Comparative Effect of Visual and Auditory Teaching Techniques on Retention of Word Stress patterns: A Case Study of English as a Foreign Language Curriculum in Iran

Maryam Homapour
English Teaching Department, Karaj Branch, Islamic Azad University, Karaj,
Iranmaryamhomapour4@gmail.com

Zohre Mohamadi*
English Teaching Department, Karaj Branch, Islamic Azad University, Karaj, Iran

Zohre.mohamadi@kiau.ac.ir

Abstract

This study aimed at investigating the effect of visual (Cuisenaire Rods) and auditory nonsensical monosyllables using Pratt speech processing software as teaching techniques on retention of word stress. To this end, 60 high school participants made the two experimental groups of the study each having 30 students on the basis of their proficiency scores on KET (Key English Test). In one experimental group, Cuisenaire rods were used to teach word stress whereas in the other one, auditory nonsensical monosyllables using Praat speech processing software was used as an auditory aid. Both groups received the same educational content except for the way of presentation. T-test analysis indicated that both experimental groups improve their retention of word stress from pretest to post test. The compassion between the two techniques indicated that visual representation had more effect on word stress retention than auditory representation. Creativity and dynamicity of the two methods can help teachers to attend individual preferences and preferred learning styles.

Keywords: Visual and auditory aids, Word stress pattern, Retention of words

1. Introduction

The significance of word stress in today's second language (L2) pedagogy has motivated the experts of this field to make more serious attempts to find influential techniques and strategies for enhancing learners' performance in word stress placement. One main reason for the significance of this issue is that change in the position of stress or incorrect stress shift in words can occasionally lead to a change in the meaning of a word and finally to the non-recognition of that word and as a result failure of communication (Benrabah, 1997). It is even argued that native speakers of the second language might have difficulty understanding the speech produced by a non-native speaker who has an incorrect stress shift (Aitchison, 1994; Slowiaczek, 1990) . Cook (2000) also believes that if a wrong syllable of a word is stressed, the meaning of that word could be totally lost. According to Falk (1973), stress is a crucial feature of English, as differences in stress might lead to different meanings. As trends in teaching pronunciation change from developing native like accents to an intelligible one, faulty pronunciations specially in word stress causes misunderstanding (Checklin, 2012).

Regarding all these justifications, considering word stress teaching strategies and relevant techniques are of high importance especially when it comes to EFL contexts (Howard, 2010) . Although there is a consensus on the necessity of teaching word stress, there is an argument about how to teach and which word stress patterns lend themselves for teaching (Howard, 2010).

Word stress written representation, Cuisenaire rods, and nonsensical monosyllables are three techniques out of the many techniques used for teaching word stress. The first two techniques are visual ones and the third is an auditory one. This study attempts to utilize these techniques to teach word stress to the students. What highlights the gap for such study is the fact that pronunciation, especially word stress, is usually left unattended while teaching vocabulary. That is, in order to teach vocabulary three components of meaning, form, and pronunciation should be covered. What happens practically is that the meaning is defined and the word is put on the board. The teacher may model the word a few times and ask for some choral and individual repetitions. That is unfortunately all. Hence, there is a lack of a study which does not only emphasize the importance of teaching word stress, but it also compares the influence of visual and auditory techniques.

What is more, there are two types of learning; immediate learning and retention which could better demonstrate long lasting learning. This study has focused on retention to investigate either

visual or auditory techniques of teaching word stress could be more beneficial for long lasting learning of word stress.

To sum up, taking into consideration the significance assigned to correct word stress in speech comprehension, the current research study attempts to investigate the impact of word stress visual representation and also the auditory technique of nonsensical monosyllables on word stress retention and also compare the two abovementioned techniques.

2. Literature Review

Scrivener (2011) believes that word stress is a very important aspect of pronunciation. A stressed syllable of a word is usually noticeable by being higher in pitch, longer and louder than other syllables in that word. He also adds that the unstressed syllables become weaker, shorter and spoken faster and less defined. Cook (2000) maintains that if the wrong syllable is stressed, the meaning totally changes. Hence, word stress is a suprasegmenatal feature which defines the concept of a word. Radford, Atkinson, Britain, Clahsen, and Spencer (2009) define a stressed syllable as the one which receives the greater emphasis. Based on the amount of this emphasis, there are four types of stress known as primary, secondary, and tertiary stress. According to Falk (1973), lexical stress describes the prominence of a syllable. Stressed syllables are also referred to as accented syllables and they are achieved through a relative increase in loudness. Stressed syllables could also be longer in duration and be produced at a higher than normal speech.

2.1 Trends in Teaching Word Stress

Different trends throughout the history of L2 pedagogy have adopted different attitudes toward teaching pronunciation and consequently toward teaching stress. Some methods ignored pronunciation in favor of other skills (Elliott, 1995; Pennington, 2014), while the others placed importance on pronunciation(Fraser, 2000; Gilakjani, 2011).

The most recent approaches to phonology, as aforementioned studies and works on the influence of correct placement of word stress and their overall results suggest, take a different angle on the problem and consider the teaching of word stress as essential (Gilakjani, 2011). Teachers are encouraged to look at teaching stress as a focal part of L2 pedagogy. The raised question in respect of this issue is whether to teach stress implicitly or explicitly, that is to say, whether to introduce the word stress patterns indirectly or provide the learners with the rules of

stress placement in the English language. In this regard, some of the most prominent works on the issue in question are reviewed briefly.

Celce-Murcia, Brinton, and Goodwin (2010) argued that teaching word stress patterns in an explicit fashion to the learners is the most effective method since in the English language most words are rule-governed with respect to their stress patterns. They, however, acknowledge the fact that the number of these rules is considerably high and it makes it difficult for L2 learners who speak languages with fewer word stress patterns to gain a command of word stress in the English language.

