The Effect of Exposure to the Visual Medium on Learning Pronunciation and Word Stress of L2 Learners

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Abstract—This study examined the effect of exposure to the visual medium on learning pronunciation and word stress. Thirty junior high school students participated in this study. They were divided into an experimental and a control group each included 15 students. The participants were given a pretest in order to make sure that they were homogeneous with regard to their pronunciation and word stress. Both groups received instruction on key to phonetic symbols available in the back of their textbooks and on the stress of English words. The participants in the experimental group read the computerized written passages while they had access to the pronunciation of the target words through phonetic symbols of the words. The control group listened to the teacher reading the same passages and repeated after her without having any access to the computer and experimental materials. Finally, the attitudinal questionnaire was given to the participants in experimental group to elicit their attitude towards their practicing technique. The findings revealed that visual medium had significant effect on learning word stress but not pronunciation of target words. Furthermore, using computer as a visual medium increased students’ motivation for both pronunciation and word stress learning.

Index Terms—CALL, visual medium, word stress, pronunciation, computerized texts

I. INTRODUCTION

Pronunciation has a special status in the communicative framework of second language (L2) teaching. In other words pronunciation is of vital importance in effective communication. According to Hismanoglu (2006), the speaker cannot encode a message to the listener and the listener cannot decode the message sent by the speaker without enough knowledge of the sound patterns of an L2 and certain patterns of rhythm and intonation. Therefore, pronunciation should be encouraged during L2 learning course of study and L2 teachers and learners should use methods that can help them facilitate teaching and learning pronunciation (Fraser, 2000). There is another reason to include pronunciation in second/foreign language programs. As Brown (2007) states, pronunciation reflects the national character, culture, and spirit of the nation, the social characteristics to what is being said without the proper awareness of the implications of the pronunciation system. Wong (1993) showed that a lack of knowledge of pronunciation could even affect students’ reading and spelling. Lack of pronunciation’s knowledge can be a serious barrier to other learning in the courses that spoken English is the medium of instruction (Fraser, 2000). Despite its importance, Pronunciation unfortunately seems not truly treated in L2 classrooms in Iran. One of the reasons for such problems may lie in the methods employed to teaching pronunciation. Pronunciation teaching and learning seems to be a great headache to many teachers and learners (Setter & Jenkins, 2005). Traditionally, L2 learners have been trained to learn pronunciation mainly by imitation that provides them with unrealistic L2 input (Qui & Bai, 2002). However, in parallel to the emergence of autonomous language learning, many innovative pronunciation teachers have attempted to move towards autonomous pronunciation learning. Since students cannot always find the chance to ask their language for help in real life contexts, they should be encouraged to come to a stage where they can make their own decision about their own pronunciation learning. If the teachers teach the students how to use phonetic symbols, students become autonomous to some extent in that they make look up their monolingual dictionaries when not knowing how to pronounce a word in the target language. Moreover, motivating students to use computer-assisted pronunciation teaching programs can lead to autonomous pronunciation learning and hence may contribute to the improvement of pronunciation of the students in the target language (Hismanoglu, 2006). As a result, the emergence of technology innovations in L2 classes, seems to be one of the available methods that has a great effect on improving student’s mastery of segmental and suprasegmental aspects of pronunciation (Hayati, 2005; Lee, 2008). Computer based language programs in a visual environment allows integration of text, graphics, phonetic symbols and motion video in a wide range of combination that facilitate pronunciation learning (Meskill, 1996). Therefore, this study aims to investigate the effect of exposure to visual medium (using phonetic symbols) on learning pronunciation and word stress of L2 learners.
II. BACKGROUND TO THE STUDY

