# Exploring Japanese Language Learners' Discomfort with *Katakana* and Practical Report on Improving Recognition Speed

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**Abstract**

This study focuses on students who struggle with *katakana* and presents strategies to address this challenge. Despite its fundamental role in the Japanese language, many students, even at the intermediate level, struggle with *katakana* and read it more slowly. This paper discusses the background of *katakan*a learning challenges, proposes an intervention using Scratch—a programming platform where students can practice *katakana* as a game—and evaluates the effectiveness of this method based on student feedback and performance. The findings suggest that increased exposure and structured practice significantly improve students' *katakana* reading speed and confidence, highlighting the need for more focused teaching methods in language education.

**Keywords**: *katakana*, Japanese language learners, reading speed, Scratch, language education

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## 1. Introduction

*Katakana* is an essential component of Japanese language, primarily used for foreign words, technical and scientific terms, and onomatopoeia. Despite its importance, many learners, particularly those from English-speaking and non-*kanji* backgrounds, struggle with *katakana*. Previous studies have highlighted these difficulties, attributing them to differences in phonetic structures, visual similarity of characters, the complexity of long and geminate sounds, and gaps between English and *katakana* meanings (Ho, 2003; Jinnai, 2008; The National Language Research Institute, 1990). This study addresses these challenges by increasing *katakana* exposure and enhancing recognition speed through a targeted educational tool.

## 2. Background

Research indicates that *katakana* poses significant challenges to both English-speaking and *kanji*-background learners. Issues include the prevalence of long vowels and double consonants

(small "*tsu*") for *kanji* learners and the disparity between English words and their *katakana* counterparts for English speakers (Jinnai, 2008; Lovely, 2011; Tamaoka, 2014; Togawa, 2018). Additionally, the coverage of *katakana* in Japanese language textbooks is often insufficient, with a lower proportion of *katakana* words compared to their actual use in modern Japanese (An, 2011; Mochizuki, 2012; Ogiso, 2022: 99; Ogiso & Kashiwagi, 2022).

*Kanji*-background learners, while familiar with the concept of multiple scripts, often struggle with the phonetic demands of *katakana*. Long vowels, double consonants, and the distinction between voiced and unvoiced sounds present considerable challenges (Ho, 2003). For English-speaking learners, the primary difficulty lies in the inconsistent mapping of English sounds to *katakana* syllables, leading to confusion and mispronunciation (The National Language Research Institute, 1990).

Moreover, the pedagogical approach to *katakana* in many Japanese language programs tends to be limited. After the initial introduction, *katakana* receives less emphasis compared to *hiragana* and *kanji*, leading to insufficient practice and reinforcement. This discrepancy is evident in the gap between the proportion of *katakana* words in textbooks and their prevalence in contemporary Japanese usage, particularly in media and technology contexts (Ogiso, 2022: 99; Ogiso & Kashiwagi, 2022).

Although there has been some research on *katakana* recognition skills (Tashiro, 2015), few studies have focused on reading speed. In a study on reading speed, Gorsuch et al. (2015) found that practicing repeated silent reading of *hiragana*, along with using audio assistance, led to an improvement in reading speed. However, while there are studies on the reading speed of *hiragana*, there are not many studies on the reading speed of *katakana*.

Therefore, students' difficulty with *katakana* might stem from insufficient input of *katakana* words, leading to inadequate mapping between *katakana* characters and their sounds. In this practical application, to help such students overcome their "*katakana* allergy," it was thought that increasing their exposure to *katakana* words and becoming familiar with them would be beneficial. For this purpose, educational materials were developed to enable smoother reading of *katakana* words.

## 3. Methodology

The intervention involved using Scratch, an educational programming tool developed by MIT, to create a practice environment where students read *katakana* words aloud before hearing the correct pronunciation. This practice was assigned as homework to 68 students from various private universities in the US, with weekly recordings over four sessions. The students' levels ranged from beginner to intermediate levels. An awareness survey was conducted at the end to assess changes in students' perceptions of their *katakana* proficiency.

