

Research Article**Pre-Service English Language Teachers' Problematic Sounds***Arda ARIKAN¹  Ahmet Fatih YILMAZ² **Abstract**

Today, pronunciation is one of the least researched areas in the EFL context. The available studies focus on learner errors and aim to generalise the sound problems in differing contexts and L1 backgrounds. Studies reveal that some of the learner errors are caused by the input they receive at their learning environment. With the belief that the primary input in an EFL classroom is the teacher, this study analysed the sound problems of senior pre-service EFL teachers. The study was carried out in three universities in Turkey within the bounds of accessibility. A total of 66 pre-service English language teachers were randomly selected. "Please Call Stella" accent elicitation text was adapted to delineate the sound problems of the language segmentally. The analysis of the descriptive data revealed the major sound problems conforming to the previously mentioned literature in the field. Although the participants had completed their formal education in ELT, they committed errors with devoicing of word-final consonants, vowel insertion, vowel shortening, gemination and individual sounds /t/, /ð/, /w/, /θ/, /ŋ/, /oo/, /ə/ and /æ/. It was assumed that mother tongue interference, fossilization of mistakes in language classrooms and non-existent sounds in L1 form the basis for errors in pronunciation.

Keywords: Sound problems, pronunciation, pre-service english teachers, L1 interference, error analysis

1. INTRODUCTION**1.1. Background of the Study**

Studies on pronunciation problems of advanced learners of English in Turkey present an overall image that would prove the assumptions expected of an EFL environment. Boran (2005) investigates the errors that 100 freshman students commit using 20 problematic words used in appropriate contexts. Although these students are mostly high achieving pre-service teacher trainees of a top university, the error ratios of incorrect pronunciation are very high and none of the participants manages to have a 100% correct pronunciation rate. The findings also support the literature in that errors in EFL context concentrate around the similarities and differences in the sound patterns of the learners' native language and the target language.

As the members of non-native speakers of English, pre-service English language teachers are expected to approximate their pronunciation to a degree which is a standard native model thus present themselves as a body of reference in class and a model for students (Jenkins, 1998).

In the light of these, this study aims to find answers to the following major and minor questions. *Major research question:* What are the problematic sounds of senior pre-service English language teachers in Turkey? *Minor research questions that guided our study are:*

- What are the senior pre-service English language teachers' sound problems regarding consonants?

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- b. What are the senior pre-service English language teachers' sound problems regarding vowels?
- c. What are the senior pre-service English language teachers' sound problems regarding diphthongs?

1.2. Significance of the Study

Previous studies in Turkey are conducted on secondary school students (Türker, 2010; Aktuğ, 2015), freshman students at ELT departments (Hişmanoğlu, 2004; Boran, 2005) or sophomore students of ELT (Kaçmaz, 1993; Ülkersoy, 2007). The current study is important in trying to define sound problems of pre-service English teachers just prior to their professional life, a group that is not studied before. In this respect, this study is the 1st in Turkey in which 4th year students were the participants. So, the data shows the output of the prospective teachers who will start teaching in a couple of months.

1.3. Phonetics and Phonology

When we speak, we produce a stream of sounds. To study the speech, phoneticians put the stream into smaller pieces called segments. Although each segment is called a sound, when they make lexical distinctions by differentiating the meaning of a word, they become phonemes (Ogden, 2009). Letters are written representations of sounds and phonemes prepared through transcriptions. The one-to-one resemblance between the letter and the phoneme is known as the perfect-fit (Demirezen, 1987). Languages such as Finnish, Hungarian, Turkish and German are listed as the phonetic languages which are closer to the perfect fit. English, on the other hand, has little correspondence between its spelling and pronunciation and it is not spelt phonetically. To study the segments of English speech, phoneticians resort to phonetic transcription which is the use of alphabetical symbols to show the sounds of speech. Typically, sounds are represented in square brackets, such as [k], [a], [t]; phonemes are given in slash brackets like /k/, /a/, /t/; letters are shown between angled brackets like <c>, <a>, <t>; and words are given between apostrophes: 'cat' (Ogden, 2009).

1.3.1. Segmentals and suprasegmentals

Segmental features of English are to do with the minimal units of sound (Demirezen, 1987). As Demirezen (1987) denotes, a speech sound is known as a phone, and when they are used in a position which may alter the meaning of a word they become phonemes. Another confusing term for EFL learners is letters which are written representations of sounds and phonemes prepared through transcriptions. As noted earlier, the one-to-one mapping between the letter and the phoneme is known as the perfect fit. Although Turkish is known as a phonetic language which is closer to the perfect fit, English has little correspondence between its spelling and pronunciation making it a phonemic language (Demirezen, 1987; Ogden, 2009). Trying to pronounce all the letters in a word is a typical error for Turkish speakers of English. Made up of vowels, consonants, semivowels, diphthongs, and approximants; segmental phonemes of English hold a vital role in teaching English to Turkish learners as L1 interference constitutes a large source of error for EFL learners.

Also known as stronemes, suprasegmental features of English include stress, pitch, juncture and intonation as the components of pronunciation (Demirezen, 1987). The period before the 1980s was a time when segmental differences between L1 and L2 were focused primarily together with articulation and discrimination of individual sounds (Derwing & Rossiter, 2002). After this period, the prosodic aspects of language known as word stress, sentence stress, pitch, rhythm, and intonation started to gain more importance (Derwing & Munro, 1997). However, a more balanced notion of contemporary pronunciation teaching regards segmentals and suprasegmentals in an equal vein. Moreover, as discussed by Hişmanoğlu (2004), native-like pronunciation is achievable by exposing learners to a sufficient amount of formal sound practice enriched with segmental and suprasegmental

aspects of pronunciation. As the current study is concerned with sound problems of learners, only segmental features will be considered in detail.

1.4. Pronunciation teaching

Accuracy oriented approaches until the 1980s started to lose their attention with the inclusion of Communicative Language Teaching (CLT) in the EFL context. CLT placed its main focus on oral communication through comprehensible pronunciation suggesting language for communication should be central in language teaching (Celce-Murcia et al., 1996). Communicative competence is favoured over linguistic competence. Fluency is believed to be achievable through authentic, natural, real-world tasks with non-directive teaching and communicatively adequate pronunciation is assumed to be a side product of the process. CLT also turned a blind eye to former pronunciation teaching techniques and methods such as imitation, minimal pairs, drills, tongue twisters, visual aids, reading aloud, phonetic training and recording of learners' production. Although this situation brought a dilemma into pronunciation teaching because of lacking a set of strategies, later formation of CLT accepted stress, rhythm and intonation as higher priority areas above articulatory competence (Brown, 2001). Role playing, problem solving and games are accepted as the communicative activities that, reportedly, yielded better results in pronunciation teaching than old techniques (Celce-Murcia, 1987).

Making use of technological advancements through computer-assisted instruction appears among the new trends in English pronunciation teaching world today. As advocated by Celce-Murcia et al. (1996), 21st-century novelties for pronunciation teaching are to be achieved with;

- *the use of fluency-building activities*
- *accuracy oriented exercises*
- *adaptation of authentic materials*
- *use of instructional technology*
- *multi-sensory modes of learning in the teaching of pronunciation (cited in Aktuğ, 2015. p.33).*

1.5. Phonetic errors and underlying factors

The distinction between *mistake* and *error* has long been clarified by researchers in that the former is irregular and also observable in native speakers while the latter is systematically recurring incorrect pieces of L2 production (Nunan, 1999). Errors in EFL context may appear in morphological, syntactic, lexical or phonological levels. Ellis (1997) notes on the importance of errors and the study on them by remarks like, they are a conspicuous feature of learner language, it is useful for teachers to know what errors learners make and paradoxically learners learn from errors if they can self-correct themselves.

Various researchers handle errors in varying aspects and present categorizations. Collins and Mees (2003) come up with three categories that we can sort errors regarding their role in intelligibility. The first and the most important group of errors brings about a communication breakdown; the second group is made up of intelligible use of language but brings about irritation and amusing occurrences of language, and the last group of errors are less important considering the native-like pronunciation is imaginary.

Trying to answer why speakers of L2 fall into errors in pronunciation, Kenworthy (1987) denotes the importance of individual variables in enhancing or impeding the acquisition of an intelligible pronunciation. They are listed as learners' native language, age, exposure, innate phonetic ability, attitude, identity and language ego, motivation and concern for good pronunciation. In a similar vein, Lado's (1957) Contrastive Analysis Hypothesis (CAH) takes the first language system as a barrier to second language acquisition and claims that by a scientific and structural analysis of the two languages linguists can come up with a list of difficulties the learners will come across in learning the target language (Brown, 2000). Researchers have valued CAH in trying to understand why some

certain errors occur in some certain set of languages and advocated comparing the native and the target language in their differences and similarities (Kaçmaz, 1993). The ongoing debate on CAH targets it for lacking a theoretical basis for predicting the areas of language that should be more challenging than others because Lado's (1957) design necessitates any difference between L1 and L2 should pose difficulty for the learners (Major and Kim, 1996). In Ülkersoy (2007) however, Oller and Ziahosseiny's results show that Japanese ESL learners with non-Roman script find English spelling easier than do learners of French who utilize the same Roman script as English. On similarity and dissimilarity between L1 and L2, Flege's (2005) Speech Learning Model (SLM) takes dissimilarity between the sounds of the two languages as the key to successful sound production. SLM posits that similar sounds are more difficult to be acquired in a native-like manner because the speaker perceives the new sound in the same category with the sound in the L1. Dissimilar sounds, on the other hand, are placed in new categories as they do not coincide with any sound item in already developed categories of L1. Flege (2005) go on to notice that "When a category is not formed for an L2 sound because it is too similar to an L1 counterpart, the L1 and L2 categories will assimilate, leading to a "merged" L1-L2" (p. 34). In a study to test the hypothesis, Flege (1987) notes that native English speakers who are learning French are able to produce the French /ü/, which does not have a counterpart in English, correctly; whereas the French /u/ is produced "fronter" than the French counterpart of the sound presumably because with an interference of the fronted American English /u/ (cited in Flege, 2005, p. 27).

