Error Analysis of English Fricative Consonants by Thai Private University Students

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Abstract

This study investigates the error analysis of English fricative consonants produced by Thai private university students and also investigates the sound substitutions of fricative consonants in English produced by Thai private university students. While previous studies of English fricative consonants paid attention to Thai public university students, this study innovatively contributes to the field by focusing on Thai private university students. The data in this study was collected from 40 participants selected by the convenience sampling method. The instrument was a list of word isolations containing English fricative consonants in various positions: the initial, middle and final positions. The data analysis followed the IPA and was cross-checked by the researchers' notes. Descriptive statistics was employed for the data calculation. Regarding the total of nine fricative sounds in standard English, the results in this study reveal that the phonemes /f/, /s/ and /h/ were accurately produced at 100 percent. However, the participants made errors with the other six fricative sounds due to their substitutions of Thai consonant sounds. The discussion of the error analysis in this study is mainly explained by their first language interference. Following the identification of the problems related to Thai students' errors, it is recommended that future studies should develop *Computer Assisted Language Learning* (CALL) or *Web-based Instruction* to help students practice their English pronunciation correctly and appropriately.

Keywords: English Phonetics, error analysis, fricative consonants, Thai private university students

1. Introduction

Accurate pronunciation is an aspect that most Thai EFL learners pay attention to. Having clear and correct pronunciation can help support the listeners to gain better understanding. In addition, it helps create a good impression. Nevertheless, pronunciation is viewed as a challenging aspect for Thai EFL learners to improve, as opportunities to speak English inside and outside the classroom are limited. Moreover, they have limited exposure to speaking with native speakers. Accordingly, their ability to speak English with accurate pronunciation is limited. In English, the ability to articulate words correctly requires one to have knowledge of the distinctive features of the various consonant sounds, which are described in Table 1.

Table 1 Distinctive Features between Consonants and Vowels

Consonants	Vowels
Place of Articulation	Height of the Tongue
Manner of Articulation	Part of the Tongue
Voicing Quality	Lip Rounding
	Muscular Tension

According to Shea and O'Neill (2021), the consonants and vowels in English have their own distinctive features. The distinctive features of consonants in English are made up of three elements, which are place of articulation, manner of articulation and voicing quality. In contrast, the distinctive features of vowels in English include four elements, which are the height of the tongue, the part of the tongue, lip rounding and muscular tension. Regarding consonants, *place of articulation* refers to the speakers' sound production involving different speech organs. For the actual pronunciation of the allophone [b], it is articulated as a bilabial consonant, which refers to the use of upper and lower lips. *The manner of articulation* refers to the release of air and voice through different channels such as the nasal cavity or the oral cavity. For example, the manner of articulation of the allophone [b] is a plosive obstruent. In order to articulate the allophone [b], the speaker breaths in, then obstructs (retains) the air, and suddenly releases it like an explosion. The final distinctive feature of consonants is called *voicing quality*. The voicing quality of the consonants in

English are divided into voiced and voiceless qualities. The voiced quality refers to the stronger vibration of the vocal folds, whereas the voiceless quality refers to the lower-level vibration of the vocal folds. For example, the allophone [b] is a voiced consonant as the vocal folds come closer to each other when articulating. Accordingly, the allophone [b] in English is technically described as a *voiced bilabial stop*. In contrast, the vowels in English also have their distinctive features. One of them is the height of the tongue, which is classified into high, mid, and low. For example, the allophone [æ] is articulated at the lowest position of the tongue. The parts of the tongue are classified into three sections, which are front, central, and back. For example, the allophone [æ] is articulated at the front part of the tongue. The quality of lip rounding is segregated into round and unrounded features. For example, the allophone [æ] receives an unrounded feature. The last quality is muscular tension, including the tense or lax sounds. Therefore, the distinctive feature of the allophone [æ] is described as a *lax unrounded low-front vowel*. The word *five* in English can be transcribed into /faɪv/. The onset of this word is the phoneme /f/ and the nucleus and coda of this word is made up of /aɪ/ and /v/, respectively.

With regard to these distinctive features of English consonants, numerous previous studies reported that EFL learners cannot follow these features correctly, and EFL learners show frequent errors of fricative sounds in English (Panichkul, 2018; Plailek & Essien, 2021). However, those previous studies focused on Thai public university students. This study seeks a new group of participants, which included Thai private university students, in order to examine the error production of fricative sounds in English. The objectives of this study are as follows.

2. Objectives of the Study
1. To investigate the errors of fricative consonants in English produced by Thai private university students.
2. To investigate the sound substitutions of fricative consonants in English produced by Thai private university students.

