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An empirical study of formal lessons using visual resources for
seventh graders in the Japanese inclusive education classroom
– Toward next -generation English learning materials with ICT–

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ABSTRACT

This empirical thesis focuses on the educational effects of learning vocabularies aided by visual information for seventh graders in formal English lessons. This study proposes a step-by-step, picture-based approach for beginner students to learn English vocabulary without using words. Four days of experimental lessons were conducted with 76 seventh-grade students in a Japanese public junior high school. The students' pronunciation skills were assessed by a native English speaker. The picture-based experimental lessons resulted in higher scores compared with lessons without pictures. As for the spelling test, no statistically significant differences were found. The questionnaire revealed that, to most of the participating students, practicing the pronunciation of a word while looking at its picture made for easier spelling memorization. Based on the results of these experiments, after having considered the limitations of using visual information, educational effectiveness for using it, and influence that pronunciation and meaning comprehension have on word and spelling mastery, the researcher proposes solutions for next-generation ICT teaching materials appropriate in Japan's inclusive education classroom.

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LIST OF CONTENTS

ABSTRACT · · · · ·	i
ACKNOWLEDGEMENTS · · · · ·	ii
LIST OF CONTENTS · · · · ·	iii
LIST OF FIGURES · · · · ·	vi
LIST OF TABLES · · · · ·	viii

CHAPTER I. INTRODUCTION

1.1 The current problem of English lessons in Japan · · · · ·	2
1.2 Thesis composition · · · · ·	4

CHAPTER II. BACKGROUND AND PURPOSE OF THE STUDY

2.1 Inclusive education in Japan and its problems · · · · ·	7
2.1.1. Effective approach for students with special needs · · · · ·	8
2.2 Seventh graders' gap in English education · · · · ·	8
2.2.1. Different approaches according to students' ages · · · · ·	9
2.2.2. Effects of English lessons in elementary schools · · · · ·	10
2.2.3. Romanized spelling · · · · ·	12
2.2.4. Difficulty in memorizing spelling of words · · · · ·	13
2.3 FLA & SLA · · · · ·	16
2.3.1 How to learn words in FLA and SLA · · · · ·	16
2.3.2. Phoneme processing and reading · · · · ·	19

2.3.3. Differences between languages	20
2.3.4. Phonological cognition in FLA and SLA	21
2.3.5. Are Japanese learners incompetent at reading English words? .	21
2.3.6. Arguments for using the first language in foreign languag	
Learning	22

CHAPTER III. RELATED RESEARCH

3.1 Previous studies on learners with special needs	25
3.2 Previous study for English vocabulary learning	27
3.3 Research Questions	28

CHAPTER IV. EXPERIMENT

4.1 Experiment	31
4.1.1 Participants	31
4.1.2 Methods	32
4.1.3 Schedule	32
4.1.4 Flow of the experimental lesson	32
4.1.5 Target words used in the experiment	33
4.1.6 Step-by-step approach procedures	37
4.2 Results	40
4.2.1 Pronunciation assessments	40

4.2.2 Spelling test · · · · ·	43
4.2.3 Students with special needs · · · · ·	48
4.3. Discussion · · · · ·	53
4.3.1. Visual materials help the average students' understanding of lessons · · · · ·	53
4.3.2. The need of the ICT teaching materials · · · · ·	55
 CHAPTER V. DESIGNS FOR ENGLISH LEARNING MATERIALS FOR ICT	
5.1. Requirements for next-generation English learning materials prepared using ICT · · · · ·	60
5.2. Design for ICT-based English learning materials · · · · ·	60
5.2.1 Sound analyzer system · · · · ·	62
5.2.2 Phonics instruction · · · · ·	64
5.2.3 Spelling training · · · · ·	65
 CHAPTER VI. CONCLUSIONS	
6.1. Conclusion · · · · ·	67
6.2. Further research · · · · ·	68
 REFERENCES · · · · ·	 70

LIST OF FIGURES

1-1	Attitudes of students toward English learning shortly after completing elementary school	10
1-2	Attitudes of students toward English learning four months after entering Junior high school	11
1-3	Attitudes of average class students toward English learning	12
2	List of Romanized spelling	13
3-1	Perceived difficulty of memorizing the spelling of English words for all class	14
3-2	Perceived difficulty of memorizing the spelling of English words for the average class	14
3-3	Perceived difficulty of memorizing the spelling of English words for the advanced class	15
4-1	Triangle model	16
4-2	Pointing the chair	17
4-3	“Learning triangle” in relation to words	18
5-1	All students’ degree of agreement on ease of remembering word spelling when one can pronounce the word	46
5-2	Average students’ degree of agreement on ease of remembering word spelling when one can pronounce the word	47
5-3	Advanced students’ degree of agreement on ease of remembering word spelling when one can pronounce the word	48
6-1	All students’ results for the questionnaire item “Which approach do you think is better?”	49
6-2	Average students’ results for the questionnaire item “Which approach do you think is better?”	50
6-3	Advanced students’ results for the questionnaire item “Which approach do you think is better?”	50

7-1	All students' degree of preference for continuing to learn English using the proposed step-by-step approach	51
7-2	Average students' degree of preference for continuing to learn English using the proposed step-by-step approach	52
7-3	Advanced students' degree of preference for continuing to learn English using the proposed step-by-step approach	52
8-1	Preparedness for spelling tests for all of the students	56
8-2	Average students' preparedness for spelling tests	56
8-3	Advanced students' preparedness for spelling tests	57
9-1	The screen showing the images related to a target word.	61
9-2	The screen that appears after a target word's image is clicked or touched (images for the target word "tired")	62
9-3	Screenshot of the sound analyzing system	63
9-4	The screen showing the assessment of a student's pronunciation	63
9-5	The screen for phonics instruction	64
9-6	The screen for spelling practice	65

LIST OF TABLES

1. Schedule of experimental lessons (2015)	32
2. Target words used in the experimental lessons	33
3. Pictures with target words used in Lesson 1	35
4. Pictures with target words used in Lesson 3	36
5. Comparison of the two methods	37
6. Statistical analysis results of the pronunciation assessment	41
7. Pronunciation assessment points for each word and student group for the picture pattern method.	42
8. Pronunciation assessment points for each word and student group for the no-picture pattern method	42
9. Pronunciation assessment points for each lesson	43
10. Statistical analysis results of the spelling test	44
11. Percentage of words spelled correctly for the picture pattern method	45
12. Percentage of words spelled correctly for the no-picture pattern method	45
13. Percentage of words spelled correctly for the each lesson	45
14. Statistical analysis results of the pronunciation assessment and spelling test for students with dyslexia and LDs	48
15. Percentage of words spelled correctly	49

CHAPTER I

INTRODUCTION

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INTRODUCTION

1.1. The current problem of English lessons in Japan

In the spring of 2007, Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) included special needs education into the country's education program. In Japan, 6.3% of students have learning disabilities (LDs) and attention deficit hyperactivity disorder (ADHD), a percentage that is expected to increase in the coming years. Schools must create an environment where all students, including those with special learning disabilities, have the opportunity to receive the same education. Special needs students experience great difficulty in learning when using standard teaching approaches. Meanwhile, the pedagogy in Japan has remained mostly unchanged for decades, especially in teaching English as a Foreign Language (EFL).

Currently, fifth- and sixth-grade elementary students in Japan need to acquire 35 credits in English, equivalent to approximately 26 hours of learning English, in one school year. Prior to 2011, students began formal English classes in Grade 7. Japan's MEXT recommended that students should start becoming familiar with English in elementary school. As students only begin learning the English alphabet, phonetics, and words in the seventh grade or junior high school (MEXT, 2008), many have demonstrated the so-called seventh graders' gap, or the shock experienced by students who are suddenly required to learn English.

The complexity of the correspondence between letters of the English alphabet, their names, and the sounds they represent, is a major obstacle for beginner Japanese

students learning English. In Japanese (*Hiragana* and *Katakana* but not *Kanji*), each character corresponds to one sound, which makes learning easier in terms of recognizing sounds and mastering pronunciations. In contrast, English has several sounds per letter, which lends to difficulty in learning to read and write. Japanese students find it challenging that many of the spellings and pronunciations of basic English words do not match the way they are read when spelled out. Further, the pedagogy for pronunciation instruction has not changed since the 1970s (Tejima, 2011).

The present research presents a new step-by-step, picture-based approach, without using English words spelling and Japanese translations, in teaching EFL vocabulary in beginner classrooms in Japan. Teachers have tended to instruct learners to learn and memorize English vocabulary using the conventional learning method. In this study, the researcher seeks an effective learning method applicable to the public junior high school English classroom, including students with special needs and foreign students who require Japanese instruction. As letters are considered not readable for students with dyslexia and foreign students who require Japanese instruction, the researcher hypothesizes a method that does not use Japanese letters at all that would be effective for these students.

The aim is to help students successfully overcome the challenge of learning English words. The researcher has conducted experimental lessons with a total of 76 seventh-grade students at a Japanese public junior high school to compare the scores of students taught with picture-based-pattern experimental lessons and those taught without pictures. Further, the study examines the difficulties of students in simultaneously learning the pronunciation, spelling, and meaning of English words. The results are hoped to provide insights for effective instruction of English vocabulary to students in public school classrooms, especially those with dyslexia and LD..

English education in Japan is poised to greet a major turning point, as English lessons will be required in elementary school. In this regard, inclusive education is needed. This study is conscious of the realization of next-generation English learning materials with ICT for the above reasons.

1.2. Thesis Composition

Chapter 2 aims to provide a background of the inclusive education and English education system in Japan. In the spring of 2007, special needs education became part of Japan's school education program through the initiative of MEXT. As the percentage of students with LDs and ADHD in Japan is increasing, this work seeks to propose an effective solution.

Japanese students start to study English in the seventh grade, when they have completed elementary schooling. For these students, the seventh grade is characterized by adjustments and coping with the gap between elementary education and junior high school instruction. The study also aims to analyze how Japanese students are significantly affected by the way individual English letters are pronounced.

The students' attitudes toward their elementary school's English lessons are assessed via a survey. Based on the results, almost all students tend to like English shortly after entering junior high school, but the percentage decreases after four months of trying to learn English. Arguments on using the first language in teaching foreign language classes are examined in this chapter.

Chapter 2 also presents a comparison of the process of language acquisition of a word in both the first and second language. The study highlights the phonological cognition in first language acquisition (FLA) as well as second language acquisition (SLA)

through phonological processing. Differences between FLA and SLA are taken into consideration. Subsequently, the possible influences of the written language of the mother tongue on learning to read English are analyzed.

Chapter 3 offers a review of the related studies on vocabulary learning for students with special needs. Studies have been conducted on the learning of L1 vocabularies and letters for Japanese learners with special needs, as well as on English vocabulary learning.

In Chapter 4, the researcher compares the differences between teaching English with picture patterns and without picture patterns. Moreover, the differences between students who are effective at learning English and those who are not will also be examined. The study will also investigate how words that students have learned in elementary school can influence their assessment of English learning based on students' questionnaire responses. This section presents an analysis of the test results and detailed discussion of the data.

Chapter 5 proposes the design for English learning materials for ICT.

Finally, Chapter 6 contains the conclusion of the study.

CHAPTER II

BACKGROUND AND PURPOSE OF THE STUDY

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2.1. Inclusive education in Japan and its problems

In the spring of 2007, special needs education became part of Japan's school education program through the initiative of MEXT, in consideration of the increasing percentage of students in Japan with LDs and ADHD. Schools must create an environment in which the students, including those with special learning disabilities, must have the opportunity to receive equal education. Special needs students experience difficulties in learning when instruction adopts ordinary teaching approaches.

According to Makino et al. (2002), phoneme-related errors are committed not only by students with special needs but also ordinary students. They pointed out the cause of the errors is the insufficiency of instruction in the process of second language learning. Students with special needs are expected to have difficulties catching up with English classes in junior high school (Masuda, 2002).

MEXT (2012) conducted a survey on students requiring special needs education among public teachers from elementary and junior high schools. The results revealed that teachers understand the different types of students and pay attention to students with special needs in homeroom classes. However, they might not have sufficient understanding of teaching approaches appropriate for these types of students. Based on the survey, 55.1% of students with special needs have the opportunity to receive special teaching support, but 38.6% of them do not receive support at all. As much as the

teachers would like to spare time to support them after class, they do not have enough time to do so in reality because they are pressed with everyday work. Meanwhile, the techniques for teaching students with special needs are not established in Japan.

2.1.1. Effective approach for students with special needs

For ADHD students to maintain concentration, teachers need to make instructions brief and not only say the words but express them visually as well (Makino, 2003). Teachers need to pronounce clearly and slowly, and have to constantly check the work of students with special needs. Further, students with special needs require to be praised because they want to overcome negative feelings about their learning difficulties. Setting simple goals that can be achieved in short periods of time can also help motivate them.