Markedness Differential Hypothesis (MDH), on the other hand, takes typological markedness as the main reason for difficulty in the target language (Eckman, 1977). The idea of markedness is put in a formula as "a phenomenon A in some language is more marked than B if the presence of A in a language implies the presence of B; but the presence of B does not imply the presence of A" (Eckman, 1977, p. 320). As MDH puts, the acquisition of fricatives presupposes the acquisition of stops, and voiced stops imply the presence of voiceless stops and so are more marked (Ülkersoy, 2007). Nevertheless, mother tongue interference or negative transfer is usually regarded as the underlying factor in learner difficulties and sound problems, although minimized in other areas of language (Hişmanoğlu, 2004). It is also argued that the emergence of problems will go up if the difference between two languages is wider and non-existent sounds in the native language will be problematic sounds to produce in the target language (Chan, 2010; Stockwell & Bowen, 1965; cited in Kaçmaz, 1993).

Influence of what is already learnt on what's built on it can be linked to interlingual errors. Also regarded as transfer, interference and interlanguage errors, interlingual errors are rooted in the learners' transfer of their native language rules to the target language (Brown, 2000). Richards and Sampson (1985) note that previous input paves the way for the later. Their assumption clarifies another error factor, intralingual errors, which originate from the target language to be learnt. Through generalization usually, learners resort to their earlier input to cope with the new input and fall into errors. According to Ellis (1997), errors in L2 are universal, and they usually occur in an attempt to grasp and implement the rules of the target language simpler. The strategies include the omission of articles or plural "s"; overgeneralization of forms like irregular simple past forms and transfer of what they keep in their minds about L1.

The Interlanguage Theory was originally coined by Selinker (1972) and holds a great focal point in error roots of EFL learners. Ellis (1997) comments on the basics of the theory as follows;

1. *The learner forms a system of abstract linguistic rules which underlies comprehension and production. The new sentences produced by the speaker are all based on this abstract system taking its roots from the native language rules.*
2. *The learner's grammar is permeable. The L2 grammar is open to any changes from within internally by transfer, overgeneralization and omission or externally by exposure to target language input.*

3. *The learner's grammar is transitional. The permeable nature of learner grammar makes it possible for learners to reformulate their grammar by adding- deleting rules or reconstructing the whole system. They develop an interlanguage continuum as they increase the complexity of their L2 knowledge.*
4. *The learners' competence is variable. Some researchers favour the idea that the systems learners construct contain variable rules. Although disputed by other researchers, learners may have variable rules at some stages of development.*
5. *Learners employ various learning strategies to develop their interlanguages. By resorting to different learning strategies like simplifying the grammar rules that they have not mastered yet, they fall into errors such as omission, overgeneralization, and transfer. Learners also resort to communicative strategies like paraphrasing, code-switching and seeking assistance.*
6. *Interlanguage is open to fossilization. Coined by Selinker, fossilization explains the position when learners stop developing while they are still lacking target language competence. Once they are able to communicate adequately for their immediate purposes, learners will not find a reason to reformulate their interlanguage. Backsliding to errors of the early stage of development is seen as typical of fossilized errors (pp. 33-34).*

Fossilization drew much attention in pronunciation teaching as the typical trait of L2 performance. Natural approach, for example, received much criticism for how it regards student errors. Not putting the errors in immediate correction for the sake of fluency, it is accused of instilling fossilized student pronunciation errors (Blair, 1991 cited in Kaçmaz, 1993).

Demirezen (2005a) warns about the fossilized pronunciation problems of pre-service teachers noting that they are not ignorable because of the potential harm they have on the advancement of communicative competence, fluency, intonation advancement and other related language skills. Moreover, this harm is not reserved to the teachers themselves only, the students also get the first seeds of errors at an early stage of forming their interlanguage.

1.6. Sound problems of non-native speakers of english

Demirezen (1986) provided definitions of phonemic analysis and phonology. In the development of phonology as science in Turkey, he made the early contributions with this reference book which presented three significant counterparts of phonology: phoneme concept, phonological theory, and syllable theories. Demirezen (1987) introduced the principles of articulatory phonetics and speech production making phonetics available for ELT students and beginners in phonetics to grasp the basics. Demirezen (2003, 2004) developed a pronunciation curing model to handle the sound problems of teacher trainees. The Audio-Articulation Model (AAM) attempted to present solutions for teacher trainees and teachers on-the-job that would cover a lesson for 45 minutes in foreign language teaching. Basic steps of the model include;

- *specifying the problem-causing phoneme,*
- *preparing a corpus of 50-100 words that would include the phoneme and its pair for contrast,*
- *classifying the words into minimal pairs with their contrasting pairs,*
- *preparing a minimal pair corpus within the general corpus for contrastive analysis,*
- *developing tongue twisters, cliché articulations, minimal sentences, contextual clues and problem-sound concentrated sentences for practice in class (Demirezen, 2007b, p.163).*

The impact of Audio-Articulation Model is vivid in the related literature review in Turkey context. Many researchers have exploited it to come up with solutions for sound problems and to teach problematic sounds (Kahraman, 2013; Demirezen, 2005b). Kahraman (2013) took [l] consonant as a fossilized sound problem for Turkish learners of English and studied the allophones of it with 18 lecturers at a Turkish university. The researcher completed a diagnostic test, introduced the allophones of /l/ sound and presented the cure method AAM by Demirezen (2003). The results showed that the cure method worked effectively, and the participants mastered their pronunciation of clear- l /l/ and

dark-l /h/ phonemes. A similar study by Kahraman (2012) focused on defossilization of /æ/ phoneme for non-native EFL teachers. The cure program which incorporates steps of AAM proved effective on the participants of the study who are 16 lecturers of a foreign language department of a Turkish University. The treatment program was seen effective showing a significant difference between pre and post-test results of the participants. In a similar vein, Karakas and Sonmez (2011) developed a sample lesson including the procedures of AAM and presented solutions for the fossilized tetha /θ/ and eth /ð/ phonemes of English. Hişmanoğlu (2009) collected data from 30 participants at an ELT program at the European University of Lefke as the students read aloud a dialogue including tetha /θ/ and eth /ð/ phonemes. He recorded and transcribed the speech sounds that are pronounced correctly or incorrectly. After determining /θ/ and /ð/ as problem causing sounds for Turks, he put AAM into practice as the treatment program. The improvement rates proved the treatment program effective bringing about betterment in the production of the problem causing sounds. Finally, Demirezen came up with sample lessons for consonant contrasts: /v/ and /w/ (Demirezen, 2005a), /ɔ/ and /ow/ (Demirezen, 2005b), /ð/ (Demirezen, 2004), /θ/ (Demirezen, 2003), /ŋ/ (Demirezen, 2007b), palatalization [nj, kj, lj, gj] (Demirezen, 2005c); and vowel contrasts: /æ/ and /ʌ/ (Demirezen, 2008).

Demirezen (2007a) conducted a diagnostic study to pinpoint the fossilized pronunciation errors of pre-service Turkish English teachers. He noted that the past tense morpheme, with its past tense and adjective derivational functions, pose problems for pre-service and in-service teachers of English in Turkey. He kept a portfolio for the 50 first-year students in the Department of English Language Education at Hacettepe University in 2006-2007, and he listed wrongly articulated allomorphs of past tense morpheme {-I}D}. The results showed that the students did not have any problems with verbs ending in voiceless consonants, /-t/ sound was used correctly where it is needed. Nevertheless, all of the students were faulty adding past tense morpheme to verbs ending in a voiced consonant and verbs ending with /t/ and /d/ phonemes. Overall, /-d/ was used as /-t/; /-əd/ was used as /-ət/; /-dət/ was used as /-tət/ and /-təd/ was used as /-tət/. Some of the learners also came up with such formations as 'called' /kɔ:lət/ using /-ət/ instead of /-d/. One of the main reasons behind the errors was seen as the least effort principle which presents reasons why learners switch to voiceless consonants rather than voiced ones in a search of ease in articulation. The effect of the Turkish language was also shown as another factor why learners devoiced word-final consonants. The other reasons behind these errors were delineated as rule overgeneralization, the spelling of past participle verbs in British English and progressive consonantal assimilation which all went hand in hand with least effort rule.