Implicit learning of stress patterns has also been discussed and recommended in some surveys. Chan and Leung (2012), in a two-part research, examined both the implicit learning of association between the ending phoneme and word stress and the implicit learning of a more abstract rule of stress placement. The result of their study supported the effectiveness of implicit methods in teaching word stress patterns of the English language. Fraser (2006) argued that producing stress on syllables was physically easy for most students and providing some rules for word stress placement may lead to learning in most L2 learners, but it does not suffice. In order to make L2 learners' attempts in establishing communication more intelligible, instructors need to help them to gain more skills to control their use of word stress. They need to improve more and more their hearing abilities to contrast between stressed and unstressed and acquire the ability to produce this contrast. They need to internalize the controlling concepts in pronunciation. Here, then, different types of practice such as repetition is aimed at helping the learners gain a command of the new concepts of the new language. The given practice, therefore, aims to prevent the learners from using the old concepts of their mother tongue and replace them with the new concepts of the target language. In this regard, the sort of practice that is recommended is repetition after listening. This view, taken by Fraser is known as *cognitive approach in teaching pronunciation*. Taking these all into consideration, corrective feedback, at an appropriate time and in an appropriate level, plays an integral role in listening and repetition practice in L2 teaching classes.

In another study, Zellers, Post, and Williams investigated the effects implicit learning brought about in learning lexical stress patterns of Spanish as an L2 in English native speakers. The reported results of the study was said to support the use of implicit methods of teaching word stress in Spanish, claiming that implicit learning contributes substantially to teaching and learning. Although the study was carried out on a language other than English, it can be of help in arriving

at a conclusion as to what the best methods is since the concept *implicit* is the main subject in question in this section.

As far as explicit and implicit teaching/learning of lexical stress are concerned, it appears to be the case that age can be a decisive factor in choosing one of the two methods. As it is suggested (Brown, 2007), implicit learning is unconscious and learners' awareness of the rule is not involved, whereas explicit learning includes a sort of direct provision of the rules for the learners. In this regard, it seems more logical to take explicit approaches to teaching lexical stress in the case of adult L2 learners since it probably is much easier for them to deal with sets of somehow complicated rules of word stress than for children or preteens. Implicit learning of lexical stress, however, seems to be effective in teaching both adults and children.

2.3 Techniques and Strategies in Teaching Word Stress

A large number of studies confirm that the pronunciation components, and in particular prosodic features, need to be mastered to a certain extent in order to produce intelligible speech. Stressed and unstressed syllables need to play a major role in any pronunciation curriculum, and the learners' awareness of these suprasegmentals can be continually encouraged and raised in a number of ways (Kanellou, 2011). The first step for successful production of word and sentence stress is receptive awareness, which – according to Kelly (2002) – can be effectively combined with the productive skill in choral and individual drilling of new words. It is, nevertheless, of paramount importance for teachers to accept that successful repetition drilling exercises does not necessarily lead to continued actual production during different practice activities or outside the language classroom (Kanellou, 2011). Therefore, Kelly (2002) argues for a large amount of practice time to be dedicated to activities that aim at improving stress on both word and sentence level.

According to Hasenberger (2012), if students have difficulty stressing individual lexical units, an alternative approach to teaching word stress would be to exaggerate the pronunciation of stressed and unstressed syllables. Other techniques commonly employed by ELT practitioners include beating out stress patterns with one's hands or fingers, tapping on a table with a pen, or speaking or singing the patterns. Additionally, pronunciation teaching researchers and experienced language teachers such as Pennington (2014) and Kelly (2000) recommend listening activities.

Since word stress is a vital feature of the pronunciation of any lexical item, it is

important for teachers to get into the habit of indicating stress patterns of new words as soon as they occur in texts or materials, or when they are presented by the teacher – particularly for words that students need to remember and actively use. There are a number of ways of indicating stress patterns when a word is written on the board:

- Circles or boxes can be written above or below the word.
- Marks can be put before the stressed syllable, e.g. ushe'rette. This is also a convention used in phonetic transcription, which students will be confronted with when working with dictionaries.
- The stressed syllable can be underlined, e.g. technical.
- Capital letters can be used to indicate the stressed syllable, e.g.comPUter. (Kelly, 2002, p. 76)

One first step in teaching word stress is to choose the system of representation of word stress placement (Celce-Murcia et al., 2010). Such representative systems such as capitalized letters of the stressed syllable (e.g., parTICular), bubbles (e.g., particular ●●●●), underlining stressed syllables (e.g., par<u>ticu</u>lar), and accent bar (e.g., par'ticular) may be used to show word stress position. These are, however, only symbols and are in written form. In order to provide the learners with spoken representation of word stress position, L2 teachers can do tapping or clapping when the primary stress occurs in words, or they can use louder tapping/clapping for primary stress, lower tapping/clapping for secondary stress, and none for unstressed syllables. Odisho (2007) recommends the use of *nonsensical monosyllables* (e.g., la or ma) as an effective technique to teach word stress perception. The practice starts with words which have two syllables; syllables may increase in number as time passes, but words with more than four syllables are not suggested. The following stress patterns are possible:

1. 'la la → sorry

la 'la → July

2. 'la la la → afternoon

la 'la la → fantastic

la la 'la → brochure

3. 'la la la la → supermarket

la 'la la la → photography

la la 'la la → automatic

la la la 'la → interviewee

Controlled practice is another technique in which vocabulary lists each containing words with the same stress patterns are prepared(Celce-Murcia et al., 2010). The words are then pronounced by the teacher and repeated back by the learners. It usually occurs both chorally and individually. The use of tapping/clapping to show the position of word stress is recommended.