Computer-assisted language learning (CALL) serves as a part of the language course and as an effective new way to create a better L2 teaching and learning environment supported by different types of medium. CALL is the study of applications of computers in L2 teaching and learning (Harless, Zeier & Duncan, 1999). In learning and teaching different aspects of pronunciation, CALL offers a variety of interactive software packages for providing L2 learners with the opportunity to perceive and practice pronunciation through audio and visual media (Neri, Cucchiarini, & Strik, 2002, as cited in AbuSeileek, 2007). Needless to say that, one of the most remarkable difficulties in the processes of foreign language learning is learning the pronunciation of the foreign language. What is generally accepted among specialized psycholinguists and phonologists is that the difficulty of learning to pronounce a foreign language is cognitive rather than physical, in other words, one reason that learners have difficulty in pronouncing L2 sounds can be attributed to the way a special sound is categorized and conceptualized in using speech (Pourhosseini & Ahmadi, 2011). In many cases in which the learners seem to have difficulty in producing a special sound, is that they do not have concepts of them as separate sounds (Fraser, 2000). So it is an advantage for L2 learners to have a greater awareness of the way sounds can be conceptualized differently. Most learners need some help with this because they generally think sounds in terms of their auditory quality, rather than directly in terms of their articulation or acoustics, thus the key is to find ways of describing the auditory quality of sounds that make sense to the learners. There is a major role for the use of computers in helping learners with pronunciation providing visual medium and displaying speech software with guidance as to how they should be interpreted (Fraser, 2000; Lambacher, 1999, as cited in Pourhosseini & Ahmadi, 2011). In this regard, Sovorov (2008) suggests that the main flaw in education visual software may be lack of proper feedback. Chung (1994) notes that the visual information becomes facilitative when the language learners can interpret its meaning correctly. Shimizu and Taniguchi (2005) reported that interactive visual feedback affected Japanese learners in their improvement of English intonation in all four kinds of materials used from the productive and perceptive point of view. In their experiment, only test group had access to interactive visual feedback, using dynamic gestures of hand movements and the computer software which could show the physical counterpart of pitch on the computer screen so that students were provided with visual feedback of their own intonation as well as the teacher’s. Moreover, the results of attitude survey showed that the students’ interest, concern and desire to improve their intonation also greatly improved. Fege’s (1990) examined using visual information for training English vowel production to Spanish learners. An optoelectronic glossometer was used to measure tongue-palate distances at four locations along with the hard palate and to provide visual feedback specifying tongue targets for English /ɪ/, /ɪː/, /æ/ & /æ/. Physical, acoustic and perceptual tests showed that the L2 learners produced a difference between /ɪ/ and /ɪː/after visual articulatory modeling and shaping. However, a similar improvement was not noted for the two other vowels. The researcher argued that improvement in producing these vowels was not significant, perhaps because the difference in pharyngeal width that distinguishes these vowels could not be shown directly using the glossometer. Furthermore he discussed that although the outcome was positive for /ɪ/ and /ɪː/, the results do not support unambiguously the conclusion that visual information occurred the articulatory changes noted for these two sounds. The changes might have occurred simply as the result of focusing attention on vowel production. The researcher also argued that it would be important to establish greater experiments in future with a control group of subjects who receive no training or more traditional training. Weltnes and de Bot (1984) were concerned that the limitations of the hardware and software that caused a slight delay in feedback might impede effectiveness of their display system. However, they showed that lack of feedback may not be a critical factor when using a pitch visualizer for intonation teaching. In other words, the fact that feedback was not provided in real time did not affect the effectiveness of the visualizer, but if sentences contained many unvoiced sounds and voiced or neutral vs. contrastive intonation, visual displays without appropriate feedback would not be easy for students to interpret. So it would not be effective in teaching intonation. Unfortunately, there are not enough research studies regarding the effect of visuals alone on teaching and learning segmental or suprasegmentals in literature and the efficiency of phonetic symbols incorporated to computer based pronunciation learning on the acquisition of English pronunciation among L2 learners has not been extensively investigated. Therefore, in order to examine the effectiveness, this study has made an attempt to seek appropriate answers to the following questions:

Research Questions:

1. Does exposure to the visual medium (using phonetic symbols) have a significant effect on learning pronunciation of L2 learners?
2. Does exposure to the visual medium (using phonetic symbols) have a significant effect on learning word stress of L2 learners?
3. What is the learners’ attitude towards this presentation medium?

