

Supporting Japanese Language Learners with an Onomatopoeia Learning Site

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Abstract: This paper describes our study where we aim to support onomatopoeia learning for Japanese language learners using our developed website called SLL Ono (To See, to Listen, to Learn onomatopoeia). The lack of English proficiency of Japanese people has been pointed out for a long time. Therefore it is a must for foreigners to have a Japanese language skill to survive in Japan. The focus in our study is onomatopoeia learning since there are more than 4,500 onomatopoeia words in Japanese. The result of our pilot evaluation shows that there was no statistically significant difference between our system and the blogger site. However the mean score increased more when they learned with SLL Ono and 15 out of 16 participants preferred our system. It was found that our automatically generated quiz function did not work effectively enough and that the refinement of the learning contents was necessary. It is among our future works to improve our quiz system and add more contents in order to improve quiz efficiency and to enrich its contents.

Keywords: Onomatopoeia learning support, Japanese language learning, blogger

1. Introduction

According to Ministry of Health Labour and Welfare, there are 1,460,463 foreign workers working in Japan as of October 31, 2018 (https://www.mhlw.go.jp/stf/newpage_03337.html). In addition, JASSO (Japan Student Services Organization) announced that 298,980 international students are studying in Japan as of May 1, 2018 (https://www.jasso.go.jp/about/statistics/intl_student_e/2018/index.html).

Japanese language skill is a necessity in order to live in Japan because of the low English proficiency of Japanese people. EF English Proficiency Index (2018) indicates that Japan is categorized the countries with low English proficiency (<https://www.ef.com/ca/epi/>). In fact, many foreign students in Japan reported the inability of Japanese local people to communicate in English as one of their biggest culture shocks. According to the questionnaire conducted in one of the authors' class held in a university in western Japan, 14 out of 15 reported that local people in Japan did not understand their English when they talked to them in English. One student reported she had never talked to local people in English. Therefore, Japanese language ability is a must in order to survive in Japan. One of the characteristics of Japanese language is that it is rich in onomatopoeia, especially when it is spoken. According to the "Japanese Onomatopoeia Dictionary" (Ono, 2007), there are more than 4,500 onomatopoeia words in Japanese. It indicates how commonly they are used by Japanese speakers in their daily lives.

2. Motivation

There are mainly two types of onomatopoeia in Japanese: 'giongo' (phonetic expressions that imitate real sounds such as 'wan-wan', the sound of a dog similar to bow-wow in English) and 'gitaigo' (mimetic expressions of states in which no sounds are produced such as 'waku-waku' meaning being

excited). The latter one is occasionally translated into English as ‘mimicry’, but in this paper, we define ‘Japanese onomatopoeia’ as Japanese ‘giongo’ and ‘gitaigo’ with the following reasons:

- (1) there is no actual equivalence of ‘gitaigo’ in English,
- (2) ‘onomatope’ (オノマトペ), the phonetic translation of the English word ‘onomatopoeia’, includes both ‘giongo’ and ‘gitaigo’,
- (3) ‘giongo’ and ‘gitaigo’ are closely related in terms of usage, structure, morphology, and syntax, and in fact, it is sometimes too difficult to categorize them,
- (4) ‘giongo’ and ‘gitaigo’ are usually regarded as a set.

Learning Japanese onomatopoeia is a big challenge for learners of Japanese as a second language because of the following reasons (Inose, 2007; Asaga, Mukarramah & Watanabe, 2008).

- (1) Difficult to explain: Many onomatopoeia words represent some feelings that people feel in various situations. There are some terms which represent some feelings of human beings in other languages such as “happy” or “sad” in English, Japanese onomatopoeia contains more complexed feelings.
- (2) Difficult to translate: There is no equivalence in other languages since some languages do not have rich varieties of onomatopoeia.
- (3) Difficult to understand: Japanese onomatopoeia words are written in hiragana or katakana (Japanese phonograms), Unlike kanji (Chinese characters), which are ideograms, it is difficult to understand the meanings.
- (4) Difficult to listen: Japanese onomatopoeia words usually consist of repetitions of the same CV (consonant-vowel) clusters. It is difficult to judge whether it is one word or the repetition of the two words.
- (5) Difficult to grasp the difference: There are many synonyms and much assonance in Japanese onomatopoeia words. For example, both “pyuh pyuh”, and “byuh byuh” represent the sound of wind, but there is a slight difference.
- (6) Difficult to grasp the situation: Some Japanese onomatopoeia words are used only in a specific situation. For example, the meaning of “jime jime” is muggy, dump and humid in dictionary, but it implies a specific rainy season (June to early July) in Japan.