Demirezen (2007b) took velar nasal consonant /ŋ/ as another problem causing phoneme for Turkish English teachers. The audition of /ŋk/ sound rather than /ŋ/, which is a fossilized error, was rooted in the Least Effort Principle and the interference of Turkish which does not allow word-final voiced consonants. Demirezen (2007b) collected the free speech data from 100 of his first-year students in 2006-2007 in the Department of English Language Education at Hacettepe University. The first results showed that 70 of the 100 students mispronounced /ŋ/ phoneme as /ŋk/. Audio-articulation Model (Demirezen, 2003) implemented by the researcher could fix 60 students' misarticulations, however, the remaining 10 were still problematic. Uzun (2019) added to the field with a descriptive study in which they presented intelligibility and comprehensibility of 20 junior pre-service English teachers studying at a public university in Turkey. The recordings that are gathered from the informants were presented to expert native speakers of English and the problematic sounds were pinpointed. Vowel schwa /ə/ and voiceless interdental fricative /θ/ were regarded as the main problems that cause learners to be accented, however, they were deemed negligible in deciding intelligibility. Aktuğ (2015) carried out a thesis study on the common pronunciation errors of seventh grade EFL learners in Turkey. The researcher selected 30 most commonly mispronounced words based on the coursebook studied and general impression on the errors of EFL learners. 80 seventh grade students were asked to read 30 sentences including the 30 keywords and the voice recording was done digitally.

A rubric was prepared sampling the pronunciation of all the words to be studied together with their segmental (vowels and consonants) and suprasegmental (word stress) considerations. In the evaluation period of the study, the researcher resorted to one native and two non-native teachers' help. The analysed data were merged with the interviews of five teachers. The findings presented five problematic words: knowledge, enough, find, cultural and foreign affecting the vowel quality. The vowel phonemes that posed the most prominent problems were /ɒ/, /ɪ/, /ʌ/, /ə/, /ɔ/ and /aɪ/. The consonant quality was demonstrated by errors in the words enough, knowledge, use, three and whole. The problematic phonemes were /f/, /dʒ/, /z/, /θ/ and /h/. Toscu (2019) explored Turkish English as a foreign language instructors' awareness of the syntactic and morphological variation in British English (BrE) and American English (AmE). The data were collected through a survey which was administered to 38 EFL instructors working at preparatory schools of different universities. The participants were asked to analyze 49 sentence-pairs in the survey to decide whether given sentences were correct or incorrect. The results indicated a) that the participants were better at recognizing the morphology and syntax of BrE than AmE, b) that of all the participants, the ones who were exposed to both varieties were better at recognizing the different uses of the syntactic and morphological forms in BrE and AmE than the ones exposing to the forms only in one variety, c) that the departments the participants graduated from did not have an impact on the recognition of the differences between BrE and AmE in syntax and morphology.

Bardakci (2015) conducted a classroom research to detect pronunciation problems of Turkish EFL pre-service teachers. The researcher observed a total number of 22 first-year students in an ELT program in Turkey. In the first week of the class, the researcher introduced IPA symbols to the learners, and they dwelled on problematic sounds with specific attention in the preceding three weeks. After the training, the students were asked to give presentations on the desired topics to last for 20 minutes. The presentations were videotaped, and each video was studied for mispronounced words by both the student and the researcher. The exhaustive lists prepared by the learners and the researcher were merged and a total of 120 words were delineated. The most prominent features of the mispronounced words were jotted down, and 137 occurrences of faulty sound productions were listed. Schwa /ə/ sound constituted the greatest proportion of the list by 39.42%; diphthongs were second largest erroneous sounds with 15.32%; /æ/, /w/, /r/, /ŋ/ and /θ/ were the other most frequent mispronounced errors respectively. The researcher also pointed out that schwa sound has the closest counterpart in Turkish vowel inventory which is /u/, a filler used in natural conversations. The results also made it clear that Turkish EFL learners were able to produce the schwa sound or a sort of approximation of it more successfully when the sound is in word-final position. The word-initial schwa sound, on the other hand, caused greater difficulty for the learners.

Şimşek and Karal (2014) developed a computer-assisted pronunciation and articulation software called ALPI. The Audiovisual Language Pronunciation Instrument (ALPI) modelled 43 English sounds with the help of a 3D head model designed with visual and aural clues. The transparent mouth feature of the software made it possible for the learners to see and model the exact points and manner of articulation. As a case study to check the effectiveness of the software, the researchers pinpointed six often cited problem causing sounds in English: /æ/, /θ/, /ð/, /ŋ/, /w/, /əu/. They carried out the study at Karadeniz Technical University in Turkey with 55 prep class students. ALPI was deemed effective and useful for classroom use with teacher guidance as it led to a significant betterment between pre and post-test results of the learners. Dikilitaş and Geylanoğlu (2012) studied the fossilized phonemes of English which are *schwa* /ə/, voiced and voiceless *th* /ð/, /θ/ and *ng* /ŋ/. A total number of 24 EFL students studying at a university in Turkey were given 10 words for each of these phonemes and their voice was recorded as they read aloud the items. The results demonstrated that Turkish foreign language learners of English have serious difficulties in pronouncing these four phonemes. Bekleyen (2011) conducted a study to analyse learner sound errors in the tertiary level. The

mixed design study involved recording 43 learners in class time, studying the sound problems and interviewing the students about the errors they were committing. The findings presented problems caused by non-existent words in the native language, borrowed words from French, Latin or Greek, words that may be pronounced in two different ways, silent letters, and Turkish orthography.

Türker (2010) carried out a diagnostic study with 733 high school students studying in Çanakkale/Turkey. The researcher gathered a corpus of 2 sentences and 65 single word items including all the vowels, consonants and diphthongs of English using a coursebook they had studied before. After the data collection, all the waveforms and transcriptions were studied individually to come up with common mistakes of secondary students. The results were supportive of previous research on the field signalling the most problematic sounds as /ð/, /θ/, /ŋ/, /ɜ:/, /ə/, /əʊ/, /ʊə/ with over 80% error rate. The most prevalent errors included items like ‘those, birth, telephone, boat, bath, joke’ with 95% for all participants. The researcher also indicated Turkish as the source of errors based on non-existent sounds, loan words and different connotations of some words between English and Turkish. Ülkersoy (2007) conducted a study to determine the phonological errors of Turkish EFL learners sampling 52 sophomores at Çukurova University in ELT department. The pre-test provided the learners with a list of 60 words to be read aloud including sounds that would present sound errors rooted in L1 interference. A treatment program was designed packed with extensive error analysis and detailed comparison of Turkish and English phonological structures. With another list of 60 words, students were observed for significant differences in their pronunciation performance. In terms of problems for consonants, inter-dental fricatives /ð/ and /θ/, word-final stops /b/, /d/, /g/, the /w/ sound, the velar nasal /ŋ/, the dark-l /l/ and the American English flap /ɾ/ were listed as problem causing phonemes in environmentally marked manner. Problematic vowels were ash /æ/, schwa /ə/ and /ɛ/ while confusion was vivid for /ʌ/ and /a/.

Hişmanoğlu (2004) added to the field with one of the most comprehensive studies in Turkey. The dissertation presented an in-depth analysis of pronunciation teaching in Turkey, approaches, methods, techniques of pronunciation teaching and testing it. The researcher also came up with techniques, activities, drills and pedagogically mastered texts to deal with teaching problematic English consonants and vowels to Turkish learners of English. The methodology of the dissertation included determining the problematic sounds of 88 ELT first-year students at Hacettepe University and a treatment program by teaching theoretical phonetics to both groups of students using Demirezen (1987) coursebook. The researcher used “The Chaser”, a short story by John Collier, as the pre-test and post-test instrument and came up with impressionistic errors of the Turkish learners of English. The errors for consonants were most prominent for /ð/ 100% and /r/ 95%, /b/ 92%, /θ/ 82%, while the list went on with /dʒ/, /g/, /ŋ/, /d/, /l/, /v/, /w/ in descending order down to 5%. On the other hand, the most problematic vowels were /æ/ 100%, /ɛ/ 87%, /o/ 87% while less than half of the students produced sound errors for /ʊ/, /ʌ/, /eɪ/, /i/, /u:/, /aʊ/ and /ɔ:/. Regarding the reasons why Turkish learners face these errors, the dissertation presented seven sub-categories.

- When an English consonant or a vowel is non-existent in the sound system of Turkish.
- When an English consonant is in free distribution while the Turkish counterpart is not.
- When the place and manner of articulation of a consonant phoneme differ in the two languages.
- When the units of measurement like tongue height, tongue position, lip rounding, tenseness and length qualities differ in the two languages.
- When the English phonological rules contradict with the Turkish phonological rules (e.g. Voicing of /t/ intervocally in English).
- When the allophones of an English consonant are non-existent in Turkish.
- When the phonotactic rules in English contradict with those in Turkish. (pp. 778-779).

The researcher chose to diagnose the sound problems using a story which is similar to the current study. He pointed out the advantages of the text stressing on its authenticity, the inclusion of

almost all of the problematic English consonant and vowel phonemes in varying positions and the inflectional morphemes (past tense, plurality, third person singularity) in a meaningful context.