2. Literature Review
2.1 Fricative Consonants in English
In order to analyze the accuracy of fricative consonants correctly, the researchers needed to gain the following knowledge. Fricatives are classified as obstruent where the air-flow is gradually released from the corners of the mouth. They are made up of nine sounds, which are /f/, /v/, /θ/, /ð/, /s/, /z/, /ʃ/, /ʒ/ and /h/. Each pair has different voicing qualities, as shown in Table 2.

Table 2 Distinctive Features of Fricative Consonants in English

	Voiceless	Voiced	Place of Articulation
Fricative Consonants	/f/	/v/	Labio-dental
	/θ/	/ð/	Inter-dental or dental
	/s/	/z/	Alveolar
	/ʃ/	/ʒ/	Palate-alveolar
	/h/		Glottal

The phonemes /v/ and /z/ are considered voiced because the vibration of the vocal cords is stronger, leading to this quality of sound. Fricative sounds are classified as obstruent when the airstream is obstructed and then gradually released. The phonemes /θ/ and /ð/ in British English are dental because the speakers' tongues only touch the back of the front teeth. With the various conditions of fricative consonants, Thai people face difficulty in pronouncing these sounds. A number of previous research papers have indicated that students, including high-school students and undergraduate students, show errors in pronouncing this set of fricative sounds and that various sounds are used to substitute them.

2.2 Previous Studies
This section reviews the research conducted on error analysis of fricative consonants between 2011 and 2021, where Thai EFL learners were studied. Each study selected different groups of participants such as Matthayom (lower-secondary) students in Thailand, Thai students from public universities, and employees

working as ground staff for an airline. Most studies employed the instruments of word lists and words in connected speech to investigate the pronunciation of fricative consonants.

Roengpitya (2011) investigated the fricatives /f/, /v/, /θ/, /s/, /z/, /ʃ/ /ʒ/ and /h/ as produced by Thai speakers. The participants in their study were Thai EFL learners. The phonological structure of the words was C_1VC_2. There were two patterns to test the sounds of fricatives in their study. One of them is that the C_1 was a fricative consonant as mentioned before, while the other is that C_2 at the end was also a fricative sound. The results show that the fricatives were pronounced shorter in connected speech and the pronunciation of voiced fricative sounds is a problem among Thai EFL learners.

Winaitham and Suppasetseree (2012) investigated English pronunciation errors of Thai first-year students at Kamphaeng Phet Rajabhat University. The instrument in this study was English pronunciation tests consisting of five minimal pairs of consonants and four minimal pairs of vowels. The minimal pairs of consonants are *long* & *wrong*, *veal* & *wheel*, *tin* & *thin*, *shop* & *chop* and *sue* & *zoo*. The minimal pairs of vowels are *pen* & *pain*, *not* & *note*, *caught* & *coat*, and *heat* & *hit*. The data analysis follows the word sound check in the Oxford Advanced Learners' Dictionary. With the pronunciation test, the results of the study showed that the students' accurate production of the pronunciation of consonant and vowel sounds was at 87.5 percent. The accuracy of stress was 50 percent. However, the accuracy of the stress of the vocabulary words was only 26.9 percent. Although the results of this study show that most students are able to pronounce vowel and consonants accurately, there are certain consonants and vowels that are difficult for students to pronounce, such as the fricative sounds /θ/, /ð/ and /v/. This is because these sounds are not found in the Thai language. Moreover, they commit numerous errors between the sounds /ʃ/ and /tʃ/. such as *sheep* and *cheap*. In terms of vowels, the most problematic vowel sounds among Thai learners are /ɔ:/ and /əʊ/ as in *bought* & *boat*. Thai students pronounce *lawn* as *lao*, whereas the word *flok* is articulated as *forg*. In addition to consonant and vowel sounds, Thai students emphasize their stress on the last syllable, as in *origiNAL* and *compuTER.*

Jehma and Phoocharoensil (2014) investigated Thai EFL learners' use of fricatives and stops in English. The participants were Pattani-Malay and included 80 learners at Thamvittaya Mulniti School, Yala. The instrument in this study was a task involving reading aloud. The task was the pronunciation of single words, containing 15 items. Each word contained fricatives and stops in different positions, which are initial, median, and final. When the errors were identified, the sounds that the participants used to substitute were reported. The results showed that the fricatives in the initial position, the medial position, and the final position were 22.16 percent, 31.14 percent, and 32.95 percent, respectively. The results of these errors are explained by L1 transfer or the interference of the first language. This is because the sounds /v/, /f/, /z/, and /ð/ do not exist in Malay. When the phonemes /v/ and /f/ do not exist, the participants substitute these sounds with the phoneme /p/.