In fact, a questionnaire survey conducted by Uosaki et al. (2015) revealed that there were only 9% of foreigners who felt no difficulty in learning onomatopoeia. Therefore there is a high necessity to develop some system in order to support their onomatopoeia learning.

The objective in this study is to propose an effective system to support Japanese onomatopoeia learning. Our research question is: (1) whether or not our system contributes to the facilitation of Japanese onomatopoeia learning. The rest of this paper is followed by the sections which describes related researches to clearly identifying the difference between related works and our research, the design of SLL Ono, its evaluation and the conclusions.

3. Related Researches: Japanese Onomatopoeia Learning Support

There are few researches so far where they developed a system to support Japanese onomatopoeia learning (Ochi & Kawasaki, 1997; Ochi et al. 1997; Asaga et al., 2008; Ogata et al., 2006; Hou et al., 2010; Kaneko & Miyakoda, 2013). Asaga et al. (2008) developed Onomatopoeia Online Example Dictionary System called ONOMATOPEDIA extracting from data on the web. They reported the system had a problem with accurateness of the image search. Hou et al. (2010) developed Japanese mimicry and onomatopoeia learning assistant system called JAMIOLAS using wearable sensors and sensor network to support learning Japanese onomatopoeia. Their limitation is that the number of the onomatopoeia words which can be learned through their system was limited to the terms only related to temperature and humidity. Therefore we have created a new website called SLL Ono in order to facilitate Japanese language learners’ onomatopoeia learning.

4. SLL Ono

SLL Ono (To See, to Listen, to Learn onomatopoeia) a website for learning Japanese onomatopoeia has been developed as a group project of the class called Computers in Language Learning, one of the International Exchange Subjects aimed mainly for international exchange students, which was held in

2018 fall semester at the university in a western part of Japan. The objective of SLL Ono is to support Japanese language learners to learn onomatopoeia words.

Websites are superior to documents or PPTs in terms of active learning. Therefore, we have explored creating an onomatopoeia learning website with a quiz function with the use of technology as well as manual power. We have created it with multimedia way by both text, picture, and audio in order to make our website look more attractive as a learning tool. CSS Only Mobile Friendly Comic Book Layout, which was originally developed for comic book layout, was introduced as a basic framework (<https://codemyui.com/>). It made the learners feel like as if they were learning onomatopoeia by reading comic books (cf. Figure 1).



Figure 1. SSL Ono interface

Pictures and gifs were searched on Yahoo Image, we judged if there were commonly used onomatopoeia by the searching result. And for some onomatopoeia related to sound, related audio sounds were searched from Freesound (<https://freesound.org>) and put them directly on our website to help to feel it. Github Pages was used since we could publish our website for free(<https://pages.github.com>).

The website was created to be interactive with its users by adding a quiz function called “Play Ono Game”, where multiple choice quizzes were automatically generated from the learning contents (cf. Figure 2). A game to play is obviously more attractive than a paper to read. Li et al. (2013) and Uosaki et al. (2013) reported that quiz function was effective in language learning. Besides, a website is easier to distribute with only a short link as long as one can connect to the Internet.



Figure 2. SLL Ono "Play Ono Game"

5. Evaluation

5.1 The Participants

Sixteen foreigners (3 Americans, 2 Iranians, 2 Thailanders, 1 Bangladeshi, 1 Canadian, 1 Chinese, 1 English, 1 Lebanese, 1 Taiwanese, 1 Tunisian, 1 Ukrainian), collected through personal contacts participated in the pilot experiments.

5.2 Procedures

Figure 3 shows the learning scenario.

