The Use of Minimal pairs to develop Thai students' abilities to produce English consonant sounds

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Abstract

This classroom-based research has two main aims: 1) To see the development of Thai students' overall ability to produce English consonant sounds; 2) To see the development of Thai students' ability to produce each English consonant sounds. The participants of this study were 22 first-year English instruction students attending the course 'English Phonetics and Morphology for English Teacher' in the academic year of 2016. The intervention (use of minimal pairs) was used in this study for approximately 2 hours each time, over a four-week period. The research instruments used were pre- test and post-test of minimal pairs of English consonant sounds (parallel form). The data were analyzed by using dependent t-test.

The findings of the study revealed that: 1) The students' post-test scores compared to the production test were higher than the pre-test scores with a significant level of .01. This suggests that the use of minimal pairs is effective in developin Thai students' abilities to produce English consonant sounds. The study also proves that the students have a high progress in producing the sounds /dʒ/,/ʃ/, /ʒ/, /θ/, /ð/, /b/, /v/, /tʃ/, /z/, and /d/ after the use of minimal pair. Also, there is a small improvement of using /t/, /w/, /l/, /s/, /ʃ/, /p/, and /f/. However, /θ/ and /ð/ should be specially prioritized when teaching Thai students because they have got the lowest scores in the production.

Keywords: English consonant sounds, Minimal pairs, Production, Thai students, Phonetics, English phonemes

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1. Background of the study

People normally learn a language for the communicative purposes; they learn the language to comprehend the texts and speech. To communicate effectively, however, it is important for people to possess four basic skills: listening, speaking, reading and writing. Of all four skills, speaking seems to be the most important for communication. This is because students are likely to assess their own achievement in language learning and the effectiveness of the course on the basis of how well their spoken proficiency is improved (Richard, 2008)

To succeed in speaking; however, it is impossible to exclude teaching pronunciation; because mispronunciation can lead to serious misunderstanding among the interlocutors in many contexts. For example, when a speaker says 'pin' instead of 'pill' in a department store setting, a listener may misunderstand or fail to get the exact meaning of the speaker from this inaccurate production of a sound (Kelly, 2000). Additionally, pronunciation is the ingredient of communicative competence. It helps the speaker to encode a message to anybody or helps the listeners to decode

the message sent from another person (Gilakjani, 2016).

From the observation in classroom, Thai students seem to have difficulty with English consonant sounds in production. This is because English has more consonant sounds than Thai (Kruatrachue, 1960). Moreover, some sounds do not exist in Thai sound system such as /tʃ/, /dʒ/, /v/, /θ/, /ð/, /z/, /ʃ/ and /ʒ/ (Kruatrachue, 1960). Aside from that, some English consonant sounds that Thai students are likely to articulate incorrectly when appearing in the final position including: /p/, /b/, /t/, /d/, /k/, /f/ and /s/. This is because these sounds do not exist in final position(Karnchanathat, 1985; Naksakul, 2008).Once the English language's phonemes do not exist in the native one, the problems might occur for speakers in sending the messages across Kenworthy(1992).The foreign speakers substitute one sound or feature of pronunciation for another, the listener hears a different word or phrase from the one the speaker was intending to say; therefore, the listeners cannot understand the speaker's speech (Kenworthy, 1992).

To solve this problem, minimal pair is employed to develop Thai students'

ability to produce English consonant sounds. Minimal pair is a pair of words that differ in meaning on the basis of a change in only one sound (Burlow&Gierut, 2002as cited in Ketkumbonk, 2015). It is used to establish the similarity and difference in sounds in a pair of words, and enable the learners to see the difference between the sounds (Avery & Ehrlich, 1995). After the students can concentrate the difference between the sounds, they are transferred to their minds, and finally they can manipulate the sounds of the target language effectively (Tuan, 2010). Thus, Minimal pair is used to develop Thai students' ability to produce English consonant sounds in the present study.

2. Purposes of the study

1) To seek the effectiveness of using minimal pairs to develop Thai students' overall ability to produce English consonant sounds.

2) To seek the effectiveness of using minimal pairs to develop Thai students' to produce each English consonant sound.

