

The Teaching of [θ] and [ð] Sounds in English

Ali KARAKAŞ* Ecehan SÖNMEZ**

Department of English Language Teaching
Mehmet Akif Ersoy University, Turkey
akarakas@mehmetakif.edu.tr

Abstract: Pronunciation teaching has its unique place in the curricula of most of the European countries though it has been neglected in Turkey so far. Mispronunciation of some core sounds is among the fundamental problems in the speech of both nonnative pre-service and in-service teachers in Turkey. The [θ] and [ð] sounds constitute the biggest trouble for Turks, for they do not take place in the Turkish sound system. To remedy this case, a sample lesson plan on teaching these problem causing-sounds has been developed according to the audio articulation method, which is claimed to be a fossilized pronunciation mistake breaker. It is hoped that the sample lesson plan on the [θ] and [ð] sounds will correct the pronunciation mistakes of non-native English teachers and teacher-trainees in Turkey.

Key Words: [θ] and [ð] sounds, corpus, pronunciation mistakes, the audio-articulation model.

INTRODUCTION

According to Hişmanoğlu (2009, p. 1697) ‘‘Pronunciation is a significant part of foreign language teaching’’, since having a good pronunciation is one of the most important signs of getting mastery in foreign language learning and teaching. However, the fossilized pronunciation errors may be a barrier for learners who are trying to get mastery in foreign language (FL) and second language (L2) in that such errors harm the learners’ speech fluency and prevent them from speaking English in the way native speakers do. Of all the fossilized pronunciation errors, the phonemes /θ/ and /ð/ have always been problematic not only for Turkish learners of English but also for Turkish teachers of English who are already on the job (Hişmanoğlu, 2009). These sounds cause severe pronunciation problems to the Turkish learners of English during the articulation process. That’s why, they need an urgent remediation, which is going to be provided with a model lesson on teaching the /θ/ and /ð/ contrasts through the audio-articulation method (AAM) developed by Demirezen (2004) as fossilized pronunciation error breaker. Besides the AAM, some principles of the Audio-lingual Method (ALM) will be employed in the activities of the sample lesson plan to supplement the teaching of TH sounds.

The Nature of Difficulty of /θ/ and /ð/ for Turks

The main reason of difficulty of these phonemes lies under the fact that these sounds [θ] and [ð] do not exist in the sound system of Turkish. As it is seen in figure 2, the [θ] sound, which is named **theta**, is a *voiceless interdental fricative* sound while the [ð] sound, which is called **eth**, is a *voiced interdental fricative* sound as it is seen in figure 1. They are among the problem-causing consonants for Turkish learners of English, for they are not coded in modern standard Turkish (Demirezen, 2007, 2010). The voiceless [θ] sound can be heard clearly in such words like **thick** /θɪk/, **ethnic** /eθnɪk/ and **sheath** /ʃiθ/. The voiced [ð] sound can be heard in such words like **thus** /ðʌs/, **within** /wɪðɪn/ and **lathe** /leɪð/. Both [θ] and [ð] are highly frequent sounds in English language. Therefore, they require a special attention if the aim is to properly teach these sounds at the micro level and English at the macro level.

As can be seen apparently above, these sounds occur word initially, word medially and word finally. To be able to get the bottom of the problem, it is beneficial to investigate the articulation of these sounds. After that, it is necessary to diagnose the problem and find out a remedy for the treatment.