Gültekin (2002) handled the pronunciation problems of Turkish students from the suprasegmental angle. The researcher tested intelligibility of 20 first-year students in their simultaneous speech practices at an ELT department in Turkey. The students were voice-recorded as they were delivering talks on impromptu speech topics for at least 3 minutes. 10 native speakers rated the students' speech based on remarks of Speech Intelligibility Index and The Check List of Errors of the Accent Inventory by Prator and Robinett (1972). The results presented 16 of the 20 speakers as either reasonably or largely intelligible. The problematic areas were listed as failure to blend well, stress in the wrong syllable, unnatural intonation, improper division of sentences and improper sentence stress. Kaçmaz (1993) set out to find pronunciation problems of Turkish learners of English. The researcher used the Prator and Robinett's Accent Inventory (1972), which included 11 sentences in prose form, as the elicitation text. 30 second-year students from the ELT department of Dokuz Eylül University participated in the study. The recordings of the participants were listened to by the researcher to pinpoint problems in particular phonemes and the learner strategies to cope with the problems were also noted down. The results put forward five cases in which participants faced problems producing the target phoneme.

- When an English phoneme was in free distribution whereas the Turkish counterpart was not.
- When an English phoneme was non-existent in Turkish.
- When the place and manner of articulation of a phoneme differed in the two languages.
- When the allophones of a phoneme were non-existent in Turkish.
- When the Turkish phonotactic rules contradicted the English phonotactic rules (p. 31)

The above-mentioned cases usually led the students to adopt strategies to cope with the problems which are substituting the target sound with a similar sounding Turkish one, deleting the problem causing phoneme and adding an extra Turkish phoneme between, before or after the English phonemes. The researcher also noted sound problems on the following phonemes respectively from 90% to 26% of all participants: /dʒ/, /ŋ/, /ə/, /æ/, /w/, /eɪ/, /r/, /n/, /aɪ/, /d/, /i:/, /ou/, /ɔ:/, /t/, /ð/, /θ/, /st/, /ər/, /e/, /ʌ/.

In his study trying to delineate interlingual transfer of Turkish, Japanese and Arabic adult speakers, Bada (1993) presented phonemic contrasts related to Turkish. The participants for the Turkish context included 22 prep-year students of ELT department at Çanakkale University in 1990-1991. The researcher gathered a problematic list of marked and unmarked sounds through minimal pairs for Turkish and in the second step of the research, the students were asked to read aloud 38 sentences including the sounds detected. Relying on the results, the change from /d/ to /t/ was prevalent in word-final position with a percentage of 70.3; whereas word-initial and word-medial occurrences were showed precise correctness with 0 changes to /t/ out of 462 occurrences. The discrepancy between the /w/ to /v/ sound was shown significantly in word-initial and word-medial position by 79.1%. One of the most problematic phonemes was /ð/, which displayed replacement to /d/ by 100% percent in word-initial position. It was also replaced with /d/ in word-medial position, with /t/ and /θ/ in word-final position. Some other replacements were also noted for /θ/ to /t/ at all positions; /f/ to /v/ word-finally; /ŋ/ to /nk/ word-finally. Regarding the vowels, the most prominent replacement was tabulated for /æ/ to /e/ signalling a difficulty for Turkish learners with the long vowels. Vowel shortening was also vivid and significant for /i:/ with /i/; /u:/ with /u/; /ɔ:/ with /o/, /a/ and /e/. Schwa /ə/ was also replaced with /e/ and /o/ occasionally.

Finally, Swan and Smith (2001) compiled the book "Learner English" which covered the common errors of 22 nations learning English. Turkish context was handled by Thompson (2001) who came up with a detailed list of phonetic errors that Turkish EFL learners commit both segmentally and suprasegmentally. The erroneous points for vowels and consonants could be summarised as follows.

- /i:/ as in *key* is often replaced with /ɪə/, or in a closed syllable as /ɪ/; *kip* for *keep*.
- /e/ in *bed* is often far too open before *n*, approaching /æ/: *man* for *men*
- /æ/ as in *back* plagues Turkish speaking learners, often substituted by /e/: *set* for *sat*
- /ɔ:/ is often pronounced as /oʊ/ leading to confusion between *law* and *low*.
- /u:/ is converted into /oʊ/ word finally or /ʊ/ in closed syllables: /doʊ/ for *do*; ‘*pullink*’ for both *pooling* and *pulling*
- /ə/ is nearly equivalent to Turkish *ı*, which is higher and tenser though. Turkish speakers usually give unstressed vowels their stressed value: /ɪnkonwɪnɪnt/ for *inconvenient*.
- /eə/ as in *care* is usually formed with /eɪ/.
- /θ/ and /ð/ do not occur in Turkish and they are often replaced by /t/ and /d/: /truə/ for *through*.
- Turkish /b/, /d/ and /dʒ/ become voiceless in word final position and /g/ does not occur finally: *bet* for *bed*, ‘*britch*’ for *bridge*.
- Turkish /v/ is articulated more lightly than the English equivalent, and with back vowels is close to /w/. Turkish alphabet does not include *w*, and the loan words are written with *v*, so two sounds are usually confusing for learners: ‘*surwiwe*’ for *survive*, ‘*vait*’ for *wait*.
- /ŋ/ occurs before /g/ and /k/ as ‘*singgingk*’ for *singing*.
- *R* is pronounced wherever it is written, and three varieties of /r/ do not resemble the standard British /r/.
- Turkish has dark /l/ as in *tell* and clear /l/ as in *let*. However, their distribution is not the same, so mistakes may be observed with the use of dark /l/ for clear /l/ before vowels and clear /l/ for dark /l/ before consonants.

Final /m/, /n/, and /l/ tend to be pronounced very short and devoiced (pp. 215-216).

2. METHOD

2.1. Research Model

Major research question: What are the problematic sounds of senior pre-service English language teachers in Turkey?

We adopted a quantitative approach to describe the sound problems regarding vowels, consonants and syllable structure changes of to-be-English teachers in Turkey at their senior year at universities. As the study aimed to reflect the overall image of the teacher candidates, no intervention was planned, and descriptive research design was followed. The gathered data were analysed in three steps. In the first step, the researcher listened to the recordings and made a list of impressionistic sound problems. The second step involved getting an expert view which paved the way to interrater reliability test. After attaining interrater reliability, the researcher dwelled on each sound problem on its own. In the third step, problematic sounds were listed by occurrences in the text, and each sample was listened to over and over to present a thorough and detailed list for each problem statistically.

To answer the research question, the researcher listed all the mispronounced words, and studied them statistically. Major accents of English (American English) and (British English-Received Pronunciation) were used as guidelines for detecting sound problems. The underlying factors for mispronunciation were presented with reference to previous studies and the literature on the topic.

2.2. The Universe and the Sample of the Study

It is known that adult foreign language learners are less likely to reach a similar proficiency level than the native speakers of the target language. This situation is vivid when pronunciation is the case making accented speech a norm and native-like accents quite rare (Levis & Barriuso, 2012). The current study tries to provide a recent image of the segmental sound problems of non-native English teachers in Turkey prior to their service and to present how proficient they are for their students as a model. As Lin (1976) suggests the ideal for a study like this is to include all pre-service English language teachers in Turkey which is the universe for the current study. However, with time, workload

and accessibility concerns, choosing a sample to represent the universe is a common process resorted by many researchers. Convenience sampling type was used to make the universe of the study more manageable.

The data were gathered from three state universities in Turkey in May 2018. The researcher arranged meetings with the participants and a total of 66 pre-service English teachers were digitally recorded as they read aloud an elicitation text. All the participants were senior students from the English Language Teaching Departments of the universities chosen within the bounds of accessibility. All three universities have similar course packages when compared in terms of pronunciation training. They offer compulsory Listening and Pronunciation 1-2 courses to their students in the freshman year for 3 hours a week. Moreover, the ELT department at Burdur Mehmet Akif Ersoy University provides Phonetics and Phonology courses compulsory in sophomore year and elective in the senior year. As shown in YÖK Atlas (2018), the average foreign language score of the students who are admitted to the three departments is 68.8/80 for Akdeniz University, 63.5/80 for Süleyman Demirel University and 59,6/80 for Burdur Mehmet Akif Ersoy University.

The demographic information and distribution of the participants are presented in Table 1.

Table 1. Demographic information about the participants

Gender	f		Institution	f		Age		f	
		%			%		%		%
Female	42	63,6	Akdeniz University	25	37,9	21-29	62	93,9	
Male	24	36,4	Süleyman Demirel University	22	33,3	30-42	4	6,1	
			Burdur Mehmet Akif Ersoy University	19	28,8				
Total	66	100	Total	66	100	Total	66	100	

2.3. Instruments

The current study tries to provide a recent image of the segmental sound problems of non-native English teachers in Turkey prior to their service and to present how proficient they are for their students as a model. As Lin (1976) suggests the ideal for a study like this is to include all pre-service English language teachers in Turkey which is the universe for the current study. However; with time, workload and accessibility concerns, choosing a sample to represent the universe is a common process resorted by many researchers. Convenience sampling type was used to make the universe of the study more manageable.