According to MEXT (2015), visual instructions are effective for students who have difficulty in paying attention in mass teaching or group learning. Taking consideration of students with special needs leads to improvements in teaching approaches that can be effective not only for students with special needs but the entire class.

2.2 Seventh graders' gap in English education

MEXT (2008) recommended that familiarity with English must start in elementary school, in consideration of the deficiency of the system at the time, when students were not required to learn the English alphabet, phonetics, and words until the seventh grade or junior high school. This long-standing system has led to the so-called

seventh graders' gap or the shock at the sudden learning of English.

In 2013, English lessons were introduced in elementary schools as required subjects. However, as MEXT has not provided concrete guidelines, elementary English lessons are not smoothly connected to junior high school lessons (Tanaka, 2014).

2.2.1. Different approaches according to students' ages

Item learning, in which students listen to and mimic basic English expressions by piece, is the main English learning activity in elementary school (Tanaka, 2013). In junior high school, English learning focuses more on the system of English grammar. Students who cannot cope well with the learning process for English tend to dislike the language. For Japanese students, elementary school English activities were fun to learn, whereas junior high school lessons were difficult (Tanaka, 2013). Kageura (2000) found that the process of introducing English letters is significantly related to this problem. Students who cannot read and write English words get frustrated which leads to their dislike of English. Fukaya and Hirai (1999) stated that the proper practice of letter instruction can provide a smooth transition from elementary school English activities to junior high school lessons.

Tanaka et al. (2013), quoting Piaget's stages of development, concluded that the concrete operational stage, which includes children from seven to eleven years old, is suitable for item learning, whereas the formal operational stage, or those above eleven years old, is suitable for system learning.

2.2.2. Effects of English lessons in elementary schools

The researcher conducted a survey among students who recently graduated from elementary school to assess their attitudes toward English lessons. Figure 1-1 shows that 79% of the students liked English shortly after entering junior high school. When students were asked the same question four months later, however, those who liked English decreased to 66% (See Fig. 1-2). One reason for this decrease may be that learning English letters begins in junior high school; students do not have prior knowledge to the letters and spelling of English words. Japanese elementary school teachers who teach English to fifth and sixth graders think that they need to teach spelling of words but hesitate to do so owing to the government course guidelines.

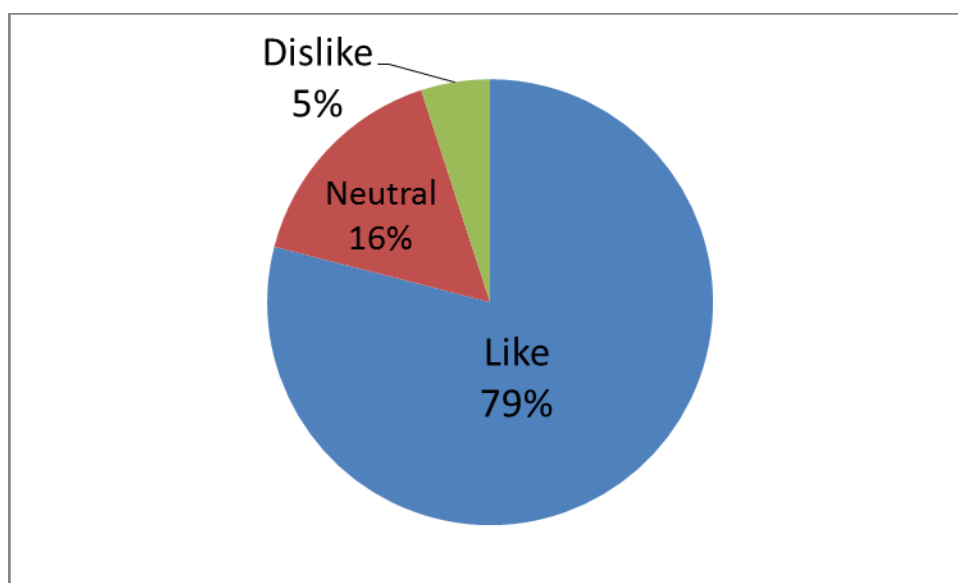


Figure 1-1: Attitudes of students toward English learning shortly after completing elementary school

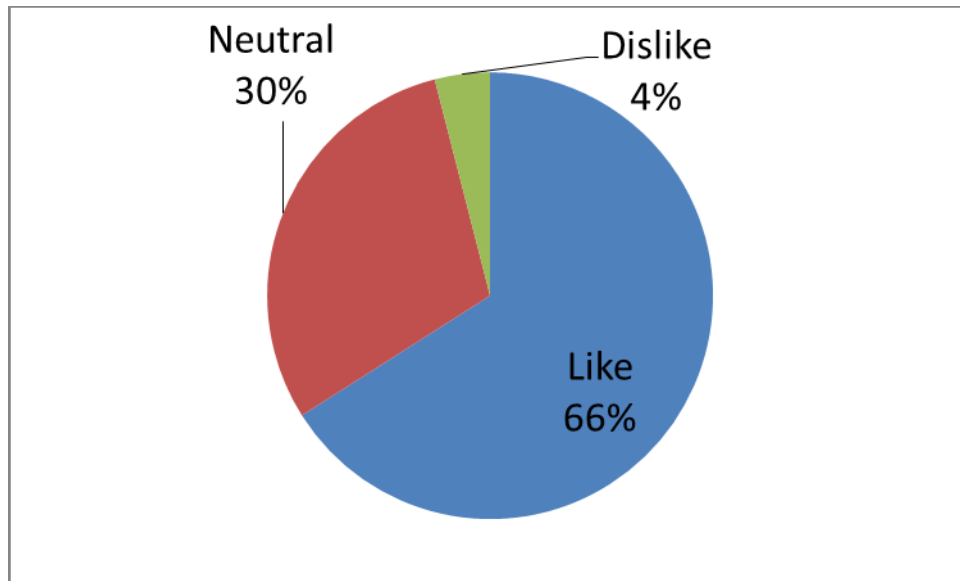


Figure 1-2: Attitudes of students toward English learning four months after entering junior high school

Figure 1-3 shows that average students tend to dislike English even before entering junior high school. Several students belonging to the average class answered that they did not understand what native English speakers said during their English lessons in elementary school. The inability to understand lessons in their elementary school days may lead to their negative attitudes toward English.

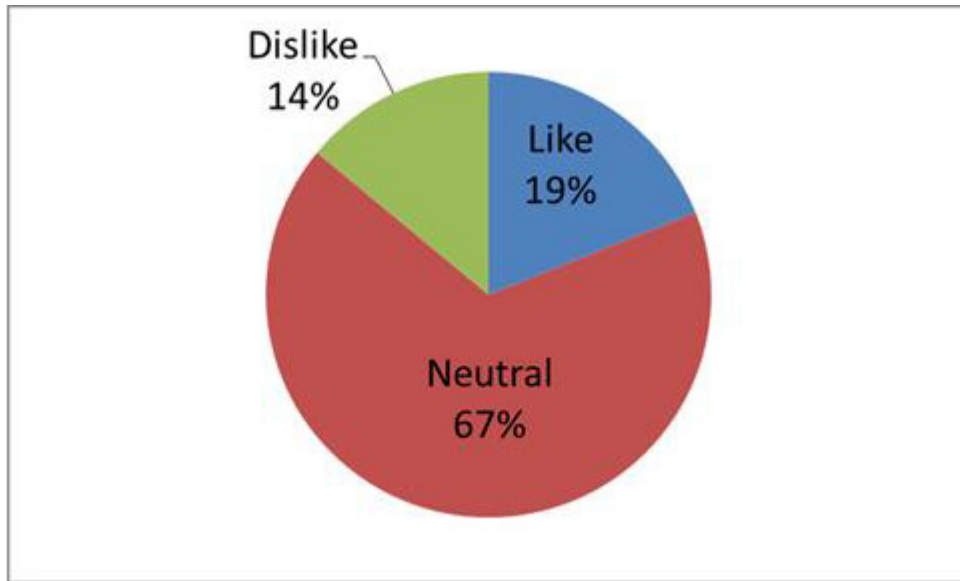


Figure 1-3: Attitudes of average class students toward English learning

2.2.3. Romanized spelling

Fourth-grade students are required to learn Romanized spelling, which translates foreign words using the Roman alphabet into Japanese. Figure 2 shows the list of Romanized spellings. Based on the survey conducted by the researcher, 84% of the students understand how to write and read Romanized spelling. This spelling guide has a huge influence on how a Japanese learner pronounces English words. For example, when they see the word “bike,” they pronounce it not as “/báik/” but as “/bike/.”

ローマ字一覧表

つまる音は、次にくる子音を重ねることで
入力することができます。
切手(), やった() など

あ	い	う	え	お		
LA	LI	LU	LE	LO		
か	き	く	け	こ		
LKA	LKI	LTU	LWA	LVA	LYU	LYO

あ	ぱ	ば	だ	ざ	が	ん	わ	ら	や	ま	は	な	た	さ	か	あ
XA	PA	BA	DA	ZA	GA	NN	WA	RA	YA	MA	HA	NA	TA	SA	KA	A
い	ぴ	び	ぢ	じ	ぎ		る	り	い	み	ひ	に	ち	し	き	い
XI	PI	BI	DI	ZI	GI		WI _読	RI	YI	MI	HI	NI	TI	SI	KI	I
う	ぷ	ぶ	づ	ず	ぐ	ゃ	う	る	ゆ	む	ふ	ぬ	つ	す	く	う
XU	PU	BU	DU	ZU	GU	XYA	WU	RU	YU	MU	HU	NU	TU	SU	KU	U
え	ぺ	べ	で	ぜ	げ	ゅ	ゑ	れ	いえ	め	へ	ね	て	せ	け	え
XE	PE	BE	DE	ZE	GE	XYU	WE _読	RE	YE	ME	HE	NE	TE	SE	KE	E
お	ぽ	ぼ	ど	ぞ	ご	よ	を	ろ	よ	も	ほ	の	と	そ	こ	お
XO	PO	BO	DO	ZO	GO	XYO	WO	RO	YO	MO	HO	NO	TO	SO	KO	O
りゃ	みゃ	ふゃ	ふぁ	ぴゃ	びゃ	ひゃ	にゃ	でゃ	てゃ	ぢゃ	ちゃ	じゃ	しゃ	ぎゃ	きゃ	カ
RYA	MYA	FYA	FA	PYA	BYA	HYA	NYA	DHA	THA	DYA	CHA	JA	SYA	GYA	KYA	XKA
りい	みい	ふい	ふい	ぴい	びい	ひい	にい	でい	てい	ぢい	ちい	じい	しい	ぎい	きい	ケ
RYI	MYI	FYI	FI	PYI	BYI	HYI	NYI	DHI	THI	DYI	CHI	JYI	SYI	GYI	KYI	XKE
りゅ	みゅ	ふゅ	ふ	ぴゅ	びゅ	ひゅ	にゅ	でゅ	てゅ	ぢゅ	ちゅ	じゅ	しゅ	ぎゅ	きゅ	っ
RYU	MYU	FYU	FU	PYU	BYU	HYU	NYU	DHU	THU	DYU	CHU	JYU	SYU	GYU	KYU	XTU
りえ	みえ	ふえ	ふえ	ぴえ	びえ	ひえ	にえ	でえ	てえ	ぢえ	ちえ	じえ	しえ	ぎえ	きえ	わ
RYE	MYE	FYE	FE	PYE	BYE	HYE	NYE	DHE	THE	DYE	CHE	JYE	SYE	GYE	KYE	XWA
りよ	みよ	ふよ	ふお	ぴよ	びよ	ひよ	によ	でよ	てよ	ぢよ	ちよ	じよ	しよ	ぎよ	きよ	
RYO	MYO	FYO	FO	PYO	BYO	HYO	NYO	DHO	THO	DYO	CHO	JYO	SYO	GYO	KYO	

Figure 2: List of Romanized spelling

2.2.4. Difficulty in memorizing spelling of words

Figure 3-1 shows that, for 47% of the students in the all class surveyed, memorizing the spelling of words is difficult. Figure 3-2 shows that among the average class students, 67% felt that it is hard to memorize the spelling of English words.