Figure 1: The mouth position of the /ð/ phoneme Figure2: The Mouth Position of the /θ/ phoneme



(Adapted from Baker and Goldstein, 2008)

The Articulation of the /θ/ and /ð/ Phonemes

Since these sounds are non-existent in Turkish sound system, difficulty arises in the production of them. The most common tendency is that Turkish learners replace the phoneme /θ/ with the phoneme /t/ and the phoneme /ð/ with the phoneme /d/. The word pairs below can be given as examples to the above statement:

- taught /tɔt/ vs. **thought** /θɔt/
- **team** /tim/ vs. **theme** /θim/
- **mat** /mæt/ vs. **math** /mæθ/
- **boot** /but/ vs. **booth** /buθ/
- **dose** /dous/ vs. **those** /ðouz/
- **dough** /doʊ/ vs. **though** /ðoʊ/
- **dare** /dɛər/ vs. **there** /ðɛər/
- **sued** /sud/ vs. **soothe** /suð/

The reason of this tendency to replace the non-existent unvoiced and voiced [θ] and [ð] sounds stems from ‘‘the establishment of mother tongue interference’’ (Demirezen, 2008). As these sounds are not coded in the Turkish consonant chart, they are converted to into the closest sounds in the mother tongue; in this case they are mostly /t/ and /d/ to compensate for the lack of exact sounds in the target language (Dalton, 1997). To remedy these two fossilized pronunciation errors, a model lesson plan will be presented below, which has been organized by taking the principles of the AAM method and some ALM principles into account.

AN APPLICATION OF THE AUDIO-ARTICULATION PRONUNCIATION REHABILITATION MODEL ON TEACHING THE /θ/ AND /ð/ PHONEMES

Time limit: 45-50 minutes.

Model: Audio Articulation Model & Audio-lingual Method.

1. Warm up – motivation

The teacher of the course starts up with a poem including the problem causing-sounds. This session lasts nearly 3 or 4 minutes. If there occurs a probability of exceeding the time limit, the teacher has the right to keep the warm up session short by skipping the last part of the poem.

T: Good afternoon everybody. How are you today? You all look very lively.

Ss: Good afternoon, sir. We're all fine.

T: Ok, friends. I wonder who likes poetry in the class.

Ss: (Students who like poetry raise their hands.)

T: Great. Today, we are going to read a poem. Who wants to read the poem? I need two volunteers. One will be the mother while the other will be the child.

Hülya: I can be the mom, sir.

Şeniz: And, I can be the child.

T: Thanks, ladies. Ok, then. Let us start. Here is the poem. Enjoy it!

My Thumbies

Child:

I have two thin thumbies
They're with me day and night.
My favorite thumb is on my left.
The other's on my right
My thumbies always soothe me
when I am feeling sad.
They help me to protect myself
when I am feeling mad.
My thumbies help me fall asleep
when I am feeling tired.
I do not know how better friends
could ever be desired.
My mother says it's time to quit--
that sucking thumbs is bad.
And every time I suck my thumbs,
my mom gets very mad.

Mom:

You've got to quit. Don't suck thy thumbs--your left
one or your right.
It's pushing all your front teeth out.
It's ruining your bite.
It might take years to get straight teeth,
with braces on your mouth.
It isn't fun. Believe me, son.
So keep your thumbs down south.
Child:
I'm 5 years old. It's time to quit--
of all the silly habits.
I don't want people thinking that
my teeth look like a rabbit's.

Hülya and Şeniz read the poem loudly and the other students listen to them. The teacher notices that they have some problems with voiced and voiceless TH sounds. But, the teacher does not make any correction of pronunciation and does not warn any of them, either.

T: All right ladies. Thanks a lot. Ok, class. Let's remember what we did in our former class.

2. Reviewing the previous topic

T: Friends, do you remember what we did in our former lesson?

Ss: Yes, sir. We studied on the articulation of [t] and [d] sounds.

T: Well done. Who can give the *phonetic identifications* of these sounds together with sample words?

Ufuk: Sir, the [t] sound is a *voiceless alveolar stop* consonant and, the [d] sound is a *voiced alveolar stop* sound in English. (Barlow, J.A. & Gierut, J.A., 2002, Demirezen, 1987). We can see the [t] sound in such words *tin* /tɪn/, *tank* /tæŋk/, *tease* /ti:z/, and the [d] sound in the words *day* /deɪ/, and *dice* /daɪs/.

T: Very good, Ufuk. Thanks. Now, it is time for today's topic.

