【Research Paper】

English Pronunciation Features and the Difficulties of Japanese Elementary School Students

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日本人小学生の英語の発音の特徴と困難点の一考察

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1. Introduction

Governments around the world are introducing English instruction to elementary school. In China, English was introduced as a compulsory subject in 2001 for six-year-old children in cities and suburban areas, and rural areas of China were included in 2002. In Vietnam, English instruction was introduced in 2003 as an elective subject for children in grades 3 to 5, and became a compulsory subject in 2011 starting in grades 3 (Murphy, 2014). Introduction of English language teaching to young learners represents a truly global phenomenon and is arguably one of the world's most significant policy developments in education.

In response to this global phenomenon, the demand for starting English language education at elementary school is also increasing in Japan. In 2017, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) announced the design for a new Course of Study and it states that third and fourth graders start English language activity class once a week to nurture basic English communication skills, while fifth and sixth graders begin learning English as a mandatory subject two times a week to develop basic English language skills by 2020. English will become a subject at elementary school for the first time in Japan, and investigating what and how to teach it is significant. Because elementary school students seem to be sensitive to English sounds, it is important to explore the ways to teach pronunciation. The current study aimed to examine English pronunciation features and problems of Japanese elementary school students and to suggest some effective methods for teaching English pronunciation at elementary school.

2. Literature Review

2.1 The Age Issue

There is the widely held belief that starting English learning earlier leads children to a higher level of competence in English. The Critical Period Hypothesis (CPH) is often cited by the proponents of early English education. Originally, Lenneberg (1967) proposed the CPH which suggested that brain plasticity was only conductive until puberty. While this position has been contested, there seems to be some agreement that there is a sensitive period for acquiring a second language. Children who start learning a second language younger than age 12, given plenty of input and interaction, are more likely acquire it to native levels. Scovel (1988) stated that after the age of 12 children didn't acquire phonologically authentic pronunciation of a second language. Long (1990) insisted that native-like accent was impossible to acquire after puberty and also claimed that the acquisition of second language morphology and syntax to native levels became unattainable without exposure to the second language before age of 15.

However, the majority of the studies have been conducted in situations where the second language is widely used within the community, which is not applicable to foreign language learning environments including Japan. Because English is not actively used in the society and mainly taught in the classroom in a foreign language learning environment, children don't have sufficient amounts of input. Therefore, the correlation between ages and the acquisition rate in foreign language learning differs from second language learning. Studies on the acquisition of English as a foreign language that have been conducted in some countries illustrate the issue. For example, Munoz (2006) investigated the classroom in Spain where children at various ages of 8, 11, 14 and 18 learnt English as a foreign language and found that older starters scored more successfully than younger ones except for aural perception. Garcia Mayo and Garcia Lecumberri (2003) probed the effect of age on English language learning as a foreign language, and concluded that the notion of 'younger is better' was not substantiated in a context where the language was taught as a subject and where the leaners' exposure to the language was mainly restricted to the school context.

Although these studies argue that early learners in a foreign language learning environment don't have advantages, there are some studies that affirm younger starters have an advantage. For example, Larson-Hall (2008) compared the English skills of Japanese university students who had started learning English before 7th grade to those who had not, and found that the former had higher scores in distinguishing phonemes, while there were no differences in their proficiency levels. Pinter (2011) insisted that high-quality input and teaching indicated a possible advantage for younger over older learners. Her eight-year project in Croatia found that earlier learners were significantly better at pronunciation, orthography, and vocabulary than

older starters. Murphy (2014) suggests the essential variables to make the English learning process in young learners effective are the quality of the input and teaching, and ensuring high-quality educational resources.

2.2 L1 Transfer in Pronunciation

Pronunciation is the area where an L1 transfer is the strongest in second language acquisition, and both the proportion of individuals observed to speak their L2 with an accent and the strength of foreign accents among individuals have been found to increase as the age of L2 learner rises (Flege, Munro, & Mackay, 1995; Oyama, 1976). Flege et al. (1995) found that the age of learning exerted a powerful influence on their pronunciation, and that some native speakers detected foreign accent in the subjects who began learning at the very young age of three.