Fraser (2001) suggests a few strategies to be mapped out in teaching word stress to L2 learners, as follows:

- Start with two-syllable words with simple phonemes.

- Pronounce the words and see whether the students can recognize which syllables in the words are stressed.

- Ask the students to underline the stressed syllables of the words in their notebooks, after you have repeated them several times.

- Underline the correct stressed syllables on the board and see whether their answers are correct.

- Provide the students with appropriate corrective feedback on their errors in word stress placement. Then, have them repeat after you chorally. Do some spot checks to make certain about the correctness of individual's word stress placement.

- Explain to the learners that stressed syllables are pronounced louder than unstressed syllables.

- Provide them with more difficult exercises after you find them capable of dealing well with simple words. For instance, intentionally place stress on incorrect syllables and ask them about correctness of the stress placement.

- Then, proceed to teach words with three syllables or more.

- When you find them capable of dealing with more complex words, provide them with more difficult exercises, such as listing words of the same stress pattern families. (p. 16)

All the above-mentioned strategies and techniques are only a few of the many which can be applied in L2 classroom environment in order to help L2 learners with lexical stress placement in the English language (and even in other languages with regular stress patterns). They are not counted as the absolute path. Creativity can be regarded as a determining factor in better teaching of lexical stress and can pave the way for more future success in the field. In this study, however,

the impact of two visual techniques including written representation of word stress placement and Cuisenaire rods were compared with the auditory method of nonsensical monosyllables. The following questions were set to find the answer.

1. Does the application of word stress visual representation (a combination of written representation of word stress placement and Cuisenaire rods) have a significant impact on word stress retention?

2. Does the application of nonsensical monosyllables have a significant impact on word stress retention?

3. Is there a significant difference between the impacts of word stress visual representation (a combination of written representation of word stress placement and Cuisenaire rods) and using nonsensical monosyllables on word stress retention?

3. Method

3.1. Participants

The participants of this study were 60 high school students (2 groups of 30) who were studying in Samen high school in Karaj. Their age range was between 16 and 17. They were selected randomly among all high school students in the Fall Semester of 2015-2016. They were attending General English classes once a week, each session lasting for 90 minutes. The program was according to the principles set out by the ministry of education and their English book.

3.2. Instruments

3. 2. 1. KET. The KET test was used as the proficiency test in order to ensure the homogeneity of the participants in this study. As retrieved from Cambridge website, KET consists of reading and writing, listening, and speaking sections. The details of the content of KET could be seen in table 1.

Table 1

Components of Key English Test

Paper	Content	Marks (% of total)	Purpose
Reading and Writing (1 hour 10 minutes)	9 parts/ 56 questions	50%	Shows the comprehension of simple written information such as signs, brochures, newspapers and magazines.
Listening (30 minutes, including 8 minutes' transfer time)	5 parts/ 25 questions	25%	Shows your ability to understand announcements and other spoken material when people speak rather slowly.
Speaking (8–10 minutes per pair of candidates)	2 parts	25%	Shows your ability to participate in a conversation by asking and answering simple questions. Your Speaking test will be conducted face to face with one or two other candidates and two examiners.

3.2.2. Praat. As retrieved from Praat website, Praat (the Dutch word for "talk") is a free scientific computer software package for the analysis of speech in phonetics. It was designed by Boersma and Weenink (1992) of the University of Amsterdam and the software continues to be developed. This software has a lot of features, including the ability of recording the voice, drawing its waveform and labeling it, analyzing pitch and intensity, and signal processing.

According to Wilson (2008), Praat could also be defined as open-source software for the acoustic analysis of speech which can be downloaded freely from for a range of operating systems, such as Mac, Windows, Linux, Solaris, etc. This instrument was used both before and after the treatment to record participants' pronunciation and to assess the accuracy of word stress placement.

3.2.3. Cuisenaire Rods. According to Cuisenaire website, Cuisenaire rods are small colored blocks of wood (or plastic). They come in different lengths, each of which is a multiple of the smallest rod. Each length is a different color. Being originally used in primary mathematics teaching, Cuisenaire rods were first brought to the field of language teaching in 1970s by Caleb Gattegno and were applied as language teaching aids in Dr. Gattegno's Silent Way approach of language teaching (Gattegno, 1987, 2010). The following table illustrates the colors and lengths in which Cuisenaire rods come:

Table 2

Cuisenaire Rods, Color and Length

Color	Length (in centimeters)
White	1
Red	2
Light green	3
Crimson	4
Yellow	5
Dark green	6
Black	7
Brown	8
Blue	9
Orange	10

Cuisenaire rods can be used for these purposes in a language- teaching classroom. The last application was used in this study.

1. to demonstrate most grammatical structures such as prepositions of place, comparatives & superlatives, and etc.

2. to create a visual model of constructs, for example the English verb tense system.

3. to represent physical objects: people, animals, fruit, tools, etc. which can help learners to create stories

4. to show syllabification in order to demonstrate word and sentence stress and also rising and falling intonation

3.4. Design

As no random sampling has been applied in this research, the design of this study was a "quasi-experimental design" (Best & Kahn, 2006). Using Campbell and Stanley's (1966) symbol system, the following symbol system was applied:

X1: Exposure of the first experimental group to the first treatment

X2: Exposure of the second experimental group to the second treatment

O1: Pretest administered to both experimental groups

O2: Posttest administered to both experimental groups

Hence, the design of this study can be shown this way:

O1 → X1 → O2

O1 → X2 → O2

In the present study, 60 high school students were chosen based on the results of Key English Test (KET), so that their same level of English proficiency was assured. They were then put into 2 groups of 30 students. The same pretest was administered to both groups and a score was given to each student. For each group, a different treatment was applied for 10 sessions and their scores were recorded.

