies is a crucial element of 21st-century educational reform, with information technology being widely recognized for promoting reformative educational concepts. Teaching Mandarin Chinese typically begins with understanding the phonetics (Han, 2017; Yang & Kam, 2018) commonly referred to as "Hànyǔ Pīnyīn" (汉语拼音) a standard Chinese phonetic system using Roman letters to aid in learning Chinese characters (Zhang & Leahy, 2021) comparable to the phonetic system in Thai including consonants, vowels, and tones.

This has led to research into the development of listening comprehension and Pinyin pronunciation skills in Mandarin through online Chinese lessons for Chinese Language Department students at the Faculty of Education, Uttaradit Rajabhat University, aiming to address pronunciation and listening comprehension issues using online lessons. These lessons include five chapters, each covering Pinyin sounds, including consonants, vowels, tones, and word formations in Chinese, enabling students to accurately distinguish Pinyin sounds and practice pronunciation, accessible anywhere, anytime, for correct standard Mandarin pronunciation. This also allows for the adaptation of materials in teaching management to enhance Chinese language education accessibility at various educational levels.

2. Method

2.1 Research Objectives

- 1) To develop and evaluate the efficacy of online Chinese lessons focusing on listening comprehension and pronunciation of Mandarin Pinyin.
- 2) To evaluate the effectiveness of these online Chinese lessons by comparing the Mandarin Pinyin listening comprehension and pronunciation abilities of Chinese Language Department students at the Faculty of Education, Uttaradit Rajabhat University, before and after the course.
- 3) To investigate the level of satisfaction of these students with the online Chinese lessons.

2.2 Sample Size

The research population comprises Chinese Language Department students from years 1 to 4 at the Faculty of Education, Uttaradit Rajabhat University, totaling 60 individuals.

The sample group for this study consists of 20 first-year Chinese Language Department students at the same university, registered in the Chinese Listening and Speaking 1 course for the first semester of the academic year 2023/2024, selected through purposive sampling.

2.3 Research Instruments

- 1) The online Chinese lessons cover Mandarin Pinyin in five chapters, including initial consonants (声母), vowels (韵母), tones (声调), syllable formation (拼音), and the rules for writing Mandarin characters (Pinyin), along with exercises at the end of each chapter.

- 2) The pre- and post-learning Mandarin Pinyin listening pronunciation tests are divided into four parts: listening from 10 consonants, 5 vowels, 10 words, and 15 short phrases, totaling 40 items.
- 3) The pre- and post-learning Mandarin Pinyin pronunciation tests are similarly structured into four parts, including 10 consonants, 5 vowels, 10 words, and 15 short phrases, with a total of 40 items.
- 4) A questionnaire assessing learner satisfaction with the online Chinese lessons, consisting of 10 items.

2.4 Research Tools

1) The process involves developing online Mandarin lessons focused on Pinyin, analyzing curriculum and relevant content into five learning units: initials, vowels, tones, syllable formation, and rules of Pinyin writing. Tools like PowerPoint, Capcut, Canva, and Adobe were used to create engaging lessons incorporating images, sounds, and exercises. The content underwent expert review for validity, resulting in an Index of Item-Objective Congruence (IOC) of 0.88. The revised lessons, confirmed for accuracy, were tested on second-year students, not part of the sample, yielding a reliability coefficient (Alpha Coefficient) of 0.982, ensuring the lessons' quality before data collection.

2) The process involved developing a pre- and post-learning Mandarin Pinyin listening comprehension test. Initial research was conducted on relevant literature to create a test framework. The test was structured around common pronunciation errors in consonants and vowels, divided into three and five distinct groups, respectively. Expert review led to an Item-Objective Congruence (IOC) index of 0.94. After expert recommendations and revisions, the refined test was trialed with non-sample second-year students, achieving a reliability coefficient (Alpha Coefficient) of 0.931. This validated test was then finalized for data collection.

3) The process for developing a pre- and post-learning Mandarin Pinyin pronunciation test included researching existing literature and applying theories to construct a test covering common mispronunciations. After expert review, the test achieved an Item-Objective Congruence (IOC) of 0.91. Following expert recommendations, the test was refined and trialed with second-year non-sample students, obtaining a reliability score (Alpha Coefficient) of 0.925. The final version of the test was then prepared for data collection.