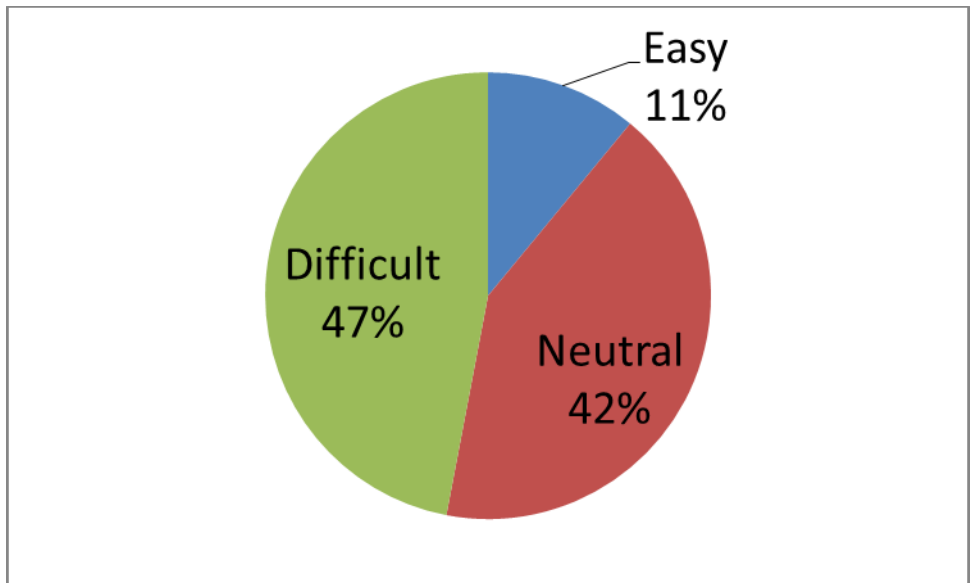


Figure 3-1: Perceived difficulty of memorizing the spelling of English words for all class

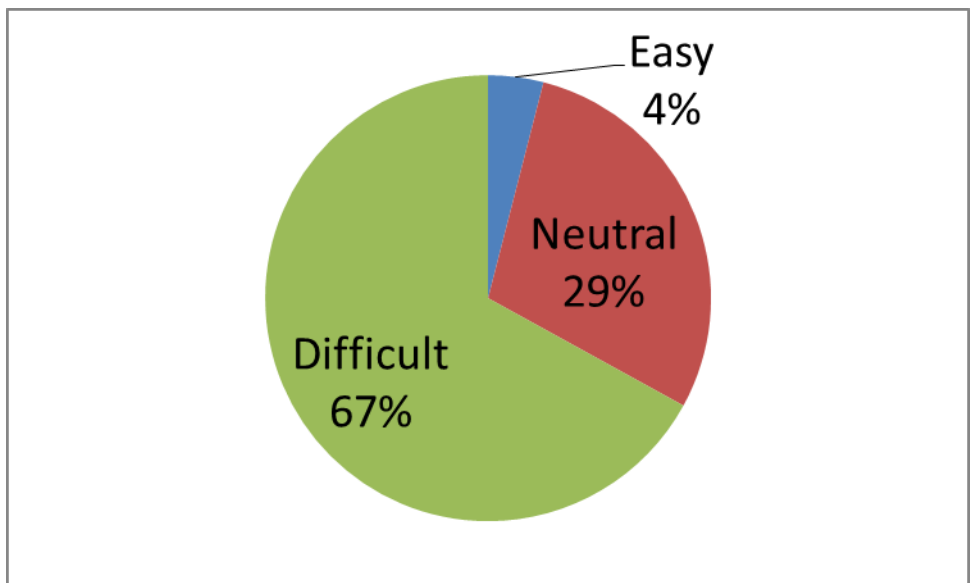


Figure 3-2: Perceived difficulty of memorizing the spelling of English words for the average class

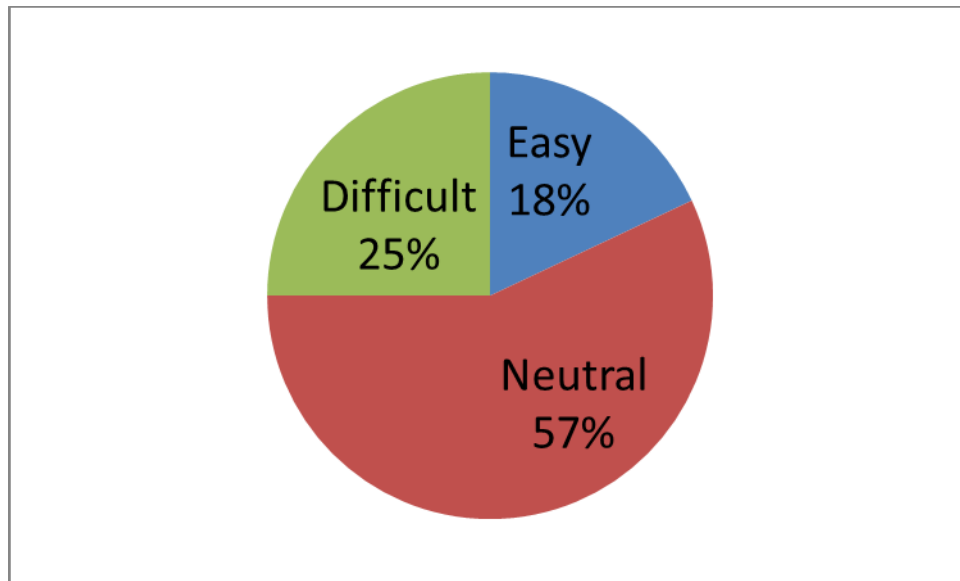


Figure 3-3: Perceived difficulty of memorizing the spelling of English words for the advanced class

The students were asked how they memorized the spelling of words. Their responses included practice writing while pronouncing the words following the Romanized pronunciation. However, the spelling and pronunciation of basic English words do not always match the way they are read when spelled out as individual letters. The following basic English words do not match their Romanized letters: like, soccer, play, have, want, much, how, many, about, write, name, nice, live, classmate, driver, some, and bike. The pronunciation of these words presents a major obstacle for beginner Japanese students trying to learn English.

2.3. FLA and SLA

How do we learn a word? The process of learning a word is different between the first (L1) and second language (L2). Plaut et al. (1996) developed the “triangle model” to simulate the process of reading words, which consists of three elements: phonology, semantics, and orthography (See Figure 4-1). To learn a word effectively, each of the three functions need to be completed.

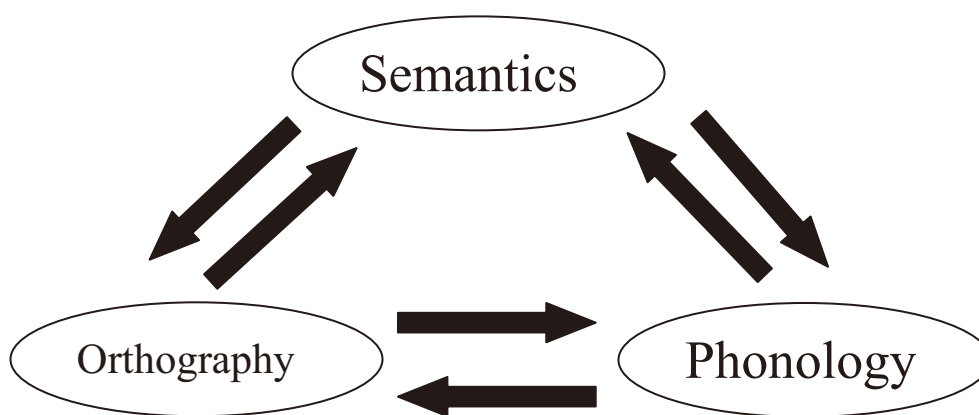


Figure4-1: Triangle model

Nation (2001) reported that to learn new vocabulary, learners must be able to know the meaning of a word, pronounce it, recognize its morphological parts, and use it correctly in a variety of sentences.

The present study highlights the phonological cognition in FLA as well as SLA. The differences between FLA and SLA are discussed in the next sections.

2.3.1. How to learn words in FLA and SLA

What does it mean to know a word? A word has a sound, and the sound has a meaning. In written languages, individual letters or characters symbolize sounds and

meanings. Connecting the sound of the word to its meaning is an essential part of learning the word. A child may learn the word “chair” and point to a chair, for example, when his/her parent points to a chair (See Figure 4-2) and says /tʃɛər/ to the child. First, the child connects the sound with the meaning, then pronounces the word, and then learns the word’s spelling. Figure 4-3 shows the “learning triangle” in relation to a word.



Figure4-2: pointing the chair

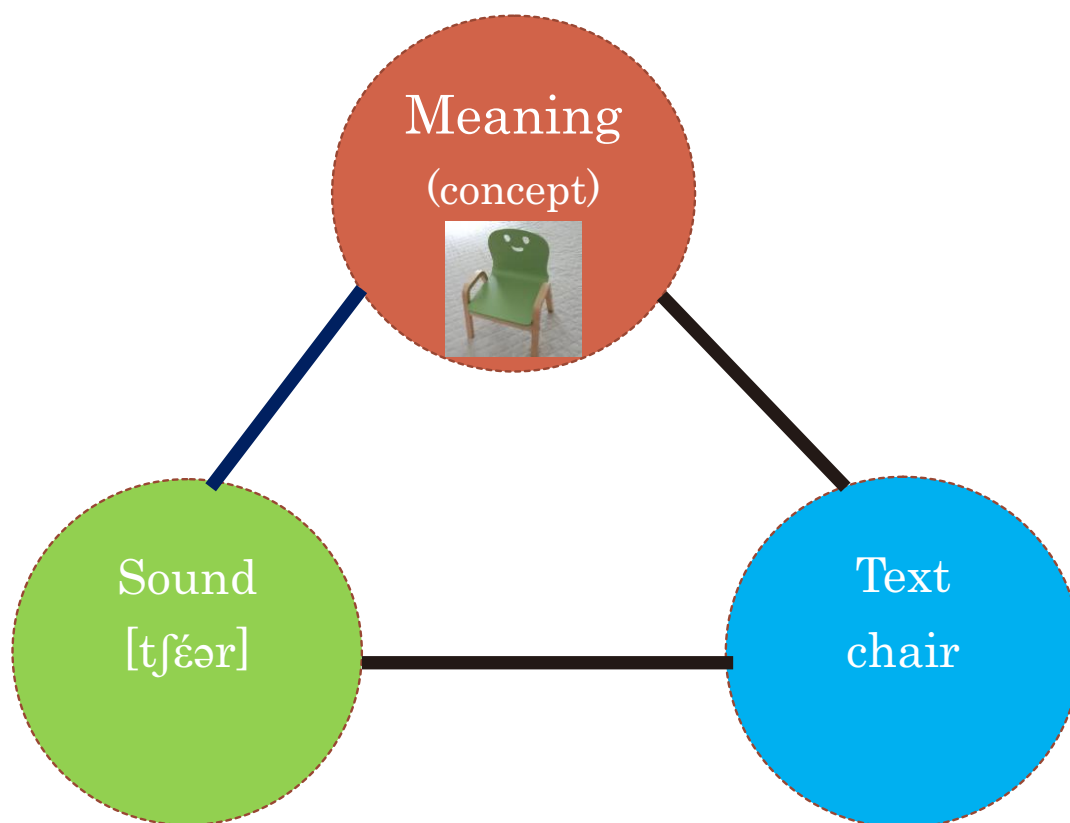


Figure4-3: “Learning triangle” in relation to words

The general approach to learning new English words in Japan is as follows. First, the teacher shows flashcards to students. One side of the flashcard displays an English word and the other displays its Japanese translation. Second, the students imitate the teacher’s pronunciation of the word. Finally, in the next lesson, the students are given a spelling test. The problem with learning words using the ordinary approach is that students have to learn an English word’s sound, spelling, and meaning simultaneously. The traditional approach for learning new English words in Japan is as follows:

1. The teacher shows flashcards to students: one side displays an English word and the other displays its Japanese translation.

2. Students repeat after the teacher's pronunciation.
3. Students have a spelling test in the next lesson.

The problem with learning words using the traditional approach is that students have to learn an English word's sound, spelling, and meaning all at the same time. The Japanese education system has a tendency to focus on spelling tests, and as such, students can get high scores even if they cannot pronounce English words well. Thus, the system of assessing English learning in Japan needs modification.

2.3.2. Phoneme processing and reading

A variety of information related to the word's spelling, pronunciation, meaning, usage, and so on is saved in the brain's long-term memory. According to Butler and Takeuchi (2008), phoneme processing plays an important role in accessing the mental vocabulary related to particular letter information seen through the eyes. Thus, the brain has a direct route through which mental vocabulary is accessed from visual letter information, and another for converting letter information into phoneme information.

English orthography assumes a phoneme as a base unit. Therefore, to acquire the skill to read English, phoneme recognition needs to be acquired as a skill. Indeed, reading skills and phoneme recognition are related to each other.

In the Japanese writing system, the base unit is a syllable and not a phoneme. Children learning the language can therefore be able to recognize a syllable first, before being able to recognize a phoneme. Children who learned Japanese therefore tend to have a delayed development of phoneme recognition because Japanese kana is not a unit in a phoneme.

2.3.3. Differences between languages

Bialystok(2002) examined the relationship between the ability for phonological recognition in the first and second language. They surveyed bilingual children living in Canada aged between six and seven years and monolingual children whose mother tongue is English. The bilingual children, who were learning English as a second language, primarily spoke either Chinese or Spanish. The two groups were compared based on phoneme cognition, number of vocabulary known, and pseudoword reading. A pseudoword is a word that does not have a meaning but can be used for learning English. As for English, the relationship between the sound of a word and its spelling is complicated. In the case of pseudoword, learners cannot depend solely on rote memorization as the words cannot be read correctly if the relationship between sound and spelling is not understood. The study showed a difference in the results of the easy phoneme recognition tasks based on age groups but none between language groups.