After an interval of 2 weeks, the posttest was administered to both groups and a score was given to each student based on his/ her performance. Then the results of the pretests and posttests were compared in both groups. Finally, the efficiency of treatment was also investigated.

3.5. Procedure

The data in this study ware collected by a word stress test sheet. On this test sheet, there were 30 words which were classified into 3 categories of 2-syllable, 3-syllable, and 4-syllable vocabulary

items. These 30 words were selected from the third grade high school English book of the students had in their syllabus.

First a KET Homogeneity test was given to 90 high school students who were studying in the Fall Semester of 2015-2016. Students were given a score out of 100 and 60 homogeneous ones were chosen and were accidentally put into 2 experimental groups.

Then, the same pretest was given to both experimental groups. That is, each of the 30 students in each group was supposed to pronounce each of the 30 words on the word stress test sheet in to Praat. Their English teacher gave them a score out of 30 based on the accuracy of the word stress placement for each vocabulary item.

During the next 10 sessions, those 30 words were taught to both groups. In order to teach word stress pattern, each experimental group experienced a different treatment. For the first group, the teacher modeled the word twice and then illustrated the stress pattern by the use of Cuisenaire rods in 2 sizes, 10 and 20 centimeters. That is, the stressed syllable was represented by the longer rod. After that, choral and individual repetitions occurred based on the following table:

Table 3

Number of Repetitions According to the Number of the Syllables

	2-syllable words	3-syllable words	4-syllable words
No. of choral repetitions	2	2	3
No. of individual repetitions	4	5	6
No. of final choral repetitions	1	1	1

Then, the word was put on the board and the stressed syllable was marked. The combination of using both word stress written representation and Cuisenaire rods was called word stress visual representation.

For the second group, the teacher modeled the word twice and after each modeling, the stress pattern was highlighted by the use of nonsensical monosyllables.

Take "expensive" as an illustration. This process is clarified below:

The first modeling   :   expensive → da.DA.da

The second modeling   : expensive → da.DA.da

After that, choral and individual repetitions took place based on Table 3.3, exactly the same as the other experimental group. However, in this treatment, before each choral repetition, the nonsensical monosyllables were used to model the stress pattern. If needed, this modeling was performed for each individual repetition as well. After 2 weeks, the posttest was administered and the scores were recorded. The results of posttest could be used to compare students' word stress retention in experimental groups, which was the primary goal of this study.

3.6. Data Analysis

The data obtained from the pretests and posttests were analyzed using SPSS 21   (Statistical Package for Social Sciences). A paired-samples t test was run to compare the participants' scores means on the pretest and their posttest to probe the first two research questions in this study. An independent t test was run to compare the two applied techniques in order to answer the third research question in the study. As Pallant (2013) states, "independent samples t test is used when you want to compare the mean scores of the two different groups of people or conditions" (p.205).

4. Results

The aim of this study was to examine the effect of visual techniques of teaching word stress, including the use of written representation of word stress placement alongside with Cuisenaire rods, and an auditory technique of using nonsensical monosyllables on word stress retention. Furthermore, the present study also sought to examine if there was a significant difference between the two aforementioned methods for teaching word stress. In this chapter, the results and analyses for the three research questions have been elaborated.

Three instruments were utilized in this study. First, a Key English Test (KET) was used to homogenize the sample population in both experimental groups. Second, Cuisenaire rods which were used as visual aids for teaching lexical stress accompanied by the technique of word stress written representation. Finally, Praat software was used in the pretest and posttest to score participants' word stress performance. There was also a word stress test sheet with 30 words which were classified into 3 categories of 2-syllable, 3-syllable, and 4-syllable vocabulary items. These lexical items were pronounced by the participants into Praat in the pretest and posttest.

4.1 Homogeneity Process through KET Homogeneity Test

KET was administered to 90 participants to choose the desired ones. Table 4 displays the descriptive statistics of the participants' scores on KET.

Table 4
Descriptive Statistics for KET Homogenizing Test

	N	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
					Statistic	Std. Error	Statistic	Std. Error
KET	90	63.99	11.453	131.180	-.348	.254	-.432	.503
KR-21	.83				Ratio	-1.37	Ratio	-.85

Based on the mean (M = 63.99) plus and minus one standard deviation (SD = 11.45), 60 subjects were selected for the main study. The KR-21 reliability index for the KET was .83. The data also enjoyed normal distribution. The ratios of skewness and kurtosis over their standard errors were lower than +/- 1.96.

4.2 Data Analysis

Statistical analysis was carried out using the Statistical Package for Social Sciences 21 (SPSS) to analyze the data *t* test (comparing the means of pretest and posttest) were performed to determine if there were a significant difference ($p < 0.05$) in using word stress visual representation and word stress retention. Also, if there were a significant difference in using nonsensical monosyllables and word stress retention. And finally, to determine which of the two techniques is more effective.

4.2.1. Data Normality

The data were analyzed through the independent *t*test and paired-samples *t*test which assume the normality of the data.

Table 5
Descriptive Statistics: Testing Normality Assumption

Group		N	Skewness			Kurtosis		
		Statistic	Statistic	Std. Error	Ratio	Statistic	Std. Error	Ratio
Non-Sensical	Pretest	30	.062	.427	0.14	-1.114	.833	-1.34
	Posttest	30	.110	.427	0.26	-1.365	.833	-1.64
Visual	Pretest	30	.207	.427	0.48	-.327	.833	-0.39
	Posttest	30	-.694	.427	-1.63	1.085	.833	1.30

As displayed in Table 5, the ratios of skewness and kurtosis over their respective standard errors were within the ranges of +/- 1.96; hence normality of the present data.