Chakma (2016) studied the error analysis of Thai EFL learners' consonant sounds. The participants in this study were 16 students from Matthayom Suksa 1, the lower-secondary school level. The instrument was made up of a list of 22 words consisting of 11 consonant sounds, such as /s/ and /th/. The data analysis was based on the judgement of accuracy or inaccuracy. The results of the study showed that the sound /s/ in the final position was incorrectly produced at 62.5 percent. The /th/ sound in the initial position and the final position was incorrectly produced at 81.2 percent and 68.7 percent, respectively. When Thai students cannot produce the sound /th/, they substitute this sound with /t/.

Muangphruek (2018) investigated Thai EFL learners' pronunciation via the use of songs. The participants in this study were seven undergraduate students from the Faculty of Innovation, Thammasat University. Their level of English proficiency was intermediate. The instrument in this study was the song *A Thousand Years*, which contains consonants and consonant clusters as in /v/, /z/, /s/, /l/, /θ/, /t/, /d/, /k/, /nd/, /rt/ and /st/. The most frequent errors of consonants were /z/ and /θ/. The sound /θ/, as in *breath*, was substituted by either /t/ or /d/. The sound /z/, as in *years*, was substituted by /s/. The sound /v/, as in *love*, was substituted by /p/.

Panichkul (2018) explored the fricative sounds as pronounced by ground staff working at airport terminals. The participants in this study were 30 ground crew attendants who speak Thai as their first language. The data analysis was done via broad phonemic transcriptions. Among eight English fricative consonants, the results are divided into the pronunciation of fricatives in initial positions and final positions.

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The sounds /f/, /s/ and /h/ in the initial position were found to be accurate at 100 percent. On the other hand, the pronunciation of the sound /θ/ often occurred as /t/ at 78 percent. The pronunciation of /z/ in the initial position nearly always occurred as /s/ at 90 percent. With regard to the fricative pronunciation of words in the middle position, the main problem was found with the sound /ð/, which appeared to be /tʰ/ at 80 percent and /d/ at 20 percent. Frequent errors occurred at the final position, where the phoneme /v/ is pronounced as /f/ at 42 percent, the phoneme /z/ was pronounced as /s/ at 85 percent, and the phoneme /ð/ was pronounced as [t ̚] at 86 percent.

Boodsee and Boonmoh (2019) investigated the English pronunciation of 10 high school students who studied in Grade 12 in Thailand. They investigated the students' ability in pronunciation, where the list of words was gathered from the books titled *Color Me Pink* and *New Weaving it Together 3*. The participants were instructed to read 15 words both with and without context. The participants were found to have clear errors with the phoneme /v/. For example, the word *victory* was pronounced with the phoneme /w/ at the initial syllable. In addition, the phoneme /v/ as in *lives*, was pronounced as /f/ to become /lɪf/. The fricative consonants /f/ and /v/ were reported as difficult consonants for Thai EFL learners to articulate correctly. The researchers discussed that the differences between Grapheme-Phoneme correspondence, referring to the differences of sound and actual spelling between Thai and English, lead to this problem.

Le and Boonmoh (2020) investigated coda clusters as produced by Thai undergraduate students. The participants in this study were 10 engineering students from King Mongkut's University of Technology Thonburi (KMUTT), Thailand. The instruments in this study included a word list task, a sentence list task and a picture base. The examples of the word list included *protect*, *lift, tent*, and *belt*. These words were also used in context, as in *it can lift cars fifteen meters*. The /ft/ in the example is called a fricative stop coda. The results in this study show that the participants made errors in the production of fricative stop sounds. The words that involved frequent errors of this type of sound were *desk, last* and *first*. The errors were especially more frequent in word isolation. The nasal stop, as in *drink* and *vent*, is another final coda cluster that most participants faced difficulty with. The final coda cluster liquid stop, such as /lp/ and /lt/ as in *help and difficult*, is reported to be the most problematic for Thai students, as 91.3 percent of the participants could not produce the fricative stop and omitted these sounds.