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2.4. Data Collection Procedure

The researcher prepared two forms to collect data from the participants. The consent form included basic information about the goal of the study, how the data will be kept confidential together with the instructions on how to complete the recording process. This form also had a part in which the participants were asked to write their names and sign to show their consent to take part in the study.

The second form was used to collect data from the participants. It started with open-ended questions that would summarise the language background of the participant. The elicitation text to be read aloud was presented to the participants with this form. The researcher planned meetings with the students at a quiet classroom or office and provided the participants with the texts 5 minutes prior to recording. The participants were invited two by two, and after filling out the demographic variables, they were recorded electronically as they read aloud the text. Each recording process took for about 3 minutes and data collection period was completed in 15 days in all of the three institutions by the researcher himself. After the data were collected, all the information provided by the participants and the recordings gathered was organised on Microsoft Excel sheets giving each participant a pseudonym.

2.5. Analysis of the Collected Data

The analysis of the data was completed through two phases: impressionistic and detailed. In the impressionistic phase, the researcher listened to all of the recordings attentively one by one using noise reducing headphones. The data was tabulated as a Microsoft Excel document, and the major sound problems were noted down by the researcher. At the same time, 12% of the sample (8/66) was randomly selected and presented to an expert with a PhD in English Language Teaching. The expert has 13 years of teaching experience and has taught Linguistics, Applied Linguistics, Listening and Pronunciation and Speaking Courses at undergraduate and graduate schools of a public university in Turkey. The sound problems noted by the expert was regarded as the constant, and the data provided by the researcher were compared and contrasted for each participant separately.

Inter-rater reliability (IRR) is known as the level of agreement between raters. IRR is measured close to 1 (or 100%) if the raters agree on the item and in case of a disagreement, IRR is 0 (0%). Among several methods for calculating IRR, percent agreement was chosen for the current study. The comparison of the raters' scores ranged from 1.00 to 0.57 with a mean of 0.76 which meant that there is a high level of agreement between raters (Landis & Koch, 1977).

Having ascertained the most notable sound problems of the participants, the research went on to design a list of items which included the problematic sounds. A separate sheet was prepared for each sound problem, and the words including the problem were given a numerical value. Each recording was listened to attentively many times for the specific sound in detail. At times, this process required the researcher to listen for the specific sounds of each sample for over 20 times as some sound problems had numerous occurrences in the elicitation text. After the data were analysed, they were shown in frequencies and percentages.

3. FINDINGS

Starting with a general overview of sound problems, each sound problem was handled on its own and statistical data were provided in tables. The tables were also enriched by brief explanations.

3.1. Impressionistic Overview of Participants' Errors

The first step in the data analysis was to study recordings for general sound problems. The findings of the researcher and the expert were contrasted, and a list of 11 sound problems was pinpointed. Table 2 depicts the overall image of the errors committed by sixty-six senior ELT students at three universities in Turkey.

Table 2. Distribution of major sound problems

Sound problem	f	%
devoicing	66	100
/r/	65	98
/ð/	64	97
/w/	64	97
/ə/	64	97
/oʊ/	63	95
/θ/	61	92
/æ/	61	92
vowel shortening	55	83
/ŋ/	51	77
vowel insertion	47	71
/l/ gemination	41	62

The frequencies in the table show the number of pre-service teachers who had the related sound problem at least once in the elicitation text. The research delineated /ə/ (97%) and /æ/ (92%) phonemes as the most problematic vowels for pre-service teachers in Turkey, whereas vowel shortening and vowel insertion were noted as major problems concerning correct vowel pronunciation. The problems with consonants were noted with /r/ (98%), /ð/ (97%), /w/ (97%), /θ/ (92%), /ŋ/ (77%) phonemes. Word-final stop devoicing (100%) and /l/ gemination (62%) were pinpointed as the major problems regarding consonantal mispronunciation.

Devoicing, which entails a change in English voiced consonants to unvoiced ones, is noticed as a common problem for all the participants. It is also clear from the table that /r/ phoneme is mispronounced by almost all of the participants (98%) having no similarity to British or American [r] sound. Problems with /ð/, /w/, /ə/ phonemes and vowel shortening share similar frequencies (64/66), although this did not mean that the same 64 participants were having problems with every occurrence of the related sound. Each sound problem listed above were regarded in their own in the following sections, and they are presented in detail.

3.2. Devoicing of Word-Final Consonants

Table 3 shows the learner errors grouped as devoicing of the word final consonants.

Table 3. Problematic items including devoicing of word-final consonants

Problematic Item	f	%
'big'	55	83
Plural suffix (8 times)	52	79
'please'	48	73
'manage'	37	56
'five'	36	55
'garage'	25	38
'Bob'	22	33
'bag'	21	32
'red'	17	26
'cheese'	14	21
'verge'	14	21
'slab'	11	17
'kid'	8	12
'need'	6	9

‘and’	6	9
‘frog’	5	8
‘seemed’	3	5
Devoicing at least once	66	100

As mentioned before, devoicing of word-final stops is a presumed error for Non-native speakers of English with a Turkish background. It is therefore expected that the participants pronounce voiceless counterparts of /b/, /d/, /g/ which are /p/, /t/, /k/. This consideration was validated in the results as the word ‘big’ was mispronounced by 83% of the participants. The formation of many participants was closer to /bɪk/ rather than /bɪg/. The same problem was observed with the words ‘bag’ /bæg/ to /bek/ and ‘frog’ /frɒg/ to /frok/ to with 32% and 8% error rates respectively. Devoicing of /b/ was noticed in the word ‘Bob’ /bɒb/ by 33% and ‘slab’ /slæb/ by 17%, which were turned into /Bɒp/, /Bap/ and /slep/ or /slæp/ at times. Devoicing to /t/ in place of /d/ was mostly at high frequency for ‘red’ /rɛd/ to /ret/ by 26% followed by ‘kid’ ‘need’ and ‘seemed’.

The table for devoicing also presents data that the participants devoice voiced fricatives /v/, /ð/, /z/, /ʒ/ to voiceless counterparts /f/, /t/, /θ/, /s/, /tʃ/. Plural suffix ‘s’ was devoiced to /s/ by 79% of the participants whereas ‘please’ /pli:z/ was devoiced to /plɪs/, /puli:s/ or /pli:s/ by 73%. English voiced affricate /dʒ/ was pronounced with a /tʃ/ in words ‘manage’ ‘garage’ and ‘verge’ reaching to 56% with /mænrtʃ/. The text included 24 points of detection where word-final voiced consonants could be tested for devoicing. Overall, there wasn’t a single participant who performed perfectly in terms of voicing word finally.

3.3. /r/ Sound

Examining the sound problems regarding /r/ phoneme, rhotic and non-rhotic versions of the words were taken into consideration. Received Pronunciation (RP) transcription of the word ‘brother’ /brʌðə/ and General American transcription /brʌðər/ was used as guidelines to compare the pronunciations of the participants. Table 4 shows that pre-service teachers studying at the three universities in Turkey, approximate their pronunciation to neither of the major accents of English. As noticed in the word ‘brother’, 98% of the participants pronounce /r/ phoneme word-finally which is not the case in non-rhotic accents. Moreover, they fail to pronounce the rhotic ‘r’ as in the General American, which entails the tip of the tongue to arch backwards and the oral cavity to be constricted at sides (Demirezen, 1987).

Table 4. Problematic items including /r/ sound

Problematic Item	f	%
‘brother’	65	98
‘her’ (3 times)	64	97
‘store’	64	97
‘for’ (2 times)	64	97
‘verge’	64	97
‘under’	64	97
/r/ sound problem at least once	65	98

It is clear in the table that the participants opted for using the voiced dental lateral /r/ whenever the sound was presented. Only one participant was flawless in pronouncing all nine of the /r/ sounds, presented word-finally or at coda position in the text, using RP.

3.4. /ð/ Sound

Table 5 shows the sound problems regarding the voiced interdental fricative /ð/.

Table 5. Problematic items including /ð/ sound

Problematic Item	f	%
'brother'	64	97
'the' (6 times)	63	95
'these' (2 times)	60	91
/ð/ sound problem at least once	64	97

/ð/ is a voiced inter-dental fricative which causes problems for NNESTs. Table 3.4. shows the word 'brother' was the most problematic word carrying the /ð/ sound word-medially. Mostly, the participants changed the /ð/ to /d/ when pronouncing the word as in /brʌdər/. The other changes were in the same direction for the rest of the total nine occurrences of the /ð/ in the text. The sample included only two participants who did well in all of the nine occurrences of the sound.

3.5. /w/ Sound

Table 6 shows the sound problems of the participants regarding the mispronunciation of the replacement of the voiced bilabial glide /w/ to voiced labio-dental fricative /v/. The text included nine occurrences of the target sound six of them being word-initially and three word-finally. It was found that /w/ is hard to produce at both of the positions, whereas the participants had relatively fewer problems pronouncing the bilabial glide with enough lip-rounding word-finally.