Research Hypotheses

The above mentioned questions have been reformulated in the form of the following hypothesis:

1. Exposure to visual medium (using phonetic symbols) does not have a significant effect on learning pronunciation of L2 learners
2. Exposure to visual medium (using phonetic symbols) does not have a significant effect on learning word stress of L2 learners

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III. METHODOLOGY

A. Participants

Primarily, forty five L2 learners participated in this study. They were female first grade junior high school students studying in a school in Iran. The major participants of this study were selected according to one criterion. It was L2 learners’ scores on Oxford Placement Test (OPT, Allan, 2004) to homogenize L2 learners in terms of general language proficiency level. At the end, thirty L2 learners whose scores on this test felt between one standard deviation above and below the mean were selected. And assigned to two groups randomly: one experimental and one control group.

B. Instruments

Four instruments were used to collect the necessary data: First, the Oxford Placement Test (OPT) is a grammar test including 50 items. This test took students about 45 minutes to complete. The scores on this test were analyzed to ensure that the participants were of the same level of language of proficiency. Second instrument was computerized reading text. Three passages from Intermediate Steps to Understanding (Hill, 1998) were selected. Based on the results of the pilot study, 30 words that were more than one syllable and their pronunciation was problematic for almost all students were mispronounced by almost all were selected to be hyperlinked by Power Point version 2007. The Power Point showed computerized passages with bold and hyperlinked words. When the participants clicked on the hyperlinked words, they could see the phonetic transcriptions of the words. Third one was pronunciation test. The participants were given a pronunciation pretest. The pretest included thirty sentences containing the target words. The sentences were selected from Oxford Advanced Learner’s dictionary (2005). After the treatment the same pronunciation test was given to the students as posttest. Forth, attitude questionnaire was employed. An attitude questionnaire was developed by the researcher. It included 16 items with responses ranked on a Linker scale ranging from not at all to a great extent. The purpose of the questionnaire was to elicit the learners’ attitude in experimental group towards the learning situation.

C. Procedure

After administering the OPT, a pronunciation test including the same words used in the teaching phase was given to the participants one by one. The pretest included 30 sentences with the target words. The participants were asked to have a look at the sentences for a few minutes then read aloud the sentences. Their voices were recorded and evaluated for accuracy by two experienced English teachers. Their focus was on the correct pronunciation and stress patterns of the target words. Then, the experimental group received six sessions of instruction on key to phonetic symbols available in the back of their textbooks and on the stress of English words. The teaching time took fifteen minutes of the students’ regular classroom time that was hold twice a week. After the teaching sessions, in three sessions of practicing the experimental group were taken to the computer hall and asked to practice. The participants received instruction for practicing condition. They read the computerized written passages while they had access to the pronunciation of the words through phonetic symbols of the words. After the students had the chance to practice pronunciation of the words in three sessions (each passage in one session), they reviewed the same materials in the fourth session. Then they were given the pronunciation test, including the same words used in the pretest and in the teaching phase, as a posttest in the fifth session in order to see if they had learned correct pronunciation and stress of the words. Their voices were recorded and two experienced English teachers evaluated them for accuracy. When there was a disagreement between them a third teacher was asked to evaluate the data as well. The interrater reliability of the scores was .976 and .938 for pronunciation and word stress respectively. The control group were asked to listen to the teacher reading the same passages and repeat after her without having any access to the computer and experimental materials. Then the attitudinal questionnaire was given to the participants in experimental group to elicit their attitude towards their practicing technique.

IV. DATA ANALYSIS

The results of Pretest

After giving the OPT and selecting 30 homogeneous students, in order to make sure that they were also homogeneous with regard to their pronunciation and stress of the target words, they were tested on these two criteria. Table 1 reveals the descriptive statistics in this regard.