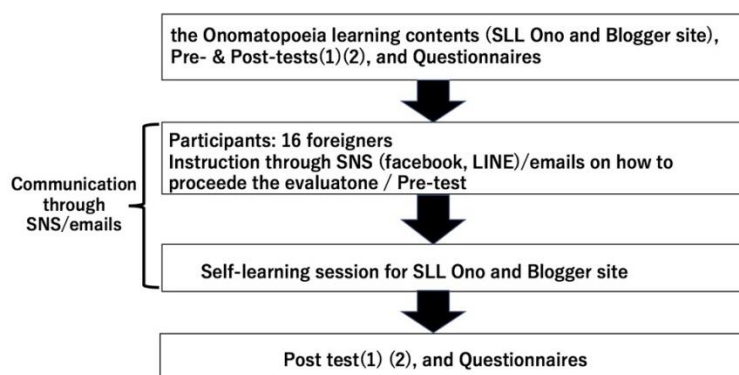


Figure 3. Evaluation Procedures

Fifteen onomatopoeia learning contents were created in SLL Ono such as にこにこ (/nikoniko/smiling), じろじろ (/jirojiro/ staring). For the purpose of comparison, we also created fifteen onomatopoeia learning contents using Google Blogger service such as ひそひそ whispering (/hisohiso/ whispering), がみがみ (/gamigami/ nagging). At the beginning, the participants took the pre-test to examine whether they know the meanings of the target onomatopoeia words. The instructions were made through emails or SNS (social network services) such as facebook or LINE. They were given a briefing on how to use SLL Ono and given the URL of the Blogger site to be learned. Then they were assigned to learn the target words on a self-learning basis using SLL Ono and Blogger site. In order to examine the effectiveness of SLL Ono, the comparison was made between SLL Ono and Blogger's site (Figures 4). A Blogger site was created for learning onomatopoeia words which were given in the pre-test (2).



Figure 4. Blogger onomatopoeia learning

There was no control group created in order to give an equal opportunity of learning with the cutting-edge technology. All the participants experienced both medias. They were instructed to click sound icons to listen to the real sounds and try the quiz system called "play Ono-Game" during their self-learning session. After the evaluation, Post-tests (1) & (2) were taken by the participants and the questionnaire was also conducted.

6. Results

Table 1 shows the result of the Pre- and Post-test (1) and (2). Pre- and Post-test (1) were identical to ask them the meaning of 13 Japanese onomatopoeia words to be learned via SLL Ono. Pre- and Post-test (2) were also identical to ask them the meaning of 13 Japanese onomatopoeia words to be learned via Blogger site. One point was given if correct for each question, thus the full mark was 13 points for Pre- and Post-test (1) and (2). The mean scores of the Pre-test (1) and (2) were 7.2 and 6.8 with the standard deviation (SD) of 3.29 and 3.71. After the learning session, the result of Post-test (1) jumped into 12.1 with the standard deviation of 1.59, while that of Post-test (2) was 10.2 with the standard deviation of 3.45. However T values show that there is no statistically significant difference between them. Figure 5 shows that the mean scores increased in both medias but the mean score increased more when they learned with SLL Ono.

Table 1

The results of Pre- and Post-tests

	Pre-test (1) (full mark 13)	Post-test (1) after SLL Ono use (full mark 13)	t-value of Pre-test (1)& (2)	t-value of Post-test (1) & (2)	t-value of Pre- & Post-test improvement
Mean	7.2	12.1	0.48 (r=0.76)	0.014 (r=0.65)	0.07 (r=0.33)
SD	3.29	1.59			
	Pre-test (2) (full mark 13)	Post-test (2) after Blogger use (full mark 13)			
Mean	6.8	10.2			
SD	3.71	3.45			

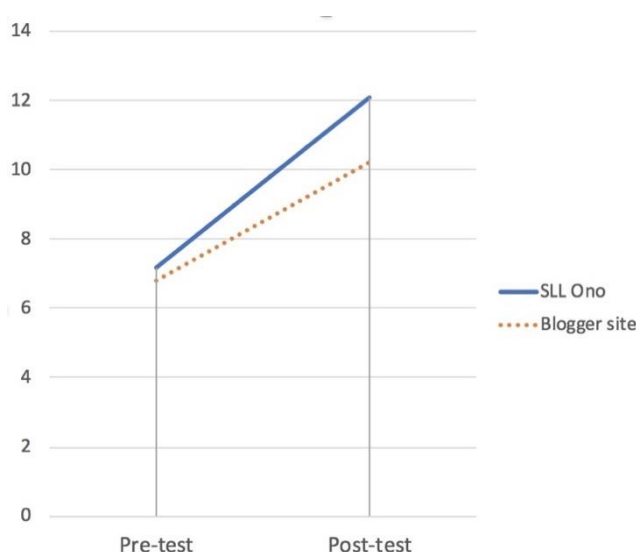


Figure 5. Comparison between SLL Ono learning and Blog learning in terms of the means of Pre- and Post-tests

7. Discussion

At the end of the evaluation, they were asked to answer the five-point-scale-questionnaire on SLL Ono (Table 2) and the Blogger site (Table 3). Q1 was created to examine its fun factor. Q2 was created based on the technology acceptance model proposed by Davis (1989). Q3 was created to examine its effectiveness. Q4 was created to examine the user acceptance of its interface. Q5 was created to examine the user acceptance of the whole system. Q6 was created to examine the effectiveness of its quiz function. SLL Ono was more highly evaluated in every question than the Blogger site. The highest score, 4.76 was given when they were asked about the usability of the system (Q.2). The lowest score, 3.53 was given when they were asked about the likability of its interface (Q. 4).

