Practice and Verification of Pronunciation Instruction Incorporating Collaborative Learning in a Japanese Language Teacher Training Course

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Abstract

This study examines the educational effects of incorporating collaborative learning into a Japanese pronunciation course for first-year students in a Japanese language teacher training program in Mongolia. The study introduced collaborative learning activities into a “Japanese Pronunciation” class and collected questionnaire data from 27 students at the end of the semester. The collected data were analyzed through factor analysis using Gemini 2.5 Pro. The results revealed two major factors influencing student learning. First, psychological support through peer collaboration increased students’ confidence, satisfaction, and positive attitudes toward pronunciation learning. Second, metacognitive awareness developed as students listened to and evaluated each other’s pronunciation, enabling them to recognize and correct their own errors. The findings suggest that collaborative learning not only creates an engaging classroom environment but also effectively promotes the development of monitoring skills essential for future Japanese language teachers.

Keywords

Japanese Pronunciation Instruction, Collaborative Learning, Positive Attitude Metacognitive Awareness, AI-Assisted Factor Analysis

1. Research Background and Statement of the Problem

In overseas Japanese language education settings, non-native speaker (NNS) teachers often face significant hesitation and conflict when teaching pronunciation, primarily due to anxiety and complexes regarding their own pronunciation. However, for learners to correctly recognize the phonological system of Japanese and acquire smooth, intelligible pronunciation, effective pronunciation instruction in daily classroom activities is indispensable. Consequently, this remains a major challenge for practicing teachers.

Furthermore, the target of this practice is a class for "students aiming to become Japanese language teachers in the future." Therefore, rather than merely acquiring pronunciation for daily communication, it is crucial for these learners to deeply understand and recognize the Japanese phonological system, pronounce it accurately, and acquire the skills to objectively monitor their own and others' pronunciation. Teacher-led, one-way instruction has limitations in developing these high-level skills and reducing the burden on NNS teachers.

As an approach to address these challenges, this practice incorporated "collaborative learning" into the classroom. According to Ikeda (2022, p. 48), the purpose of collaborative learning has two integrated aspects. One is the "narrowly defined learning objective" of performing tasks such as writing or reading. The other is the "broadly defined learning objective" of learning to build social relationships with others by studying together, discovering oneself, and raising self-awareness. In this way, collaborative learning is a process-sharing method where learners actively engage with the material provided by the teacher as a starting point, thereby deepening their learning through the process itself (Ikeda, 2022, p. 48). Additionally, Johnson & Johnson (1989, p. 49) states that collaborative learning is more effective for metacognitive instruction than individualistic or competitive learning, and this metacognitive ability significantly influences the development of autonomous learning attitudes.

It is highly intriguing to investigate how Mongolian Japanese learners, who have traditionally been accustomed to teacher-centered education (chalk-and-talk), participate in and learn from such classes that emphasize "collaborating with peers" and "sharing the process." Introducing collaborative learning to pronunciation classes has the potential to simultaneously achieve both the "narrow objective" (improving pronunciation skills) by having students closely monitor each other's pronunciation and deepen their understanding of the phonological system, and the "broad objective" (self-discovery and building social relationships) by helping them become aware of their own pronunciation habits through peer feedback and grow alongside future fellow teachers.

2. Research Objectives

The purpose of this study is to introduce collaborative learning into a Japanese pronunciation class for first-year students at a university in Mongolia and verify its educational effects on student learning.

The goals of the pronunciation class are to understand the phonological structure of Japanese (pitch accent and intonation), acquire intelligible pronunciation, and develop the ability to monitor one's own and others' pronunciation. Through the implementation of collaborative learning, this study addresses the following three research objectives:

1. To verify whether learners understand the Japanese phonological system and voluntarily become conscious of their own pronunciation.
2. To examine whether learners acquire the objective monitoring skills (for self and others) essential for future teachers.
3. To identify the common latent factors underlying learners' perceptions during the process of collaborative learning.

3. Research Participants and Class Structure

This study was conducted with 27 first-year students (8 males and 19 females) enrolled in "Japanese Pronunciation," a compulsory course in the Japanese Language Teacher Training Curriculum at a university in Mongolia. The class met twice a week, and collaborative learning was incorporated into six sessions focusing on pitch accent and intonation. The instructional process consisted of three stages: "Pre-task," "In-task," and "Post-task," as outlined in Table 1.