3. Scope of the study

Sounds used in the present study

The sounds used in the present study are the 15 sounds that Thai students are likely to mispronounce when appearing in both the initial and final position in words including:/tʃ/, /dʒ/, /v/, /θ/, /ð/, /ʃ/,/ʒ/ and /z/. This is becausethey do not exist in Thai phonological system. So, Thai students are likely to substitute another sounds to these target sounds, for example: as in /tʃ/ in the word church /tʃɜːtʃ/ can be /tɜːtɕʰ/ or /tɕʰɜːtˈ/ when produced by Thai students. As can be seen in the example, Thai students substitute Thai /tɕʰ/ or /ʨ/ to English /tʃ/ (Yercharoen, 2001; Sumdangdaj, 2007;Khirin (2011);Ketkumbonk, 2015; Karnchanathat, 1985; Kruatrachue, 1960).

The other group is English consonant sounds that Thai students are likely to articulate incorrectly when appearing in the final position including: /p/, /b/, /t/, /d/, /k/, /f/,and /s/.This is because Thai students are likely to approximate Thai final consonant sounds called 'Sound section' or Matra (มาตรา) to the target sound. Thai allows only the aspirated /p/, /b/, /t/, /d/, and /k/ to be the initial consonants (Naksakul, 2008). Unaspirated voiceless consonant sounds can be

represented by the symbols '- ˋ' on the right corner of the consonant sounds.One example of the way Thai students substitute Thai sounds is the way the produce English final /p/ as in pop /pa:p/ can be substituted by /pˋ/ or /บ/ which is unaspirated sound and becomes /pa:pˋ/. Moreover, English final /f/ can be replaced by /pˋ/ when produced by Thai students too. And English final /s/ can be replaced by /tˋ/ or /ด/ or /tʰ/ or /ท/ as in 'Kiss' /kis/ ⟶ /kitˋ(tʰ-)/ (Ketkumbonk, 2015).

As suggested by the information above, it is necessary to develop Thai students ability to produce English final consonant sounds. For this reason, the present study adopted these 15 sounds to teach Thai students to produce via minimal pair.

Constructing Minimal Pair

After selecting the sounds, minimal pair was constructed and used to teach and train students to recognize and produce English consonant sounds. In constructing the minimal pair of sounds, it is important to consider the three features of sounds including: 1) place of articulation; 2) manner of articulation, and 3) voiced or voiceless.

Thereby, minimal pairs can be constructed to contrast these three features of sounds, namely, to contrast the place of articulation, like the pair /p/-/t/ as in 'hip'-'hit'; to contrast the manner of articulation, like the pair /p/-/f/ as in 'pup'-'puff'; and voiced or voiceless features, like the pair /t/-/d/ as in 'hit'-'hid' (Burlow&Gierut, 2002 as cited in Ketkumbonk, 2015).

Aside from that minimal pair can be constructed to contrast with each other minimally and maximally which can be called *minimal* and *maximal contrasts* (Burlow&Gierut, 2002as cited in Ketkumbonk, 2015). A minimal contrast is the way to contrast the sounds in just a single different feature among phonemes. One example is the difference between the final sounds /-p/ and /-b/ as in 'cup'-'cub'. It involves a minimal contrast for the final /p/ and /b/ in a voiceless or voiced feature; whereas, the differences between /t-/ and /s-/ as in 'thumb' /θʌm/ and 'some' /sʌm/ involve minimal contrasts in place and manner, respectively. In a maximal contrast; however, it means that a phonemic features are different from each other in more than one feature i.e. different dimensions of place, manner, and voice. One example is

the phonemes /v/ and /p/ in the pair 'lip'-'live'. They differ along all three dimensions with a place contrast differentiating bilabial from labio-dental, a manner contrast differentiating stop from fricative, and a voice contrast differentiating from voiceless and voiced (Barlow &Gierut, 2002 referred in Ketkumbonk, 2015).

Minimal pairs used in the present study are compiled from the mistakes that Thai people normally do when articulating English consonant sounds from the review of literature mentioned above.

4. Research methodology

1) Subjects

Subjects in the present study are 22 Thai students who are Thai-native speakers. They are the first-year undergraduate students from the Faculties of Education, majoring in English Instruction, RajabhatSakon Nakhon University, the academic year of 2016. They studied the subject 'English Phonetics and Morphology for English Teacher' which is the required subject of the English Instruction Curriculum.