However, significant differences between language groups appeared when high-level phoneme recognition tasks were given. Compared with the monolingual group, the group whose mother tongue was Spanish had a high ability for phoneme recognition, whereas the group whose mother tongue was Chinese had lower phoneme recognition. Spanish and English use an alphabet system with a phonemic character but Chinese uses an ideographic system.

2.3.4. Phonological cognition in FLA and SLA

Bialystok collaborated with other researchers in a follow-up study (2003) on the possible influence of the written language of the mother tongue on English reading. A group whose mother tongue was Hebrew was included to the investigation. Although Hebrew is transcribed in phonemic characters as in English, its letters are based on the Hebrew alphabet. They first compared the results for reading English words. The Spanish and Hebrew groups were better at reading English compared with the monolingual group. However, the Chinese group's score was of the same level as the English monolingual group. Groups having a phonemic character that is the same as English had an advantage in reading English words.

Next, they compared the results for reading pseudoword. An equilateral correlation was seen between the mother tongue and second language reading in both the Spanish and Hebrew groups but not in the Chinese group. Thus, improvement in phoneme handling in Chinese may not necessarily improve English phoneme processing. Based on the results of the study, the transition of phoneme information processing might happen only in cases in which the language orthography system of the first and second languages is the same. In this context, the transition of reading words from Japanese to English may prove to be challenging for Japanese English learners.

2.3.5. Are Japanese learners incompetent at reading English words?

The Japanese writing system is a combination of syllabic characters (*kana*) and ideographs (*Kanji*). Japanese is different from Chinese as it does not assume phonemic

character basics. Thus, phoneme processing from Japanese to English may not be transferred as automatically as in the case of Chinese.

Flege's speech learning model (1995) shows that second language learners tend to comprehend second language sounds using those from their mother tongue. As a phoneme category becomes established, it becomes more difficult for second language learners to perceive it in the same way as monolingual native speakers.

The Japanese seems to have an upper hand in comparison with languages that use writing systems with phoneme units. Meanwhile, Koreans may have an advantage in phoneme processing when they use Korean in learning English, as *Hangul* alphabet assumes phoneme units.

2.3.6. Arguments for using the first language in foreign language learning

Available literature related to the current study is mainly undecided on the effectiveness of using students' native languages in EFL vocabulary instruction. According to Gibson (1975), beginners can easily learn English vocabulary without using their first language. Learners can grasp a word's meaning by looking at a picture illustrating the word, even without translations. Pavio and Desroshers (1980) proposed the bilingual dual coding theory, which states that using language together with images in learning vocabulary tends to increase the depth of understanding of the learner. However, Swan (1997) noted that teachers experience great difficulty in explaining the meanings of words without translations. Further, Cook (2010) said that translation is effective in language teaching and essential in learning words, although pictures and gestures can also help express the meaning of words. He noted the difference between pre- and post-adolescent learners: the former lack the ability to think logically of lan-

guage itself and cannot organize their thoughts nor clarify their new knowledge. Hasegawa (2007) mentioned that elementary English education is “affective,” whereas junior high school English is “cognitive.” He found a gap in the teaching approaches between elementary and junior high schools. According to Fenson et al. (1994), word “imageability” ratings for nouns and verbs are correlated with the age of acquisition. The turning point in the development of a child’s ability to think happens at about the age of ten years (Piaget, 1972). The period from the age of seven to eleven years is called the concrete operational stage, in which children learn from concrete experiences, such as seeing and hearing. In this period, it is important for children to create concrete experiences by playing outside. Children move to the formal operational stage after the age of 11 years. They have the ability to rationalize by developing hypotheses and do so systematically by themselves despite the abstract nature of certain ideas. Depth is added to logical thinking during this period. In other words, the erstwhile “dotted” understanding from experience begins to form “a single continuous line.” Seventh graders, as newly entering the formal operational stage, are still testing their logical thinking faculty. They cannot handle multiple tasks at once, which may impede their learning of English pronunciation sound, spelling, and meaning at the same time.

Therefore, the no-translation approach may be suitable for pre-adolescent learners. Seventh graders are 12 or 13 years old, or the beginning of adolescence.

CHAPTER III

RELATED RESEARCH

CHAPTER III

RELATED RESEARCH

3.1. Previous studies on learners with special needs

Several scholars have studied the use of technological aids in special needs education. Stromer et al. (1996) conducted an experiment involving matching a picture with a word arbitrarily using a computer system, for students with developmental and hearing disabilities. They found that stimulus equivalences are produced between the picture and the word, contributing to the spelling and copying of the words. Roldán et al. (2014) also developed a multi-touch tabletop learning tool for people with cognitive disabilities and people with Autism Spectrum Disorder (ASD). The instrument shows an image depicting the user's feelings through a visual approach. In their study, the students who worked with the system performed better than the students who worked with paper. Van der Meer et al. (2015) reported the success of intervention via teaching with pictures and word matching using an iPad for students with ASD.

Nakayama (1997) trained two junior high school students with LDs, an eighth grader and a ninth grader, to read English sentences under the sample alignment method. In the sample alignment method, students learn to read through the use of picture cards. First, the students were shown an English sentence as a sample stimulus, and then they were asked to choose the picture card that showed the English sentence. Second, the teachers provided the sound of the word using computer-assisted instruction, and then the students were asked to choose the word's meaning. After the training, both of the students could correctly pronounce 90% of the English words.

Coltheart et al. (2001) proposed the Dual-Route Cascaded (DRC) model of visual word recognition and reading aloud. They explained the methods for reading aloud non-words. The DRC model has two routes: the lexical route, which runs on the left side, and the nonlexical route, which runs on the right side (See Figure 1-2). The lexical route is the process in which readers can recognize known words by sight alone through looking up a lexical dictionary.

Japanese *kanji* is ideographic in nature; readers are able to read aloud a word through the lexical (left side) route. Meanwhile, *hiragana* is phonogram based; readers can read a word aloud through the nonlexical (right side) route. Noguchi (2010) conducted a case study of a child with dyslexia who had difficulty in phonological awareness, reading, and spelling. According to the DRC, this case tends to involve difficulty in the nonlexical reading route, but not in the lexical reading route. In other words, the child would be able to read *kanji* but not *hiragana*. However, in Noguchi (2010), the child could read two-syllable *hiragana* words smoothly through the experimental lessons that combined *kanji* characters and their *hiragana* letters.

Amano (2005) stated that people generally acquire phonological awareness before learning letters. That is, if we have not reached a certain level, we cannot learn letters. Phonological awareness indicates the ability to operate spoken language sounds not only for its meaning but also for its phonological aspects (Noguchi, 2010). Further, Noguchi concluded that people with dyslexia tend to acquire phonological awareness. A disorder in phonological awareness is the main reason for using alphabets in lessons for students with dyslexia. As in the case of alphabets, phonological awareness plays an important basis for pronouncing *hiragana*.

While there are several studies on teaching approaches for students with learning disabilities, the teaching approaches for EFL in formal lessons have not been studied in Japan.

3.2. Previous study for English vocabulary learning

Lee and Macaro (2013) examined the effects of teachers' language use (L1 is Korean and L2 is English) on vocabulary acquisition for elementary school and university students. They suggested that both age groups benefit from links made with the L1, particularly the elementary school students (younger learners). Moreover, their questionnaire data showed that young learners opposed an English-only (L2-only) pedagogy. However, according to Cameron (2001), Chambers (1991), and Macdonald (1993), young learners are likely to accept English-only pedagogy.

As regards the difference between noun and verb acquisition, McDonough et al. (2011) suggested that at the beginning of word learning, "imageability" might be a driving factor. Barani et al. (2010) studied whether audiovisual aids have any effect on learning EFL vocabulary for Indian children aged 7 to 12 years by recruiting 30 learners, who were divided into experimental and control groups. They found that visual aids have a significant effect on learning English vocabulary.

Kizawa (2013) examined how explicit instruction on English pronunciation affected English learning for Japanese junior high school students. Her study touched on the relationship between alphabets and the pronunciation of English words. The results indicated that explicit instruction for English pronunciation leads to enhanced proficiency in pronunciation and higher learning motivation. Meanwhile, Shizuka

(1995) measured the efficiency of teaching pronunciation using the “Individual Card Approach.” This instruction was found to enhance students’ English pronunciation.

Fukuda (2008) examined the learning effect of flashcards in enhancing students’ vocabularies in his English lessons. He noted that the flashcards approach is superior to the word list approach. EFL teachers in Japan have attempted teaching new vocabulary without using translations. However, this approach has not been subjected to a validity assessment; rigorous testing on the effectiveness of teaching vocabulary without Japanese translations has not been performed.

3.3. Research Questions

1. Is teaching the pronunciation of words without using spelled out word guides effective?

Hypothesis

The method of teaching without word guides will help students avoid the influence of pronouncing words according to their Romanized spelling. As mentioned in previous sections, 84% of the students can write and read Romanized spelling. However, this spelling guide has a huge influence on how a Japanese learner pronounces English words; the Romanized spelling does not always capture the correct pronunciation.

2. Can ability to pronounce a word help improve memory of the same?

Hypothesis

Pronouncing a word helps promote better recall. According to Tejima (2011), when Japanese learners memorize an English word, they learn its spelling and pronunciation separately.

3. In using the step-by-step method, are there differences between student types?

Hypothesis

Students who are weak in learning and those with special needs prefer the step-by-step learning method, as previously shown. Students who are good at learning do not prefer this proposed method because they have the ability to think logically.

CHAPTER IV

EXPERIMENT

CHAPTER IV

EXPERIMENT

4.1. Experiment

The current study aimed to examine the differences between using picture patterns and no-picture patterns in teaching EFL. The differences between students who are effective at learning English and students who are not were also analyzed. In the experiment, students were categorized into two levels—advanced and average students. Each class underwent four experimental lessons using both with-picture and no-picture patterns. Subsequently, the students' pronunciation assessment and spelling tests were analyzed using a paired *t*-test and Wilcoxon signed rank test. After the lessons, each student was asked to respond to a questionnaire.

4.1.1. Participants

A total of 76 seventh-grade students studying in a public junior high school were recruited to participate in the study. The students were categorized into two levels based on their mid-term test scores, with 43 advanced students and 33 average students. The mid-term test consisted of comprehensive questions, including English spelling, fill-in-the-blank items on idioms, and reading and understanding lengthy English texts.

The average students group included several students with LDs or students who may have LD, ADHD, and ASD, as well as a student with dyslexia.

4.1.2. Methods

Method 1 entails using a picture pattern without Japanese translations. Method 2 employs a no-picture pattern with Japanese translations. The goal of both is for students to pronounce and spell English words correctly.

4.1.3. Schedule

Table 1 shows the schedule of the experimental lessons conducted.

Table 1. Schedule of experimental lessons (2015)

Lesson	Pattern	Advanced class	Average class
First lesson	Picture pattern	October 14	October 15
Second lesson	No-Picture pattern	October 17	October 20
Third lesson	Picture pattern	October 22	October 21
Fourth lesson	No-Picture pattern	October 24	October 24

4.1.4. Flow of the experimental lessons

One lesson is 50 minutes long and begins with a warm up: the teacher and students engage in easy English conversations on the date of the month, weather, and similar types of topic. After the warm up, the students complete a BINGO game written in English words. These two activities take about ten minutes. After these activities, the experimental lessons were held using the proposed Step-by-Step approach in teaching English, which is discussed in detail in Section 5.1.3.

4.1.5. Target words used in the experiment

Table 2 provides the target words used in the experimental lessons. The words were chosen from an English textbook that had not been used by students. The words in Lessons 1 and 2 are adjectives that describe human emotions, whereas those in Lessons 3 and 4 are noun words that the students will learn from the English textbook. The target words used in the experiment contained five words included in an English textbook used in elementary school: “happy,” “tired,” “sleepy,” “sea,” and “river.”

The students were already familiar with a number of borrowed English words used in daily life. The five words that were used for picture patterns were “sleepy,” “oil,” “radio,” “stone,” and “judge.” The five words used for no-picture patterns were “blood,” “sea,” “hotel,” “river,” and “parent.”

Table 2. Target words used in the experimental lessons

Lesson 1	Pictures	sad	angry	excited	tired	sleepy
Lesson 2	No pictures	bad	happy	nervous	bored	scared
Lesson 3	Pictures	oil	radio	judge	stone	patient
Lesson 4	No pictures	sea	hotel	blood	river	parent

The students imitated the teacher’s pronunciation of the words. In the next lesson, the students were given a spelling test. In the proposed step-by-step approach, the students take the pronunciation assessment before the spelling test. Japanese traditional teaching style does not include pronunciation assessment tests. All of the students had time to practice for the pronunciation assessment during the experimental lessons. The spelling memorization task was given as their homework. Not





giving students time to memorize spelling during the class was intentional in this experiment.

