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## EFFECTS OF ORAL REPETITION ON LEARNERS' JAPANESE WORD ACCENTUATION

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### ABSTRACT

*Japanese word accentuation is a problematic area for learners unfamiliar with a pitch accent system. Since accent locations are unpredictable, learners are typically told to memorize them by rote, which is a time-consuming, tedious, and demanding task. It would certainly be ideal for learners to learn correct accentuation without explicit instruction as they learn new words. This article reports on a preliminary study that examined effects of a computer-based online word repetition exercise on the learning of Japanese word accentuation. 41 students in their 10<sup>th</sup> week and 17 students in their 12<sup>th</sup> week in a 2<sup>nd</sup>-year 1<sup>st</sup>-semester Japanese course took a pretest, followed by computer-based online word repetition practice on the Speak Everywhere system, a posttest immediately after the practice, and a delayed posttest after one week (class-and-computer condition). Out of the same group of students now in a 2<sup>nd</sup>-year 2<sup>nd</sup>-semester course, 22 students took a pretest, followed by two posttests in their 5<sup>th</sup> week (class-only condition). A paired t-test (two tailed) performed on 13 overlapping subjects found a significant difference between the two conditions ( $t=5.58$ ,  $p<.001$ , Cohen's  $d =1.9309$ ). The online word*

*repetition practice produced a significant gain in accentuation scores without explicit instruction, while classroom instruction alone was not sufficient to produce a significant gain.*

## INTRODUCTION

Word-level accentuation in Japanese is a nagging problem for learners as well as for instructors. Since word accentuation is basically unpredictable, learners must memorize it for every word. This is in addition to memorizing potentially very complex written representations of words and meaning. A glimmer of hope is seen in Mizuno's study (2007), which suggests that acquisition of accentuation is possible without explicit instruction through certain kinds of repetition activities.

On the pedagogical grounds that word-level accentuation should ideally be learned as new words are introduced (Shibata 2012), the present study examines an activity Mizuno's study did not cover, i.e., a word-level repeat-after-the-model activity done online. Because repeating words after the instructor tends to be a very tedious exercise to spend much time on in class, it is a good candidate for individualized practice outside the classroom. We will examine whether or not the repeat-after-the-model practice done online outside the class time has beneficial effects on the acquisition of word accentuation. If beneficial effects are found, we would have an instructionally desirable situation: that is to say, we would not only be able to effectively help learners to learn word accentuation, but also save precious class time by taking this practice out of the classroom.

This study is a part of a larger project that purports to examine various effects of a blended learning approach with an online interactive oral practice/assessment platform, called *Speak Everywhere* (<http://speak-everywhere.com>). This web-based system allows learners to practice speaking individually outside the classroom and allows instructors to review the students' production. A successful outcome of the study would support such an approach to language teaching. This study also purports to examine Wong and VanPatten's (2003) claim that drills "are not necessary or beneficial for foreign language acquisition or the development of fluency and should be discarded from instructional practice" (p.403). If the simple oral repetition practice, a prototypical mechanical drill, turns out to be beneficial, it would constitute evidence against it.

## RESEARCH BACKGROUND

### *Japanese word accentuation*

As stated above, accentuation in Japanese is problematic for learners. The difficulty stems from the fact that it is a pitch accent system unfamiliar to learners of Indo-European language backgrounds. Even grammatically correct sentences may not be understood by native Japanese speakers or sound very foreign to them if accentuation is incorrect. Accent is contrastive in Japanese, and there are quite a few minimal pairs like *ame* (high-low) ‘rain’ and *ame* (low-high) ‘candy’ and minimal sets like *hashi-ga* (high-low-low) ‘chopsticks + nominative case particle,’ *hashi-ga* (low-high-low) ‘bridge + nominative case particle,’ and *hashi-ga* (low-high-high) ‘edge + nominative case particle.’ Most importantly, the accent location (i.e. a high-low sequence) is largely unpredictable in Japanese, which means that learners need to memorize it for each word.