Table 6. Problematic items including /w/ sound

Problematic Item	f	%
'Wednesday'	62	94
'we' (2 times)	59	89
'snow'	57	86
'with'	56	85
'will'	52	79
'willow'	52	79
'yellow'	44	67
/w/ sound problem at least once	64	97

The word 'yellow' was the item with the fewest mispronunciations with 67% error rate. The participants often tended to replace the /w/ sound with /v/ instead of using a diphthong word-finally as in: /jɛlloʊ/ for /jɛləʊ/ and /snov/or /sunov/ for /snəʊ/.

3.6. /ə/ Sound

Table 7 presents the detailed list of items bearing the most problematic vowel for the participants by 97% error rate. The elicitation text included the target sound schwa /ə/ word-finally in 'Stella'; word-medially in 'garage'; at the last syllable of a word as in brother, 'station' and 'under' positions together with weak forms of function words: 'a', 'the', 'for', 'from' 'can', 'her', 'to' and 'and'. It is seen in the table that 95% of the participants had problems producing the correct form of the word 'Stella' /stɛlə/. Participants showed a tendency towards changing the schwa /ə/ which is an unstressed mid-central vowel in English vowel chart to Turkish low back unrounded vowel /ʌ/: /stɛlʌ/ or /stɛllʌ/. Similarly, the replacement that 76% of the participants made in the item 'garage' was with /ʌ/: /gʌrʌʒ/ instead of /gərə:ʒ/. Schwa /ə/ in the last syllables was usually replaced with Turkish high unrounded back vowel /u/ as in 'brother' by 68%, 'station' by 52% and 'under' by 48%.

Table 7. Problematic items including /ə/ sound

Problematic Item	f	%
'Stella'	63	95
function words	62	94
'garage'	50	76
'brother'	45	68
'station'	34	52
'under'	32	48
/ə/ sound problem at least once	64	97

A total of 94% of the participants failed to use the weak forms of function words with the target sound schwa /ə/. The replacements were noted between /ə/ to /ɛ/ as in 'a'; /ə/ to /ʊ/ as in 'the'; 'for' /ə/ to /o/ as in 'for'; 'can' /ə/ to /u/ as in 'to' and /ə/ to /œ/ as in 'her'.

3.7. /oo/ Sound

Table 8. Problematic items including /oo/ sound

Problematic Item	f	%
'go'	59	89
'snow'	57	86
'willow'	39	59
'yellow'	30	45
/oo/ sound problem at least once	63	95

Table 8 shows the items that the /oo/ phoneme was tested for its correct production in the elicitation text. Among the three occurrences word-finally, 'go' was noted to be the most problematic one with 89% faulty production. The participants usually tended to skip the lip rounding at the end of the words. The formations they came up with mostly had just Turkish rounded back low vowel /o/. Overall, the sample included only three participants who did well in every occurrence of the target diphthong /oo/ as in /goʊ/, /jɛloʊ/ and /wɪloʊ/.

3.8. /θ/ Sound

Table 9 presents the learner errors regarding the voiceless interdental fricative /θ/.

Table 9. Problematic items including /θ/ sound

Problematic Item	f	%
'with'	58	88
'three'	57	86
'things'	53	80
'thick'	46	70
/θ/ sound problem at least once	61	92

/θ/ is a voiceless interdental fricative and it was tested at two positions in the elicitation text; one word-finally and three word-initially. Of the four occurrences of the sound, the most problematic word was shown to be the word 'with' with 88% mispronunciation. Oftentimes, the participants replaced /θ/ with the voiceless dental stop /t/ which is specific to Turkish consonant chart. The wrong formations included /vɪt/ or /wɪt/ for /wɪθ/; / tri:/ or /tuɾi:/ for /θri:/; /tɪŋz/ or /tɪŋks/ for /θɪŋz/ and /tɪk/ for /θɪk/.

3.9. /æ/ Sound

/æ/ is a wide-open, front low and short vowel in English vowel chart. The vowel was tested at five different environments in the elicitation text. As is clear from Table 10, /æ/ phoneme caused great problems for pre-service teachers in the current research. Of the 66 participants whose voice recordings were analysed, only five of them were flawless in producing the target sound at every occurrence of it. The faulty pronunciations often included replacing the target sound /æ/ with /ɛ/, an unrounded front low vowel in Turkish vowel chart. The word ‘bags’, in this sense, was pronounced as /bægz/ or /bɛks/ instead of /bægz/ by 89% of the participants.

The low frequency for the item ‘ask’ was rooted in the participants’ choices of accents RP or GA. In American English, the word is pronounced as /æsk/, whereas in British English it is /ɑ:sk/. The frequency and the percentage shown in the table covered only those who hadn’t approximated their accents to British English with such productions as /ɑ:sk/ or /ʌsk/.

Table 10. Problematic items including /æ/ sound

Problematic Item	f	%
‘bags’	59	89
‘snack’	58	88
‘slabs’	52	79
‘plastic’	50	76
‘ask’	32	48
/æ/ sound problem at least once	61	92

3.10. Vowel Shortening

Vowel shortening was noticed in the following items shown in Table 11.

Table 11. Problematic items including vowel shortening

Problematic Item	f	%
‘garage’	35	53
‘call’	27	41
‘store’	26	39
‘scoop’	24	36
‘these’	21	32
‘need’	12	18
‘please’	10	15
‘meet’	7	11
‘three’	6	9
‘spoons’	5	8
‘cheese’	5	8
‘peas’	3	5
vowel shortening problem at least once	55	83

Vowel shortening is regarded as a sound problem caused by replacing the long vowels with short ones. It was tested at 12 different items in the elicitation text. Table 11 shows the most commonly shortened vowels of the pre-service NNESTs. It was seen that 83% of the participants shortened at least one of the tested vowels /ɔ:/, /u:/, /i:/ and /a:/. The number of participants who did well at all of the 12 items was 11, which constituted 17% of the sample.

3.11. /ŋ/ Sound

Table 12 shows the detailed list of words including the voiced velar nasal /ŋ/ that seemed to have caused a major problem for 77% of the participants. /ŋ/ phoneme is not found word-initially, so it was tested word-finally five times in the elicitation text. The word ‘bankrupting’ was noted as the most problematic formation in that the participants usually chose to pronounce the last [g] sound as /g/ or /k/: /bɛŋkrʌptɪŋk/ or /bɛŋkrʌptɪŋg/ instead of /bæŋkrʌptɪŋ/. As for the second word in the list, ‘things’ was mispronounced by 58% of the participants together with devoicing of the plural suffix: /tɪŋks/ or /θɪŋks/ rather than /θɪŋz/.

Table 12. Problematic items including /ŋ/ sound

Problematic Item	f	%
‘bankrupting’	42	64
‘things’ (2 times)	38	58
‘challenging’	12	18
‘bring’	11	17
/ŋ/ sound problem at least once	51	77

3.12. Vowel Insertion

Table 13 shows the list of words that are mispronounced by the participants by adding an extra vowel sound, therefore causing a change in the syllable structure. This problematic case was tested at twenty different points in the elicitation text most of which being word-initial consonant clusters. All of the participants did well with five of the tested words which were ‘spoons’, ‘plastic’, ‘snake’, ‘frog’ and ‘station’. It is deduced from the table that 19 of the participants had no problem with any of the tested words in terms of vowel insertion. The remaining 47 participants (71%) tended to add an extra vowel in some words most of which cumulating around the item ‘Wednesday’ by 53%. The formations the pre-service teachers came up with included /vɛnuuzdeɪ/, /vɛdnuzdeɪ/, /vɛdnɪzdeɪ/ or /vɛtnuzdeɪ/ rather than /wɛnzdeɪ/. Adding the extra /u/ sound, which is a Turkish unrounded high back vowel, was seen to be the case at words with initial consonant clusters like ‘snack’ and ‘brother’; /suɪnɛk/ for /snæk/ by 18% and /buɪrʌduɪ/ for /brʌðə/ by 9%.

Table 13. Problematic items including vowel insertion

Problematic Item	f	%
‘Wednesday’	35	53
‘snack’	12	18
‘please’	11	17
‘scoop’	8	12
‘brother’	6	9
‘bring’	6	9
‘three’	5	8
‘trees’	5	8
‘slabs’	4	6
‘train’	3	5
‘from’	1	2
‘store’	1	2
‘fresh’	1	2
‘snow’	1	2
vowel insertion problem at least once	47	71

3.13. /l/ Gemination

Table 14 shows the points of errors for gemination of the consonant /l/.

Table 14. Problematic items including /l/ gemination

Problematic Item	f	%
'Stella'	35	53
'yellow'	28	42
'willow'	22	33
/l/ gemination sound problem at least once	41	62

/l/ gemination is a sound problem that could also be accepted as a consonant insertion that affects the syllable structure. As is provided in Table 14, 62% of the participants fell into this error. The word 'Stella' was seen to be the most problematic item in terms of gemination as 53% of the participants pronounced the word like: /stellʌ/ instead of the correct version /stelə/. According to the table, 'yellow' as /jellov/ and 'willow' as /villov/ were the other flawed formations by 42% and 33% error rate respectively.