4) The process for creating a learner satisfaction questionnaire post-online Chinese lessons involved studying relevant theories and methodologies, constructing the questionnaire, obtaining an Index of Item Objective Congruence (IOC) from experts (values between 0.50 and 1.00 deemed acceptable), revising based on expert feedback, and finally collecting data from the target sample group.

3. Data Collection

The research process involves informing students about the study, scheduling data collection times, examining data collection tools, and detailing the collection timeline from July to August 2023 for five weeks. Initial meetings in July will clarify objectives and demonstrate online Chinese lessons. Participants will complete pre-lesson tests, engage with the online lessons over five weeks, then take post-lesson tests and satisfaction surveys. Data will be compiled and analyzed to conclude the research findings.

4. Data Analysis

The research will include statistical description of personal data by gender and Chinese language learning experience, using mean and standard deviation. The objectives' analysis will compare pre- and post-learning outcomes using the t-test method to examine mean differences and standard deviations.

5. Results

Table 1. Personal information of the students of the Faculty of Education at Uttaradit Rajabhat University, categorized by gender and learning experience in Chinese language

Personal Information	Number of Students (20 total)	Percentage
Gender		
Male	2	10%
Female	18	90%
learning experience in Chinese language		
Less than 1 year	3	15%
1–2 years	16	80%
More than 2 years	1	5%

Table 1 shows that the majority of students are female (90%, 18 students) and most have 1 to 2 years of Chinese language learning experience (80%, 16 students).

Table 2. Comparison of pre- and post-learning scores for pinyin listening comprehension using online Chinese Lessons

Score (40)	Mean (\bar{x})	Standard Deviation (S.D.)	t-value	Degrees of Freedom (df)	Significance (sig)
Pre-learning	16.45	2.32	14.038	19	0.00
Post-learning	24.50	0.68			

From Table 2, it can be seen that the first-year Chinese language learning students in the Faculty of Education showed a statistically significant improvement in pinyin listening comprehension after using online Chinese language learning, with the score increasing from a mean of 16.45 before learning to a mean of 24.50 after learning at a significance level of .05.

Table 3. Comparison of pre- and post-learning scores for pinyin pronunciation skills using online Chinese lessons

Score (40)	Mean (\bar{x})	Standard Deviation (S.D.)	t-value	Degrees of Freedom (df)	Significance (sig)
Pre-learning	10.85	3.44	25.80	19	0.00
Post-learning	16.30	3.60			

Table 3 shows that the first-year Chinese language students in the Faculty of Education demonstrated a statistically significant improvement in their pinyin pronunciation skills after participating in online Chinese classes, with an increase in mean scores from 10.85 (before learning) to 16.30 (after learning) at a significance level of 0.05.

Table 4. Average scores and standard deviations of learner satisfaction following online Chinese lessons

Aspect	\bar{x}	S.D.	Satisfaction Level
Content Aspect			
1. Presentation appropriateness	4.40	0.68	Highest
2. Content clarity and difficulty	4.75	0.44	Highest
3. Self-learning promotion	4.90	0.30	Highest
4. Comprehension aids in media	4.75	0.44	Highest
5. Online media usability	4.70	0.47	Highest
Visual, Language, and Audio Aspect			
1. Text presentation	4.70	0.47	Highest
2. Text size	4.70	0.47	Highest
3. Text and background color	4.00	0.64	High
Learning Activity Aspect			
1. Lesson usability	4.85	0.36	Highest
2. Engagement	4.65	0.48	Highest
3. Applicability of learned content	4.60	0.59	Highest
Assessment and Evaluation Aspect			
1. Test relevance to lessons	4.80	0.41	Highest
2. Appropriateness of question count	4.75	0.44	Highest
3. Question content relevance	4.75	0.44	Highest
Overall Average	4.66	0.47	Highest

Table 4 shows that the students were most satisfied with the online Chinese lessons overall. They particularly appreciated the ability of the lessons to facilitate self-study anytime and anywhere (mean = 4.90) and found the lessons easy and convenient to use (mean = 4.85). The aspect with the lowest satisfaction was the color of the text and background, which was still rated highly (mean = 4.00).