Tables 3 and 4 provide the pictures used in Lessons 1 and 3, respectively. These pictures were used based on a Google image search. As for the picture used for the word “patient” in Table 4, there are two persons in the picture; the patient is encircled in red for clarity.

Table 3. Pictures with target words used in Lesson 1

	sad
	angry
	excited
	tired
	sleepy

Table 4. Pictures with target words used in Lesson 3

 An illustration of three plastic bottles of cooking oil with green handles and a sunflower with green leaves in front of them.	<p>oil</p>
 An illustration of a silver portable radio with a telescopic antenna and a speaker grille.	<p>radio</p>
 An illustration of a judge with grey hair, wearing a black robe and a blue tie, sitting behind a wooden bench.	<p>judge</p>
 An illustration of three dark grey, irregularly shaped stones of different sizes.	<p>stone</p>
 An illustration of a doctor in a white coat standing by a hospital bed, examining a patient who is lying in bed. A red circle highlights the patient.	<p>patient</p>

4.1.6. Step-by-step approach procedures

A comparison of the two experimental methods is shown in Table 5.

Table 5. Comparison of the two methods

Stages	Content	Method 1: Picture pattern	Method 2: No-picture pattern
Step 1	Practice a word's pronunciation	Teachers and students practice pronunciation while looking at pictures of the words.	Teachers and students practice pronunciation while looking at English words and their Japanese translation.
Step 2	Self-directed pronunciation practice	Students practice pronunciation on their own while looking at the corresponding pictures for English words.	Students practice pronunciation on their own while looking at flashcards with English words and Japanese translations.
Step 3	Pronunciation assessment	Students can refer to the corresponding picture.	Students look at the Japanese translation.
Step 4	Memorizing the spelling	Students memorize a word's spelling while looking at the corresponding picture and its spelling.	Students memorize a word's spelling while looking at the English word and Japanese translation.
Step 5	Spelling test	Students try to spell the word while looking at the corresponding picture.	Students try to spell the word while looking at the Japanese translation.

Method 1: Picture pattern without Japanese translations

Step 1. Practice a word's pronunciation with a teacher

The students repeat the word after the teacher while looking at a picture depicting the word's meaning. The teacher pronounces each target word twice, and repeats all the words in seven rounds, making the students pronounce each word 14 times.

Step 2. Self-directed pronunciation practice

The students pronounce each word while looking at the corresponding picture.

Step 3. Pronunciation assessment

A native English speaker assesses the students' pronunciation individually. The students pronounce the words while looking at the corresponding pictures. The assessment criteria are as follows:

- A. Very good (3 points)
- B. Good (2 points)
- C. Needs more practice (1 point)

Step 4. Memorizing the spelling

Memorizing the spelling of target words is given as homework. The teacher distributes a worksheet with pictures and their associated spellings. It is the first time that the students can see the words' correct spelling. The students need to memorize each word's spelling by themselves.

Step 5. Spelling test

The spelling test is conducted to check whether each student could spell the words correctly. In the test, the students spell the words while looking at corresponding pictures.

Method 2: No-picture pattern with Japanese translations

Step 1. Practice a word's pronunciation with a teacher

The students repeat the word after the teacher while looking at flashcards, which contain English words and their Japanese translations. The teacher pronounces each English word along with its Japanese translation. This is done twice for each word, and then repeated in seven rounds; the students pronounce each word 14 times.

Step 2. Self-directed pronunciation practice

The students pronounce each word while looking at the corresponding flashcard.

Step 3. Pronunciation assessment

This step is the same as in Method 1. The students pronounce the words while looking at the Japanese translations.

Step 4. Memorizing the spelling

Memorizing the spelling of target words is given as homework. The teacher distributes a worksheet with the English words, their correct spelling, and their Japanese translation. The students need to memorize each word's spelling by themselves.

Step 5. Spelling test

The students spell the words while looking at the Japanese translations.

4.2. Results

The picture-based pattern method resulted in higher pronunciation scores compared with the no-picture pattern method. However, no statistically significant differences were found in the spelling test. Details are as follows.

4.2.1. Pronunciation assessment

The first research question relates to the effectiveness of learning word pronunciation without using the word's spelling.

A paired *t*-test was run to verify the differences between the picture pattern and no-picture pattern lessons. The scores of the average students group conformed to the normal distribution in the results of the pronunciation assessment. In contrast, the scores of both the advanced students and the all-students groups did not conform to the normal distribution. Therefore, both groups were compared via a Wilcoxon signed rank test. Table 6 shows that the scores of students who used the picture pattern method are significantly higher compared with those who used the no-picture pattern per group. (the average-student group $P = 0.005$; the advanced-students group $P = 0.017$; all students $P = 0.001$). Hence, pronunciation practice without using the words' written form resulted in better acquisition of word pronunciation.

Table 6. Statistical analysis results of the pronunciation assessment

Class	n	<i>p</i> value
Average	33	0.005
Advanced	43	0.017
Total	76	0.001

Tables 7 and 8 show the scores for the pronunciation assessment of each word. Both average and advanced class students obtained the highest scores for the word “stone.” The other words that students could say superbly were “judge,” “sleepy,” “happy,” and “sea.” The students may have scored high for these words because such terms are familiar for Japanese people.

Of the target words that can be found in an elementary school English textbook (i.e., “tired,” “sleepy,” “happy,” “sea,” and “river”), “happy” seemed the easiest for the students based on their high scores in the assessment test. Again, “happy” is familiar for the Japanese, and its counterpart *shiwase* is often used in daily conversation. The same can be said of “sleep.” These two words are also already learned in elementary school, which may explain the students’ high score in the pronunciation test.

The students’ scores for “judge” and “stone” were also high (3.95 points), similar to “happy.” These two words have one syllable, and thus easy to pronounce. However, students scored low in the words “sad” and “bad” (pronounced /sæd/ and /bæd/, respectively). These words have the /æ/ sound that is not found in the Japanese language, leading to difficulties in pronunciation.

A number of the imported words were pronounced faithfully. “Radio” and “hotel” are examples of imported words that the Japanese find difficult to pronounce.

In the experimental lesson, the picture pattern method proved to be superior to the no-picture pattern method. However, there is a need to consider as well the influence of the imported language.

Table 7. Pronunciation assessment points for each word and student group for the picture pattern method.

	sad	angry	excited	tired	sleepy	oil	radio	judge	stone	patient
average	3.20	3.57	3.32	2.82	3.77	3.61	3.23	4.00	4.00	3.41
advanced	3.58	3.65	3.40	3.70	3.81	3.58	3.86	3.91	3.91	3.16
total	3.39	3.61	3.36	3.26	3.79	3.60	3.54	3.95	3.95	3.29

Table 8. Pronunciation assessment points for each word and student group for the no-picture pattern method

	bad	happy	nervous	bored	scared	sea	hotel	blood	river	parent
Average	3.33	3.95	2.84	2.70	2.84	3.79	3.59	3.08	3.33	3.56
Advanced	3.86	3.95	3.47	3.21	3.09	3.98	3.86	3.35	3.19	3.53
Total	3.59	3.95	3.15	2.95	2.97	3.89	3.73	3.21	3.26	3.55

Table 9 shows the pronunciation assessment points for each lesson. Lessons 1 and 3 (in pink) used the picture pattern, whereas Lessons 2 and Lesson 4 (in blue) used the no-picture pattern.

Table 9. Pronunciation assessment points for each lesson

	All students	Average	Advanced
Lesson 1	3.48	3.33	3.63
Lesson 2	3.32	3.13	3.51
Lesson 3	3.67	3.65	3.68
Lesson 4	3.52	3.47	3.58

Japanese translations of English words were not shown to the students in the picture pattern learning conducted in the study. Students might therefore misunderstand word meanings using this approach, especially for abstract words. Cook (2010) observed that explaining an abstract word's meaning without using translations may be difficult for teachers. Further, students could look up the translation of words in the dictionary out of the classroom even if the teacher gives the lesson in English only.

Although this approach could lead to a misunderstanding of word meanings using this approach, it nonetheless results in better acquisition of words' pronunciation.

4.2.2. Spelling test

The second research question asked if learners can remember a word better when they can pronounce the word.

The paired *t*-test for the spelling test scores showed that the average-students group conformed to the normal distribution, whereas the advanced-students and the all-students groups' scores did not. Therefore, the non-conforming groups were com-

pared via a Wilcoxon signed rank test. The results are presented in Table 10. No statistically significant difference was observed between the two methods for all groups.

Table 10. Statistical analysis results of the spelling test

Class	n	<i>p</i> value
Average	33	0.795
Advanced	43	0.988
Total	76	0.887

Tables 11 and 12 show the percentage of words spelled correctly for each pattern.

If students can pronounce an English word, can they memorize it? The three words “judge,” “stone,” and “happy” in Tables 11 and 12 had the highest scores. Meanwhile, only 59.3% of the students could spell “judge” correctly. As for “stone,” 80.2% of the students could spell it correctly. The result of the spelling test for “happy” was excellent (total, 96.5 %; average, 95.3 %; advanced, 97.7 %). This finding is because “happy” is familiar for Japanese people in both pronunciation and spelling.

Three-letter words “sad,” “oil,” “bad,” and “sea” were correctly spelled by nearly 85% of the students. Words with a small number of characters can be assumed as easy to memorize. Moreover, these three-letter words obey the rule of Romanized reading, except for “sea.” As for “sad,” the advanced students who had learned the alphabet well obtained good results because this word obeys the rule of Romanized reading (average, 78%; advanced, 100%). The same case was observed for “bad” (average, 76.7%; advanced, 93.0%).

Meanwhile, a number of average class students do not understand Romanized letters, and their achievement in the spelling test was not as high as that of advanced students.

Table 11. Percentage of words spelled correctly for the picture pattern method

	sad	angry	excited	tired	sleepy	oil	radio	judge	stone	patient
Average	78.0%	65.9%	22.0%	34.1%	43.9%	97.7%	79.1%	37.2%	67.4%	20.9%
Advanced	100.0%	100.0%	83.7%	88.4%	90.7%	100.0%	86.0%	81.4%	93.0%	74.4%
Total	89.0%	82.9%	52.8%	61.3%	67.3%	98.8%	82.6%	59.3%	80.2%	47.7%

Table 12. Percentage of words spelled correctly for the no-picture pattern method

	bad	happy	nervous	bored	scared	sea	hotel	blood	river	parent
Average	76.7%	95.3 %	14.0 %	39.5 %	30.2 %	76.2%	73.8%	66.7%	33.3 %	35.7 %
Advanced	93.0%	97.7 %	67.4 %	74.4 %	83.7 %	97.7 %	97.7 %	97.7 %	100.0 %	90.7 %
Total	84.9 %	96.5 %	40.7 %	57.0 %	57.0 %	86.9 %	85.7 %	82.2 %	66.7 %	63.2 %

Table 13. Percentage of words spelled correctly for the each lesson

	All students	Average	Advanced
Lesson1	70.7%	48.8%	92.6%
Lesson2	67.2%	51.2%	83.3%
Lesson3	73.7%	60.5%	87.0%
Lesson4	76.9%	57.1%	96.7%

Figure 5-1, 5-2 and 5-3 shows the results of a Likert-type scale on the ease of remembering word spelling when one can pronounce the word. Based on the results, 80% of the advanced students and 90% of the average students stated that knowing the pronunciation leads to better spelling recall. Further, 85% of all students surveyed found it easier to remember the spelling when they can pronounce the word.