3. Stating the aim of the lesson

The teacher sets the goal of the lesson and writes the topic on the board, by saying:

T: Dear friends, today we will study the articulation of [θ] and [ð] sounds in English, which were mispronounced by your friends during the poetry session in such words as *they* and *teeth*. Your friends tended to pronounce the [θ] as [t] and the [ð] sound as [d]. Please, be careful [t] and [d] sounds are mostly employed instead of the [θ] and [ð] sounds by Turkish students. In fact, [t] is a voiceless alveolar stop fortis sound and the [d] is a voiced alveolar stop lenix sound (Kelly, 2001, p. 49). However, the [θ] and [ð] sounds have different phonetic identifications which do not exist out language.

After stating the aim of the lesson, the teacher gets ready to present his/her *corpus* that includes 50-100 words including the [θ] and [ð] sounds. The teacher arranges the words in the order of word-initially, word-medially and word finally positions so that students can discriminate how they are articulated in all positions. Besides this, the teacher puts the transcriptions of these words into the corpus. After doing so, the teacher makes sure that students know all the words, otherwise it is better for the teacher to handle the unknown words in the corpus.

a) Presenting the corpus

The corpus prepared by the teacher should be given to the students in the class. It is important that students should also be provided with the sounds of the words in the corpus.

Table 1: The corpus of the [θ] sound

| Word-Initially | | Word-Medially | | Word-Finally | | | | | | | |
|----------------|---------|---------------|----------|--------------|-----------|-----------|------------|--------|--------|---------|---------|
| thigh | /θaɪ/ | thread | /θred/ | ether | /iθər/ | bathtub | /bæθtʌb/ | breath | /breθ/ | length | /lɛŋkθ/ |
| thou | /θu/ | theorem | /θiərəm/ | ethnic | /ɛθnɪk/ | toothpick | /tuθpɪk/ | sheath | /ʃiθ/ | month | /mʌnθ/ |
| thus | /θʌs/ | therapy | /θerəpi/ | method | /mɛθəd/ | bathrobe | /bæθroʊb/ | teeth | /ti:θ/ | fourth | /fɔ:θ/ |
| thistle | /θɪsəl/ | thicken | /θɪkən/ | athlete | /æθlit/ | panther | /pænθər/ | loath | /louθ/ | broth | /brɔθ/ |
| thief | /θɪf/ | thicket | /θɪkɪt/ | pathetic | /pəθetɪk/ | bathroom | /bæθrʊm/ | wreath | /riθ/ | math | /mæθ/ |
| theme | /θim/ | thimble | /θɪmbəl/ | ethos | /iθas/ | cathedral | /kəθɪdrəl/ | mouth | /maʊθ/ | worth | /bɜ:θ/ |
| thesis | /θɪsɪs/ | thug | /θʌg/ | apathy | /æpəθi/ | mouthful | /maʊθfʊl/ | sooth | /suθ/ | beneath | /bɪniθ/ |
| thick | /θɪk/ | thrift | /θrɪft/ | earthy | /ɜ:θi/ | bathmat | /bæθmæt/ | bath | /bæθ/ | faith | /feɪθ/ |
| thud | /θʌd/ | thorn | /θɔ:n/ | ethic | /ɛθɪk/ | stealthy | /steɪlθi/ | cloth | /klɔθ/ | booth | /buθ/ |
| thrift | /θrɪft/ | thumb | /θʌm/ | ethereal | /iθɪriəl/ | lethal | /liθəl/ | lath | /læθ/ | myth | /mɪθ/ |
| thrash | /θræʃ/ | thrill | /θrɪl/ | pithy | /pɪθi/ | zither | /zɪθər/ | birth | /bɜ:θ/ | wrath | /ræθ/ |

To compare the [θ] sound with the [ð] sound, the teacher needs to present another corpus including the [ð] sound in the words. This type of contrastive analysis will help students discriminate the difference between two sounds.