It should be noted here that accentuation varies considerably among regional varieties, and native speakers normally have little difficulty communicating with one another in spite of it because they, unlike learners, can usually supply enough contexts to disambiguate between minimal pairs. For this reason, some textbooks and instructors choose not to teach word accents. However, as Sato (1995) found through experiments using manipulated synthetic speech, correct prosody in general, and correct pitch in particular, make learners’ utterances sound more native-like than do accurate individual segments. Thus, we would be doing our students a gross disservice to ignore this important aspect of the language.

### *Repetition in word learning*

In the general psycholinguistic literature on word learning, word learning is thought to involve the establishment of at least the following three components: (1) a semantic representation, (2) a phonological representation, and (3) a link from (1) to (2) (Abbs, Gupta, & Khetarpal, 2008). The focus of the present study is whether repetition practice aids in establishing (2), an internal phonological representation. Repetition practice consists of listening and producing. We will discuss them separately below.

***Benefits of perceptual training.***

There are studies such as Rochet (1995), Bradlow, Pisoni, Akahane-Yamada, and Tohkura (1997), and Wang, Jongman & Sereno (2003) that found that intensive perception training in which learners listen repeatedly to L2 sounds without production practice significantly enhances their phonetic perception *as well as* production. This line of research establishes that repeated auditory presentation is beneficial.

Rochet (1995) examined whether perceptual training is effective for the perception and production of voicing contrasts in standard French. The subjects were twelve Mandarin Chinese-speaking learners of French who had lived in Canada for 2-4 years. A pretest and a posttest designed to test both perception and production of voicing contrasts were given to all the subjects. Between the pre- and post-tests, they received six half-hour training sessions on the voiced-voiceless contrast. There was no control group. In the training, the subjects listened to voiced and voiceless examples /pu/ and /bu/ and were asked to identify them as voiced or voiceless. They could listen to them as many times as they wanted, and immediate feedback was provided. The results of the perceptual test show that the subjects' perception was significantly different from their perception in the pretest ( $t=6.813$ ,  $p<.01$ ), closer to that of French speakers. In addition, although the training was restricted to the syllables /pu/ and /bu/, improvement on syllables containing other vowels was also recognized. In the production part of the test, improvement on initial voiceless stops was significant ( $t=-4.413$ ,  $p<.01$ ) although that on voiced stops didn't reach significance. In summary, this study found that perceptual training was effective for perception and that it also led to some improvement on production.

Bradlow, Pisoni, Akahane-Yamada, and Tohkura (1997) is another study that demonstrated benefits of perceptual training. Between a pretest and a posttest, a group of 11 Japanese-speaking learners of English (experimental group) received perceptual training on /r/-/l/ identification, while a control group (N=12) did not. Two tests of generalization were also given, testing the /r/-/l/ contrast with the same words but spoken by a new speaker (test of generalization 1) and with novel words spoken by a familiar speaker (test of generalization 2). Their results showed that the experimental group showed significant perceptual learning ( $p=.0074$ ) and the control group did not, and it generalized to novel words spoken by new speakers. Moreover, the subjects demonstrated reliable transfer of learning from perception to production. Their posttest productions were judged

by a group of American English-speaking raters to be significantly better than the pretest productions ( $p=.0018$ ).

Chinese tones are similar to Japanese accent in that they are unpredictable and must be memorized. Wang, Jongman & Sereno (2003) examined whether or not perceptual training on tones affects production using a pretest-posttest design. Sixteen English-speaking learners of Chinese were separated into two groups: One with two-week perceptual training between the pretest and the posttest, and the other without. These participants read 20 words with each of the four tones, for a total of 80 words. Participants received perceptual training on 40 out of the 80 words. Adult native speakers of Mandarin Chinese participating as judges evaluated the participants' productions. The trained group showed significant improvement in their production after the perceptual training ( $t=58.90$ ,  $p<.0001$ ), while the control group did not. In addition, the trained group also improved in their production of the 40 words that were not used for the perceptual training.