4.2.2. Reliability

The Kuder-Richardson Reliability Coefficients (KR-21) were calculated to check the study reliability. It is one of the methods used for assessing the internal consistency. The score of KR-21 ranges from 0 to 1, but the value of at least 0.70 is desirable.

Table 6

KR-21 Reliability Indices

	N	Mean	Variance	KR-21
Pretest	60	15.48	33.305	.80
Posttest	60	18.88	38.206	.84

As can be seen in Table 6, the KR-21 reliability indices for the pretest and posttest of word retention were .80, .84.

4.3. The effect of application of visual representation on word stress

A paired-samples *t*test was run to investigate the effect of the application of word stress visual representation on retention of word stress.

Table 7

Descriptive Statistics, Pretest and Posttest of Word Stress (Visual Group)

|	Mean	N	Std. Deviation	Std. Error Mean
Posttest	20.57	30	4.500	.822
Pretest	16.13	30	5.097	.931

As displayed in Table 7, the visual representation group had a higher mean on the posttest of word stress (M = 20.57, SD = 4.50) than pretest (M = 16.13, SD = 5.09).

Table 8.
Paired-Samples ttest, Pretest and Posttest of Word Stress (Visual Group)

	Paired Differences						
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
			Lower	Upper			
4.433	2.674	.488	3.435	5.432	9.081	29	.000

The results of the paired-samples *t* test (t (29) = 9.08, p < .05, r = .86 representing a large effect size) (Table 8) indicated that there was a significant difference between the visual representation group's mean scores on the pretest and posttest of word stress. The application of word stress visual representation did have significant impact on retention of word stress was rejected. Figure 1 shows the mean of students' scores on pretest and the posttest.
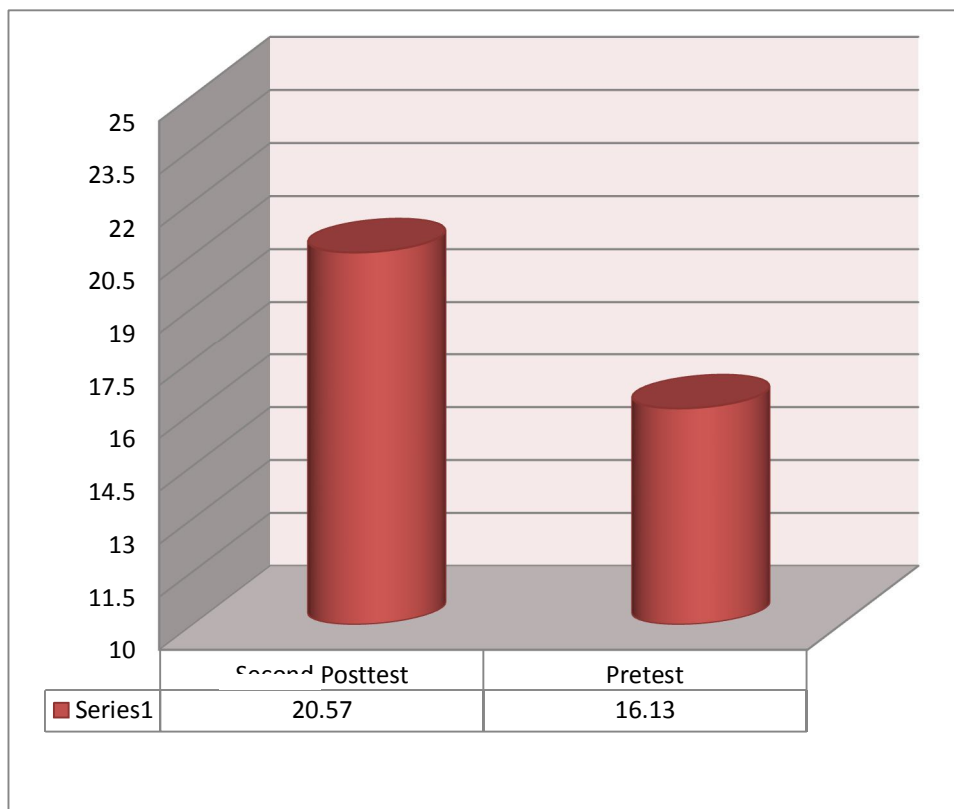
Figure 1. Pretest and posttest of retention of word stress

(visual group)

4.4. The effect of application of nonsensical monosyllables on retention of word stress   A paired-samples *t*test was run to investigate the effect of the application of nonsensical monosyllables on the retention of word stress.

Table 9

Descriptive Statistics, Pretest and Posttest of Retention of
Word Stress (Nonsensical Monosyllables Group)

	Mean	N	Std. Deviation	Std. Error Mean
Posttest	17.20	30	7.184	1.312
Pretest	14.83	30	6.395	1.168

As displayed in Table 9, the nonsensical monosyllables group had a higher mean on the posttest of retention of word stress (M = 17.20, SD = 7.18) than the pretest (M = 14.83, SD = 6.39).

Table 10
Paired-Samples ttest, Pretest and Posttest of Word Stress (Nonsensical Monosyllables Group)

Paired Differences							
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	Df	Sig. (2-tailed)
			Lower	Upper			
2.367	3.459	.632	1.075	3.658	3.748	29	.001