6. Discussion

The development and evaluation of online Chinese lessons, focusing on listening comprehension and Pinyin

pronunciation skills, have been assessed by three experts, achieving an Index of Item Objective Congruence (IOC) of 0.88, surpassing the standard threshold of 0.50, indicating high quality and content accuracy. These findings complement existing studies on language acquisition strategies and the application of online platforms in Mandarin language education, demonstrating the effectiveness of digital learning environments in enhancing linguistic proficiency.

The research aligns with Sinyagovskaya and Murray (2021) exploration of Augmented Reality for Mandarin pinyin, highlighting modern technological advancements in language education. It also matches Xu and Li (2021) discussion on the utility of online applications for phonetic learning, emphasizing the effectiveness of digital solutions. Furthermore, it complements Zhang et al. (2019) examination of Pinyin in vocabulary learning, underlining the importance of pronunciation access. Additionally, Chanpeng (2022) development of Chinese pronunciation practice packages through online platforms reflects the growing trend towards interactive and accessible language learning methods.

The effectiveness of online Chinese lessons at Uttaradit Rajabhat University was evaluated by comparing pre- and post-learning abilities of first-year Chinese language students in listening comprehension and Pinyin pronunciation. The assessment revealed statistically significant improvements in both skills post-learning, indicating the high quality and content accuracy of the developed online lessons, validated by expert reviews. This underscores the impact of well-constructed educational materials on language acquisition.

This research aligns with Liu, Li and Zhang (2024) work evaluating online and face-to-face learning impacts on Chinese EFL students, providing insights into digital resource benefits in language studies. It also complements Wong et al. (2024) analysis of online support for Chinese-learning autistic preschoolers, offering perspectives on online language learning effectiveness and methodologies.

The study on student satisfaction with the Chinese language program at the Faculty of Education, Uttaradit Rajabhat University, found that students were most satisfied with the online Chinese language lessons. This satisfaction stemmed from improved language learning skills, opportunities for self-directed learning, ease of use, and alignment of assessments with lesson content.

This research is consistent with the findings of Fan and Tian (2024), who investigated the satisfaction of international students learning Chinese online in China. Their study provides valuable insights into the factors influencing students' satisfaction in online learning environments, which can contribute to the understanding of students' satisfaction in online Chinese courses. In addition, it coincides with Yu and Liu (2022) research, which focuses on dance but also examines the effectiveness and satisfaction of online learning in the higher education landscape in China. The findings from Yu and Liu's study can be applied to online Chinese courses, especially to identify the factors that influence satisfaction with online learning experiences.

7. Conclusion

This research investigated the efficacy of online Chinese language teaching for students majoring in Chinese at the Faculty of Education, Uttaradit Rajabhat University, with a focus on listening comprehension and Mandarin pinyin pronunciation skills. The results demonstrate statistically significant improvements in both skills post-instruction. Furthermore, students exhibited a high level of satisfaction with the online courses they received.

Recommendations for Future Research

- 1) Future research should significantly expand the sample size and diversity, encompassing students from various academic years, cultural backgrounds, and educational institutions. This approach will enhance the generalizability of findings and offer a more comprehensive view of the effectiveness of online learning in language education.
- 2) Comparative studies should be emphasized, incorporating traditional teaching methods alongside online learning to serve as benchmarks. This addition will facilitate a deeper understanding of the comparative effectiveness of different instructional approaches in language acquisition.
- 3) It is imperative to address potential biases in self-reported measures of satisfaction and learning outcomes. Future studies should incorporate more objective metrics, such as academic performance and engagement rates, to provide a balanced view of student satisfaction and learning effectiveness.
- 4) A longitudinal perspective should be adopted in future research to assess the long-term impact of online learning on language proficiency and retention. Follow-up studies, tracking the same cohort over time, will shed light on the sustainability of language skills acquired through online platforms.

5) The implications of the research findings for language teaching practices and policies should be thoroughly explored. Future studies should provide concrete recommendations for educators and policymakers, aiming to optimize language teaching strategies and curriculum designs based on the insights gained from online learning environments.

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