### ***Benefits of production training.***

Abbs, Gupta, and Khetarpal (2008) identified two functional components of performance of overt spoken repetition: articulatory-phonological planning of the word form and execution of that plan. The former is termed internal silent repetition (or subvocal rehearsal), and the latter overt spoken repetition. Through several experiments, they demonstrated that overt spoken repetition is not critical to word learning and suggested that internal silent repetition suffices. However, since internal repetition is a part of overt repetition, overt repetition as frequently employed in foreign language teaching is validated.

The idea of internal silent repetition is a key to understanding the somewhat surprising benefit of perceptual training on production discussed above. As Abbs, Gupta, and Khetarpal (2008) discussed, when faced with a task of learning new phonological word forms, subjects tend to spontaneously engage in internal silent repetition. If we assume that the subjects in the studies reviewed above engaged in internal silent repetition during the perceptual training, the benefit on production can be explained as a benefit coming from internal repetition.

There are studies that examined the effectiveness of various rehearsal strategies in word learning: e.g. Duyck, Szmalec, Kemps, & Vandierendonck 2003; Ellis & Beaton 1993; Papagno, Valentine, & Baddeley 1991; Seibert 1927. These studies found that overt spoken repetition is more effective for vocabulary

acquisition than either silent or visual methods of rehearsal, but the silent and visual methods also showed significant learning.

### ***Oral repetition in second language acquisition.***

In second language acquisition, the role of oral repetition in L2 pronunciation training has largely been unexplored (Trofimovich & Gatbonton, 2006), presumably because it is seen as a non-communicative mechanical drill. However, Gu and Johnson (1996) found a positive significant correlation between learners' endorsement of overt repetition and their overall linguistic proficiency. In other words, more proficient students tended to believe that overt repetition improved their word learning and presumably made greater use of a repetition strategy. In terms of L2 phonological processing, in particular, Trofimovich and Gatbonton (2006), through an auditory word-priming experiment, found that repetition had measurable benefits for processing L2 Spanish words. In this study, the subjects were able to reproduce words more quickly and more accurately when the words were presented auditorily first than when they were not.

As mentioned above, Wong and VanPatten (2003) claimed that drills are not necessary or beneficial. Although their focus is on grammatical pattern drills and acquisition of grammar, they do mention fluency and their claim certainly includes oral repetition. On purely theoretical and practical grounds alone, it is hard to see how phonemes and words, for example, can be learned/acquired without some sort of repetition-type drills.

### ***Research on Japanese pronunciation instruction***

Although during the Audio-Lingual era, repeat-after-the-model exercises were widely used, with the emergence of Communicative Language Teaching, such foundational oral practice lost emphasis as interactive/communicative practice received greater emphasis. Since the 1990s, however, research on pronunciation acquisition in Japanese as a second/foreign language (JSL/JFL) has been on a steady increase, and the importance of teaching prosodic features such as accent and intonation has gained some recognition (Fukuoka, 2002).

For prosody acquisition, oral reading training, repeating, and shadowing are the most common instructional techniques (Mochizuki, 2006, p. 42). Shadowing is a type of repeating exercise in which students repeat words or sentences they

hear at the same time or right after the speaker (Kurata, 2008:229). The method had been used mainly for improving listening skills in English language education (Ogiwara, 2007), and research has shown that it only takes a small amount of training to improve learners' listening skills (Iwashita, 2008).

Ogiwara (2007) examined whether or not shadowing is effective for improving the pronunciation of individual segmental sounds and accentuation in Japanese. His data consisted of an audio recording of the subjects' oral reading on the first day of shadowing training and then on the tenth day. The subjects were given a different passage in each session from the course textbook. Each recording was made after each subject practiced a given passage until they were confident. Comparing the recordings from the first and the last sessions, the study found that the last set of recordings contained significantly fewer accentuation errors than the first set. For example, the subject that improved the most had an error rate of 76.60% in the first session, while he had 26.19% in the last session.