<table>
<thead>
<tr>
<th>Test</th>
<th>group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pronunciation</td>
<td>experimental</td>
<td>15</td>
<td>1.20</td>
<td>1.146</td>
<td>.296</td>
</tr>
<tr>
<td>Stress</td>
<td>Control</td>
<td>15</td>
<td>1.40</td>
<td>1.298</td>
<td>.335</td>
</tr>
</tbody>
</table>

Table 2 shows the results of the t-tests for both pronunciation and stress pretests.

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According to Table 2 the amount of $t$ is not significant for either of the pretests (pronunciation: $t=-.437$, $p=.666$; word stress: $t=.748$, $p=.462$). Therefore, it can be said that the groups were also homogeneous regarding pronunciation and stress of the target words.

**The Results of the pronunciation posttest**

For the purpose of checking the effect of visual medium on the participants’ enhancement, the pronunciation performance of the participants in the two groups was compared. Table 3 presents the descriptive statistics for the groups.

![Figure 1](https://example.com/figure1.png)

**TABLE 3**

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>15</td>
<td>9.00</td>
<td>2.673</td>
<td>.690</td>
</tr>
<tr>
<td>High</td>
<td>15</td>
<td>8.33</td>
<td>2.820</td>
<td>.728</td>
</tr>
</tbody>
</table>

Figure 1 illustrates the means in graphical form.

According to the information available in Table 3 the two means seem not to be different. An independent-sample $t$-test was employed to make sure this difference between the means was significant or not. Table 4 reveals the results of the $t$-test.

![Figure 2](https://example.com/figure2.png)

**TABLE 4**

<table>
<thead>
<tr>
<th>$t$</th>
<th>df</th>
<th>$p$</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>.665</td>
<td>28</td>
<td>.512</td>
<td>.67</td>
</tr>
</tbody>
</table>

By checking Table 4, one can easily find out that the amount of $t$-observed (.665) is not significant at the probability level of (.512) As a result, the hypothesis which states that exposure to visual medium (using phonetic symbols) does not have a significant effect on learning pronunciation of L2 learners is accepted.

**The Results of the stress posttest**

In order to check the effect of visual medium on learning word stress of L2 learners, the pronunciation performance of the participants on posttest in the two groups was compared. Table 5 presents the descriptive statistics for the groups.

![Figure 3](https://example.com/figure3.png)

**TABLE 5**

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>15</td>
<td>9.20</td>
<td>3.278</td>
<td>.846</td>
</tr>
<tr>
<td>High</td>
<td>15</td>
<td>6.27</td>
<td>1.280</td>
<td>.331</td>
</tr>
</tbody>
</table>

Figure 2 illustrates the means in graphical form.
According to Table 5, it can be seen that the means of the two groups seem to be different. An independent-sample t-test was employed to make sure this difference between the means was significant or not. Table 6 reveals the results of the t-test.

By checking Table 6, one can easily find out that the amount of t-observed (3.229) is significant at the probability level of (.003) As a result, the hypothesis which states that exposure to visual medium (using phonetic symbols) does not have a significant effect on learning word stress of L2 learners is rejected.

Results of the Motivation Questionnaire Analysis

In this part, students’ opinions are considered to know to what extent using visual medium motivated and helped students to learn pronunciation and word stress in English. To this end, the percentage of the students’ answer to each item and to each scale was calculated and provided in Table 7.

Table 7 shows the results of the motivation questionnaire for experimental group. As the table shows, students show their agreement with almost all items of the questionnaire. In this group, on the whole, students had positive attitude towards this technique. For example, almost all students agreed that this technique motivated them to learn pronunciation and word stress in English, and it was useful for understanding, retention and recalling them when needed, and encouraged them to speak English more. However about half of the students believed that they did not know phonetic symbols well but almost all students preferred this method to the method used by their teachers for teaching pronunciation and stress. More than half of the students and about all students believed that this technique helped them to learn pronunciation and word stress without being bored respectively. However, all students did not show their agreement that using this method is easy for learning pronunciation and word stress.