Perceptional identification training improved pronunciation of Japanese speakers of English (Bradlow, Pisoni, Yamada, & Tohkura, 1997), and pronunciation and perception seem to be positively correlated. Riken (2010) compared 14 month-old French and Japanese children to investigate how they heard sounds with and without consonant clusters, and found that Japanese children couldn't distinguish the differences because they inserted illusionary vowels while listening to consonant clusters. It shows that Japanese and English languages significantly differ in their phonological systems in which the former has vowels in each sound with no consonant clusters. It also indicates that 14 month-old Japanese children have already acquired the Japanese language phonological system even if they are not yet able to read Japanese letters. Kuhl (2011) states that babies are taking 'statistics' regarding what sounds are used and spoken while they are listening to their mothers. She claims because there are hardly any English /r/, /l/ sounds in Japanese and the Japanese /r/ is very different from the English /r/, /l/, Japanese babies absorb Japanese /r/ sounds and discard English /r/, /l/ sounds. Therefore, Japanese 12-month-old babies only perceived 50% of English /r/, /l/ sounds. Oiwa and Akatsuka (2011) reported that Japanese elementary school children had difficulties in distinguishing /l/ from /r/, and /v/ from /b/ and that listening practice didn't enable the children to tell the differences in English sounds which weren't present in Japanese.

It is important to consider whether English is the first or the second language for children because they acquire different phonological systems depending on their first language. Explicit pronunciation practice is necessary for some phonemes in English which don't exist in children's first language (Ehri, Nunes, Willows, Schuster, Yaghoub-Zadeh, & Shanahan, 2001). On the other hand, Jenkins (2000) indicated the

most important areas for mutual phonological intelligibility were most consonant sounds including aspiration of /p/, /t/, /k/, appropriate consonant cluster simplification, vowel length distinctions and nuclear stress.

2.3 Synthetic Phonics

Synthetic phonics is an explicit instruction on how to connect a sound to a letter or letters. Recent studies have shown that synthetic phonics is the most effective way to increase children's literacy. For example, Johnston, McGeown, & Matson (2012) compared 10-year-old children who had learned to read by analytic or synthetic phonics methods and found that the group taught by synthetic phonics had better word reading, spelling, and reading comprehension. Grant (2013) conducted a longitudinal study for first graders and found that the use of a synthetic phonics program was shown to give them a significant start with their reading, writing and spelling, and it was especially effective for children who learnt English as an additional language. Yamami (2016) investigated the effectiveness of teaching synthetic phonics to Japanese fifth and sixth graders in English learning classes, and found that students became more interested in letters and reading books after learning it intensively.

2.4 The purposes of the study

Given the above discussion, Japanese students in the 5th and 6th grades are considered to have acquired phonological systems based on their L1 (Japanese) and assumingly pronounce English sounds that are affected by Japanese language. On the other hand, they seem to have higher sensitivity towards English sounds than adults and it is important to consider what to and how to teach pronunciation at elementary schools. The following two research questions were addressed;

(1)What are features and problems of Japanese 5th and 6th graders' English pronunciation?

(2)What are some effective methods for teaching English pronunciation for elementary school English in Japan?

3. Method

3.1 participants

20 Japanese 5th and 6th graders participated in this study. All of them had compulsory foreign language classes once a week at elementary school and they also attended a private English school. The private school was located in a residential area of a city in central Japan. Classes at the private school met once a week for sixty

minutes and all of them were taught by the author (Japanese English teacher). There were four to five students in one class and they had synthetic phonics instruction consisting of 15 minutes of a 60 minute lesson for 24 weeks (six months). The remaining 45 minutes were used for chants, games and storytelling. For synthetic phonics instruction, five to six letters and their sounds were introduced each week by using alphabet letter cards and demonstraitng the sound the letter represents. After learning letter and sound connection, they blended the sounds and read three-letter-words. The phonics instruction included pronunciation practices to clarify the sounds which didn't exist in the Japanese language. For example, the vowel /æ/ for the letter "a", /a/ for the letter "o", and /ʌ/ for the letter "u" were instructed referring to the differences from Japanese vowels, especially the differences in the shape of the mouth. In addition, how to pronounce consonants of /l/ and /r/ were explicitly instructed with "l" and "r" letter cards by focusing on differences from Japanese /r/ sounds. Pronunciation for consonants of /p/, /t/, /k/ with more air than Japanese /p/, /t/, /k/ sounds were taught and children were asked to put their hands in front of their mouths and to feel the air while they pronounced English /p/, /t/, /k/. Further, how to pronounce consonants of /f/ and /v/ were taught with the letters by using teeth and showing the difference from Japanese /f/ and /b/.