Table 2: The corpus of the [ð] sound

| Word-Initially | | Word-Medially | | Word-Finally | | | | | | | |
|----------------|---------|---------------|------------|--------------|----------|----------|------------|---------|---------|--------|---------|
| this'll | /ðɪsəl/ | thereof | /ðeərəʌv/ | either | /ˈiðər/ | smoother | /smuðər/ | breathe | /brið/ | blithe | /blaɪð/ |
| thus | /ðʌs/ | thereby | /ðeərbaɪ/ | mother | /mʌðər/ | northern | /nɔːrðərn/ | bathe | /beɪð/ | scathe | /skeɪð/ |
| thou | /ðəʊ/ | therefor | /ðeərfɔːr/ | father | /fɑːðər/ | gather | /gæðər/ | clothe | /kloʊð/ | blythe | /blaɪð/ |
| thy | /ðaɪ/ | therefore | /ðeəfɔːr/ | tether | /teðər/ | together | /təgeðər/ | lathe | /leɪð/ | scythe | /sɪð/ |
| than | /ðæn/ | they'll | /ðeɪl/ | dither | /dɪðər/ | southern | /sʌðərn/ | sheathe | /ʃeɪð/ | seethe | /sið/ |
| those | /ðoʊz/ | then | /ðen/ | feather | /feðər/ | heather | /heðər/ | withe | /wɪð/ | tithe | /taɪð/ |
| the | /ðə/ | theirs | /ðeəz/ | bother | /bəðər/ | rhythm | /rɪðəm/ | soothe | /suð/ | writhe | /raɪð/ |
| these | /ðiːz/ | them | /ðem/ | brother | /brʌðər/ | weather | /weðər/ | teethe | /tiːð/ | | |
| they | /ðeɪ/ | their | /ðeər/ | neither | /niðər/ | bathing | /beɪðɪŋ/ | wreathe | /rɪːð/ | | |
| that | /ðæt/ | thence | /ðens/ | within | /wɪðɪn/ | further | /fɜːðər/ | mouth | /maʊð/ | | |
| there | /ðeər/ | thee | /ði/ | other | /ʌðər/ | rather | /ræðər/ | loathe | /loʊð/ | | |
| though | /ðoʊ/ | this | /ðɪs/ | worthy | /wɜːðɪ/ | another | /ənʌðər/ | lithe | /laɪð/ | | |

After the presentation of the corpus, students are asked to repeat these words in small doses individually or in group. Since over-repeating may be boring for the students, the teacher should avoid creating a parrot-like repetition phase and should keep the phase as lively as possible. The teacher should target those students who have trouble in articulating the words correctly. Having done all these chores, the teacher can establish the minimal pairs by exposing the [θ-ð] differences.

b) Establishing the minimal pairs

The teacher firstly handles the unknown words. It is also advisable to establish the minimal pairs with related pictures so that students can see the differentiations in meaning. The teacher tries to specify the words into minimal pairs with contrastive analysis (Baker and Goldstein, 1992). Students are asked to repeat the minimal pairs in *single*, *group* or *choir*. During the repetition phase, the teacher gets closer to the students to see the students' mouth positions, and to observe whether they can articulate the sounds correctly or not. The frequently encountered voiceless and voiced TH minimal pairs are as follows:

| [θ] | vs. | [ð] |
|----------------------|-----|----------------------|
| • sheath (n) /ʃiːθ/ | | sheathe (v) /ʃeɪð/ |
| • thigh /θaɪ/ | | thy /ðaɪ/ |
| • teeth (n) /tiːθ/ | | teethe (v) /tiːð/ |
| • ether /iːθər/ | | either (Am.) /iːðər/ |
| • loath (adj) /loʊθ/ | | loathe (v) /loʊð/ |
| • wreath (n) /rɪːθ/ | | wreathe (v) /rɪːð/ |
| • mouth (n) /maʊθ/ | | mouth (v) /maʊð/ |
| • thou /θəʊ/ | | thou /ðəʊ/ |
| • sooth (adj) /suːθ/ | | soothe /suːð/ |
| • thus /θʌs/ | | thus /ðʌs/ |
| • thistle /θɪsəl/ | | this'll /ðɪsəl/ |
| • with /wɪθ/ | | withe /wɪð/ |

c) Establishing near-minimal pairs

Sometimes an exact minimal pair contrasting two phonemes may not exist in a language. Linguists then look for near minimal pairs. In a *near minimal pair* only the sounds surrounding the phonemes are identical.