### 3.1 Procedure

Scratch allowed students to practice reading *katakana* words from categories such as food and drinks (see Figure 1), first with visual support and then without (see Figure 2). Students had to read aloud before the correct pronunciation was played, aiming to improve their recognition and pronunciation speed. This method ensured active engagement and provided immediate feedback, which is crucial for language acquisition. As seen in Figure 1, several sets were prepared for the learners, and they were able to practice different categories of words.


**Figure 1**: Categories for *katakana* reading practice


**Figure 2**: Image of student's view when practicing with visual support

In the first session, students practiced each *katakana* character individually to speed up letter recognition and played a game that involved HPVT (High Variability Phonetic Training), where players are to determine if the heard sound matches the displayed character. In the second session (Figure 1), they focused on common words related to food and drinks that are often heard in daily life. In the third session, students practiced names of states in the United States and

country names. In the fourth session, they covered names of countries that are less commonly heard, such as those in Oceania and Africa.

Each session included:

1. Familiarization with words using pictures: This step helped students associate *katakana* words with their meanings visually, reinforcing memory through dual coding.
2. Reading without visual support before the correct pronunciation was played: This step encouraged students to rely on their phonetic understanding rather than visual cues.
3. A mixed category challenge for recording and submission as students' assignments (see Figure 3): This step tested students' ability to read *katakana* words without pictures in varied contexts, simulating real-life language use.

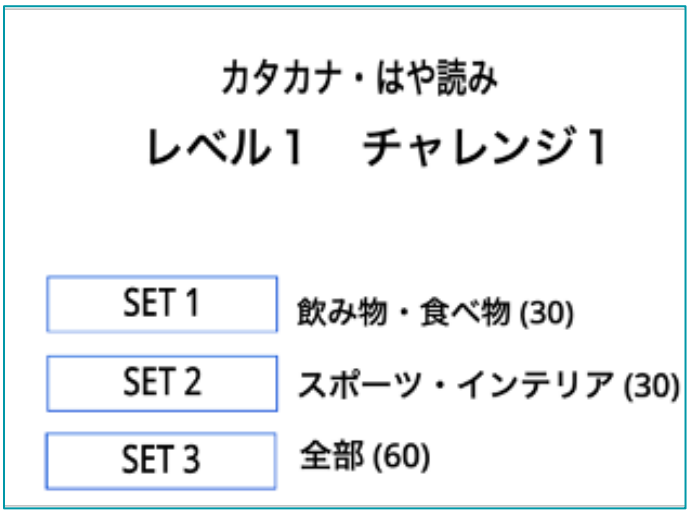


**Figure 3**: Image of student's view (students recorded SET 3 and submitted it as their assignments)

Students could adjust the speed at which the correct pronunciation was played, as shown in Figure 4. For example, if they set it to 0.1 seconds per mora, and the correct answer was "バナナ" "*banana*" with three moras, the correct pronunciation would be played after 0.3 seconds (0.1 seconds x 3 moras = 0.3 seconds delay). Students were instructed to aim for a target of 0.3 seconds per mora. This customization allowed students to progress at their own pace while maintaining a challenging environment.