Figure 6 shows the result of the question: Which do you prefer SLL Ono or Blogger site? Fifteen out of sixteen students preferred SLL Ono to Blogger site. It was in line with the fact that SLL Ono was more highly evaluated in every question than the Blogger site.

Table 2

The results of the 5-point-scale questionnaire on SLL Ono

	Questions	Mean	SD
Q.1	Was it fun for you to use SLL Ono?	4.29	0.92
Q.2	Was it easy for you to use SLL Ono?	4.76	0.56
Q.3	Was it helpful for you to learn Japanese onomatopoeia?	4.47	1.07
Q.4	Please rate how much you liked or disliked its interface.	3.53	0.80
Q.5	Please rate how much you liked or disliked the whole system.	3.82	0.39
Q.6	Was the quizzes helpful for your onomatopoeia learning?	4.56	0.51

Table 3

The results of the 5-point-scale questionnaire on Blogger site

	Questions	Mean	SD
Q.1	Was it fun for you to use Blogger site?	3.12	1.58
Q.2	Was it easy for you to use Blogger site?	4.0	1.27
Q.3	Was it helpful for you to learn Japanese onomatopoeia?	3.70	1.49
Q.4	Please rate how much you liked or disliked its interface.	3.06	0.90



Figure 6. Which did you like better SLL Ono learning or Blogger site learning ?

Table 4 shows the participants' free comments on SLL Ono. Some comments were positive using the adjectives such as "easy", "nice", "great", "friendly" (#1, 2, 3, 7, 9). But since our system was a prototype, there were some negative comments with some suggestions concerning the contents such as the ambiguity of picture images (#10) and the overwhelming way in showing learning contents (#15), and the malfunctions of the game (#11, 13). These issues are to be coped with as our future works.

Table 4

The students' impressions of SLL Ono

No.	Comments
#1	It easy to remember the association between the word and its animation
#2	It was a nice site for learning basic onomatopoeia.
#3	It was very easy to understand and helpful for me.
#4	The idea with the pictures and sounds is great. It's hard to learn anything and especially onomatopoeia without pictures. I also find the blog really helpful since Japanese people use Onomatopoeia a lot in everyday conversation.
#5	Also, I think that adding more onomatopoeia would be wonderful."
#6	Overall, I believe the system was user-friendly and designed well. At times, though, I felt that the pictures shown did not quite correspond to their associated sounds or at least it was difficult to discern what a few pictures were referring to, the first time I saw them. However, I think attempts, such as the one presented here on collecting some of the most frequently used onomatopoeic words in Japanese language and teaching them through gamification, are very valuable and I really found this website useful specially in that sense. I think a lot more people will appreciate this effort if the website is made open to the public. Perhaps, the next attempt could be teaching Japanese compound verbs, which are also very difficult to memorize and use in the right context. Thank you very much again for the precious effort!
#7	it is very helpful
#8	Be able to observe more Onomatopoeia terms.
#9	It looks friendly and easy to understand.
#10	I did not understand the meaning of some pictures. Maybe videos of the action with the sound in background would be useful. Or an explanation for why this sound corresponds to this action
#11	The Ono Game continued forever and it didn't tell me when it would end so I endlessly did the quiz. It should tell the test taker approximately how long or how many questions there are up front. Also, the word repeat frequency was too often.
#12	Was it "just" a list of words coming with illustrations or did I miss something?
#13	There were some small mistakes though. For example, the correct options weren't included in the answers. I think it would be nice to review all the answers again.
#14	Good but can be more advanced by giving example sentences, scoring the quizzes, and further gamification,
#15	Just presenting all the onomatopoeia at once can be overwhelming. Explanations of the onomatopoeia would be better.
#16	It's a great way to learn onomatopoeia, but I'm not sure how much it can help with long-term retention.

8. Conclusion

In this study, we describe facilitating Japanese onomatopoeia learning by creating SLL Ono. When compared with Blogger site, SLL showed its superiority in many aspects as described in Discussion section. The questionnaire results showed that the students were satisfied with its usability. There was no statistically significant difference in the improvement between Pre- and Post-test results between SLL Ono learning and Blogger learning. Therefore our hypotheses (our system contributes to international students' learning Japanese onomatopoeia: Research Question (1)) was not proved to be correct. However the fact that the mean score increased more when they learned with SLL Ono as well as the fact that 15 out of 16 participants preferred our system endorsed that we are in the right direction

in developing this system for Japanese language learners. Since this is our on-going project, it was pointed out in the participants' feedback that there were some weak points to be improved regarding its contents and the quiz function. It is among our future works to enrich the contents as well as the improvement of our quiz system.

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