Mizuno (2007) examined Japanese learners' prosody acquisition using both shadowing and chorus repetition in a JFL environment. The study focused on word-level accents, speed, fillers, and pauses. The participants were divided into three groups: a shadowing group (20 people), a chorus repetition group (12 people), and a control group (8 people). The experimental groups received their respective training in addition to regular classroom instruction, while the control group only received classroom instruction. The materials used in the training were reading passages of approximately 200 words on a variety of cultural topics. The shadowing group shadowed an audio recording of a native speaker reading the passages, while the chorus repetition group orally repeated the passages one clause or sentence at a time after the instructor. Thirty words that appear one or more times in the passages were chosen as accent items, and the subjects were tested on them in the pretest and the posttest. The pretest and the posttest were identical, consisting of ten sentences to be read aloud. During the training, no explicit accent instruction was given and no special attention was paid to the chosen words in any way. The study found that both the chorus repetition group and the shadowing group had significant gains on the acquisition of correct accentuation ( $p < .05$ ), and that the shadowing group outperformed the chorus repetition group ( $p < .05$ ).

### **Research questions**

Both Ogiwara's and Mizuno's studies were conducted within the context of repeating a passage in oral reading training. It would be ideal if accentuation could be learned in the context of a vocabulary exercise when new words are first introduced. It is for this reason that the present study focuses on the role of repetition in vocabulary exercises. Specifically, the following three questions will be addressed in the present study.

RQ1: *Does an online vocabulary repetition exercise have a positive effect on learners' acquisition of word accentuation?*

RQ2: *Is classroom instruction alone sufficient to ensure learners' acquisition of word accentuation?*

RQ3: *Do learners improve on word accentuation to a greater degree when an online vocabulary repetition exercise is given than when they only have regular classroom instruction?*

## **METHOD**

### **Participants**

The participants were students enrolled in Japanese 201 (second-year first-semester course) classes during the fall 2009 semester and in Japanese 202 (second-year second-semester course) classes during the spring 2010 semester at a US university. Data collection was conducted at three different times while they were working with content in Chapters 5, 6, and 8. Because parts of the experiment were not required components of the courses but extra credit work, the number of participants varied for each chapter: 41 for Chapter 5, 17 for Chapter 6, and 22 for Chapter 8. Ten participants overlapped between Chapter 5 and Chapter 6, thirteen participants overlapped between Chapter 5 and Chapter 8, and six participants overlapped between Chapter 6 and Chapter 8. They included both male and female students from the US and various other countries such as China, Taiwan, Hong Kong, Malaysia, Korea, India, and Indonesia. Their native languages were English, Korean, Chinese, Taiwanese, Cantonese, Indonesian, and Malay. Also included were 2 Japanese heritage students. Their age range was between 19 and 23 years old. Table 1 shows the distribution of participants' native countries and languages for each chapter.



**Table 1. The Distribution of Participants' Native Countries and Languages**

	Chapter 5	Chapter 6	Chapter 8
	N=41	N=17	N=22
The USA / English	23	3	8
Korea / Korean	6	6	6
China / Chinese	5	4	4
Taiwan / Chinese	4	3	3
Hong Kong / Cantonese	1	0	0
Indonesia / Indonesian	1	1	0
Malaysia / Malay	0	0	1
India / English	1	0	0

### **Materials**

**Training and testing platform.** For oral practice and all testing, a web-based system called *Speak Everywhere* was used. It is an online oral practice/assessment platform available to anyone for a nominal fee (<http://speak-everywhere.com>). This system allows foreign language instructors to assign oral practice homework and tests to their students. Students' oral productions are saved on the server and can be reviewed/graded at a later time. It is also possible to provide feedback on the production in both audio and text. The system supports a wide variety of exercise formats: e.g. repeat-after-the-model, Q&A, role-play, oral flashcards, structure drills, oral reading, and short speech.

