

Teaching Word Stress to Turkish EFL (English as a Foreign Language) Learners Through Internet-Based Video Lessons

Murat Hismanoglu

Akdeniz University, Antalya, Turkey

The purpose of this study is to elicit problem causing word stress patterns for Turkish EFL (English as a foreign language) learners and investigate whether Internet-based pronunciation lesson is superior to traditional pronunciation lesson in terms of enhancing Turkish EFL learners' accurate production of stressed syllables in English words. A pre-post test design with two groups of Turkish EFL learners: an experimental ($N = 15$) and a control group ($N = 15$) was used. The learners' pre- and post- test recordings were analyzed with paired samples *T*-test and independent samples *T*-test. Findings indicated that the experimental group outperformed the control group in the final test administered.

Keywords: stress, word stress, suprasegmental phonology, Internet-based video lessons

Introduction

During the past 20 years, pronunciation specialists have stressed suprasegmentals rather than segmentals in enhancing oral communication (Avery & Ehrlich, 1992; Morley, 1991). A shared assertion of L2 (second language) pronunciation researchers is that attributing prominence to the suprasegmental features of English not only maximizes learners' intelligibility, but also is less discouraging for students in that greater change can be affected (Celce-Murcia, Brinton, & Goodwin, 1996; McNerney & Mendelsohn, 1992). More recently, a plethora of studies have also emphasized the prominence of NNSs' (non-native speakers) prosody in instructional speech (Hahn, 2004; Levis & Pickering, 2004; Pickering, 2004) and have contributed to the predominance of suprasegmental instruction in ESL (English as a second language) settings (Derwing & Rossiter, 2003). Furthermore, research studies have attempted to specify the prosodic factors that give rise to listeners' perceptions: temporal measures (Derwing, Rossiter, Munro, & Thompson, 2004), speaking rates (Munro & Derwing, 2001), pausing (Iwashita, Brown, McNamara, & O'Hagan, 2008), stress (Juffs, 1990; Wennerstrom, 2000) and intonation (Mennen, 1998; Pickering, 2001, 2004; Wennerstrom, 1998). The present study investigates the production of one aspect of prosody—lexical stress—in the speech of Turkish EFL (English as a foreign language) learners.

Lexical stress indicates the placement of stress on a specific syllable within a word. Lexical stress can be distinguished in various ways. Segmentally, lexical stress in English is linked with long or unreduced vowels (Ladefoged, 1993). Suprasegmentally, lexical stress in English is associated with various acoustic aspects covering fundamental frequency (F0), intensity and duration (Lehiste, 1996). The accurate placement of stress on a particular syllable is the key to communicating the intended meaning of a word in English, due

to the fact that English employs stress distinctively. In Cutler's (1984) view, not only ungrammatical sentences or articulation of individual sounds, but also inaccurate placement of primary stress in L2 words may give rise to miscommunication in that the misplacement of lexical stress can "precipitate false recognition, often in defiance of segmental evidence" (p. 80). As Tarone (2005, p. 493) stated, the correct placement of primary stress in L2 words can affect the perception of comprehensibility, "the degree to which a speaker's utterance is understood by a listener". It can also have an influence on the perception of nativeness, the degree to which a speaker sounds like a native speaker of a particular language. Hence, the purpose of this study is to reveal problematic word stress patterns for Turkish EFL learners and examine whether Internet-based pronunciation lesson has impact on enhancing Turkish EFL learners' accurate production of stressed syllables in English words.

Lexical Stress in Turkish and English

Lexical Stress in Turkish

In Turkish, the primary stress is generally placed on the final syllable of a word irrespective of the length of the word and weight of the syllables (Lees, 1961; Lewis, 1967; Sezer, 1983). Hence, stress can be viewed to move rightwards in the following examples as a series of suffixes is attached to a stem as follows:

kaLEM	"pen"
kalemLİK	"penholder"
kalemlikLER	"penholders"
kalemliklerİM	"my penholders"
kalemlikleriMİZ	"our penholders"
kalemliklerimizDEN	"from our penholders"

Apart from this default stress position for words, Turkish also has a variety of cases of non-final stress, which can be further categorized into two types. Firstly, an exceptional root stress is sometimes observed in Turkish, which is a phenomenon restricted to certain place names, unfamiliar personal names, uninflected adverbs and conjunctions of foreign origin and certain other borrowings (Kabak & Vogel, 2001). The following examples exhibit the case clearly as follows:

İsTANbul	"İstanbul"	TeREsa	"Teresa"	akVARyum	"aquarium"
TAKsim	"TAKsim"	ManDEla	"Mandela"	NEgatif	"negative"
RoMANya	"Romania"	FAkat	"but"		

Related to the stress patterns of loan words and place names, Sezer (1983) proposed a word stress rule known as "Sezer stress rule" in the literature. The rule states that if the antepenultimate syllable is heavy and the penultimate syllable is light, the stress falls on the antepenultimate syllable. Otherwise, the stress falls on the penultimate syllable. Although "Sezer stress rule" makes the correct prediction in a variety of irregularly stressed words in Turkish, there are still some exceptions to this rule. To illustrate, some of the words (e.g., Taksim, Mandela and negatif) presented above do not follow this rule.

Secondly, an exceptional non-final stress is encountered in Turkish when certain affixes are attached to a word. These affixes prevent the assignment of stress to their right, and thus, result in non-final stress. This can

be seen in the following words for a subset of the affixes in question. The related affixes are underlined (Kabak & Vogel, 2001).

git-ti-NİZ	“You went”.
go-past-2pl	
GİT-me-di-niz	“You didn’t go”.
go-NEG-PAST-2pl	
git-ti-NİZ-mi	“Did you go?”
go-PAST-QUES	
boya-n-dı-LAR	“They made up their faces (themselves)”.
make up-RECIP-PAST-3PL	
boya-n-dı-LAR-da	
make up-RECIP-PAST-3PL-CONN	“They also made up their faces (themselves)”.
boya-n-mış-tır-lar-da	“They might also have made up their faces (themselves)”.
make up-RECIP-EVID-EP COP-3PL-CONN	

In vocative form, the primary stress falls on the penultimate syllable as follows (Abushibab, 2010):

Kadı́n	“Hey, woman!”	Çocuđ	“Hey, kid!”
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In adverbs, the stress is mostly placed on the first syllable as follows (Abushibab, 2010):

Şİ́mdi	“now”	YARİ́n	“tomorrow”
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In compound words, the stress is placed on the first component as follows (Inkelas & Orgun, 2003):

BAŞbađan	“prime minister”	CUMHURbađkanı	“president”
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Lexical Stress in English

In English, word stress assignment is mostly unpredictable. The number of syllables does not determine assignment of word stress. A shift in stress pattern can denote a shift in the lexical category (Abushibab, 2010). To illustrate, when the word “INSult” functions as a noun, the stress is on the first syllable. However, when it is employed as a verb, the stress is on the second syllable as seen in the word “inSULT”. The following is a small list of such pairs of words.

Noun	Verb
CONtract	conTRACT
DEcrease	deCREASE
EXport	exPORT
IMport	imPORT
OBject	obJECT

TRANSport

transPORT

In English, some adjectives are also distinguished from verbs via a shift in stress pattern. The examples below show the case clearly:

Adjective

Verb

ABsent

abSENT

PERfect

perFECT

Despite of the unpredictable nature of word stress in English, the following main generalizations or inclinations can be presented:

(1) The stress is on the first syllable in most of two-syllable words as in: father, mother, sister and uncle;

(2) For words ending with: -ify, -ive, -ient, -iant, -ian, -ious, -iate, -iary, -iable, -ish, -tion, -sion, -ic, -ical, -ity, -ium, -iar, -ior and -ible, the primary stress is placed on the syllable coming before the ending (Kenworthy, 1987) as illustrated in:

diVERsify	absTENTious	abRUption	faMILiar
eMULsify	absTEMious	comPASSion	peCULiar
aDAPtive	abBREViate	conFESSion	beHAVior
deDUCTive	imMEDiate	acaDEMic	suPERior
deFECTive	aVIary	anaLOGic	resPONSible
conVENient	biLIary	boTANical	diGESTible
omNIScient	certiFIable	elLIPTical	
inVARIant	falsiFIable	aBIlity	
alLEGiant	adMONish	fiDELity	
barBARIan	asTONish	milLENium	
coMEDian	abdiCAtion	tiTANIum	

(3) When an ending is attached to a word, the primary stress falls on the same syllable in the new word as was the case in the basic word as seen in:

HAppy

LAzy

HAppiness

LAziness

(4) While the primary stress is on the first component in compound nouns as seen in BLACKboard and DRUGstore, the primary stress is on the second component in compound verbs and adjectives as seen in underSTAND, old-FASHIONED, cold-BLOODED and deeply-ROOTED.