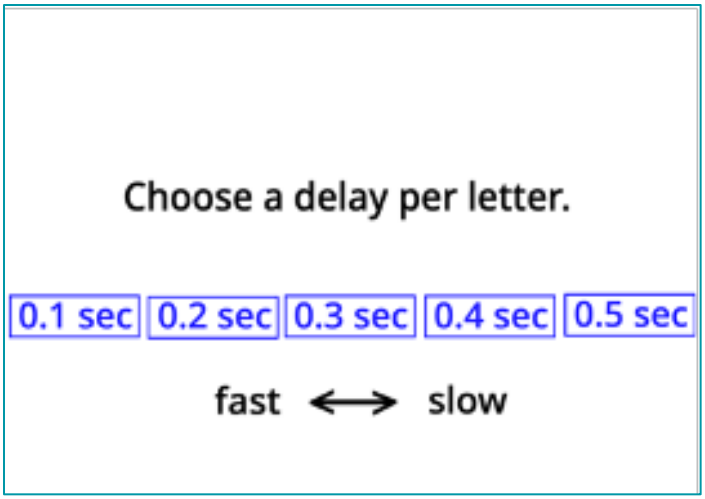


**Figure 4**: Student's view for choosing the speed

## 4. Results

Based on the performance observed in the audio files they submitted, students showed notable improvement in their *katakana* reading speed and confidence. Initial difficulties with visually similar *katakana* characters and words with long sounds were noted. However, by the fourth session, many students were able to read faster and more accurately, particularly benefiting from the repetitive practice. Additionally, the survey conducted after the practice sessions highlighted both the students' initial discomfort with *katakana* words and their enhanced reading abilities as a result of using Scratch.

### 4.1 Analysis of Students' Recordings

The primary aim of this practice was to assist learners in overcoming their discomfort with *katakana* and to enhance the speed at which they read *katakana*. Therefore, no scores were assigned based on the accuracy or fluency of each student's speech, and these results were not presented to the students. Additionally, since each session from the first to the fourth addressed different topics, the accuracy or fluency of each student's speech was not quantified during the analysis. However, a review of all the audio files submitted by the students, as well as their feedback, indicated that this practice using Scratch had a positive impact on the speed of *katakana* reading for many students. A detailed examination of the audio files from the first through the fourth sessions revealed several common trends among the students.

In the second session, where students practiced reading familiar *katakana* words quickly, many were able to read words commonly encountered in textbooks or everyday life, such as "chocolate" and "hamburger," relatively quickly. However, there was noticeable difficulty in distinguishing between similar-looking *katakana* characters, such as "シ" and "ツ," or "チ" and

“テ.” Moreover, due to the time constraints, reading *katakana* words that included double consonant (small “*tsu*”), such as “パンナコッタ,” where the correct reading should be “パンナコッタ”, “*pannakotta*” instead of “パンナコタ”, “*pannakota*,” posed a challenge for many students. In addition, *katakana* words containing contracted sounds, such as “キャンディー,” were also a source of difficulty for a significant number of students. Another common issue observed was the delay in pronouncing the first character of a *katakana* word after it appeared on the screen. This delay could be attributed not only to a slower recognition speed of the first *katakana* character but also to the tendency of some students to silently read the entire word before vocalizing it to translate *katakana* words into English first, leading to a slower response.

In contrast, the fourth session demonstrated significant improvement in reading speed, even with the inclusion of less familiar country names. The most notable change observed was the substantial reduction in the time taken to pronounce the first character of a *katakana* word. This improvement could be attributed to an increase in recognition speed and growing familiarity with the game mechanics. Instead of reading the entire word before speaking, many students adopted a strategy of starting with the first one or two characters and then recalling the remaining part of the word from memory, selecting words they had practiced.

Although it may seem that students were not fully reading the *katakana* words, this shift in strategy also represents a positive development. The original intention behind this tool was to facilitate faster reading of *katakana*, but additional benefits were also observed. Through repeated practice, students were able to internalize *katakana* words similarly to how new *hiragana* or *kanji* words are learned. Furthermore, the feature allowing students to hear the correct pronunciation of *katakana* words 0.3 seconds after reading them contributed to improvements in pronunciation, particularly with sounds like double consonants or the “r” sounds “ラリルレロ”, which had not been previously emphasized.

To illustrate these findings, the audio recordings of one student from the second and fourth sessions were analyzed. This student, who is currently enrolled in a first-year Japanese course and speaks English as a first language, demonstrated noticeable improvement. In the second session, although some *katakana* words were pronounced well, there remained inconsistency in the speed of *katakana* recognition. In the fourth session, the student exhibited faster pronunciation, even with country names, and pronounced them with Japanese phonetics rather than English pronunciation. While the pronunciation of “マレーシア”, “Malaysia” as “マレジア”, “*Marejia*” was not perfect, further practice is expected to lead to continued improvement.