**Training module.** A repeat-after-the-model exercise was created on *Speak Everywhere*. A sample screen is shown in Figure 1. Vocabulary items are presented one at a time. Clicking "Start" starts the video. ("Start" changes to

“Redo” once clicked.) When the video finishes playing, audio recording starts automatically. The students are to click “Stop” when finished. The “Listen” button allows them to listen to their recording. Finally, the “Submit & Next” button saves the recording on the server and proceeds to the next vocabulary item. Because the students had used *Speak Everywhere* for routine oral practice not connected to the present study, they were familiar with the operation of the program.

Figure 1. Practice screen



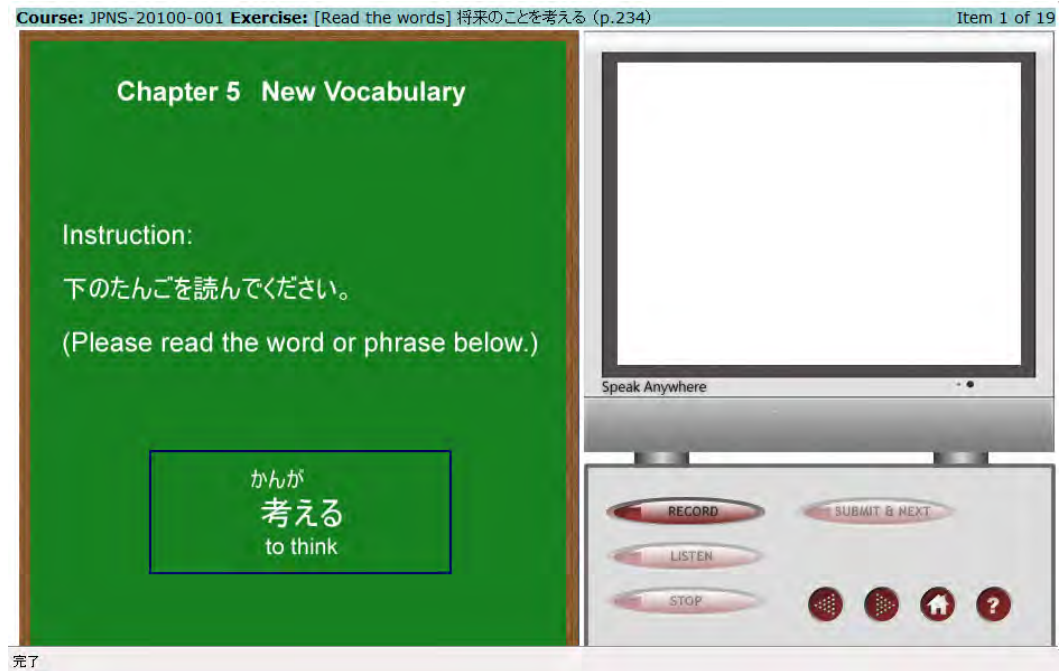
### Tests

Vocabulary items used in this experiment were taken directly from the new vocabulary lists in each chapter of *Nakama 2* (Makino, Hatasa & Hatasa, 2000), a popular Japanese textbook. Most of the words used in the exercises were simple nouns or verbs. The words are listed in Appendix.

The pretest, posttest, and delayed posttest were identical and they were created on *Speak Everywhere*. A sample test screen is shown in Figure 2. Students were instructed to click the “Record” button and say the word shown on

the left. The “Listen” button was available for an instant review. Here, they had the option of redoing the recording or proceeding to submit the recording. There was no model video provided for the tests.

**Figure 2. Test Screen**



### **Procedures**

In Chapters 5 and 6, the students took the pretest, the posttest, and the delayed posttest in addition to practicing vocabulary on *Speak Everywhere* (class & computer condition). In Chapter 8, the students took only the pretest, the posttest, and the delayed posttest without practice (class-only condition).

Students also practiced conversations using the same vocabulary words in daily classroom activities between the pretest and the second posttest. Students met 50 minutes a day, 5 days a week for the class. No in-class pronunciation instruction was given.

Each vocabulary exercise contained 19 or 20 words. The time spent on the vocabulary exercise was about 10 minutes total. The data for this research were collected from the assignments for Chapter 5 and 6 in the 201 classes during the

fall 2009 semester and from the assignment for Chapter 8 in the 202 classes during the spring 2010 semester.