Using Internet-Based Video Lessons to Teach Word Stress

Over the last two decades, educators have enhanced the deployment of video in the classroom. Unlike print or audio material, video presents a powerful source of information. As Norton and Wiburg (2003) stated, video helps students to learn new contents by observing their context. Prospective EFL teachers are one particular group of

students that video can help. Video enables them to better comprehend the social, cultural, or emotional aspects of contents and their consequences. If English is not their mother tongue, video can also assist prospective EFL teachers in mastering new words or expressions, as well as suitable intonation patterns and non-verbal aspects of communication. Further, visual learning contributes to increasing learners' motivation and promoting retention of information (Weyers, 1999). It can be stressed that language found in videos could help NNSs to comprehend stress patterns. Videos provide the learner with the opportunity to view both rhythm and speech rhythm in second language discourse via the employment of authentic language and speed of speech in a variety of situations. Videos enable contextual clues to be presented. Furthermore, video can arouse students' interests (Canning-Wilson, 2000).

Related to teaching word stress, there are a variety of Internet-based video lessons provided by Jennifer's ESL (Retrieved from <http://www.youtube.com/watch?v=WX1rrFh4OZw>), Rachel's English (Retrieved from http://www.rachelsenglish.com/introcontent_words, and http://www.rachelsenglish.com/function_words), Kebins's TESL (teaching English as a second language) (Retrieved from <http://www.youtube.com/watch?v=ajHG R8zb1XU>), TeachYa (Retrieved from http://www.teachya.com/pronunciation/stress/word_stress_intermediate.php), Steve Bo (Retrieved from <http://youtube.com/watch?v=9AI3wsuAH10>), and LisCarpenter (Retrieved from <http://www.viddler.com/explore/LisCarpenter/videos/4/>) on the web.

Methodology

Sample Characteristics

The study was conducted with the participation of 30 (five males, 25 females) in the English Language Teaching Department of Akdeniz University, Faculty of Education in the spring semester of 2010-2011 academic year. The participants were in the freshman year of a four-year program leading to a bachelor's degree in teaching EFL. These 30 students were selected randomly from a population of 79 freshman students of the department and divided into two subgroups, the control group and the experimental group, consisting of 15 members. Each participant was assigned a number during the data analysis procedure due to ethical considerations and they were reminded that the data gathered would not be utilized for any assessment purposes and that personal details would be kept confidential. The demographic properties of the participants are displayed in Table 1.

Table 1

Demographic Properties of the Participants

		Frequency	Percentage (%)
Groups	Control	15	50
	Experiment	15	50
Gender	Male	5	17
	Female	25	83
Age	20-22	30	100
	23-25		
	25+		
Year	Freshman	30	100
	Sophomore		
	Junior		
	Senior		
Total		30	100

These 30 students had problems in producing the main stress in English words accurately because of being under the negative influence of the mother tongue, Turkish, and not having adequate knowledge about the suprasegmental aspects of the English language.

Instruments

In this study, a word list made up of 49 English words categorized under seven specific sub-categories with seven words was utilized as a pre-test to elicit whether 30 EFL learners' produced the primary stress in these English words accurately or not. A cell phone with a voice recording quality was deployed to record the subjects' productions of the primary stress in these 49 English words. While a computer with internet access and a projector were employed to conduct the internet-based pronunciation lesson on word stress in English in a technology-furnished classroom, a white board and a board marker were utilized to implement the traditional pronunciation lesson on English word stress in the classroom.

Procedure

After the elicitation of problematic word stress patterns for Turkish EFL learners, the experimental group was exposed to two 50-minute (2 × 50 minutes: 100 minutes) internet-based video lessons on English word stress. In the first video lesson (Retrieved from <http://www.youtube.com/watch?v=WX1rrFh4OZw>), students watched a phonetic definition of word stress given by a teacher on the Net (i.e., a stressed syllable is louder, longer and at a higher pitch in a word) through exemplification.