| [θ] | [ð] |
|-----------------|----------------|
| • bath /bæθ/ | bathe /beɪð/ |
| • cloth /klɒθ/ | clothe /kloʊð/ |
| • breath /breθ/ | breathe /brið/ |
| • lath /læθ/ | lathe /leɪð/ |

d) Tongue twisters

The tongue twisters are practiced individually, in pairs or chorus in class after the teacher exhorts them first. The teacher can also make use of audio files of the tongue twisters.

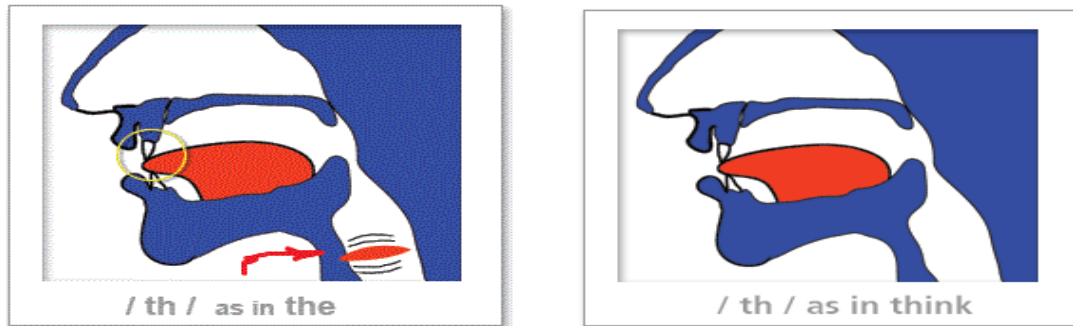
- | | |
|---|---|
| 1. A sheath A sword sheath A sheathed sword sheath A leather sheathed sword sheath | 5. Breath Breathing the breath Breathing the toothy breath Breathing the toothy breath with a thief |
| 2. Either Either of these Either of these ethers Either of these third-rate ethers | 6. A bath A filthy bath Bathing in a filthy bath Bathing the baby in a filthy bath |
| 3. Teeth Healthy teeth Healthy teeth in the mouth Healthy teeth teething in the mouth | 7. A cloth A wool cloth A thicker wool cloth A thicker wool cloth to clothe |
| 4. Thigh Thick thigh Thy thick thigh Thy thick thigh in a pie | 8. Wreathing Wreathing Thomas Wreathing Thomas in a wreath Wreathing Thomas in a wreath with wrath |

e) Giving the rule

The teacher should give the rule in a way that will enable students to capture it in clear details. For this reason, the teacher can use figures or charts illustrating the mouth position in the articulation of the problem-causing sounds. The teacher claps his/her hands to catch students' attention by saying:

T: Dear students, it is **RULE TIME** now. Wide open your eyes and lend me your ears, please. As you can see in the figure below, we stick out our tongue a bit between the upper and lower teeth (Demirezen 1987: 39) and then we blow out air. Both sounds are inter-dental fricatives (Ladefoged, 2001). Please, pay attention to the [ð] sound; for it is a voiced consonant while the [θ] sound is a voiceless one.

Figure 3: The articulation positioning of of the [ð] and [θ] sounds in the mouth



(Figures taken from <http://englishgoes.com/en/english-pronunciation-lesson-2-th/>)

Kelly (2001) gives us some suggested ways of explaining how to form these two consonants: For the articulation of the [ð] and [θ] sounds: "Put the front of your tongue against the back of your top teeth. Let the air pass through as you breathe out. Don't use your voice. Hold the sound, and add your voice" (p. 55). After giving the rule, the teacher shows a video to the students, in which a native speaker models how to articulate these sounds with sample words. Then, the teacher can do further exercises.