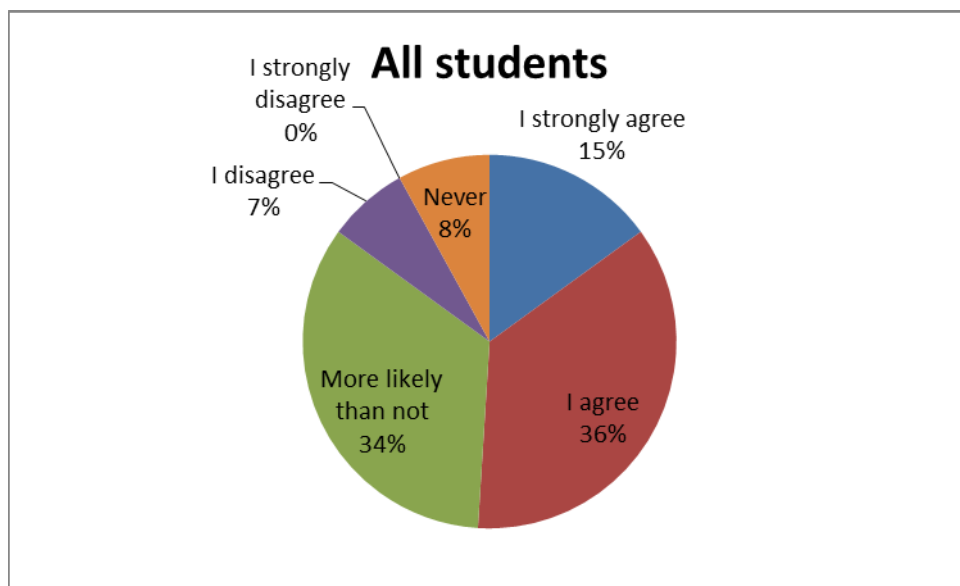


Figure 5-1: All students' degree of agreement on ease of remembering word spelling when one can pronounce the word

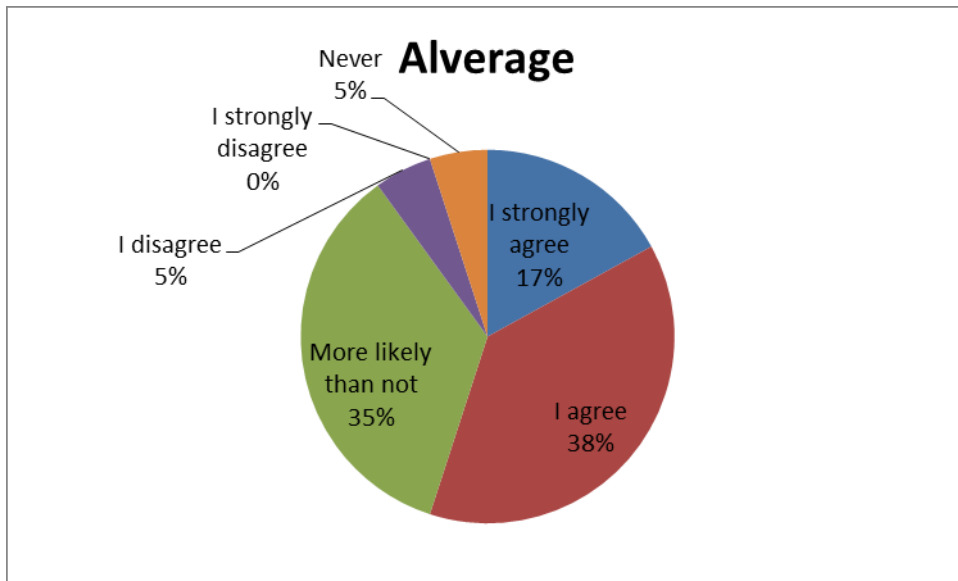


Figure 5-2: Average students' degree of agreement on ease of remembering word spelling when one can pronounce the word

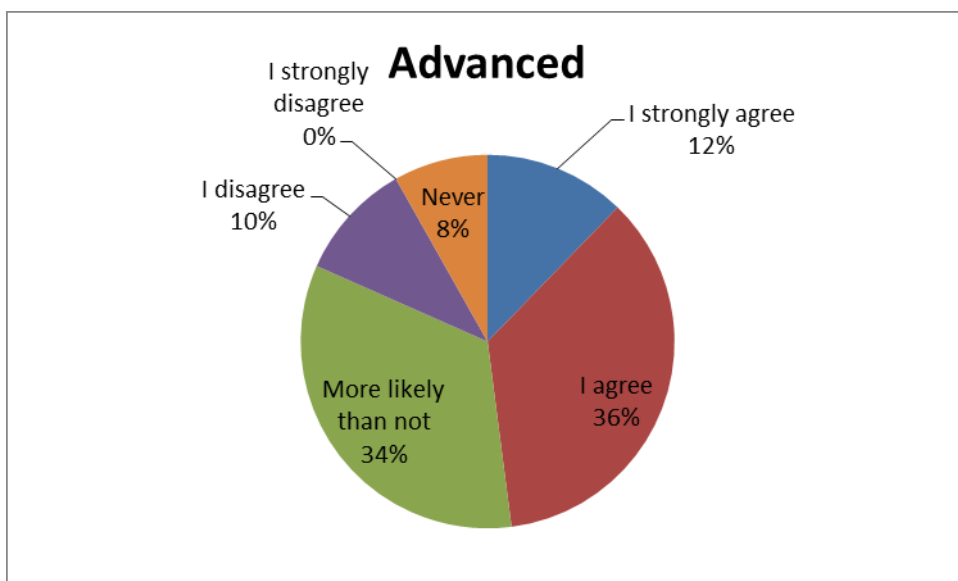


Figure 5-3: Advanced students' degree of agreement on ease of remembering word spelling when one can pronounce the word

4.2.3 Students with special needs

The second research question asked if there are differences in using the step-by-step method between student types.

From the average class, seven students with special learning needs were selected for the study: one with dyslexia, and the rest with LDs. The results the paired *t*-test for the scores are provided in Table 14. The scores of students instructed using the picture pattern method were higher compared with the no-picture pattern method group ($p=0.007$). In contrast, for the spelling test, the two methods showed no statistically significant difference for the seven students ($p=0.030$).

Table 14. Statistical analysis results of the pronunciation assessment and spelling test for students with dyslexia and LDs

Test item	n	<i>p</i> value
Pronunciation assessment	7	0.007
Spelling test	7	0.030

Table 15 shows the percentage of words spelled correctly. For “happy,” students with special needs obtained a high spelling achievement, similar to the other students. In the results of their spelling achievement, “oil” was nearly always spelled correctly (88.9%), out of the four words (sad, oil, bad, sea), which has a small number of characters. As stated above, “sea” does not obey the rule of Romanized reading. The seven students with special needs answered that they do not understand Romanized letters (See Figure 3-4). The six students without a dyslexia student could write English alphabets in order.

Table 15. Percentage of words spelled correctly

picture	sad	angry	excited	tired	sleepy	oil	radio	judge	stone	patient
	75%	62.5%	12.5%	12.5%	25%	88.9%	33.4%	0%	55.6%	0%
No-picture	bad	happy	nervous	bored	scared	sea	hotel	blood	river	parent
	55.5%	88.9%	0%	0%	0%	44.5%	22.3%	33.4%	0%	0%

Figures 6-1, 6-2, and 6-3 show the results on the preferred approach of the different student types. The average-level students reported a higher preference for the picture pattern method compared with the advanced students. Further, 69% of the total students preferred the picture pattern method. All of the seven students with special needs also preferred this method.

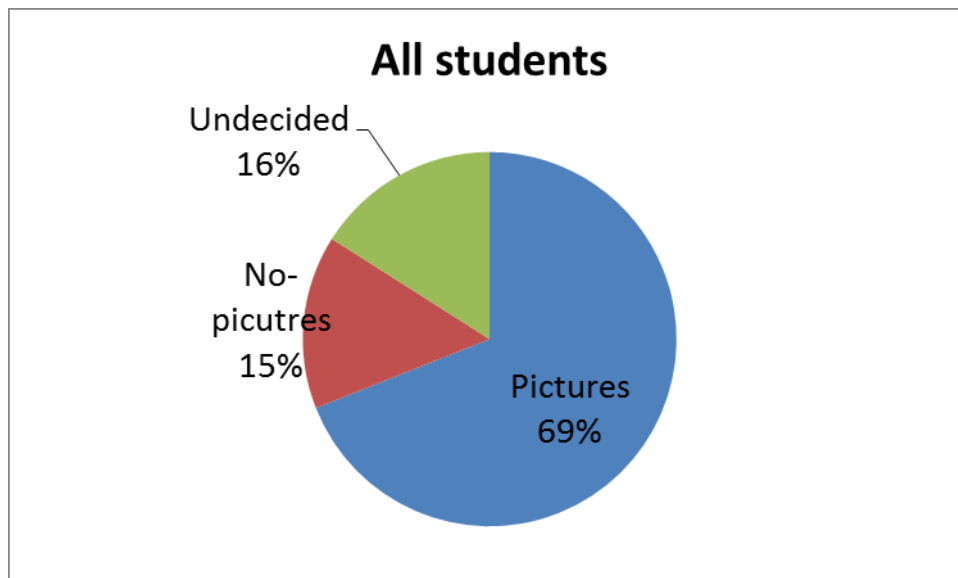


Figure 6-1: All students' results for the questionnaire item "Which approach do you think is better?"

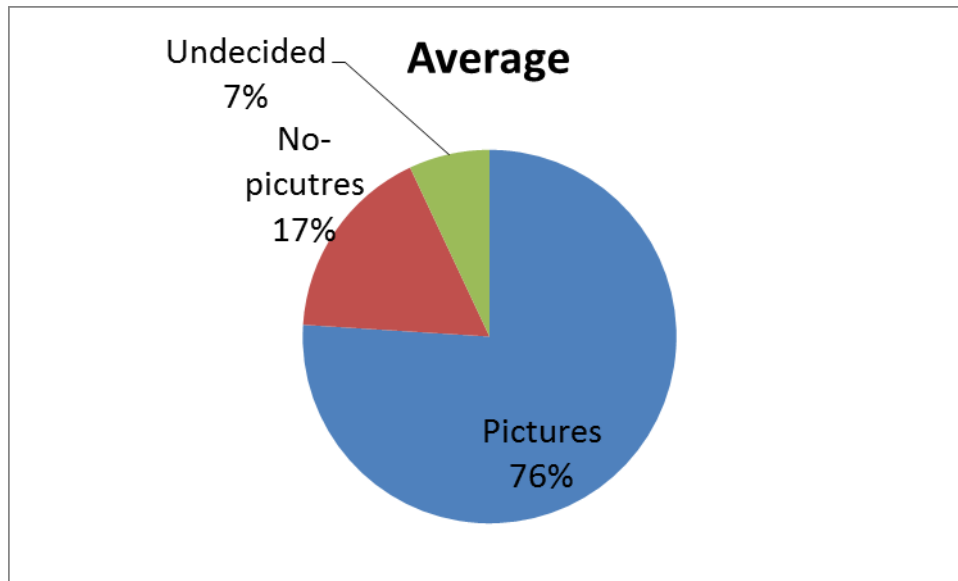


Figure 6-2: Average students' results for the questionnaire item "Which approach do you think is better?"

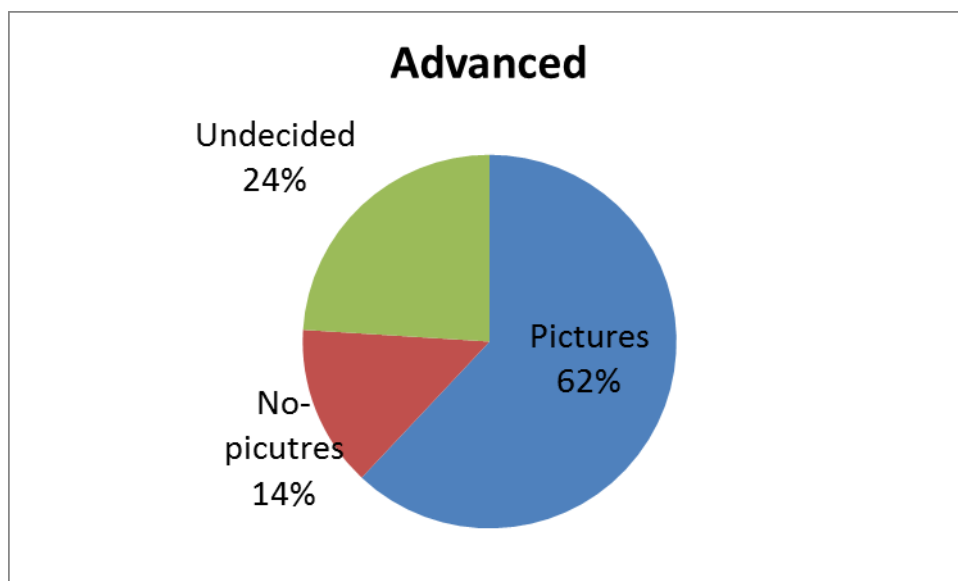


Figure 6-3: Advanced students' results for the questionnaire item "Which approach do you think is better?"

Figure 7-1, 7-2 and 7-3 show the results of a Likert-type scale on the attitude of students toward continuing to study English using the proposed approach. A total of 83% of students relayed a positive feedback regarding the picture pattern approach. The difference between the advanced- and average-level students is notable: 92% of average-level students favored this approach compared with the 76% for the advanced-level students. About one-fourth of advanced-level students were not in favor of this approach. A total of 8% from the entire class answered that they never want to continue learning English words with this approach.

Therefore, the proposed approach is better for the lower-achievement type of students.