### 4.2 Feedback from Participants

As part of the fourth session, a survey was conducted using Google Forms to gather student feedback. A total of 68 students from various universities participated. The survey included questions to collect general information, such as their first languages and the duration of their Japanese language study.

For the question about first languages, 52 participants identified English as their first language. Among them, 2 participants listed Spanish and Mandarin Chinese as their additional first language. Additionally, 11 students reported Mandarin Chinese as their first language, while one student identified as a Korean speaker, one as a Kapampangan speaker, one as a Vietnamese speaker, and two as Spanish speakers.

Regarding the length of Japanese language study, 39.7% of participants reported studying for "Less than a year (first year of studying Japanese)," 47.1% indicated "1-2 years (second year)," 2.9% selected "2-3 years (third year)," and 10.3% had been studying for "More than 3 years" (see Figure 5).

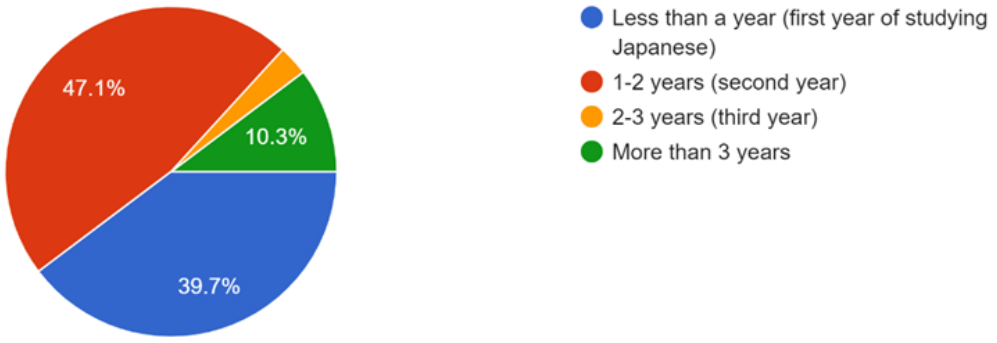


**Figure 5:** Length of Participants' Japanese Study

The survey incorporated three multiple-choice questions: the first addressed participants' discomfort towards *katakana*, the second assessed their perception of improvement in *katakana* reading after practicing with Scratch, and the third evaluated their views on the speed at which the correct pronunciation was played. These were followed by an open-ended question inviting detailed responses, along with a section for participants to provide additional feedback on both Scratch and their *katakana* practice. The results are presented below.

1) "Do you have trouble with *katakana* words? Do you have a sense of discomfort towards them?"

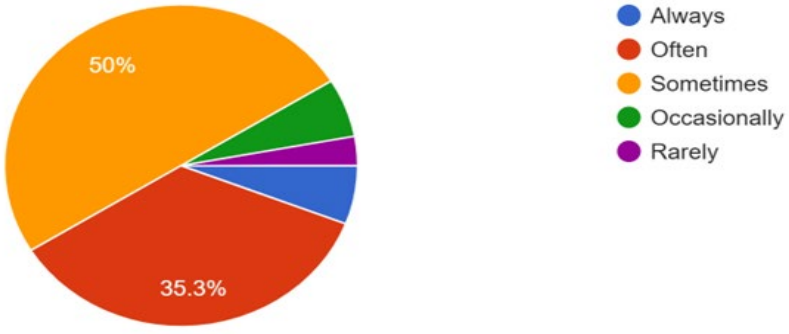


**Figure 6:** Participants' reported discomfort towards *katakana* words

In response to the question about their discomfort with *katakana*, "Do you have trouble with *katakana* words? Do you have a sense of discomfort with them?" the results were as follows: 5.9% of students answered "Always," 35.3% answered "Often," and the most common response was "Sometimes," which accounted for half of the participants. Only 5.9% answered "Rarely," and 2.9% answered "Never."