The assignments for Chapters 5 and 6 consisted of four sections: pretest, practice, posttest, and delayed posttest. The format of the pretest was simply to read a set of vocabulary words that appear on the computer screen. The second task (practice) was to repeat after the native speaker model in the video. After watching and listening to the native speaker in the video, they practiced the words and the computer application captured their performances automatically. The students were able to access the practice section right after the pretest. For the posttest, students followed the exact same procedure as the pretest about a week after they completed the practice, followed by the delayed posttest after another week.

Each instructor listened to the submitted audio a few weeks after the due date of the practice. The instructor gave corrective feedback on 7% of the submitted audio, and it was all given before the posttest. We, however, chose not to remove these records from the data set because 7% is a small number and because there was no way to ascertain whether or not the students actually received the feedback. (It takes a click to receive it.) The feedback was only given on the students' performance in the practice session and not on the tests. Because the experiment was conducted in an educational setting, it was not possible to completely eliminate feedback.

### ***Measure***

The number of correctly accented items on each test and practice was counted for each subject by one of the researchers. For example, the word *wakai* 'young', syllabified as *wa-ka-i*, has its accent on the second syllable and is pronounced with the pitch pattern of low-high-low. All pitch patterns other than low-high-low were counted as incorrect. Auditory judgment by a native speaker was used to make this determination for each word. Because Chapter 5 had 19 words, this measure ranged from 0 to 19. For Chapter 6 and 8, the range was between 0 and 20. *Sinmeikai Nihongo Akusento Jiten* (Kindaichi & Akinaga, 2001), a dictionary of Japanese word accentuation, was used to verify the correct accentuation.

**Data analysis**

For Research Question 1 and 2, a repeated-measures ANOVA followed by Bonferroni’s post-hoc test was used to compare between the pretest and practice, between the pretest and the posttest, between the pretest and the delayed posttest, and between the two posttests for Chapter 5 and 6 as well as for Chapter 8. For Research Question 3, the paired sample *t*-test (two-tailed) was used to detect a difference between the gain in Chapter 5 and that in Chapter 8 in order to ascertain the effects of the online practice.

Statistical analysis software SAS 9.21 was used for these statistical analyses.

**RESULTS**

**Data related to Research Question 1 and 2**

For the sake of brevity, the posttest and the delayed posttest will be referred to as posttest 1 and posttest 2, respectively. The data collected from the pretest, practice, posttest 1, and posttest 2 in each chapter are summarized in Table 2. The data from Chapters 5 and 6 represent the class-and-computer condition, while those from Chapter 8 represent the class-only condition.

**Table 2 Pre-test, practice, posttest 1, and posttest 2 scores in Chapters 5, 6, and 8**

Ch.	N	W	Pre	Prac	Post1	Post2	Prac-Pre	Post1-Pre	Post2-Pre	Post2-Post1
5	41	19	7.24 (3.54)	17.80 (1.40)	13.27 (2.77)	12.73 (2.96)	10.56**	6.02**	5.48**	-0.54
6	17	20	10.24 (2.19)	19.65 (0.61)	13.65 (2.09)	13.53 (2.32)	9.41**	3.41**	3.29**	-0.12
8	22	20	10.23 (4.88)	N/A	10.91 (4.16)	11.55 (4.13)	N/A	0.68	1.32	0.64

The scores are means, and the numbers in the parentheses are standard deviations.

Ch. = Chapter, N = number of subjects, W = number of words

\*\**p*<.01

A repeated-measures ANOVA was used to compare the mean scores among the four data points, and a significant difference was detected in Chapter 5 (*F*=15.42, *p*<.0001), Chapter 6 (*F*=21.23, *p*<.0001), and Chapter 8 (*F*=13.52,

$p < .0001$ ). Using Bonferroni's post-hoc test, the gain between the pretest and the practice (Prac-Pre column), that between the pretest and posttest 1 (Post1-Pre), that between the pretest and posttest 2 (Post2-Pre), and that between posttest1 and posttest 2 (Post2-Post1) were tested for significance in each chapter. As seen in Table 2, all the gains in Chapter 5 and 6 are statistically significant, while none of the gains in Chapter 8 are.