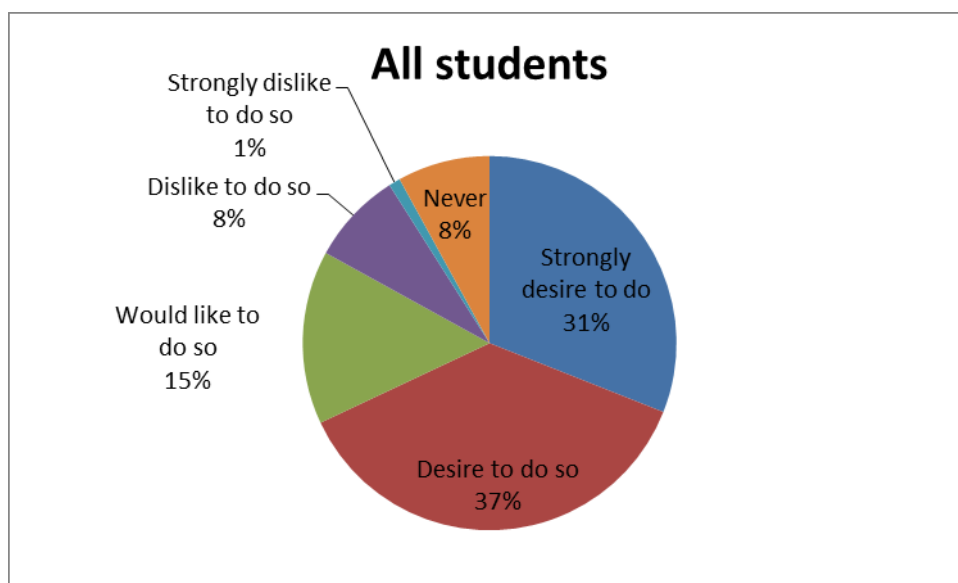


Figure 7-1: All students' degree of preference for continuing to learn English using the proposed step-by-step approach

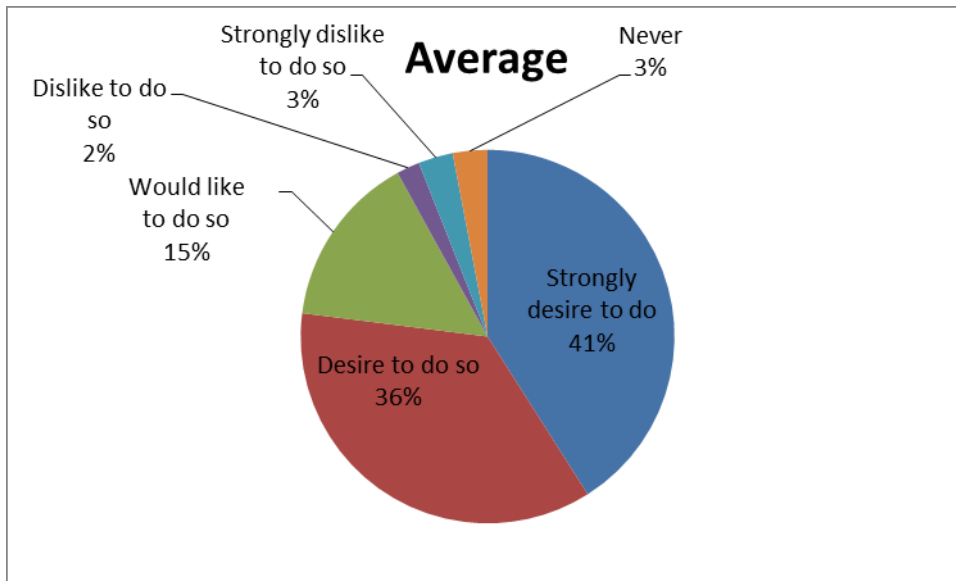


Figure 7-2: Average students' degree of preference for continuing to learn English using the proposed step-by-step approach

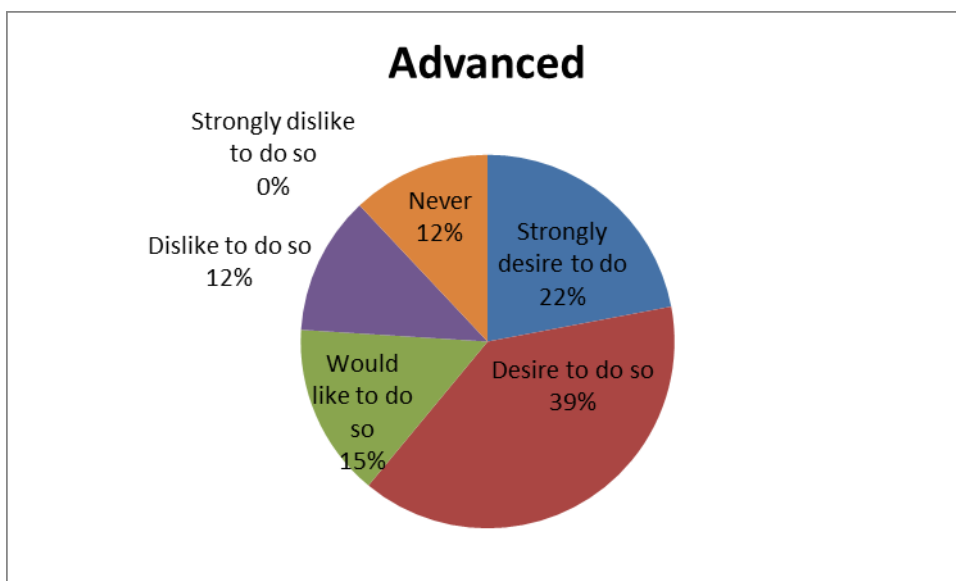


Figure 7-3: Advanced students' degree of preference for continuing to learn English using the proposed step-by-step approach

4.3. Discussion

As shown in Figure 7-3, 24% of advanced-level students and 8% of all the students surveyed reported their dislike of the step-by-step approach. One reason for this outcome may be that they can already memorize or understand English words under the traditional teaching approach.

According to Lenneberg (1967), there is a critical period for language learning. He suggested that natural language acquisition can only take place during a critical period, lasting from about age two to puberty. This finding was based on the size of the cerebral hemispheres with respect to age. The cerebral left hemisphere is more related to language, whereas the right one is related to memory retention of images or pictures. At the beginning of the language developmental term, both hemispheres are almost the same size. The language function lateralizes to the left hemisphere as a person ages, which tends to be complete around puberty. Seventh graders in junior high school are generally aged 12 or 13 years, or the period known as puberty. Using visual materials in learning English words around this period could help their learning. However, the visual approach may also be unhelpful as this period is already the transitional term. The no-translation approach with visual materials might be more suitable for beginners and younger pre-adolescent learners of EFL.

4.3.1. Visual materials help the average students' understanding of lessons

The average-level students preferred the picture-based method (Figure 7-2) and intended to continue studying English using the proposed approach (Figure 6-1). The same group showed better results when instructed using the picture-based approach

resulted compared with the no-picture method (Table 6). These results suggest that for students with special needs, the visual materials of the proposed approach may help promote lesson comprehension but not reading and writing.

Moreover, average-level students include those with LDs, such as dyslexia. Showing Japanese translations may be a learning obstacle for these students. Further, classes could have students whose native language is not Japanese. Indeed, students who immigrated to Japan or who transferred from an international school to a Japanese public school tend to have problems reading Japanese letters, especially Kanji. Therefore, this study focused on the use of a word and its picture in a picture pattern lesson that excludes Japanese translations.

Schuman (1975) suggested that progress in L2 may be impeded by the fear of making mistakes or being ridiculed for communicating ineffectively. According to Flege (1987), attitudes and inhibitions may be related to motivation, which probably plays an important role in deciding how successfully an L2 will be pronounced. As these two researchers stated, the secret to learning L2 sound is the motivation to learn the target language. Especially, students with special needs have not been given due recognition because of their disability.

The special needs students performed poorly in the spelling memorization task, and thus scored low in the spelling tests. Their knowledge of the words can therefore only be assessed through their pronunciation of the words. The students with LDs felt sad about their spelling test results, but were motivated by the recognition they received when tests were evaluated in combination with the pronunciation assessments.

Shiba (2003) insisted that setting a simple aim in the short term can help motivate students with LDs, for whom grasping too much information at one time may be

challenging. The proposed approach is suitable for students with LDs because it does not compel them to learn everything all at the same time but in a step-by-step manner.

The traditional method for vocabulary assessment in Japanese education uses only spelling tests. The correct pronunciation of words by students tends to be excluded in evaluation. The proposed step-by-step approach has a pronunciation assessment conducted before the spelling test, as learning vocabulary involves both spelling and pronouncing words. This approach brings a feeling of accomplishment for students.

4.3.2. The need of the ICT teaching materials

In the post-lesson questionnaire, a number of students also said that they would like to listen to the word's pronunciation more times. As shown in Table 10, pronouncing a word leads to better spelling recall. Students clearly need more time to listen to the correct pronunciation and then practice it.

In the study, the students were not given time to memorize a word's spelling during the experimental lesson. The reason for this is that there are individual differences in the time a person takes to memorize. A caveat is that students who do not have good study habits or those who do not have enough time to study at home because of personal activities may not do their homework. Thus, allotting class time for memorization might be a needed compromise.

Figure 8-1 shows the answers of students when asked if they prepared for the spelling test: 37% of students in the whole class said they prepared for the tests every time, 51% of the advanced students prepared for the tests, and only 18% of the average students prepared. Further, only 5% of the advanced students did not prepare for the

test, but this figure is higher in the average students group at 33%. The seven students with special needs answered they sometimes prepared for the spelling tests.

Based on the results, developing good study habits at home is important. The seventh graders were not used to writing English letters. Thus, as beginners, they require proper guidance.