3.2 Procedure

The students saw pictures of 20 words and pronounced them while the author recorded them. 20 words were chosen because they had the initial phonemes which didn't exist in Japanese ([l], [r], [f], [v]), and included aspiration of [p], [t], [k] which were important for mutual intelligibility and consonant clusters of [tr], [bl], [gr], [fr], [fl] which were not present in Japanese. The 20 words were: pink, pig, two, tree, key, kick, blue, bear, dog, duck, green, grapes, fish, frog, flower, violin, lemon, lion, red and rabbit. The pictures rather than written words were used for the recording because some of the students may have had difficulties to read written words and pronounce them (see Appendix). Before the recording, the students were shown the pictures, and they confirmed the meaning of the pictures.

After the recordings, four English speakers (American, English, Australian, Philippine) listened to them and judged whether they were intelligible. They were also asked to describe how the words sounded when they evaluated them as unintelligible. After the evaluation, an interview was conducted regarding students' pronunciation. The words judged as unintelligible were counted and the reasons for unintelligibility were gathered.

4. Results

This study intended to identify which words were difficult to pronounce for Japanese 5th and 6th graders and what were features and problems of their English pronunciation. Table 1 below shows the number of unintelligibly pronounced words (NUW), and the reasons for unintelligibility. Each word was pronounced by 20 students and judged by four speakers (20 times x 4 judges =80).

Table 1: The number of unintelligibly pronounced words (NUW)

word	NUW	reasons
tree	28/80	"tree" sounds as "three"
grapes	23/80	no [s] sounds in the end(19), inserting an extra vowel in "gr"(4)
lion	18/80	replacing [l] with [r]
blue	17/80	inserting an extra vowel in "bl" and replacing [l] with [r]
red	15/80	replacing [r] with [l]
lemon	14/80	replacing [l] with [r]
flower	13/80	inserting an extra vowel in "fl" and replacing [l] with [r]
violin	13/80	replacing [v] with [b]
frog	10/80	inserting an extra vowels in "fr"
green	10/80	inserting an extra vowel in "gr"
pig	8/80	"pig" sounds as "big" (5), adding an extra vowel in the end (3)
duck	6/10	"duck" sounds as " dark" (5), no [k] sound in the end (1)
key	5/80	"key" sounds as "kee-ee" with two syllables
fish	5/80	"fish" sounds as "hish"
rabbit	4/80	replacing [æ] with [ʌ]
dog	4/80	[dɔg] sounds as [dʌg]
pink	2/80	week [p]
two	2/80	[t] sounds as [d]
kick	2/80	"kick" sounds as "keek"
bear	1/20	having two syllables

"Tree", "grapes", "lion", "blue" and "red" are the top five most difficult words to pronounce. The word "tree" was the most unintelligibly pronounced (28 times out of 80), and they were all judged as "three". The word "grapes" was unintelligibly pronounced 23 times, and they were judged as not having [s] sounds in the end 19 times, and inserting

an extra vowel between consonant clusters of “gr” four times. The word “lion” was unintelligibly pronounced 18 times, and they were judged as replacing [l] with [r]. The word “blue” was unintelligibly pronounced 17 times and they were judged as inserting an extra vowel in “bl” and replacing [l] with [r]. The word “red” was unintelligibly pronounced 15 times due to replacing [r] with [l]. In other words such as “lemon” and “flower”, mixing [l] and [r] was also noticed. Inserting an extra vowel occurred between consonant clusters in the words of “frog” and “green”, and “frog” became “furog” and “green” became “gureen”. The word “pig” was judged as “big” five times, and the word “duck” was misunderstood as “dark” five times. On the other hand, almost all the words of “pink”, “two”, “kick” and “bear” were intelligibly pronounced and their NUW were only 2 or 1 respectively.

In the following interview, all speakers referred to the problematic pronunciation of [l] and [r] and commented that [l] and [r] were replaced each other, or there were no or little differences. One speaker stated that distinction between [l] and [r] were clear at the beginning of the words, but they were not clear within the words. Another speaker mentioned that English native children never dropped [s] sounds in “grapes”, and not hearing [s] in plural nouns sounded odd and it may be very unique to Japanese’s children pronunciation. In addition, three of the speakers commented that [t], [p], [k] pronunciation were weak, and [t] sometimes sounded as [d] and [p] sounded as [b]. On the other hand, it was mentioned that it could have been better to use the recording of a sentence instead of a word because listening to one word spoken by English native speakers could be misunderstood.

5. Discussion

The paper discusses two issues: finding features and problems of Japanese elementary school students’ English pronunciation and probing effective methods for teaching pronunciation at elementary school.