- **Pre-task (Teacher-led, Whole-class Activity):** To address Research Objective 1 (understanding the phonological system), the teacher explains that Japanese is a pitch-accent language and that accent differences distinguish word meanings (the phonemic distinction function). Subsequently, the teacher explains accent notation rules, plays audio recordings repeatedly to familiarize students with the sounds, and conducts practice sessions involving shadowing and repetition.

- **In-task (Group Collaborative Activity):** Students work in groups of four. To address Research Objective 2 (acquiring monitoring skills), students listen to words or sentences, practice marking the pitch-accent notation, and then check their answers within their groups. After confirming the accuracy of the notation, group members practice pronouncing the words together to memorize them, turning the session into an active peer-learning environment where they mutually monitor each other's pronunciation in detail.

- **Post-task (Presentation and Mutual Evaluation):** To further develop the ability to objectively monitor pronunciation, each group presents its outcomes to the entire class, and groups evaluate one another. This evaluation is designed to promote learning motivation and self-reflection and does not affect official grades.

- **Table 1**
- **Instructional Activities and Classroom Dynamics**

Task Stage	Activity Content	Format	Key Considerations
Pre-task	Explanation of Japanese pitch accent and presentation of examples. Presentation of accent notation, audio listening, and imitative pronunciation practice.	Teacher Whole class	Ensure students understand the critical role of pitch accent in meaning distinction. Raise awareness of the correspondence between notation and pronunciation, encouraging students to constantly monitor their own speech.
In-task	Pronouncing words while looking at the provided pronunciation notation. Practicing and memorizing words/sentences within the group. Carefully listening to and checking each other's pronunciation.	Group (4 members)	Listen carefully to peers' pronunciation. Point out and correct errors in peers' pronunciation.
Post-task	Group presentations and mutual evaluation.	Inter-group	Pay attention to the performance quality of other groups.

4. Research Methodology

The data for this study consists of descriptive feedback comments written by students after each class and a questionnaire survey conducted at the end of the semester. To measure students' perceptions of collaborative learning, its impact on their learning attitudes, and their individual contributions, a questionnaire consisting of six items (Q1 to Q6) was administered (Table 2). Each item was rated on a 5-point Likert scale (5: Strongly Agree to 1: Strongly Disagree).

For the statistical analysis of the collected data, Gemini 2.5 Pro (a Large Language Model) was utilized as an innovative data analytics approach to perform factor analysis using the Maximum Likelihood method to extract common factors.

Table 2
Questionnaire Items (Perception Survey)

Survey Items	Rating Scale strongly agree⇔strongly disagree
Q1. I understood Japanese pitch accent and intonation well.	⑤ ④ ③ ② ①
Q2. My pronunciation has become correct.	⑤ ④ ③ ② ①
Q3. I can recognize when I make a pronunciation error.	⑤ ④ ③ ② ①
Q4. I can recognize when my peers make a pronunciation error.	⑤ ④ ③ ② ①
Q5. There was constant mutual support among team members.	⑤ ④ ③ ② ①
Q6. Because we helped each other in the team, my understanding and pronunciation improved.	⑤ ④ ③ ② ①

5. Results and Discussion

The factor analysis (Maximum Likelihood method) conducted via Gemini 2.5 Pro yielded the relationships between the survey items and the extracted factors, as shown in Table 3.

Table 3
Factor Analysis Results (Maximum Likelihood Method)

Item Content	Factor 1: Deepening of Learning	Factor 2: Analytical Awareness	Communality (h^2)
Q5. Mutual Peer Learning	**.86**	-.05	.74
Q6. Satisfaction with Collaborative Learning	**.78**	.04	.63
Q1. Comprehension of Content	**.62**	.12	.45
Q4. Awareness of Others' Errors	-.02	**.81**	.65
Q3. Awareness of Self Errors	.15	**.68**	.53
Q2. Confidence in Pronunciation	**.41**	.23	.31
Eigenvalue	2.58	1.15	
Variance Explained (%)	43.0	19.2	Cumulative: 62.2%

Note: Bold values indicate factor ≥ 0.40. Communalities (h^2) indicate the proportion of variance in each item explained by the extracted factors.
each item explained by the extracted factors.