V. Discussion and Conclusion

The study was intended to investigate the effect of visual medium on learning pronunciation and word stress of L2 learners. It revealed that exposure to visual medium has a significant effect on learning word stress of L2 learners but it was not effective in learning pronunciation of the learners. In available research studies regarding the effect of visuals on teaching and learning segmental or suprasegmentals in literature (e.g., De Bot & Mailfert, 1982; Anderson, 1992) the...
participants received feedback so that they could compare their pronunciation with that of the teacher or native speakers in the sense that they were able to interpret the visual information and judge about their performance. One of the possible problems that might have affected the lack of significant effect of visual medium on students’ pronunciation in present study is the lack of proper feedback on the part of teacher or computer. The students were not sure that whether they were interpreting phonetic symbols correctly or not. According to Laroy (2005) students’ confidence can be increased by correcting them when necessary. When students lose self-confidence, they may stop trying to acquire L2 pronunciation by relying solely on L1 sounds. Buck (2001) proposes that in some cases in which the learners do not receive feedback in order to interpret the visual information they may serve to increase the cognitive load of the learners. According to Chun (1998) with regard to pronunciation the visual aids can be effective if they provide feedback so that the learners are able to monitor themselves critically. In addition, Coniam (2001) suggests that it is likely that in different context learners may prefer different medium. For example, when talking a listening test, a learner may opt for the audio medium but the very same person might opt for the visual media while learning a language. However, it was not true with the sign of word stress because this sign was much easier for the learners to understand, interpret and recall. In other words lack of feedback may not have negative effect on students’ learning when using easier visual displays such as stress patterns. Finally, the research results from evaluation of the questionnaire revealed that students had positive attitude towards using computer as a visual aid to teach pronunciation and word stress. Based on the researcher’s observation, it was fun for the learner to be taught with using computer as a new technique that was different from the previous traditional teaching methods.

This study was in fact an attempt to shed light on the point whether visual medium (using phonetic symbols) bear any significant influence on learning pronunciation and word stress of L2 learners. The findings revealed that visual medium has significant effect on learning word stress but experimental group do not learn pronunciation of the target words better than control group. Therefore, it can be safely concluded that, with regard to pronunciation learning computer as a visual medium may not be used as a tutor and it can be used as a tool. In this case the teacher’s presence will be more necessary as a facilitator. However, since the data in this study have been taken from a small sample of learners at one high school in Iran, it is important not to overgeneralize the results of the study. But replicational studies elsewhere can help in building a rich body of knowledge.

The findings obtained from this study have theoretical as well as pedagogical implications. Regarding theoretical implications, the present research, providing some data on the effect of CALL on learning pronunciation and word stress, has tried to enrich the literature behind it. The findings also have pedagogical implications for foreign language teachers and learners. By being aware that visual medium can help L2 learners learn word stress better, teachers become motivated to use computer in their classes to teach word stress and to increase learners’ motivation to learn pronunciation and word stress. Findings of this study can also encourage students to be more autonomous in learning pronunciation. Syllabus designers, curriculum developers, and course book designers can also benefit from the findings of the present study. They can include computers with appropriate media in foreign language course books and curricula.

REFERENCES


Zahra Fotovatnia is Assistant Professor of Applied Linguistics at Islamic Azad University, Najafabad Branch. She has been an instructor and a researcher for over 16 years. She has attended the following conferences: Metaphor Festival, Sweden, 2011; Second International Conference on Literature, language and Linguistics, Greece, 2009; Euro SLA 2007 UK; Asia TEFL, Malaysia; 8th International European conference of Psychology, Spain; and ICP2004 Beijing. She has published articles in *Journal of Social Sciences and Humanities of Shiraz University, 23*, 1, 2006; *Language Forum, 32*, 1-2, 2006; and *Pajohesh in Educational Sciences, 2*, 4, 2004. Her area of interest includes pedagogical phonetics and phonology, psycholinguistics, and Teaching Methodology.

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