• •

steam boat (a stressed syllable is louder)

— —

steam boat (a stressed syllable is longer)

— — — —

—

steam boat (a stressed syllable is at a higher pitch)

Students listened to sample sentences about how the stressed syllable is made louder, longer and at a higher pitch and repeated these sentences. Some sample sentences were as follows:

Jennifer worked on a STEAMboat.

The steamboat was BEAUtiful.

Jennifer wore a UNIform.

Jennifer worked at the purser's STAtion.

There was interesting SCENery along the river.

The CABins were very small.

Jennifer went on an exCURsion to a horse farm.

They listened to sentences with the missing word pronounced with the incorrect word stress, and then they listened to the same sentences with the corrected word stress by the second speaker. Finally, they practiced

saying the correct pronunciation of the highlighted word.

Do you have a PASSport?

I forgot my CAmera.

What COUNTry are you from?

Show the man your TICKet.

There are many TOURists here.

Students were asked to count the number of syllables in each word. Sample words given to the students by the teacher were as follows:

travel	2 syllables
map	1 syllable
compass	2 syllables
suitcase	2 syllables

Students were also asked to listen to how 50 states and their capitals in the US are pronounced and repeat the articulations of these 50 states and their capitals correctly. Some sample states and their capitals that students did practice on were as follows: AUSTin, TEXas; FRANKfurt, KenTUCKy; HELena, MonTAna; and LINcoln, NeBRASka.

In the second video lesson, students accessed the Website (Retrieved from <http://www.englishclub.com>) to learn common word stress rules in English. Some common word stress rules in English that students learned on this Website were as follows:

Rule 1. Stress on first syllable

Most 2-syllable nouns and adjectives are stressed on first syllable.

Sample words for 2-syllable nouns are: PRESENT, EXPORT, CHINA, TABLE

Sample words for 2-syllable adjectives are: PRESENT, SLENDER, CLEVER, HAPPY

Rule 2. Stress on last syllable

Most 2-syllable verbs are stressed on last syllable.

Sample words for 2-syllable verbs are: to PRESENT, to EXPORT, to DECIDE, to BEGIN

Rule 3. Stress on penultimate syllable (penultimate = second from end)

Words ending with -ic, -sion and -tion are stressed on penultimate syllable.

Sample words for words ending with -ic are: GRAPHic, geoGRAPHic, geoLOGic

Sample words for words ending with -sion and -tion are: teleVISION, reveLATION

Rule 4. Stress on ante-penultimate syllable (ante-penultimate = third from end)

Words ending with -cy, -ty, -phy, -gy and -al are stressed on ante-penultimate syllable.

Sample words for words ending with -cy, -ty, -phy, -gy and -al are: deMOcracy, dependaBILITY, phoTOgraphy,

geOLogy, CRItical

Rule 5. Compound words (words with two parts)

While compound nouns are stressed on the first component, compound adjectives and verbs are stressed on the second component.

Sample words for compound nouns are: BLACKbird, GREENhouse

Sample words for compound adjectives are: bad-TEMpered, old-FASHioned

Sample words for compound verbs are: to underSTAND, to overFLOW

As for the control group, they were not exposed to a specific training by their teacher. The teacher wrote common English word stress rules on the blackboard, gave as many examples as possible for each word stress rule, articulated these sample words by giving importance to primary stress and asked the students to pronounce these sample words by attributing prominence to primary stress. To illustrate, the following stress rule was written on the blackboard by the teacher for words ending in suffixes, such as -ic, -sion and -tion.

In words with the following suffixes, the main stress is usually on the syllable immediately before the suffix: -ic, -sion and -tion. Many examples were given by the teacher for this word stress rule.

atmosPHERic	acceleRAtion	compreHENsion
photoGRAPHic	clarifiCAtion	exTENSion
symBOLic	explaNAtion	hyperTENSion
pragMATic	exHAUSTion	susPENSion

These sample words were articulated by the teacher by paying attention to the correct articulation of primary stress and the students were asked to pronounce these sample words focusing on the correct articulation of primary stress.