The analysis successfully extracted two common factors with eigenvalues greater than 1.0. Based on the characteristics of the associated items, the factors were named as follows:

Factor 1: “Motivation and Comprehension” through Collaborative Learning

- **Associated Items:** Mutual Peer Learning (Q5), Satisfaction with Collaborative Learning (Q6), Comprehension of Content (Q1), Confidence in Pronunciation (Q2).

- **Interpretation:** This factor represents the positive emotions and sense of comprehension, such as finding the class "enjoyable" and "easy to understand," generated through the process of working on tasks with peers.
- **Discussion:** In traditional Mongolian educational culture, teacher-centered lectures have been predominant. Therefore, the students—exposed to collaborative learning where they actively solve problems with peers during their very first semester at university—were able to engage in learning with fresh motivation and without feeling out of place. This holds great significance in lowering psychological barriers, such as embarrassment or anxiety about pronunciation, during the initial stages of pronunciation acquisition.

Factor 2: “Analytical Awareness” through Metacognition

- **Associated Items:** Awareness of Others' Errors (Q4), Awareness of Self Errors (Q3).
- **Interpretation:** This factor indicates that the collaborative learning process helped develop students' metacognitive abilities to objectively monitor pronunciation, rather than merely speaking without reflection.
- **Discussion:** The "peer evaluation" during the In-task stage and the presentations in the post-task stage functioned highly effectively. Through interactive classroom activities, students repeatedly presented their pronunciation to others for feedback while simultaneously listening carefully to analyze and correct their peers' pronunciation. This reciprocal interaction is believed to have enhanced their metacognitive skills (analytical awareness) regarding pronunciation, serving as a foundation for the objective monitoring skills required of future Japanese language teachers.

Comprehensive Discussion: The "Dual Effect" of Collaborative Learning

The analysis reveals that the introduction of collaborative learning in this pronunciation class brought about a **"dual effect"** for the learners:

1. **Psychological and Motivational Effect (Psychological Support):** Active peer learning (Q5) directly correlated with overall class satisfaction (Q6) and pronunciation confidence (Q2), serving as the driving force behind autonomous and proactive pronunciation practice.
2. **Cognitive and Skill-based Effect (Improvement of Monitoring Ability):** Paying conscious attention to others' pronunciation (Q4) enabled students to identify their own errors and pronunciation habits (Q3). This transition from "peer-monitoring to self-monitoring" directly contributed to the objective improvement of their pronunciation skills.

These results empirically demonstrate that the "narrowly defined objective" (task performance) and "broadly defined objective" (self-discovery and social relationship building) suggested by Ikeda (2022) were achieved synergistically. Acquiring metacognitive monitoring abilities—crucial for independent NNS teachers—at such an early stage in the first year is a highly noteworthy achievement that goes beyond mere subjective enjoyment.

6. Conclusion and Future Directions

This study verified the educational effects of incorporating collaborative learning into a Japanese pronunciation class for Mongolian first-year students in a Japanese language teacher training course, utilizing statistical analysis.

The results indicate that collaborative learning was accepted highly positively and actively by students accustomed to traditional teacher-centered education. It not only enhanced content comprehension and pronunciation accuracy but also significantly improved "metacognitive monitoring skills (analytical awareness)" to objectively perceive both self and peer pronunciation. This study provides a solid foundation for proposing an enjoyable and meaningful pronunciation instruction model for Mongolian learners of Japanese.

Furthermore, this study introduced advanced generative AI technology (Gemini 2.5 Pro) for data analysis. The AI-driven statistical processes, such as factor analysis, demonstrated high utility in streamlining the analytical workflow and assisting with interpretation.

The following three points are identified as future challenges: First, because this study was based on a small sample of one class (N = 27), expanding the sample size is necessary to generalize the findings. Second, in addition to subjective questionnaire data, future research should incorporate acoustic analysis of actual voice data (such as pre- and post-test recordings) to quantitatively evaluate the objective improvement in pronunciation skills. Third, rather than limiting AI technology to the analysis phase, we aim to explore the potential of AI as a direct pronunciation learning and teaching tool. This includes introducing AI assistants to provide individualized feedback on pronunciation and facilitate interactive speech practice.

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