When asked to describe specific situations where they felt challenged, we received 63 responses, with some participants mentioning multiple challenges. The most frequent comments highlighted difficulty with *katakana* words that have pronunciations differing from English or that do not derive from English. Additionally, there were reports of difficulty with longer *katakana* words. Example comments include:

- "I have trouble mostly when the English equivalent of the word is not easily apparent to me, especially with new words."
- "if the word is not recognizable or comes from a language other than English"
- "When the word is very long and I need to figure out all the individual characters without knowing what the word means,"

Another point raised was the difficulty in distinguishing similar *katakana* characters, particularly "シ"; "*shi*" versus "ツ"; "*tsu*" and "ン"; "*n*" versus "ソ"; "*so*". This difficulty was evident in the students' performances in the audio files. Participants commented:

- "I feel difficulty with *katakana* especially when there are similar looking characters (like シ and ツ)"
- "I mix up characters such as シ、ツ、ソ、ン if I do not have time to read the rest of the word."

Remarkably, some participants noted ongoing challenges with memorization and even basic familiarity:

- "there's a few symbols I don't quite have memorized yet"
- "I never really learned *katakana*, and so I pick up characters here and there, but it's hard to read it consistently."

2) "Do you think your reading speed improved after these practice sets?"

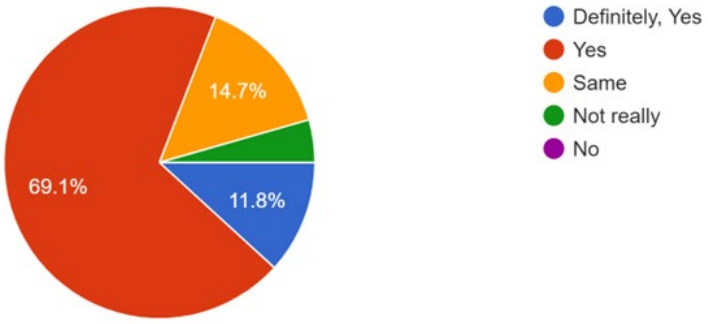


**Figure 7:** Self-assessment of *katakana* reading improvement after practicing with Scratch

Next, in response to the question, “Do you think your reading speed improved after these practice sets?” 11.8% of students answered, “Strongly agree,” and 69.1% answered “Agree,” indicating that approximately 80% of students felt the practice was effective. Additionally, 14.7% selected “Same,” and 4.4% chose “Not really,” with no students answering “No.”

3) “How fast were you able to read them aloud?”

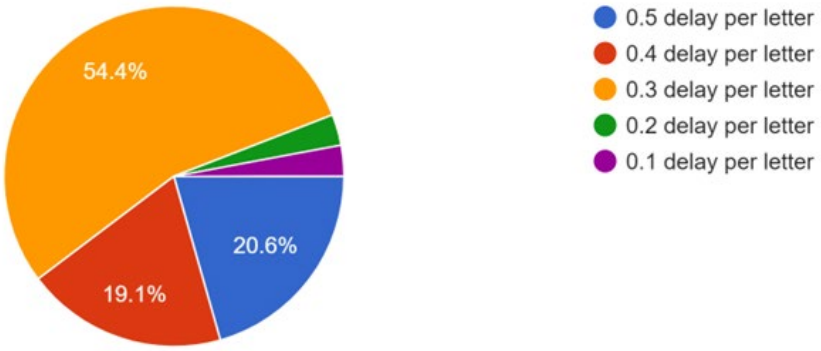


**Figure 8:** Self-reported reading speeds (seconds per mora)

Regarding the actual reading speed, when asked, “How fast were you able to read them aloud?” 54.4% of students reported being able to read at the target speed of 0.3 seconds per mora, as intended and instructed in the tasks. Despite these instructions, 20.6% and 19.1% practiced at speeds of 0.5 and 0.4 seconds per mora, respectively. Additionally, 2.9% reported reading at speeds of 0.1 and 0.2 seconds per mora.