After the experimental group was exposed to a two-hour (2×50 minutes: 100 minutes) Internet-assisted pronunciation lesson on English word stress and the control group to a two-hour (2×50 : 100 minutes) traditional pronunciation lesson on the same subject, the pre-test was administered to both the control group and the experimental group as a post-test. The collected data was analyzed thoroughly to reveal whether Internet-based pronunciation lesson was superior to traditional pronunciation lesson in terms of enhancing Turkish EFL learners' accurate production of stressed syllables in English words.

Results and Discussion

Word Stress Patterns Causing Problems for Turkish EFL Learners

Table 2 presents the mean scores and the percentages with respect to seven sub-categories indicating problem causing English word stress patterns for Turkish EFL learners. Although students' misarticulation means were high on sub-categories 2, 3, 4, 6 and 7, their misarticulation means were low on sub-categories 1 and 5. These results display that Turkish EFL learners had tendency to mispronounce the primary stress on the last, penultimate and ante-penultimate syllables as well as on compound adjectives and verbs. However, their inclination to mispronounce the primary stress on the first syllables of words and compound nouns was low.

Table 2

Problem Causing English Word Stress Patterns for Turkish EFL Learners and Misarticulation Means

English word stress pattern	<i>X</i> (mean)	Percentage (%)
1. Placing primary stress on the first syllable	0.77	11
2. Placing primary stress on the last syllable	3.57	51
3. Placing primary stress on the penultimate syllable	3.78	54
4. Placing primary stress on the ante-penultimate syllable	4.06	58
5. Placing primary stress on compound nouns	0.84	12
6. Placing primary stress on compound adjectives	3.99	57
7. Placing primary stress on compound verbs	3.78	54

In the following section, three most frequently misarticulated word stress patterns and two least frequently misarticulated word stress patterns in Table 2 will be discussed thoroughly. While the phonological discussions on word stress in Turkish presented here are based on Lees (1961), Lewis (1967), Sezer (1983), Kabak and Vogel (2001), Abushibab (2010) and Inkelas and Orgun (2003), the so-called discussions on English word stress given here rely on Kenworthy (1987), Abushibab (2010), and Wayland, Guion, Landfair, and Li (2006).

Three most frequently misarticulated word stress patterns by Turkish EFL learners. *Placing primary stress on the ante-penultimate syllable.* Of 30 EFL learners, 18 of them (58%) mispronounced the stressed syllable in the words, such as aristocracy, convergency, accessibility, adaptability, bibliography, neurology and accessional. One reason why these 18 EFL learners failed to articulate the stressed syllables in these words was that they were unaware of the phonological rule with respect to placing the primary stress on ante-penultimate syllable for words ending in -cy, -ty, -phy, -gy and -al (Kenworthy, 1987). Another reason was that they were under the influence of phonological system of their mother tongue, Turkish, where the primary stress is generally placed on the final syllable of a word irrespective of the length of the word and weight of the syllables (Lees, 1961; Lewis, 1967; Sezer, 1983).

Placing primary stress on compound adjectives. Of 30 EFL learners, 17 of them (57%) mispronounced the stressed syllable in the words, such as old-fashioned, deeply-rooted, short-sighted, narrow-minded, left-handed, high-priced and well-cooked. Two main reasons for EFL learners' mispronunciation of the stressed syllable in these words were as follows: (1) EFL learners were unfamiliar with the phonological rule concerning placing the primary stress on the second component in compound adjectives in English; and (2) They transferred compound word stress rule in Turkish, having main stress on the first member (Inkelas & Orgun, 2003), to compound adjectives in English.

Placing primary stress on the penultimate syllable. Of 30 EFL learners, 16 of them (54%) mispronounced the stressed syllable in the words, such as academic, apologetic, feministic, compassion, confession, abruption and investigation. The main reasons for EFL learners' mispronunciation of the stressed syllable in these words were as follows: (1) EFL learners were unfamiliar with the phonological rule concerning placing the primary stress on the penultimate syllable for words ending with -ic, -sion and -tion (Kenworthy, 1987); and (2) They transferred the default stress's position for words in Turkish, having main stress on the final syllable of a word irrespective of the length of the word and weight of the syllables (Lees, 1961; Lewis, 1967; Sezer, 1983), to stressing words ending with -ic, -sion and -tion.