4. DISCUSSION AND CONCLUSION

4.1. Discussion

This study was shaped around one research question to describe the sound problems of the end-products in ELT higher education in Turkey who are studying at more than 130 private and public universities, reaching up to 4800 in number at each level (YÖK Atlas, 2018). The informants were selected from three universities that were chosen on the basis of accessibility. Each informant was recorded digitally reading aloud a structured elicitation text and the problematic sounds were noted down as tabulated in the findings chapter. The research question was divided into three categories dwelling on consonants, vowels, and diphthongs separately.

Research question: What are the problematic sounds of senior pre-service English language teachers in Turkey?

As pointed out in the findings, the problems related to consonants concentrate around 6 points resulting in a consonantal change. The pre-service teachers of English in Turkey change voicing word-finally and they have problems pronouncing the /t/, /ð/, /w/, /θ/, and /ŋ/ consonants correctly. Because of the rule that the words do not end in voiced consonants in modern Turkish, devoicing of word final voiced consonants is regarded as a marked error point in Ülkersoy (2007). The loan words or Arabic origin names are therefore pronounced and written with voiceless counterparts of the original ones as in Arabic 'kitab' to 'kitap', 'book'. Voicing is allowed only when a vowel suffix follows: 'kitaba' (book-dative).

Devoicing was tested at 24 word-final voiced stops, fricatives and affricates in this study. As noted before, all the informants fell into devoicing error at least once in any of the 24 points of detection. Words ending in voiced stops: 'big', 'bags', 'Bob', 'red', 'need', 'seemed' were changed to voiceless stops as in /bik/, /beks/, /Bop/, /ret/, /ni:t/ and /si:mt/. One point to be mentioned about devoicing at this point was environmental markedness which was proposed by Eckman (1977) who remarks word-final position as the most marked environment for voice contrasts. Devoicing of the same voiced velar stop /g/ in the item 'big' was noticed at a much higher proportion than 'bags' by 83% to 32%. In the elicitation text, the word following 'big' is 'toy' which starts with a voiceless labiodental stop /t/ which may have made speakers approximate the previous voiced consonant /g/ to the voiceless counterpart /k/. The word 'bags', on the other hand, is found at the end of a clause which goes on with a word starting with a vowel: 'and'.

Devoicing as a systematic error appeared to be in effect not only with voiced stops but also with voiced fricatives /v/, /ð/, /z/, /ʒ/ and the affricate /dʒ/. The higher percentages of errors with devoicing plural suffix ‘s’ (79%) and ‘please’ /pli:z/ (73%) are worth noting here as they are some of the earlier learnt pieces of language for EFL learners. Selinker (1972) explains fossilization as the situation that learners stop developing when they are able to perform well in their own context although they are lacking at their target language competence. Departing from the definition, the reason behind devoicing seen in the most common words may well be associated with faulty pronunciation input provided to learners at early stages of learning a foreign language, which is a threat warned in Demirezen (2005b).

Another underlying factor for devoicing in the Turkish context is rooted in the Least Effort Principal. Zipf’s Law of Least Effort is summarized as simplifying the speech as a result of speakers’ laziness or sloppiness (Nordquist, 2018). Voicing of word-final consonants, therefore, is accepted as an extra effort that requires vibration of the vocal cords and by devoicing, learners systematically minimize the effort they spend to get the message through. However, such productions limit intelligibility of NNESTs as in the item ‘please’ /pu:li:s/ which is pronounced more like ‘police’ /pø:li:s/. From this perspective, the findings of this study support what was put forward by Demirezen (2007b).

The last matter to be discussed about devoicing in this study is about the voiced velar nasal /ŋ/. As presented in the findings, 77% of the pre-service teachers tend to pronounce it with a combination of a nasal and a velar stop /nk/. Although the phenomenon looks like the insertion of a consonant, what works here is categorised as devoicing of the word-final voiced velar stop /g/. Apart from what is discussed here so far, this faulty production has roots on the phonetic nature of Turkish that requires speakers to pronounce every single written letter. It is stated in Thompson (2001), Demircan (1996) and Kornfilt (1997) that Turkish phonotactics allow word-final consonants by restricting their voicing. As Turkish L1 learners, the sample studied in this study followed the rules of their L1 and this affected their L2 pronunciation. The findings presented that the participants tended to devoice word-final voiced obstruents systematically as a result of transfer from their L1. This finding goes hand in hand with the results of Demirezen (2007a, 2007b) and Ülkersoy (2007) in that devoicing was regarded as a very strong effect of L1 in the Turkish context.

One of the errors foreseen for NNESTs in the related literature is approximation of the target sound to a similar sound in their native sound inventory. In Turkish L1 context, approximation is vivid for consonants /θ/ to /t/, /ð/ to /d/ and /w/ to /v/ (Demirezen, 2005). This current study took its sample from the teacher candidates of three universities in their last year to the end of the year in May 2018. Although one should admit that learning never ends; this should mean that the participants of this study are closer to being teachers of English rather than learners of it. Nevertheless, the approximation pinpointed in their voice recordings is well worth noticing. A total of 97% of them replace /θ/ with /t/ and /w/ with /v/, whereas 92% of the teacher candidates replace /ð/ with /d/.

In Lado’s (1957) Contrastive Analysis Hypothesis (CAH), L1 is seen as a barrier to production in L2. Handled together with Eckman’s (1977) Markedness Differential Hypothesis (MDH), the approximation of above-mentioned problematic sounds could be grounded on the formula that sounds that are not existent in the native language are the ones that are difficult to pronounce in the target language. In this respect, the absence of /θ/, /w/ and /ð/ in Turkish sound inventory seems to have diverted teacher candidates to the closest sounds in their native language. The procedure of approximation can also be accepted as a fossilised error for the participants of this study because after receiving hours of instruction at their phonetics and speaking courses at their tertiary education, they still fall into this error at a high percentage. The situation justifies remark of Ellis (1997) on fossilized errors: “Backsliding to errors of the early stage of development is seen as typical of fossilized errors.” (p. 34).

Previous research predicts that learners of English with Turkish L1 background may get confused using the English consonantal phoneme /l/ and its allophones dark /l/ and clear /l/.

Turkish has dark /l/ as in *tell* and clear /l/ as in *let*. However, their distribution is not the same, so mistakes may be observed with the use of *dark /l/* for *clear /l/* before vowels and *clear /l/* for *dark /l/* before consonants (Thompson, 2001. p. 216).

Kahraman (2013) and Hişmanoğlu (2004) present errors resulting from faulty production of the related sound in terms of place and manner of articulation. Our findings, on the other hand, put forward another problem for the /l/ phoneme which was, to the best of our knowledge, not mentioned before: /l/ gemination. It is a sound problem that could be accepted as consonant insertion changing the syllable structure. Majority of our participants was noted to be pronouncing both /l/ phonemes individually when they were presented together: ‘Stella’, ‘yellow’ and ‘willow’. Turkish is listed as a phonetic language with almost one-to-one resemblance between its letters and phonemes which is known as the perfect-fit (Demirezen, 1987). The reason for the /l/ gemination in English could be grounded on this perfect fit that requires learners to try to pronounce every single letter that they see. Besides this mother tongue interference, overgeneralization could also be taking effect together with fossilization of previously incorrect learning, especially ‘yellow’.

The last of the consonantal errors to be dealt with will be about /r/. English /r/ and Turkish /r/ phonemes have different places and manners of articulation. English consonant inventory bears it as an alveolar glide with many allophones like a tap, flap, trill or as a retroflex sound in as in American English. In Turkish, on the other hand, /r/ is a dental lateral which includes the apex touching the alveolar ridge tappingly. Statistical data gathered from the findings showed that pre-service English teachers did not try to approximate their accents to any of the major accents in terms of rhoticity. Only one participant was found to be using non-rhotic British accent who stated that she was born in the United Kingdom and lived there for 13 years. Morley (1987) and Demirezen (2007a) emphasize that EFL teachers need to have a native-like pronunciation that will feature as the major source of input in many foreign language teaching contexts. As attested in our findings, pre-service English teachers whose recorded data were studied, do not seem to have a native-like pronunciation in terms /r/ phoneme. Mother tongue interference get in the way, and the participants change the target alveolar glide /r/ to Turkish dental lateral /r/.

Collins and Mees’s (2003) categorisation of errors is worth revisiting when the case of the problematic /r/ sound is considered. It is proposed that sound errors should be studied under three categories with regard to their role in intelligibility; the first and the most important group causes a communication breakdown, the second group is the intelligible use of language which may bring about amusement or irritation, and the last group is about errors that may go unnoticed if we consider native-like pronunciation is imaginary. From this point of view, /r/ phoneme problem should not be regarded in the same group as the other consonantal errors mentioned in our findings since the substitution of it does not bring about communication breakdowns.