### ***Data related to research question 3***

Research question 3 aims to compare the class-and-computer condition and the class-only condition to ascertain the efficacy of the online practice.

First of all, in order to show that there are no differences in the level of difficulty between the words in Chapter 5 and those in Chapter 8, the mean pretest scores of the 13 overlapped subjects in Chapter 5 and Chapter 8 were compared. Table 3 shows the result of a paired  $t$ -test (two-tailed). Note that the scores have been normalized because the numbers of items differ between the two chapters. The result shows that their means are not significantly different. From this result, we can assume that in terms of difficulty, the words in Chapter 5 and those in Chapter 8 were equivalent.

***Table 3. Comparison of the pretest means between the class-and-computer condition and the class-only condition***

	Overlapped subjects (N=13)	
	M	SD
Computer-and-class	43.7	21.635
Class-only	50.4	21.743
t-value		-76
p-value		0.4610

The paired  $t$ -test (two-tailed) was used in order to determine whether or not there was a significant difference in their gains between the two conditions. As Table 4 shows, the result of the paired  $t$ -test is significant. Effect size was also calculated using Cohen's  $d$  ( $d = 1.9309$ ). This number is generally interpreted as a large effect size. Note that it was the same 13 people that took the tests in Chapter 5 and Chapter 8. Only the test items were different between the two conditions.

**Table 4. Results of the paired t-test (two-tailed) comparing the two conditions**

	N	Gain	SD	df	t-value
Class & Computer	13	30.3692	13.0875	12	5.58***
Class-only	13	4.2308	13.9711		

\*\*\* $p < 0.001$

## DISCUSSION

Looking at the results for Chapters 5 and 6 in Table 2, the practice produced a gain of 10.56 in Chapter 5 on a 19-item exercise and a gain of 9.41 on 20 items in Chapter 6. To highlight the effect of the practice further, let us briefly examine individual scores in Chapter 6 (Table 5).

**Table 5. Individual pretest and practice scores in Chapter 6**

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Pretest	10	10	6	10	11	15	10	12	12	10	7	12	12	9	7	11	10
Practice	20	20	20	20	20	19	19	19	19	20	20	20	20	20	18	20	20

As can be seen, the practice brought up the pretest scores to perfect or nearly perfect scores. For example, the student that scored the lowest on the pretest (#3) was able to pronounce every single word with correct accentuation during the practice. Notice that no explicit instruction or feedback on pronunciation was given during the practice. On this point, an anonymous reviewer said that the learners would naturally do better repeating after a model than without a model. Although we entirely agree with this comment, a nearly perfect correction rate observed here is still worth emphasizing because classroom instructors certainly do not expect a perfect correction rate when they model for their students, especially when that modeling is not accompanied by explicit instruction. Being able to listen to the model as many times as they want, and compare their own pronunciation with the model in a private, relaxed environment away from their teacher and peers may have contributed to the effectiveness.

In terms of retention, the decline from the practice to the first posttest is statistically significant in both Chapter 5 and 6 as we expected. However, the difference between posttest1 and posttest2 is not significant. The gain from the pre-test remained statistically significant throughout. Obviously, longer-term retention should be addressed in a future study.

As we saw, the class-and-computer condition outperformed the class-only condition by a wide margin, and the class-only condition did not produce a statistically significant gain. This means that the students are not able to learn correct accentuation through class activities alone. Note that the words used in this study were new vocabulary words introduced in the lessons. They, therefore, were focused on and used frequently in the classroom activities. This opens up new avenues of research: e.g. What else do they fail to learn through class activities? How much of it can be helped by the kind of online intervention used in the current study?