4. Doing Further Exercises

In this part, the teacher does further articulations of the problematic sounds with different activities by creating a game like atmosphere. For example, the teacher can establish minimal sentences for students.

A. Minimal Sentences

(The teacher practices minimal sentences without boring students. First, s/he reads the sentences, and then s/he gets students to repeat in isolation, pairs or choir. It is advisable that the teacher should create his/her own minimal sentences by appealing to students' areas of interest.)

1. Elizabeth can easily spell the word **THY / THIGH**.
2. I don't like **EITHER / ETHER**.
3. My father makes a good **LATHER / LATHER**.
4. How do you say the word **LOATHE / LOTH?**
5. They will **SHEATHE / SHEATH** the blade. (Nilsen & Nilsen, 1973)
6. Rachel doesn't know the meaning of **SOOTH / SOOTHE**.
7. Liz told me that she found **THOU / THOU** on the street yesterday.
8. **TEETHE / TEETH** is a difficult word to pronounce.
9. Does the word **WREATHE / WREATH** have two 'e' letters?
10. Here is an example word including TH: **BATH / BATHE**.
11. **LATH / LATHE** is an unknown word for many students.

B. Sentences with contextual clues

(After the teacher exhorts the sentences, s/he practices the following sentences without boring students, in single or in pairs.)

1. Julia will **EITHER** get **ETHER** or novocain.
2. Please **SHEATHE** your knife in a **SHEATH**.
3. The baby's **TEETH** will soon **TEETHE**.
4. They will **WREATHE** him in a **WREATH**.
5. Michael is **LOTH** to **LOATHE** anyone in the class. (Nilsen & Nilsen, 1973)
6. Don't **MOUTH** a speech when your **MOUTH** is full.
7. The three children **BATHE** in the same **BATH**.
8. My daughter couldn't find a **CLOTH** to **CLOTHE** her doll.
9. A **SOOTH** herbal tea will **SOOTHE** her.
10. Mine, **THOU** lord of life, send me a **THOU** again
11. Does **THY THIGH** hurt a lot after the operation?

5. Making Summary

T: Dear friends, today, we have learnt how to articulate the [θ] and [ð] sounds in English. Don't forget that you must practice these sounds in front of a mirror two times a day: one before the breakfast and the other after dinner. You should do this in order to see your articulatory improvement. (Then, the teacher can go back to his/her rule again and can summarize it using the same charts, figures or videos s/he used during the rule-giving section.)

T: Ok! Let's have a brief look at our rule again. To articulate the voiceless TH sound,

- put the tip of your tongue between your front teeth.
- blow out air between your tongue and top teeth.
- do not use your use.
- to articulate voiced TH, just use your voice. That's all you have to do. It is a piece of cake, isn't it Gizem?

Gizem: Yes, sir. I am more comfortable with these sounds now. I think it will be rather better after I have practiced them in front of the mirror.

T: Sure! We all love you and believe that you can achieve this.

6. Giving Assignment

The teacher gives students their assignments and warns them not to be negligent in doing these at home. The teacher should not forget to recollect the assignments in the following lesson for evaluation. After making necessary suggestions and correction, s/he can give them back to the students.

1. In which of the alternatives is there an articulation of the **voiced TH** sound?

- a. think b. thumb c. thus d. thud e. thistle
a. ether b. bath c. cloth d. thank e. either
a. that b. month c. broth d. tooth e. path

2. In which of the alternatives is there an articulation of the **voiceless TH** sound?

- a. three b. thee c. thy d. thou e. bathe
a. though b. feather c. father d. these e. ether
a. other b. method c. neither d. together e. gather