Two least frequently misarticulated word stress patterns by Turkish EFL learners. *Placing primary stress on the first syllable.* Of 30 EFL learners, only 3 of them (11%) mispronounced the stressed syllable in

the words, such as brother, neighbor, student, mountain, object, subject and market. Although these EFL learners were unfamiliar with the phonological rule concerning placing the primary stress on the initial syllable in two-syllable nouns (Serenio, 1986; Kelly & Bock, 1988), most of them were highly successful in accurately articulating the stressed syllable in the given words.

Placing primary stress on compound nouns. Of 30 EFL learners, only 4 of them (12%) mispronounced the stressed syllable in the words, such as bedroom, motorcycle, software, swimming pool, printer cartridge, driving license and rainfall. A great majority (26) of these EFL learners (88%) transferred compound word stress rule in Turkish, having main stress on the first member (Inkelas & Orgun, 2003), to compound nouns in English and exhibited a high level of performance in accurately articulating the stressed syllable in the given words.

Is Internet-Based Pronunciation Lesson Superior to Traditional Pronunciation Lesson in Terms of Enhancing EFL Learners' Accurate Production of Primary Stress in English Words?

To reveal whether Internet-based pronunciation lesson is superior to traditional pronunciation lesson in terms of maximizing EFL learners' accurate articulation of primary stress in English words or not, the researcher followed a threefold statistical procedure. Firstly, the pre-test and post-test scores within the control group were compared with respect to seven problematic word stress patterns for Turkish EFL learners through the use of paired samples *T*-test. Secondly, the pre-test and post-test scores within the experimental group were compared with respect to seven problematic word stress patterns for Turkish EFL learners through the use of paired samples *T*-test. Thirdly, the improvement rates between groups were compared with respect to seven problematic word stress patterns for Turkish EFL learners through the use of independent samples *T*-test. In the following section, these comparisons within and between groups are presented thoroughly.

Table 3 shows the comparison of pre-test and post-test scores within the control group with respect to seven problematic word stress patterns for Turkish EFL learners. When the mean values of the pre-test scores ($X_1 = 6.33$, $X_2 = 3.40$, $X_3 = 3.26$, $X_4 = 2.86$, $X_5 = 6.80$, $X_6 = 2.93$ and $X_7 = 3.20$) and post-test scores ($X_1 = 6.80$, $X_2 = 5.60$, $X_3 = 5.46$, $X_4 = 5.00$, $X_5 = 7.00$, $X_6 = 5.13$ and $X_7 = 5.13$) of the control group are compared, it can be stated that the control group made a significant progress in a majority of word stress patterns, such as: (1) $t_{(14)} = -3.500$, $p < 0.05$; (2) $t_{(14)} = -15.199$, $p < 0.05$; (3) $t_{(14)} = -15.199$, $p < 0.05$; (4) $t_{(14)} = -16.000$, $p < 0.05$; (6) $t_{(14)} = -15.199$, $p < 0.05$; and (7) $t_{(14)} = -29.000$, $p < 0.05$, except for (5) $t_{(14)} = -1.871$, $p > 0.05$, where an insignificant progress of the same group was observed. These results show that Turkish EFL learners, after being exposed to a traditional pronunciation lesson, commenced to accurately pronounce the primary stress on the first, last, penultimate and ante-penultimate syllables as well as on compound adjectives and verbs more accurately than they did before. However, their accurate productions of the primary stress on compound nouns were low.

Table 4 exhibits the comparison of pre-test and post-test scores within the experimental group with respect to seven problematic word stress patterns for Turkish EFL learners. When the mean values of the pre-test scores ($X_1 = 6.13$, $X_2 = 3.53$, $X_3 = 3.20$, $X_4 = 3.00$, $X_5 = 6.73$, $X_6 = 3.06$ and $X_7 = 3.20$) and post-test scores ($X_1 = 6.93$, $X_2 = 6.53$, $X_3 = 5.80$, $X_4 = 5.93$, $X_5 = 7.00$, $X_6 = 6.73$ and $X_7 = 6.60$) of the experimental group are compared, it can be indicated that the experimental group made a significant progress in all of the word stress patterns, such as: (1) $t_{(14)} = -7.483$, $p < 0.05$; (2) $t_{(14)} = -17.748$, $p < 0.05$; (3) $t_{(14)} = -19.858$, $p < 0.05$; (4) $t_{(14)} = -14.222$, $p < 0.05$; (5) $t_{(14)} = -2.256$, $p < 0.05$; (6) $t_{(14)} = -29.103$, $p < 0.05$; and (7) $t_{(14)} = -25.968$, $p < 0.05$. These results display that Turkish EFL learners, after being exposed to an Internet-based pronunciation lesson,

commenced to accurately pronounce the primary stress on the first, last, penultimate and ante-penultimate syllables as well as on compound nouns, adjectives and verbs more accurately than they did before.