The results of this study have important pedagogical implications. Taniguchi (1992) identified three major reasons why Japanese instructors do not teach pronunciation: (1) time constraints, (2) their lack of knowledge on how to teach pronunciation, and (3) extra effort required of teachers and learners. The kind of computer-based intervention used in this study can be given as homework and does not take time away from class sessions. This effectively solves the time constraint issue. Also, since this study showed that explicit pronunciation instruction was not necessary, the lack of knowledge issue becomes a non-issue. Finally, this study showed that students are able to learn correct accentuation without explicit instruction or rote memorization. This lessens the burden on students and teachers. In sum, an online system like the one used in this study is capable of removing hurdles to pronunciation instruction.

As a limitation, it must be noted that this study was conducted in an educational setting in which the main researcher did not have control over the course curriculum. For instance, it was not possible to choose a design with a control group and an experimental group.

## CONCLUSION

The two major findings of the present study were (1) a repeat-after-the-model vocabulary exercise done online has a beneficial effect of allowing learners to acquire word accentuation without explicit instruction, and (2) regular classroom instruction (without explicit instruction on pitches) is not sufficient for acquisition to occur. Regarding the first finding, a follow-up study is required to find out exactly what aspect(s) of the practice made it so beneficial. Was it the fact that the practice was individualized? Was it the model presented as a video clip, rather than audio? In the present study, we did not track each and every mouse click of the subjects. A follow-up study might keep a detailed log of



subject activities during practice for a more fine-grained analysis. For example, we might examine how many times they compared their own utterance to the model, how many times they repeated each word, etc.

Drills have been given a bad name in foreign language education, although many see them as a necessary part of language learning. Some, notably Wong and VanPatten (2003), claim that form-only drills are unnecessary and should be discarded. Their argument runs roughly as follows: only learners' internal mechanisms that process meaningful input can create a linguistic system in the learners. In drills, attention is given primarily (or exclusively) to form rather than to meaning. Therefore, drills do not promote language acquisition. In our view, however, it is hard to see how learners can learn to say new words without listening to the model and saying them first. The present study found a significant effect in the simplest repetition drill that has the potential to make it unnecessary to memorize the accent location of each word by rote. We believe that it merits further investigation. For example, it might be interesting to apply it to the learning of Chinese tones.

In spite of the benefit of the repetition drill, we contend that this type of activity is tedious, inefficient, ineffective, and uninteresting in the classroom. It therefore makes good sense to make it an individualized online activity in a blended curriculum, which would have a desirable effect of freeing up the class time for more engaging interactive activities.

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## APPENDIX

### *Chapter 5 Vocabulary List*

kangaeru	to think	uru	to sell
onaji	same	kyuryou	salary
chigau	to be different	jibun	oneself
yameru	to quit	bouekigaisha	trading company
ryugakusuru	to study abroad	enjinia	engineer
kenkyusuru	to do research	bengoshi	lawyer
hataraku	to work	maneejaa	manager
shushokusuru	to get a job	kaikeishi	accountant
toshitoru	to become old	shachou	president of a company
wakai	young		

### *Chapter 6 Vocabulary List*

chushajou	park	michi	road; street; way
gasorinsutand	gas	douro	road; street
shiyakusho	city	oudanhodou	pedestrian crosswalk
taishikan	emb	kousaten	intersection
eigakan	mov	hashi	bridge
taaminaru	ter	shingou	traffic signal
basutei	bus	tukiatari	T-roads
biru	buil	kado	corner
kawa	rive	tugi	next
konohen	this	hitotsumeno	the first corner

***Chapter 8 Vocabulary List***

joushi	superior; boss	uketuke	reception desk
kachou	section manager	Moushikomi youshi	application form
okyaku	customer; guest	rirekisho	resume
douryou	colleague	daijina	important
purojekuto	project	narau	to learn
kaigi	meeting	shucchousuru	to go on a business
shorui	documents	moushikomu	to apply
senmon	specialization	setsumeisuru	explanation to explain
mensetsu	interview	henjisuru	response to respond
koukoku	advertisement	keiken	experience