2) Research Instruments

(2.1) Pre-test and Post-test Minimal pair of production

The minimal pair of production is used to investigate English consonant sounds that Thai students' development in producing English consonant sounds. The test paper of minimal pairs was designed in accordance with a word list of minimal pairs. All words are compiled from words with problematic consonant sounds that cause difficulty for Thai learners to produce and that were suggested by the previous studies in the scope of the study. And then, the sounds are paired together to create the minimal pairs. There are totally 42 pairs.To allow students to produce each pair of sounds twice, and to crosscheck that they could exactly recognize the sounds, each minimal pair was doubled. As 82 test items made the test very energy consumed for students to produce, the test was divided into series 1 and series 2. Series 1 includes 41 test items while series 2 includes 41 test items. The Pre-test and Post-test are in parallel form.

3) Data Collection

(1) 22 subjects were invited to a peaceful room to perform MinimalPair Pre-test of production.

(2) To perform the test, they read each series one by one and their

voices were recorded by the high-definition audio-recorder.

(3) After the collection of pre-tests, the tests were checked and the scores were calculated to find the pre-tests total scores of each student.

(4) Minimal pair activity is used to train the subjects to produce English consonant sounds for four hours.

(5) After four hour-training, the subjects were asked to perform the Minimal Pair post-test of production.

(6) After the collection of post-tests, the tests were checked and the scores were calculated to find the post-tests total scores of each student.

(7) The score from the Minimal Pair pre-test and post-test of production were calculated to find the difference by using T-test.

5. Data presentation and analysis

The data from both the tests of recognition and production was analyzed to find the mean scores. And then, dependent t-test was used to find S.D. and the significant difference (Sig.). The data was presented in tables and the descriptive analysis was conducted. The results of the study were described in the following sections:

Purpose of the study 1: To seek the effectiveness of using minimal pairs to develop Thai students' overall ability to produce English consonant sounds.

The data from the test of production was used to answer the purpose of the study1. The table   1 presents the data from minimal pair pre- and post-test of production. An independent-samples t-test was conducted to compare students' ability to produce English consonant sounds before and after the use of minimal pair. According to the result, there is a statistically significant difference between the students' mean scores from the pre- test (M = 57.97, SD = 13.867) and post-test of production (M = 74.54, SD = 6.867) conditions; t (21) (-7.756), p = 0.00. These results suggest that students' post-test production scores are higher than pre-test scores.

Table 1: Data Presentation from the minimal pair tests of production

Test	N	$\bar{x}$	S.D.	t	df	Sig.
Pre-test	22	57.9773	13.86798	-7.756	21	.000***
Post-test	22	74.5455	6.86764			

Purpose of the study 2: To seek the effectiveness of using minimal pairs to develop Thai students' overall ability to produce English consonant sounds.Table 2 below illustrates the descriptive statistics from the test of production. Its aim is to clearly show Thai students' progress in producing each sound after the use of minimal pair. The total scores of each sound are based on the total number of the subject i.e. 22 people. According to the test, the result of production of English final consonant sounds can be shown in the following table.

Table 2: Data Presentation from production scores of each sound

No.	Sounds	Total scores	Pretest		Posttest	
			Raw scores	Percentage	Raw scores	Percentage
1.	/t/	330	303	91.81	316	95.75
2.	/d/	374	265	70.85	347	92.78
3.	/tʃ/	352	238	67.61	318	90.34
4.	/dʒ/	308	119	38.63	283	91.88
5.	/θ/	308	141	45.77	243	78.89
6.	/ð/	176	76	43.18	120	68.18
7.	/s/	352	276	78.4	305	86.64
8.	/z/	330	224	67.87	298	90.3
9.	/ʒ/	44	24	54.54	42	95.45
10.	/ʃ/	352	217	61.64	309	87.78
	/p/	132	114	86.36	129	97.72
11.	/b/	132	98	74.24	131	99.24
12.	/f/	154	125	81.16	154	100
13.	/v/	154	104	67.53	141	91.55
14.	/l/	88	80	90.9	86	97.72

According to the table 2, Thai students have the high progress in producing the sounds /dʒ/,/ʃ/, /ʒ/, /θ/, /ð/, /b/, /v/, /tʃ/, /z/, and /d/ after the use of minimal pair because the scores of pretest and posttest are quite different from each other. On the other hands, the pre-test and post-test scores of/t/, /w/, /l/, /s/, /p/, and /f/ are minimally different. This is because the pretest and posttest scores are not quite different. Moreover, /θ/ and/ð/ seem to be the most difficult sounds for students to produce because the scores of these two sounds are the lowest after the use of minimal pair.