Analysis of the recorded data revealed four major sound problems associated with vowel quality. Two faulty vowel productions /ə/ and /æ/ were handled under approximation, while the other problems with vowels were dealt with under vowel shortening and vowel insertion categories. Schwa /ə/ phoneme was found to be the most challenging for the participants as only two of them produced it correctly at all occurrences. It is shown in the literature that schwa is a fossilized pronunciation error for learners with the Turkish L1. Demirezen (2010) presents reasons for the fossilized schwa problem which show the importance of this error. The first reason is the non-native speaking teacher as the input. This supposition is supported in our findings in that being pre-service teachers of English, our participants also commit many errors with this particular sound. Another reason was noted as

codability in the native language which enables learners to code the target sound with a similar one in their native language inventory. Turkish vowel inventory has a high back unrounded vowel /u/ which is close to English schwa /ə/ and this leads learners to switch to the previously learnt item, which is termed mother language interference. Mother tongue interference was attested in our findings with items ‘brother’, ‘station’ and ‘under’ whose target schwa /ə/ phonemes were replaced with /u/. For the items, ‘Stella’ and ‘garage’, phonetic feature of Turkish language led our participants to replace the word-final schwa /ə/ to /ʌ/ and the one in the word-initial unstressed syllable to /ʌ/.

As shown in the findings, function words were ranked the second most problematic for the target schwa /ə/ phoneme. Schwa in English is defined as a weak and reduced vowel which takes the place of all unstressed vowels in connected speech. The majority of our participants (94%), on the other hand, pronounced the function words using the strong form at least once in the elicitation text. From this perspective, our findings go hand in hand with Sustarsic (2007) who showed that even native speakers of English pronounce ‘and’, ‘at’ ‘for’ and ‘a’ using the strong form in the ‘Please Call Stella’ elicitation paragraph.

Another problem that appeared in the findings was about the English vowel /æ/ which is described as low front and unrounded. What makes it specific to English is its wide-open nature which, therefore, makes it a marked vowel in the Turkish context. As it is a vowel that is non-existent in Turkish vowel inventory, our participants referred to their L1 and transferred the closest sound to the target one which happens to be /e/ this time: a low front but not as open vowel. The strategy that the participants were applying here could be grounded in the way NNEs in Turkey pronounce the definite article ‘a’ as /e/. Taking overgeneralisation to the foreground; ‘bags’, with the same letter orthographically, gets pronounced as /begz/. Ülkersoy (2007) regards this as a fossilized error that was learnt in the language classroom and our findings prove that it has not yet been erased from the interlanguages of the senior pre-service English teachers.

It is proposed in McAllister, Flege and Piske (1999) that speakers whose native language does not include long and short vowel contrast, are prone to having problems learning those contrasts in the target language (cited in Ülkersoy, 2007). Departing from this proposition, vowel shortening could be a predicted error for Turkish people. Although Turkish vowel inventory is not as complex and does not provide long and short vowel contrast; Turkish speakers mediate this process with a specific consonant shown as /ɣ/. The voiced velar fricative phoneme /ɣ/ is pronounced in a way to lengthen the preceding vowel similar to long vowels in English. Nevertheless, our participants tended to shorten long vowels /ɑ:/ to /ʌ/; /ɔ:/ to /o/; /u:/ to /u/ and /i:/ to /ɪ/.

<u>Desired Form</u>	<u>Shortened Form</u>
/ɑ:/ - /gə'ra:z/ - ‘garage’	/ʌ/ - /gʌrʌz/ (53%)
/ɔ:/ - /kɔ:l/ - ‘call’	/o/ - /kol/ (41%)
/ɔ:/ - /stɔ:/ - ‘store’	/o/ - /stor/ (39%)
/u:/ - /sku:p/ - ‘scoop’	/u/ - /skup/ (36%)
/i:/ - /ði:z/ - ‘these’	/ɪ/ - /ðɪz/ (32%)

Our findings for vowel shortening are in conformity with those by Bada (1993), Thompson (2001) and Kaçmaz (1993) who pinpointed similar problems for /ɔ:/, /u:/, /i:/ for different learner levels and groups. The shortening between /ɑ:/ to /ʌ/ was handled in Ülkersoy (2007) who presented that the participants confused the pronunciation of them and used the long vowel instead of the desired short one. Our participants’ case of shortening in the item ‘garage’ /gə'ra:z/ could be associated with the pronunciation of the ‘garaj’ /gʌrʌz/ which is a loan word in Turkish meaning the same.

Bringing about a change in the syllable structure, vowel insertion is found to be another sound problem related to vowel production. Our elicitation text included twenty occurrences where systematic vowel insertion is possible. Almost all of the tested words started with consonant clusters in

which two consonants stick together word initially. It was claimed in Kornfilt (1997) that Turkish phonotactics does not permit word-initial consonant clusters and the clusters in the loan words are separated by an epenthetic vowel as in train ‘tren’ /tiren/. Under the possible effect of L1 interference, our participants kept breaking up the consonant clusters in English words by adding Turkish high unrounded back vowel /u/ as the epenthetic vowel. The undesired formations were higher in frequencies for the words ‘snack’ /sunek/ by 18% and ‘please’ /puli:z/ by 17%. Our findings are in the same vein with Ülkersoy (2007), whose findings proved that pronouncing word-initial consonant clusters without epenthesis was challenging for learners with Turkish L1.

In the analysis of our findings, we detected one particular word that included vowel insertion for many times which was ‘Wednesday’ /wenzdeɪ/. The desired pronunciation of the word was provided by almost half of the participants, whereas 53% of the senior pre-service English teachers produced the undesired form including Turkish /u/ or /ɪ/ as the epenthetic vowel as in /vɛnuuzdeɪ/, /vɛdnuzdeɪ/, /vɛdnɪzdeɪ/ or /vɛtnuzdeɪ/.

English sound system bears a category of complex vowels which are called diphthongs. In English, diphthongs are combinations of a vowel followed by a glide /w, y, r/. Turkish phonotactics do not allow the quick movement of the tongue from one position to another in the same syllable as characterised by diphthongs in English (Hişmanoğlu, 2004). Moreover, whenever two vowels are presented together, they are phonated individually as in ‘aile’ /aile/ ‘family’ which is a loanword.

Our elicitation text provided nine words in which /eɪ/, /ɔɪ/, /aɪ/, /əʊ/ or /oʊ/ diphthongs could be checked for desired pronunciation. In the analytical stage of our study, the vowels followed by glide /y/ was not noticed to be problematic. Our participants did not have problems producing the desired forms of ‘toy’, ‘maybe’ or ‘five’ in terms of diphthongs. The vowel followed by glide /w/, however, caused many problems for the participants. Of the four occurrences word-finally, we found that ‘go’ was the most problematic one with 89% faulty production. Our participants tended not to bring the vowel /o/ together with glide /w/ skipping the lip rounding at the end of the words. As discussed with the replacement of consonants, /w/ was substituted by /v/ wherever it was written and the diphthong /oʊ/ was mispronounced in items ‘yellow’, ‘willow’ and ‘snow’.

As also shown in our findings, /w/ is a predicted error for Turkish learners as it does not appear in Turkish consonant inventory. The formula deduced from Eckman’s (1977) MDH: ‘*Sounds that are not existent in the native language are the ones that are difficult to pronounce*’ is justified at this point. There are no diphthongs in Turkish neither a bilabial glide /w/ that means /əʊ/ or /oʊ/ will usually cause problems for learners of English with Turkish L1.

4.2. Conclusion, Limitations and Suggestions

The assumption that language teachers form the basis of primary language input in foreign language classes was taken as the basic motivation for the current study. The recorded data acquired from 66 senior ELT students at three universities presented the segmental sound problems as could be grouped below.

- *Word-final consonants get devoiced.*
- *Non-existent sounds in Turkish get replaced with a close one.*
- *Consonant clusters are broken up inserting an extra vowel.*
- *Long vowels are shortened.*
- *Speakers do not adopt a target accent, but adapt it.*

Although the participants are selected from various universities around the Mediterranean region where the study was conducted, the number of participants (n.: 66) failed to make it possible to study each gender group and school group separately, which may be a limitation of the study. Apart

from that, the nature of the reading aloud activity may well be accepted as a limitation because it does not capture naturally occurring language in conversation. However, the study tries to get a general image of the sound problems accepting this read aloud recording as participants' actual performance. Lastly, involving more technology like waveforms for recorded speech would have yielded more precise results minimizing the raters' errors.

The findings of the current study are in conformity with the previous research that stresses the effect of mother tongue interference. The contrastive studies and empirical research prove that some sounds are problematic for the learners of English with Turkish L1 background. It is also shown with this study that being the closest candidates of NNESTs, the pre-service teachers of English language in Turkey do not get to the desired level of professional efficiency in terms of pronunciation as noted in Demirezen (2010). Discussed earlier, the reasons for sound problems in the current study cumulate around mother tongue interference, non-existent sounds, and accentedness. Suggestions for the delineated problems will be handled accordingly.

A more well-rounded study to include more institutions and more students could have yielded more diverse results. Another limitation is noted as the instrument used to pinpoint learner errors. In addition to having many advantages, specifically designated elicitation paragraphs may be a limitation for not reflecting informants' actual free speech performance. The analysis of the collected data revealed several notable implications for the future studies. As some sounds needed very careful examination of the vocal organs, resorting to video recording of the participants' mouth movements as they speak could be a better solution for detecting lip rounding, aspiration and articulation of the problematic sounds. Segmental features of English pronunciation present how close the NNESTs are to being native-like English speaking models for learners. Nevertheless, suprasegmental features of the language should also be taken into consideration to draw a wider picture of the Turkish English and add to the literature of the World Englishes.

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