Finally, we received 26 responses to the open-ended feedback about Scratch and the practice sets. Of these, 19 comments were positive, noting that the *katakana* practice using Scratch was enjoyable, user-friendly, and effective:

- “I think this was a fun and interactive way to teach *katakana*!”
- “I found the website very easy to use and fun!”
- “I found this very helpful! I recognize many symbols a lot quicker now.”

Notably, there were comments expressing a desire to continue using Scratch and a motivation to practice *katakana* further:

- “This was the *katakana* reading speed tool I needed, and I actually use it daily to practice :). Thank you for the opportunity!”
- “It was very enjoyable! I’ll use this to practice my *katakana* even after the activity in the future. :)”

Moreover, there were remarks highlighting the benefits to vocabulary acquisition and suggestions for more etymological explanations:

- "This was a good exercise to improve *katakana* reading. I'm not sure how much my reading speed improved, but my vocabulary definitely did, which helps."
- "I would like it if we had more explanation on the etymology. Nothing too crazy, but just something that gets us to understand why certain words are pronounced the way they are (for example, ブルネイ being pronounced 'Broo-NAY' because it sounds closer to how it does in Malay as opposed to English 'Broo-NY')."

Additional feedback included reports of system issues with Scratch, suggestions to extend the duration of correct pronunciation playback, and recommendations to increase practice with sentences containing *katakana* words rather than single words. While the topics covered ranged from familiar subjects like food to less familiar ones like foreign country names, some students expressed a preference for more focused practice on a single topic.

## 5. Discussion

The survey responses underscored the varying levels of discomfort students experience with *katakana*, encompassing issues from specific character recognition and pronunciation to broader challenges such as memorization and comprehension. The most frequent comments highlighted that students often struggle with *katakana* words whose pronunciations differ from English or are not derived from English. This suggests that Japanese language learners attempt to identify the corresponding English word when encountering *katakana*. Although the survey did not explicitly gather data on the respondents' first languages, it is reasonable to infer that these challenges may be particularly relevant to English speakers, given that the majority of participants identify English as their first language and all attend schools in the United States. Furthermore, many students reported difficulties with longer *katakana* words and distinguishing between visually similar characters. Given that the survey followed the last practice set that included unfamiliar words, such as African country names, it is plausible that those who found the practice most challenging were also those who reported the strongest discomfort. The feedback also highlighted difficulties with memorization and comprehension, likely due to limited opportunities to practice *katakana*, as noted in previous research. Since most respondents have been studying Japanese for only 1-2 years, their exposure to *katakana* may have been insufficient, leading to unfamiliarity with certain characters.

Despite these challenges, the analysis of student audio files and survey responses indicated that using Scratch for *katakana* practice had a positive effect on reading speed. Early sessions highlighted issues with similar-looking characters, double consonants, and delayed pronunciation of the first character. However, by the fourth session, students exhibited significant improvement, particularly in their ability to quickly pronounce the first character of a word, suggesting increased recognition speed and the adoption of more efficient reading strategies. In fact, approximately 80% of students reported improved reading speed, with the majority reaching the target speed of 0.3 seconds per mora. This indicates that Scratch was effective in both enhancing reading speed and reducing negative perceptions of *katakana* words.

Furthermore, repeated practice with Scratch led to additional benefits, such as improved pronunciation of sounds like "r" ("ラリルレロ") and better internalization of *katakana* words, similar to the way *hiragana* or *kanji* are memorized.

The open-ended feedback revealed that students valued the engaging, game-like nature of Scratch, which made the learning process enjoyable. In addition, students' responses indicated that the practice not only enhanced their ability to read *katakana* but also encouraged a broader interest in *katakana* and its role as an essential component of the Japanese language. Suggestions for improvement included extending the time before the correct pronunciation is revealed, incorporating *katakana* practice within sentences, and focusing on specific word categories. These insights are crucial for refining the tool and better addressing learners' needs.