Table 3

Comparison of Pre-test and Post-test Scores Within the Control Group With Respect to Seven Problematic Word Stress Patterns (N = 15)

English word stress pattern	Test	\bar{X} (mean)	SD (standard deviation)	df (degree of freedom)	t (t-value)	p (p-value)
1	Pre-test	6.33	0.61	14	-3.500	0.004
	Post-test	6.80	0.56			
2	Pre-test	3.40	0.50	14	-15.199	0.000
	Post-test	5.60	0.73			
3	Pre-test	3.26	0.45	14	-15.199	0.000
	Post-test	5.46	0.51			
4	Pre-test	2.86	0.51	14	-16.000	0.000
	Post-test	5.00	0.75			
5	Pre-test	6.80	0.41	14	-1.871	0.082
	Post-test	7.00	0.00			
6	Pre-test	2.93	0.25	14	-15.199	0.000
	Post-test	5.13	0.51			
7	Pre-test	3.20	0.41	14	-29.000	0.000
	Post-test	5.13	0.35			

Table 4

Comparison of Pre-test and Post-test Scores Within the Experimental Group With Respect to Seven Problematic Word Stress Patterns (N= 15)

Word stress pattern	Test	\bar{X} (mean)	SD (standard deviation)	df (degree of freedom)	t (t-value)	p (p-value)
1	Pre-test	6.13	0.51	14	-7.483	0.000
	Post-test	6.93	0.25			
2	Pre-test	3.53	0.51	14	-17.748	0.000
	Post-test	6.53	0.63			
3	Pre-test	3.20	0.41	14	-19.858	0.000
	Post-test	5.80	0.41			
4	Pre-test	3.00	0.37	14	-14.222	0.000
	Post-test	5.93	0.79			
5	Pre-test	6.73	0.45	14	-2.256	0.041
	Post-test	7.00	0.00			
6	Pre-test	3.06	0.45	14	-29.103	0.000
	Post-test	6.73	0.45			
7	Pre-test	3.20	0.41	14	-25.968	0.000
	Post-test	6.60	0.50			

Table 5 shows the comparison of the improvement rates between groups with respect to seven problematic word stress patterns for Turkish EFL learners. When the improvement rates of the control group ($X_1 = 0.46$, $X_2 = 2.20$, $X_3 = 2.20$, $X_4 = 2.13$, $X_5 = 0.20$, $X_6 = 2.20$ and $X_7 = 1.93$) are compared with those of the experimental group ($X_1 = 0.80$, $X_2 = 3.00$, $X_3 = 2.60$, $X_4 = 2.93$, $X_5 = 0.26$, $X_6 = 3.66$ and $X_7 = 3.40$), it can be clearly stated that the experimental group is superior to the control group in terms of accurately producing the primary stress

in a majority of problematic word stress patterns for Turkish EFL learners, such as: (2) $t_{(28)} = -3.595, p < 0.05$; (4) $t_{(28)} = -3.257, p < 0.05$; (6) $t_{(28)} = -7.643, p < 0.05$; (7) $t_{(28)} = -9.982, p < 0.05$. However, the comparison of the improvement rates between groups with respect to problem causing word stress patterns, such as: (1) $t_{(28)} = -1.950, p < 0.05$; (3) $t_{(28)} = -2.049, p = 0.05$; and (5) $t_{(28)} = -0.418, p < 0.05$, does not provide statistically significant evidence concerning the superiority of the experimental group to the control group. Hence, it can be stated that Internet-based pronunciation lesson is superior to traditional pronunciation lesson in terms of enhancing EFL learners' accurate articulation of primary stress on the last and ante-penultimate syllables of words as well as on compound adjectives and compound verbs. However, such a technology-furnished lesson is not superior to traditional pronunciation lesson in terms of enhancing EFL learners' accurate articulation of primary stress on the first and penultimate syllables of words as well as on compound nouns.