First, English [l] and [r] are found to be the most difficult sounds to pronounce even for students who have had pronunciation instruction and practice. Replacing [r] with [l] and vice versa were pointed out in various words, and they were by far the most problematic features of student pronunciation. Equivalence classification prevented experienced L2 learners from producing similar L2 phones (Flege, 1987) and having a similar sound of Japanese [r] makes it difficult to pronounce English [l] and [r]. Considering that all the students have had pronunciation practice with the English [l] and [r], and yet pronouncing them is the most difficult, it is necessary to keep focusing on [l] and [r] pronunciation in teaching and demonstrating how they are different from

Japanese [r]. On the other hand, as Ehri et al. (2001) stated, phonics instruction was more effective when it was taught with letters than without letters; the results of this study may have been different if students were shown written letters instead of pictures when their pronunciation was recorded. Using letters is effective and necessary for pronunciation practice.

Second, the word "tree" was often judged as "three" and it seems to have been caused by no aspiration of [t] at the initial position of the word. The word "pig" was sometimes judged as "big", and week [p] and [t] were pointed out by the judges. As Jenkins (2000) claims, the aspiration of [p], [t], [k] is crucial for mutual intelligibility especially for Non-Bilingual English speakers. Aspiration for [p], [t], [k] needs to be explicitly instructed because it is essential for mutual intelligibility and yet it doesn't occur in Japanese. Japanese [p], [t], [k] sounds don't need much air to pronounce while aspirated English [p], [t], [k] sounds entail strong air explosion. It may be effective to refer to the differences between Japanese and English sounds and how to pronounce them explicitly. For example, putting a hand in front of the mouth and comparing the amount of air when uttering the sounds is effective. When aspirated English [p] is pronounced, the strong air touches the hand while there is only very weak air with Japanese [p] pronunciation.

Third, deletion of [s] at the end of "grapes" was judged as unintelligible. It was thought to be caused by the influence of the Japanese language whose nouns don't take plural forms while English clarifies singular and plural forms. Because nouns in Japanese don't take any plural forms, the end consonants of nouns in English pronounced by Japanese students tend to be weak or missing. The numerical concept is different from Japanese to English, and it should be taught combined with pronunciation instruction.

Fourth, inserting an extra vowel between consonant clusters is often observed and it is a problematic feature of Japanese student English pronunciation. 14-month-old Japanese children already acquired the Japanese phonological system and inserted illusionary vowels while listening to consonant clusters (Riken, 2010). Therefore, it is necessary to repeatedly practice pronunciation of consonant clusters, and to show the differences between Japanese and English phonological features.

Finally, as it was mentioned in the interview, using sentences may be more effective for pronunciation than just saying one word. Derwing and Munro (2015) conducted the research with three groups, a control group with no pronunciation instruction, a segmental group with consonant and vowel pronunciation instruction, and a suprasegmental group with prosodic instruction only, and found that only the

suprasegmental group showed significant improvement in listening comprehension. Although 20 words alone were utilized in this study, applying sentences as well as words to practice pronunciation would be more efficient.

6. Conclusion

Synthetic phonics instruction is a way of teaching children to read and write, and it is effective for children's literacy (Johnston et al., 2012). It is useful especially for children who learn English as an additional language (Grant, 2013), and is suitable for Japanese students who study English as a foreign language. Phonics combined with pronunciation practice of sounds which don't exist in Japanese would be effectual. English sounds which are not present in Japanese are consonants of [l], [r], [θ], [ð], [f], [v], aspiration for [p],[t],[k], consonant clusters, some vowels such as [æ], [a], [ʌ] which sound similar to Japanese [a], and diphthongs. Phonics with explicit explanation of how some sounds differ from Japanese would be efficient. In order to conduct English pronunciation instruction in the classroom, pronunciation teacher education is essential since most teachers lack confidence in their English pronunciation (Pinter, 2011) and they often desire professional development opportunities in pronunciation instruction (Burri, 2015). Teaching pronunciation requires a basic knowledge of the sound system of English and teachers need to know how vowels and consonants are articulated, as well as the fundamentals of prosody (Derwing & Munro, 2015). The most important variables for successful early English learning are the quality of the input and teaching, and incorporating pronunciation into L2 teacher preparation programs (Grant, 2014). In order to implement elementary school English education in Japan, it is essential to establish effective teaching methods and to ensure substantial training for elementary school teachers.

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Appendix

Pictures shown to students for recording