6. Conclusion and Discussion

First, the result of the study showed a statistically significant difference in students' ability to produce English consonant sounds before and after the interference of minimal pair. The mean score of production post-test (74.54) was higher than the mean score of production pre-test score (57.97). This can be indicated that minimal pair can improve students' ability to produce English consonant sounds too. According to the result of production, minimal pair can improve students' ability

to recognize English consonant sounds. This finding corresponds with Tuan (2010) that practice with minimal pair can improve students' production at the word level. From the practice, students can produce the English consonant sounds correctly because they realize that changing in just one sound leads to a change in meaning (Kelly, 2000). If students learn to hear and see the difference of sounds over and over, they will be able to articulate them correctly (Elmaksoud, 2013).

Additionally, when looking deeply into the improvement of each sounds, it was found that after the use of minimal pair; 1) Thai students have the high progress in producing the sounds /dʒ/, /ʃ/, /ʒ/, /θ/, /ð/, /b/, /v/, /tʃ/, /z/, and /d/; 2) there is a small improvement of using /t/, /w/, /l/, /s/, /ʃ/, /p/, and /f/; 3) /θ/ and /ð/ have the lowest scores. For the first point, Thai students have the high progress in producing the sounds /dʒ/, /ʒ/, /θ/, /ð/, /b/, /v/, /tʃ/, /z/, and /d/. This is because minimal pair provides the room for contrastive analysis to identify and contrast the sounds between words (Chapelle, Chung, & Xu, 2008). This approach may enable Thai students to distinguish the unfamiliar sounds found in

English words via hearing and pronouncing the consonant sounds which are non-existent in Thai sound system. Moreover, this result corresponds with Altamimi (2015) that after the use of minimal pair, students were familiar with English consonant sounds which are non-existent sounds in their native language increasingly. Thus they can produce them more clearly. For the second point, students show little progress in pronouncing /t/, /l/, /s/, /p/, and /f/. This maybe because Thai student already master in these sounds because the score of pre-test is quite high and show just a smallprogress in the post-test.Naksakul (2008) asserted that /t/, /l/, /s/, /p/, and /f/ exist in Thai sound system but in the initial position of words. For this reason, Thai students may be familiar with these sounds.Thus /t/, /w/, /l/, /s/, /p/, and /f/do not cause severe problem for them to recognize and produce. However, /θ/ and /ð/ can still be the most difficult sounds for students to produce as their production score were the lowest in both pre-test and post-test. This result corresponds to Yercharoen(2001),Khirin (2011), and Ketkumbonk (2015) that /θ/ and /ð/ were non-existent sounds in Thai sound system.

As a result, /θ/ and /ð/ should be emphasized in teaching pronunciation.

To sum up, minimal pair drill and practice can develop both students' ability to produce English consonant sounds effectively. This is because the scores from the post-test in production are different significantly from the pre-test score of production. Moreover, θ/ and /ð/ should be specially concentrated when teaching Thai students to produce because they do not exist in Thai phonological system.

7. Recommendation

Recommendation for English language teaching

1) Integrating minimal pair to teaching speaking

As mentioned previously, pronunciation is a part of speaking skill as it helps the interlocutors to send the message each other (Kenworthy, 1992). To start with, articulation practice on English consonant sounds can be the basic element. Teachers may come up with minimal pair to train students before practicing speaking skills. Students will articulate the sound clearly when they speak. And what they speak can be comfortably comprehensible for the

hearers after they are trained (Kenworthy, 1992).

Recommendation for English language teaching

2) Researching Minimal Pair to improve Thai students to recognize and to produce English vowel sounds

The present study focuses only on the production of English consonant sounds. Thus, the future study may focus on using minimal pair to improve students' ability to produce English vowel sounds.

2) The use of minimal pair toimprove Thai students to recognize and to produce English consonant sounds

The present study concentrates only on the production of English consonant sounds, thus it is advisable to investigate whether Minimal pair can improve Thai students' ability to recognize English consonant sounds or not.

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