As displayed in Table 10., the results of the paired-samples *t*Test (t (29) = 3.74, p < .05, r = .57 representing a large effect size) indicated that there was a significant difference between the nonsensical monosyllables group's mean scores on the pretest and posttest of retention of word stress. The application of nonsensical monosyllables did have significant impact on retention of word stress. Figure 2 shows the mean of students' scores on pretest and posttest.
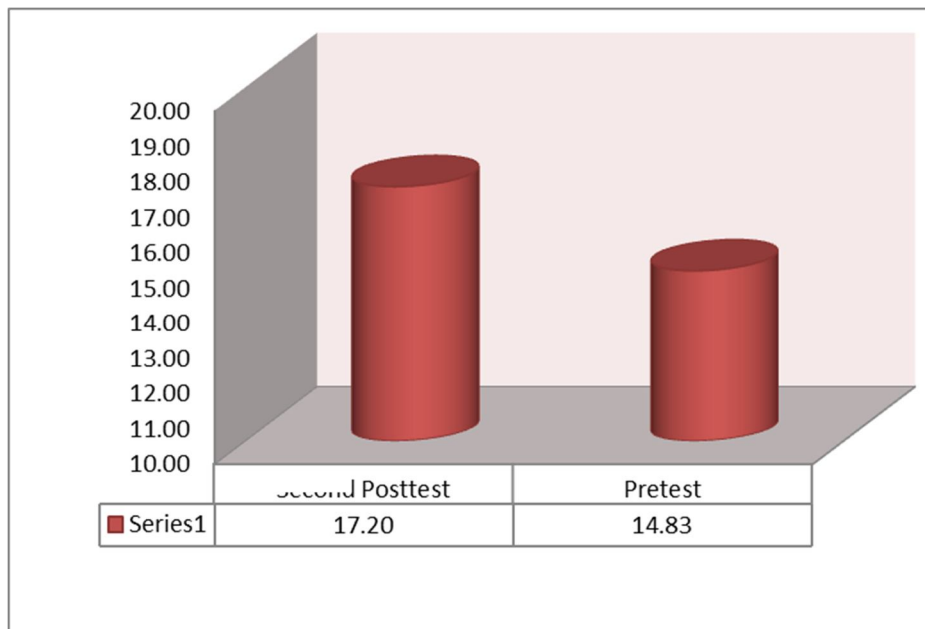
Figure 2. Pretest and posttest of retention of word stress(nonsensical group)

4.5. Comparative effect of visual and monosyllables on word stress retention

An independent *t*test was run to compare the visual representation of word stress and using nonsensical monosyllables on the word stress retention.

Table 11
Descriptive Statistics, Posttest of Retention of Word Stress by Groups

	Group	N	Mean	Std. Deviation	Std. Error Mean
Posttest	Visual	30	20.57	4.500	.822
	Non-Sensical	30	17.20	7.184	1.312

As displayed in Table 11, the visual representation group had a higher mean on the posttest of word stress retention (M = 20.57, SD = 4.50) than non-sensical monosyllables group (M = 17.20, SD = 7.18).

Table 12
Independent ttest, Posttest of Word Stress Retention by Groups

	Levene's Test for Equality of Variances		*t* test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	12.965	.001	2.175	58	.034	3.367	1.548	.268	6.465
Equal variances not assumed			2.175	48.723	.034	3.367	1.548	.256	6.477

The results of the independent *t*test (t (48) = 2.17, p < .05, r = .29 representing a moderate effect size) (Table 12) indicated that there was a significant difference between the visual representation of word stress and using nonsensical monosyllables on the word stress retention. The results should be interpreted cautiously due to the moderate effect size value. It should be noted that the assumption of homogeneity of variances was not met (Levene's F = 12.96, p < .05). That is why the second row of Table 12, i.e. "Equal variances not assumed" was reported. Figure 3 illustrates the mean of the students' scores in the posttest in both groups.
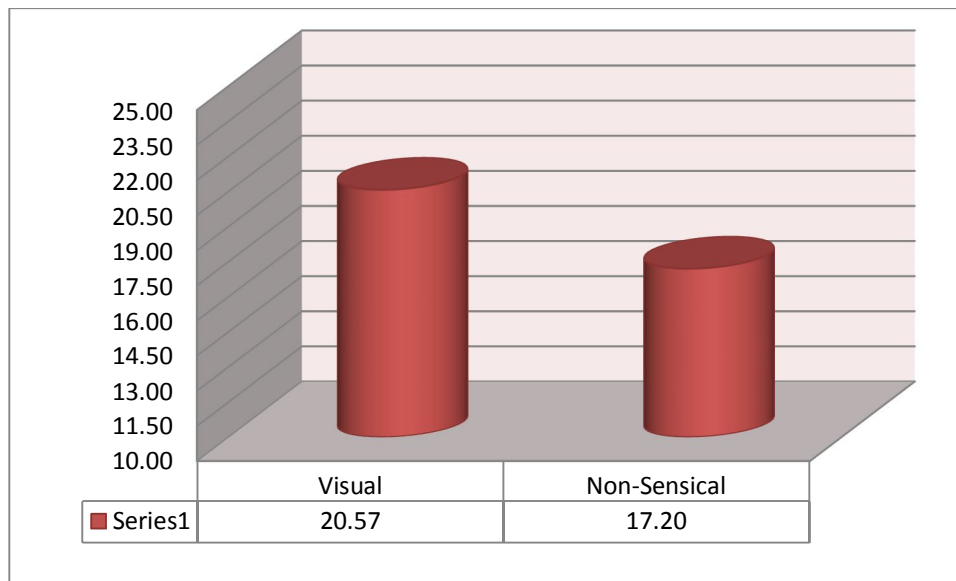

Figure 3. Posttest of word stress retention by groups

5. Discussion and Conclusion

Regarding the objectives of the study, the results and findings are discussed as follows. The first question in this study inspected whether there would be a significant impact of using word stress visual representation on word stress retention. In the visual group, the mean of posttest was higher than the mean of the pretest. This indicated that word stress visual representation (a combination of written representation of word stress placement and Cuisenaire rods) had a significant effect on word stress retention.