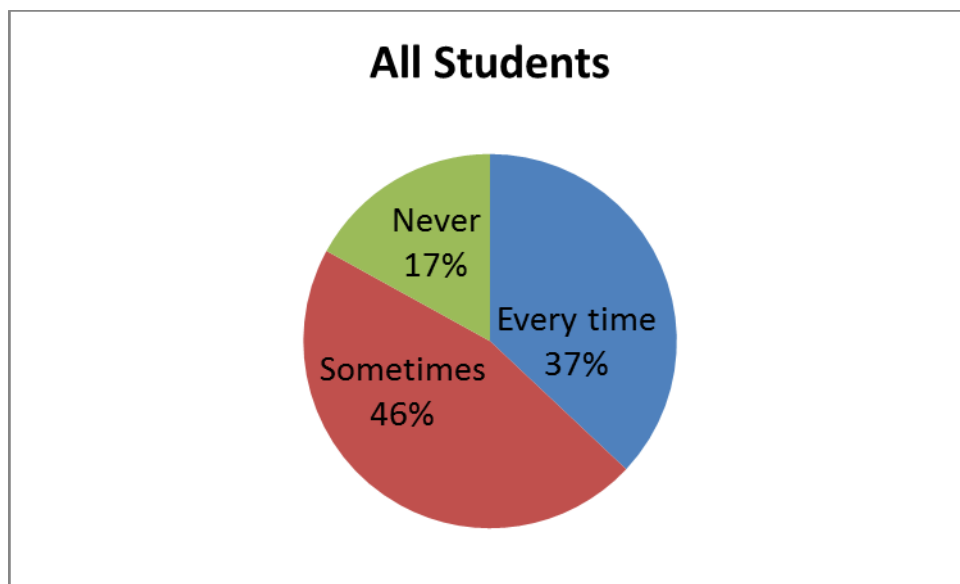


Figure 8-1: Preparedness for spelling tests for all of the students

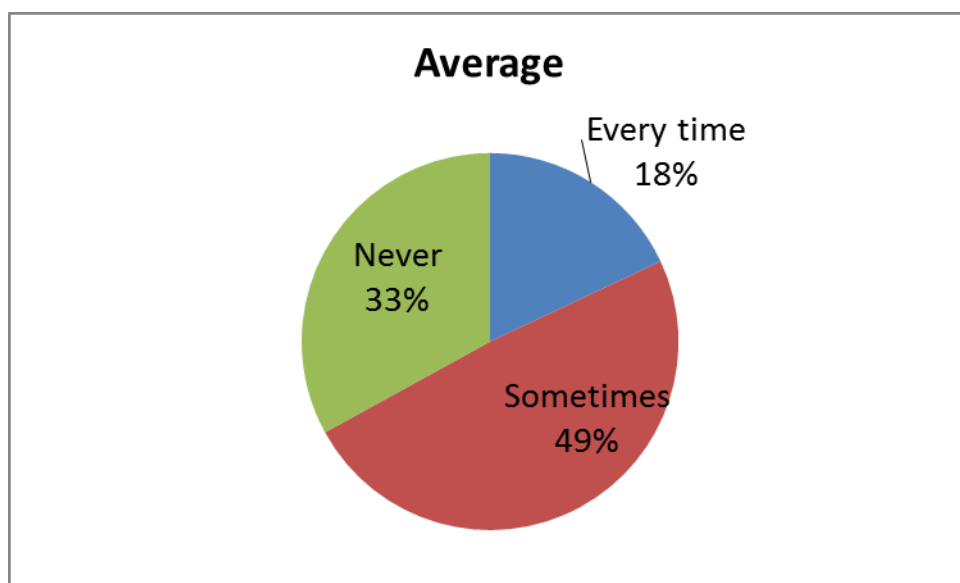


Figure 8-2: Average students' preparedness for spelling tests

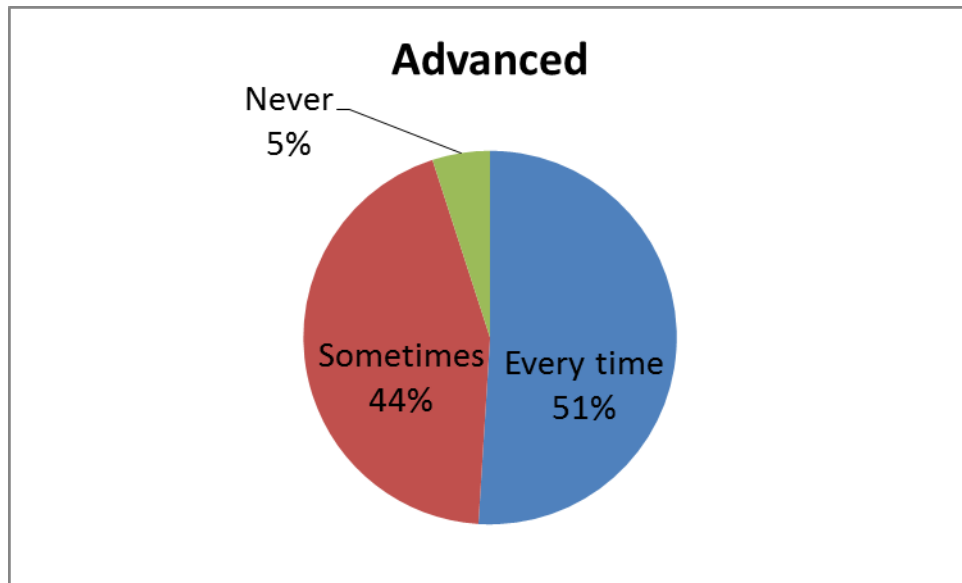


Figure 8-3: Advanced students' preparedness for spelling tests

Public junior high schools may consider installing a computer program that would play a word's pronunciation when students click on its corresponding image. Such a program should allow students to listen to the words' pronunciations as much as they like before the pronunciation assessment tests. Meanwhile, computer programs that assess students' pronunciation are also ideal for saving time.

It is difficult for Japanese learners who do not receive pronunciation instruction to pronounce English words whose pronunciation does not match their Romanized spelling. According to Tejima (2011), when Japanese learners memorize an English word, they learn its spelling and pronunciation separately. For example, when students learn the word "share," they try to memorize the spelling itself. Subsequently, they memorize the pronunciation by reading its Romanized spelling /sha-re/. They do not recognize its word family of "care," "dare," "fare," and "rare," among others. Thus, when they memorize the spelling, they assume that writing a word many times is the best way to memorize the spelling.

Japanese learners need to learn phonics because their language does not have phonemes as units of written language. Butler (2008) stated that phonics instruction is effective for Japanese learners to perform phoneme processing smoothly.

Therefore, ICT teaching materials must include the correct pronunciation, phonics instruction, and spelling practice.

CHAPTER V

DESIGNS FOR ICT-BASED ENGLISH LEARNING MATERIALS

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DESIGNS FOR ICT-BASED ENGLISH LEARNING MATERIALS

5.1. Requirements for next-generation English learning materials prepared using ICT

The researcher proposes the following in the creation of next-generation English learning materials using ICT.

1. A step-by-step learning guide specially designed for seventh graders (beginner learners)
2. A device that allows students to learn word pronunciation first without the word's spelling and Japanese translation
3. Functions for repeated pronunciation practice and assessment of students' pronunciation
4. A focus on phonics to facilitate understanding of English words and their pronunciation
5. A function for spelling training

5.2. Design for ICT-based English learning materials

In this proposed system, we can avoid the misunderstanding of the words' meanings. Moreover, students can learn the phonics and it leads to memorize the spelling easily.

Figure 9-1 shows the screen of the images related to a target word. When a student clicks or touches each image, for example, the one encircled in red, the word “tired” is pronounced and the next image related to the word “tired” is shown on the screen (See Figure 9-2).

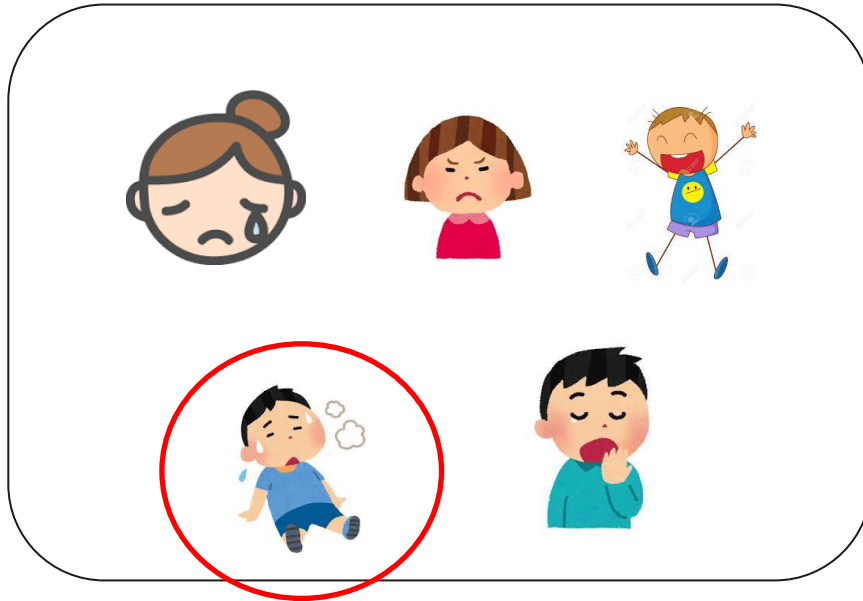


Figure 9-1: The screen showing the images related to a target word.

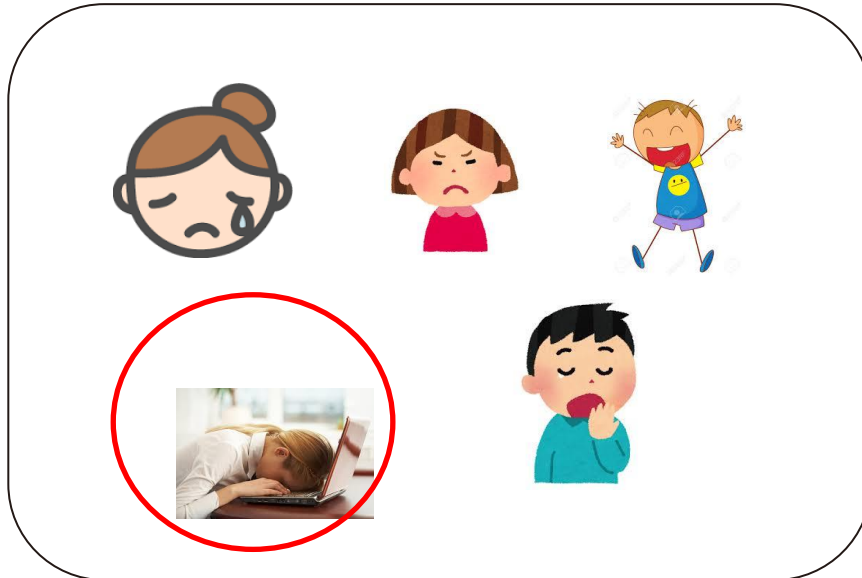


Figure 9-2: The screen that appears after a target word's image is clicked or touched (images for the target word "tired")

When the screen is clicked or touched again, another image appears. Thus, the image changes with every touch on the target word. This system helps avoid misunderstanding of the word's meaning. Students can listen to the word's pronunciation as many times as they like.

5.2.1 Sound analyzer system

Figure 9-3 shows the sound analyzer system for the images. Students can record their pronunciation and then compare their pronunciation with the correct one using the sound analyzer. As they compare the model wave of a word's sound, they can notice the differences between them. Next, an assessment of their pronunciation by the analyzer is shown on the screen (See Figure 9-4).

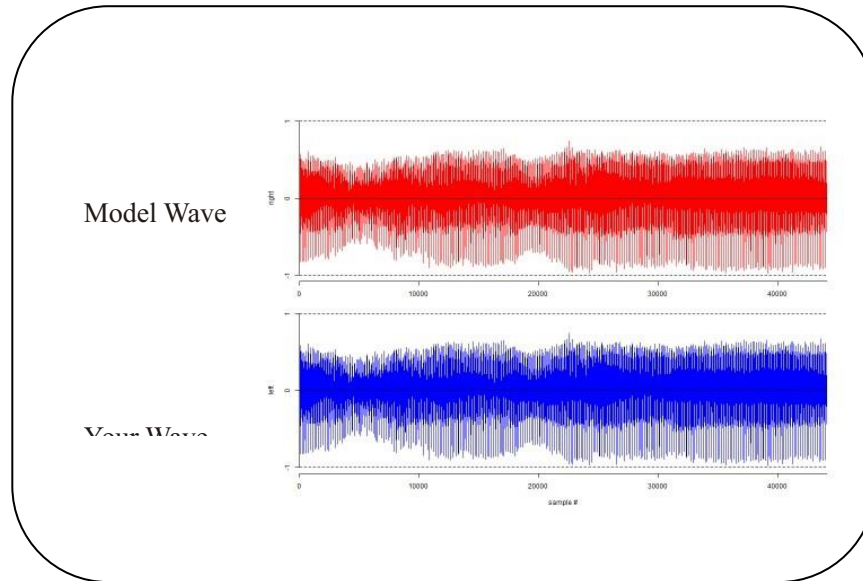


Figure 9-3: Screenshot of the sound analyzing system

Pronunciation result

very good

Figure 9-4: The screen showing the assessment of a student's pronunciation

5.2.2 Phonics instruction

After learning a word's pronunciation, students learn its spelling through phonics instruction. In this stage, they first see the spelling of the word. Figure 9-5 shows a sample screen for phonics instruction. For the word "sad," for example, when the students click or touch its first letter "s," they can hear its phonic pronunciation instead of the "s" alphabet sound. The same applies to the other letters "a" and "d" in the word. When they click or touch the image, the pronunciation of /sæd/ is pronounced. Students can thus learn to add the sounds to pronounce the entire word.



Figure 9-5: The screen for phonics instruction

5.2.3 Spelling training

Finally, students learn the words' spelling. When an image is shown (See Figure 9-6), the students type its spelling on the blank spaces. If they spell the word correctly, they can go on to the next word. Otherwise, another image of "sad" is shown, and they need to try again. If they want to know the spelling of a word, they can click or touch its image, and the spelling is shown on the screen.



Figure 9-6: The screen for spelling practice

CHAPTER VI

CONCLUSION

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CONCLUSION

6.1. Conclusion

This study proposed a picture-based, step-by-step approach to teaching English vocabulary to Japanese beginner students through a technique that eschews Japanese translations. One of the guiding ideas of this study was that learning English words is difficult for Japanese students because the latter rely on the names of individual letters in English words when learning the pronunciation of these words. The proposed approach tested in this study removes this difficulty by highlighting the practice of meanings and pronunciations and adding the spelling part later. Based on the results, the picture-based pattern method resulted in higher pronunciation scores than the no-picture pattern method, although no significant difference was found between the two approaches in terms of the spelling test. Thus, the picture-based approach may at the minimum be as effective as the no-picture approach using Japanese translations.

The post-study questionnaire revealed the advantage of using the picture-based approach: most of the participating students found that practicing the pronunciation of a word while looking at its picture made for easier spelling memorization. This approach can therefore significantly alleviate students' stress when trying to learn English vocabulary. Thus, the results indicate the importance of the picture-based, step-by-step approach for effectively teaching English vocabulary to Japanese public school students, including those with special needs in formal English lessons.

Ganschow and Sparks (2001) indicated that phonetic problems, such as connecting sounds and symbols, are much more relevant than syntactic problems for learners with LDs and learners who are not proficient in learning foreign languages.

Thus, the effect of phonological realization on foreign language learning merits examination.

Several of the proposed next-generation materials for English learning with ICT need facilities such as a computer room or Computer Assisted Language Learning (CALL) system. Unfortunately, most public junior high schools in Japan only have one computer room and no CALL system. An urgent issue is to equip the classroom environment in schools such that ICT can be used for instruction.

6.2. Further research

The class targeted for this experiment was considered an average class in Tokyo Prefecture because the students in this class were from a public junior high school that does not have a selection system in its admission. The students were categorized into two levels based on their mid-term test scores. This method helped ensure uniformity. Therefore, the class is a general class in Tokyo Prefecture. However, the researcher needs to verify the differences with other prefectures especially regarding English learning achievements.

In future research, the researcher aims to broaden the target of the use of the proposed next-generation English learning materials with ICT to all students. Such computer programs would help students become more proactive in learning English vocabulary. Special programs should also be designed to help students with dyslexia and LDs.

The current work did not focus on students with special needs; an approach to vocabulary learning specifically for their use is clearly needed in EFL. The researcher

hopes that the proposed next-generation English learning materials with ICT in this study can also help them in learning English words.

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