3. Prepare 5 tongue twisters including both voiced and unvoiced TH.

4. Write down 3 sentences with contextual clues using the sounds we have learned today.

5. Write a poem including voiced and unvoiced TH sounds.

6. Consonant sound pair: voiced [ð] and unvoiced [θ]:

clothe
bath
that
thought
cloth
whether
them
father
think
three
mouth
teeth
this
thorough
soothe
together
though
mouth
thousand

theater
breath
brother
bathe
those
wealthy
thread
weather
these
breathe
thumb
healthy
mouth
bathe
fourth
through
smooth
month
birth

CONCLUSION

The consonants [ð], named as *eth*, and [θ] named as *theta*, are among the problem causing sounds for both Turkish students and teachers in pre-service and on the job. That's because of the fact that Turkish language has no [θ] and [ð] sounds (although Arabic and Spanish speakers do). Therefore, students tend to replace them with [s] and [z] word-finally and [t] and [d] sounds word initially. "The difficulty of /θ,ð/ lies not so much in their articulation, which most learners can perform correctly in isolation, as in combination with other fricatives, especially, /s/ and /z/" (Cruttenden, 2008: 196-197). They must be practiced with combinations of other sounds in phrases, sentences or paragraphs as done in the above exercises but not in isolation.

To cure these problematic sounds, a sample lesson was prepared according to *the AAM model* in this paper. While applying the sample lesson plan, the teacher should adapt the activities according to the level of students. There should not be over-repetition in order not to bore students. The success of the model mostly depends on teacher's creativity and classroom performance. The teacher should be very active by using his/her body in class.

Although some teachers and students may think that replacement of /θ,ð/ with sounds in the mother tongue can be tolerated, it is not favorable to do so. Because as teachers and learners of English, we should pave the way leading us to the correct pronunciation, since having a correct pronunciation is a sign of both professionalism and phonetic intelligence.

REFERENCES

Baker, A. 1992. *Introducing English Pronunciation, A Teacher's Guide to Tree or Three and Ship or Sheep*. Cambridge University Press, New York, the U.S.A.

Baker, A. & Goldstein, S. 2008. *Pronunciation Pairs, an Introduction to the Sounds of English*. 2nd Edition. Cambridge University Press, New York, the U.S.A.

Barlow, J.A. & Gierut, J.A. (2002). Minimal Pair Approaches to Phonological Remediation. *Seminars in speech and language*, 23 (1).

Cruttenden, A. 2008. *Gimson's Pronunciation of English*. 7th Edition. Hodder Education, London, England.

Dalton, D.F. (1997). Some Techniques for Teaching Pronunciation. *The Internet TESL Journal*, Vol.3

Demirezen, M. (2010). "The principles and applications of the audio-lingual pronunciation rehabilitation model in foreign language teacher education." *Journal of Language and Linguistic Studies*. Vol. 6 - No: 2, October 2010, 127-148.

Demirezen, M. (1987). *Articulatory Phonetics and the Principles of Sound Production*. Ankara: Yargı Publications.

Demirezen, M. (May 2004). *İngilizce'nin peltek-d (ETH) sesbiriminin Türkler için çıkardığı sesletim sorunları ve çözümler*. Journal of Arts and Sciences vol 1.: Çankaya University

Hismanoglu, M. (2009). The Pronunciation of the interdental sounds of English: an articulation problem for Turkish learners of English and solutions. *Procedia social sciences* 1, 1697-1703.

<http://englishgoes.com/en/english-pronunciation-lesson-2-th/>

Kelly, G. (2001). *How to Teach Pronunciation*. Oxfordshire: Pearson Education Limited.

Ladefoged, P. (2001). *Vowels and Consonants*. Oxford: Blackwell Publishers.

Longman Dictionary of Contemporary English: (2004). The Living Dictionary. International Edition, 2004. Essex: Pearson Education Limited

Longman Dictionary of American English. (2009). Pearson.

Nilsen, D. L. F & Nilsen, A. P. (1973). *Pronunciation Contrasts in English*. Regents Publishing Company, New York, the U.S.A.

www.eslgold.com/pronunciation/voiced_sound_th.html