The second question in the present study inspected whether there would be a significant impact of applying nonsensical monosyllables on word stress retention. In the nonsensical group, the mean of posttest was higher than the mean of the pretest. This indicated that applying nonsensical monosyllables had a significant influence on word stress retention. The last question in this study was to specify which of the two techniques of applying word stress visual representation and applying nonsensical monosyllables has a more significant impact on word stress retention. According to the results of the analysis, applying word stress visual representation (a combination of written representation of word stress placement and Cuisenaire rods) had a more significant effect on word stress retention. Based on what occurred during the 10-session treatment period, there are several reasons to justify this result. Some of them are mentioned below:

1. Students' attention was drawn to the word stress patterns of all 30 lexical items.
2. By seeing the written representation of word stress placement on the board, the exact syllable which received the primary stress was highlighted for the learners, which made the stress pattern stick to their both short-term and rather long- term memory.
3. By looking at the proper setting of the Cuisenaire rods, both the syllabification and the exact syllable which received the primary stress were highlighted for the learners, which made the stress pattern stick to their both short-term and rather long- term memory.
4. Choral and individual repetitions, both as inseparable stages of teaching word stress, contribute to the consolidation of the word stress patterns in short-term and rather long- term memory.

Taking into consideration the fact that word stress visual representation is an implicit technique of teaching lexical stress, these justifications are in line with Chan and Leung (2012)'findings which supported the effectiveness of implicit methods in teaching word stress pattern of the

English language. They are also in line with the findings of Zellers et al. who claimed that implicit techniques of teaching lexical stress contributes substantially to learning word stress. Moreover, they are in line with Celce-Murcia et al. (2010)'s findings that emphasized the significance of choosing a system of representation of word stress placement.

Applying nonsensical monosyllables has no effect on word stress retention due to the following results. With regard to what occurred during the 10-session treatment period, there are several reasons to justify this result. Some of them are as follows:

1. Students' focus was attracted to the word stress patterns of all 30 vocabulary items.
2. By listening to the nonsensical monosyllables which rhymed with the words, on the exact syllable which received the primary stress was highlighted for the learners, which made the stress pattern stick to their both short-term and rather long- term memory.
3. Repetitions in both forms of choral and individual led to the consolidation of the word stress patterns in short-term and rather long-term memory.

Taking into account the fact that applying nonsensical monosyllables is an implicit technique of teaching word stress, these justifications are in line with the findings of Zellers, Post, and Williams (2011) who emphasized that the implicit techniques of teaching word stress have a key role in learning the correct word stress. They are also in line with Chan and Leung's (2012) findings which supported the significance of teaching lexical stress through implicit techniques. Furthermore, they are in line with Odisho's (2007) findings which highlighted the effectiveness of applying nonsensical monosyllables in teaching word stress perception.

Applying visual techniques of word stress representation have the same impact on word stress retention as the auditory technique of nonsensical monosyllables. However, by analyzing the data obtained in pretests and posttest, it was concluded that visual techniques have a stronger impact on word stress retention. With regard to what occurred during the 10-session treatment period, there are several reasons to justify this result. Some of them are as follows:

1. As two visual techniques (a combination of written representation of word stress placement and Cuisenaire rods) were used simultaneously, the word stress pattern was established and reinforced in learners' mind.

2. The students involved in the present study were adults and most adults have a dominant visual learning style; thus; visual techniques of teaching word stress are bound to be more appropriate for retention.

The findings of the present study revealed that applying word stress visual representation (a combination of word stress written representation and Cuisenaire rods) has a significant positive influence on word stress retention. Taking this method into account as an implicit method, this finding concurs with the findings of Zellers et al. who supported the contribution of implicit techniques to learning word stress. Moreover, it is in line with Celce-Murcia et al. (2010) findings which highlighted the importance of selecting a system of representation of word stress placement.

The researcher also concluded that applying nonsensical monosyllables has a significant effect on word stress retention. Considering this method as an implicit one, this finding also agrees with the findings of Zellers, Post, and Williams (2011). Additionally, it supports Odisho (2007) who put an emphasis on the efficacy of nonsensical monosyllables. Finally, based on the results of this study, visual techniques have a more significant impact on retention of word stress patterns.

In line with the present research findings, Kissling (2015)'s study of how phonetic instruction improves' Spanish as a second language learners' sound awareness confirmed instruction can help learners improve in perception on discrimination post and delayed posttests. In addition, the findings of a study by Gómez Lacabex and Gallardo del Puerto (2014) on the effect of pronunciation training on phonetic schwa by three teaching technics of auditory discrimination and identification, listen and practice drills, and exposure to native input were in line with the present study as both advocate controlled practice on pronunciation.

As the researchers suggest, the first and foremost implication of the findings of this study is for EFL teachers to be reminded of the significance of correct word stress placement in getting one's meaning across, particularly when being faced with native speakers (Mennen, 2007). Furthermore, they could remarkably benefit from the two techniques (visual and auditory) investigated in this study in order to teach word stress patterns to their students. Noting the fact that one of the techniques used in this study was visual and the other one was auditory, teachers should make sure they take all their students' preferred learning styles which is one of the driving forces in language learning (Mennen, 2007) into account while choosing each of the two methods.

Last but not least, teachers should be thoroughly prepared in order to apply these techniques, especially the nonsensical monosyllables.

The findings of the study also have crucial implications for EFL education. As inaccurate stress placements can lead to miscommunication, finding effective techniques in teaching word stress affects positively better word stress learning, which in turn contributes to smooth communication in terms of pronunciation and comprehension in English and this is the ultimate goal of EFL education sectors (Setter & Jenkins, 2005). As far as English learners are concerned, attending to their preferred learning style, they can take advantage of both methods in order to establish the accurate word stress pattern in their short and rather long-term memory. Other than learning the correct word stress pattern, they can enjoy both creativity and dynamicity which exist in these methods and best meet their students' need (Breitkreutz, Derwing, & Rossiter, 2001).