Table 5

Comparison of the Improvement Rates Between Groups With Respect to Seven Problematic Word Stress Patterns

Word stress pattern	Group	N (number)	X (mean)	SD (standard deviation)	df (degree of freedom)	t (t-value)	p (p-value)
1	Control	15	0.46	0.51	28	-1.950	0.061
	Experiment	15	0.80	0.41			
2	Control	15	2.20	0.56	28	-3.595	0.001
	Experiment	15	3.00	0.65			
3	Control	15	2.20	0.56	28	-2.049	0.050
	Experiment	15	2.60	0.50			
4	Control	15	2.13	0.51	28	-3.257	0.003
	Experiment	15	2.93	0.79			
5	Control	15	0.20	0.41	28	-0.418	0.679
	Experiment	15	0.26	0.45			
6	Control	15	2.20	0.56	28	-7.643	0.000
	Experiment	15	3.66	0.48			
7	Control	15	1.93	0.25	28	-9.982	0.000
	Experiment	15	3.40	0.50			

Conclusions

The primary objectives of the present study were to find out problem causing word stress patterns for Turkish EFL learners and examine whether Internet-based pronunciation lesson is superior to traditional pronunciation lesson in terms of enhancing Turkish EFL learners' accurate production of stressed syllables in English words. Results of the study have shown that while Turkish EFL learners had problems in pronouncing the primary stress on the last, penultimate and ante-penultimate syllables as well as on compound adjectives and verbs due to being unfamiliar with word stress patterns of L2 (English) and negative effect of L1 (Turkish), they had no problems in pronouncing the primary stress on the first syllables of words and compound nouns, due to being accustomed to stress patterns of commonly used words in English and transferring L1 compound word stress rule to L2 compound stress rule.

The data analysis has revealed that students exposed to Internet-based video lessons were superior to those trained in traditional pronunciation lessons with respect to maximizing their pronunciation of the primary stress in English words. Although paired samples *T*-test results exhibited significant progress within two groups,

independent samples *T*-test results proved that the experimental group outperformed the control group in a majority of problematic word stress patterns.

Future research covering other learner groups and Internet-based video materials and examining other forms of stress, namely, phrase stress, sentence stress, emphatic stress, etc., could constitute more evidence in favor of the positive effect of Internet-based video lessons on improving L2 pronunciation learning by increasing learners' motivations on the one side and establishing a stimulating learning environment on the other side of platinum.

Additional research is also required to assess whether the impact of Internet-based video lessons on improving Turkish learners' English pronunciation is short-term or long-lasting. Further research is also needed to compare attitudes of Turkish learners of English and learners of English of other nationalities towards deploying Internet-based video lessons in pronunciation learning.

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Appendix

Questionnaire

Participant details:
Name of the university:
Department:
Age:
Sex:
Year:

Dear participants,

This questionnaire aims to find out whether you can accurately pronounce the following English words by giving importance to the stressed syllables. While you are articulating the words below, your voice will be recorded via the use of a cell phone with a recording facility. However, please note that your recording will be kept confidential.

Word stress patterns		
Pattern 1	Pattern 2	Pattern 3
(1) brother	(8) to object (v)	(15) academic
(2) neighbor	(9) to subject (v)	(16) apologetic
(3) student	(10) to desert (v)	(17) feministic
(4) mountain	(11) to present (v)	(18) compassion
(5) object (n)	(12) to export (v)	(19) confession
(6) subject (n)	(13) to import (v)	(20) abruption
(7) market (n)	(14) to contract(v)	(21) investigation

(table continued)

Pattern 4	Pattern 5	Pattern 6	Pattern 7
(22) aristocracy	(29) bedroom	(36) old-fashioned	(43) underestimate
(23) convergency	(30) motorcycle	(37) deeply-rooted	(44) underexpose
(24) accessibility	(31) software	(38) short-sighted	(45) undertake
(25) adaptability	(32) swimming pool	(39) narrow-minded	(46) overwrite
(26) bibliography	(33) printer cartridge	(40) left-handed	(47) overload
(27) neurology	(34) driving licence	(41) high-priced	(48) oversimplify
(28) accessional	(35) rainfall	(42) well-cooked	(49) overlengthen