## 6. Conclusion

This study demonstrated that using Scratch for *katakana* practice significantly improved participants' reading speed and confidence. Many students expressed discomfort with *katakana*, citing challenges such as visually similar characters, unfamiliar pronunciations, and lengthy words. However, the engaging, game-like nature of Scratch helped students overcome these difficulties, resulting in enhanced reading abilities and a deeper understanding of Japanese language. The study revealed that increasing learning opportunities and providing structured practice are effective strategies for addressing challenges in *katakana* reading.

While the study was overall effective, several areas for improvement were identified. Firstly, the study was limited by a small sample size. Future studies should address this by increasing the sample size to further validate the findings. Additionally, incorporating a broader range of *katakana* words and contextual uses could provide a more comprehensive understanding of the challenges faced by participants. Participants also expressed a desire for new features, such as vocabulary expansion. Notably, feedback indicated difficulties in distinguishing similar *katakana* characters (e.g., "シ" and "ツ"), suggesting that adding practice categories focused on these similarities could be effective. Furthermore, incorporating a feature that allows participants to check their accuracy in reading *katakana* within a given time frame could enhance motivation and interest. Since the survey showed that students have varying needs and goals, providing an interactive and customizable tool like Scratch has the potential to greatly enhance the language learning experience.

This study highlights the importance of consistent exposure to and practice with *katakana* for Japanese language learners. As mentioned earlier, the number of *katakana* words introduced in textbooks is insufficient compared to their prevalence in real life in Japan and given the difficulty of allocating sufficient time to cover *katakana* in class, it tends to receive less attention than *hiragana* and *kanji* after the initial introduction. However, the improvement in *katakana* recognition speed and the positive feedback from participants suggest that tools like Scratch can improve students' *katakana* reading speed and confidence.

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### References

Gorsuch, G., Taguchi, E., & Umehara, H. (2015). Repeated reading for Japanese language learners: Effects on reading speed, comprehension, and comprehension strategies. *An International Online Journal, 15*(2), 18–44. https://eric.ed.gov/?id=EJ1075950

Lovely, E. (2011). Learners' strategies for transliterating English loanwords into katakana. *New Voices, 4*, 100-122.

Tamaoka, K. (2014). The Japanese writing system and lexical understanding. *Japanese Language and Literature (The American Association of Teachers of Japanese, AATJ), 48*, 431-471.

Tashiro, Y. (2015). The effects of online katakana word recognition training among novice learners of Japanese as a foreign language (Publication No. 1152) [*Doctoral dissertation, Purdue University*]. http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=17165&context=dissertations

安榮花 (2011)「日本語学習者に対するカタカナ語教育の問題と提案」. Ferris University: Ferris Academic Intelligence Repository (FAIR) / フェリス女学院大学学術機関リポジトリ, pp. 55-56. https://core.ac.uk/reader/228875746

小木曽左枝子 (2023)「カタカナ語学習の観点から見た初級・中級教科書の分析」『2022 年ブカレスト大学日本語教育シンポジウム発表論集』p.91-107.

小木曽左枝子・柏木美和子 (2023)「中級日本語教科書における単語リストの英語対訳の役割:カタカナ語の分析」『第 24 回英国日本語教育学会年次大会』カーディフ大学.

国立国語研究所(1990)『外来語の形成とその 教育』(日本語教育指導参考書 16)大蔵省印刷局.

陣内正敬 (2008)「日本語学習者のカタカナ語意識とカタカナ語教育」『言語と文化』11, 47-60.

戸川美恵 (2018)「子日本語学習者のカタカナ語彙の習得に関する考察 ～台湾人日本語学習者への調査を通して～」. 別府大学日本語教育研究, pp. 13-20.

澎飛 (2003)『外国人を悩ませる日本語から見 た日本語の特徴:漢字と外来語編』凡人社.

望月通子 (2012)「基本語化を考慮したカタカナ外来語の学習と教材開発―その振り返りと新たな開発に向けて―」. 外国語学部紀要, 第 6 号.