There is a space for further research on different word stress teaching and reinforcing methods which originate from classroom and the teacher. That is to say, inventing new techniques for teaching lexical stress by the use of teacher's taste and creativity in that specific environment has an essential role. For example, the teacher can use other items, even her own limbs, to highlight the stressed syllable. Or the teacher can make students conscious of the exact syllable that receives primary stress by asking them to follow specific instructions, such as raising their right hands when the primary stress occurs. Moreover, there should be further study on the role of corrective feedback both on the spot and delayed on word stress learning. The research should clarify how correction impacts word stress patterns produced by the students. In addition, teachers' belief mediates how they approach language teaching in general Karimi and Asadnia (2015), Therefore, a research on how teacher beliefs may mediate pronunciation learning is required.

Refrences

Aitchison, J. (1994). Understanding words. *Language and understanding*, 83-95.

Benrabah, M. (1997). Word-stress–a source of unintelligibility in English. *IRAL-International Review of Applied Linguistics in Language Teaching, 35*(3), 157-166.

Best, J., & Kahn, J. (2006). Research in education, 10th. *New Delhi: PHI Learning Private Ltd*.

Boersma, P., & Weenink, D. (1992). 2008. *Praat, A System for Doing Phonetics by Computer. Web site: www. praat. org.*

Breitkreutz, J., Derwing, T. M., & Rossiter, M. J. (2001). Pronunciation teaching practices in Canada. *TESL Canada Journal, 19*(1), 51-61.

Celce-Murcia, M., Brinton, D. M., & Goodwin, J. M. (2010). *Teaching pronunciation hardback with audio CDs (2): A course book and reference guide*: Cambridge University Press.

Chan, K.-w., & Leung, J. (2012). Implicit learning of L2 word stress rules. *HKU Theses Online (HKUTO)*.

Checklin, M. (2012). What in the world do we know about word stress? A review of what it is and how to teach it. *TESOL in context special edition S, 3*, 379-397.

Cook, A. (2000). *American Accent Training: A guide to speaking and pronouncing colloquial American English*: United States of America.

Elliott, A. R. (1995). Foreign language phonology: Field independence, attitude, and the success of formal instruction in Spanish pronunciation. *The Modern Language Journal, 79*(4), 530-542.

Falk, J. (1973). Sound and Sound Systems. In *Linguistics and language; a survey of basic concepts and applications* (pp. 77-105). Lexington, Mass.: Xerox College Pub.

Fraser, H. (2000). *Coordinating improvements in pronunciation teaching for adult learners of English as a second language*: DETYA (ANTA Innovative project).

Fraser, H. (2001). *Teaching Pronunciation: A handbook for teachers and trainers: Three frameworks for an Integrated Approach*: TAFE NSW, Access Division.

Gattegno, C. (1987). *The science of education part 1: theoretical considerations*: Educational Solutions.

Gattegno, C. (2010). *Teaching foreign languages in schools: The silent way*: Educational Solutions World.

Gilakjani, A. P. (2011). A study on the situation of pronunciation instruction in ESL/EFL classrooms. *Journal of Studies in Education, 1*(1).

Gómez Lacabex, E., & Gallardo del Puerto, F. (2014). Raising perceptual phonemic awareness in the EFL classroom. *Concordia Working Papers in Applied Linguistics (COPAL), 5*, 203-215.

Hasenberger, T. (2012). *The role of pronunciation in secondary-school TEFL.* uniwien.

Howard, J. (2010). A research informed approach to stress rule selection for english for academic purposes (EAP) programmes. *International Journal of Linguistics, 2*(1), 1.

Kanellou, V. (2011). *The place and practice of pronunciation teaching in the context of the EFL classroom in Thessaloniki, Greece.* Cardiff University.

Karimi, M. N., & Asadnia, F. (2015). EFL TEACHERS'BELIEFS ABOUT ORAL CORRECTIVE FEEDBACK AND THEIR FEEDBACK-PROVIDING PRACTICES ACROSS LEARNERS'PROFICIENCY LEVELS. *Journal of Teaching Language Skills, 34*(2), 39-68.

Kelly, G. (2000). How to Teach Pronunciation. Essex: Longman.

Kissling, E. M. (2015). Phonetics instruction improves learners' perception of L2 sounds. *Language teaching research, 19*(3), 254-275.

Mennen, I. (2007). Phonological and phonetic influences in non-native intonation. *Trends in linguistics studies and monographs, 186*, 53.

Odisho, E. Y. (2007). A multisensory, multicognitive approach to teaching pronunciation. *Linguística, 2*, 3-28.

Pallant, J. (2013). *SPSS survival manual*: McGraw-Hill Education (UK).

Pennington, M. C. (2014). *Phonology in English language teaching: An international approach*: Routledge.

Radford, A., Atkinson, M., Britain, D., Clahsen, H., & Spencer, A. (2009). Word classes. *Linguistics An Introduction, Cambridge University Press*, 125-139.

Scrivener, J. (2011). Learning Teaching. The Essential Guide to English Language Teaching. Student's Book Pack: Macmillan.

Setter, J., & Jenkins, J. (2005). Pronunciation. *Language teaching, 38*(1), 1-17.

Slowiaczek, L. M. (1990). Effects of lexical stress in auditory word recognition. *Language and Speech, 33*(1), 47-68.

Wilson, I. (2008). *Using Praat and Moodle for teaching segmental and suprasegmental pronunciation.* Paper presented at the Proceedings of the 3rd international WorldCALL Conference: Using Technologies for Language Learning (WorldCALL 2008).

Zellers, M., Post, B., & Williams, J. IMPLICIT LEARNING OF LEXICAL STRESS PATTERNS. *Hong Kong Journal of Applied Linguistics*, 17-21.