Piyamat and Deekawong (2021) studied the problems of Thai university students' pronunciation in English. The participants in their study were 20 undergraduate students who studied English phonetics at Huachiew Chalermprakiet University. The instruments in their study were a closed-ended questionnaire and a pronunciation identification task. In terms of the closed-ended questionnaire, the results showed that Thai students agreed with the statement that they want to improve their English pronunciation at 89.47 percent. They felt unsure about their pronunciation of English consonant sounds at 31.74 percent, while they perceived that they could pronounce vowels clearly at 49.29 percent. When it comes to pronunciation of segmental phonemes, three major problems of pronunciation were reported to be consonant pronunciation, consonant cluster pronunciation, and final sound with -*s* ending pronunciation. The participants admitted that the major problems result from their native language and lack of experience in learning English and exposure. The researchers also mentioned that the sounds that Thai students seem to have problems with are /z/, /r/, /v/, /θ/, /ð/, /tʃ/, /ʃ/, and /dʒ/.

Plailek and Essien (2021) investigated Thai EFL university learners' pronunciation problems. The participants in their research study were 208 first-year students from the Faculty of Education, Suan Sunandha Rajabhat University. They were given an English pronunciation test with 22 phonemes, which were divided into different categories, such as plosive, nasal, fricative, affricate, and approximant. The participants were found to have the most difficulty in the manner of articulation of fricatives. The top-three problems were the phonemes /ð/, /θ/ and /v/ at 96.19 percent, 95.19 percent and 87.98 percent, respectively. The participants perceived that their problems mostly arose from the lack of knowledge of correct pronunciation and instruction of teachers.

While previous studies focused on Thai EFL learners from public universities and schools, this study will fill a gap by applying innovative methods. The participants in the study are undergraduate students majoring in English at the College of Arts, Rangsit University, Thailand. The reasons and justifications for selecting this group of participants are given in the following section.

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3. Method

3.1 Participants

It seems that the participants in the previous studies were Thai EFL learners who were enrolled as undergraduate students at public universities in Thailand. This study investigates a different group of participants by focusing on a private university in Thailand. In this study, the goal is to see whether different groups of participants are likely to provide different results of note. This group of participants was gathered by the convenience sampling method, as it is important for the study's sample to willingly enroll in the experiment themselves, so that they could pay their attention to the research procedure at the optimal level and be willing to participate in the project themselves.

3.2 Data Collection

The researchers collected the data themselves. A total of 40 students, including males and females, were invited to the English laboratory room where the atmosphere is quiet, and their sound could be recorded by a recording device. This study follows Jehma and Phoocharoensil (2014), who asked the participants to articulate approximately 15 words containing fricative consonants. The participants articulated the sounds with the two researchers while each researcher listened and took notes. The fricative consonants in English were written in different positions: the initial position, the medial position, and the final position, as shown in the instrument in Table 3.

Table 3 The Instrument of Word Isolation

Fricative Consonants	Initial Positions	Medial Positions	Final Positions
/f/	fine	coffee	life
/v/	van	lover	leave
/θ/	thank	birthday	mouth
/ð/	they	mother	breathe
/s/	sun	classroom	miss
/z/	zoo	dozen	buzz
/ʃ/	shoes	washing	cash
/ʒ/	-	vision	beige
/h/	house	behind	-

For the instrument above, two experts in the field of English phonetics were asked to cross-check the words with regard to the practicality and accuracy of the sounds given in the different positions.

4. Data Analysis

The data analysis in this study follows the chart of the International Phonetic Alphabet (IPA), as shown in Figure 1.

Figure 1 International Phonetic Alphabet

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In order to ensure the reliability of the results in this study, the two researchers, who are English linguists, kept their own notes, referred to as *logs*. When the participants were asked to record his/her fricative consonants, each researcher took notes concerning their errors in production. These notes were subsequently used to triangulate the data. Descriptive statistical data was used to convert frequencies into percentages. The results of this study are given below.

5. Results

The frequencies and percentages of errors in the fricative consonants as produced by Thai private university students are presented in Tables 4 to 12.

Table 4 Frequencies and Percentages of Accuracy and Error of the Fricative Consonant /f/

Phoneme	Initial Position	Medial Position	Final Position	
	/f/	/f/	/f/	∅
/f/	40 (100%)	40 (100%)	32 (80%)	8 (20%)

Table 5 Frequencies and Percentages of Accuracy and Error of the Fricative Consonant /v/

Phoneme	Initial Position		Medial Position		Final Position		
	/v/	/w/	/v/	/w/	/v/	/f/	/p/
/v/	9 (22.5%)	31 (77.5%)	10 (25%)	30 (75%)	5 (12.5%)	18 (45%)	17 (42.5%)

Table 6 Frequencies and Percentages of Accuracy and Error of the Fricative Consonant /θ/ in English

Phoneme	Initial Position		Medial Position		Final Position			
	/θ/	/t/	/θ/	/t/	/θ/	/n/	∅	/th/
/θ/	10 (25%)	30 (75%)	9 (22.5%)	31 (77.5%)	10 (25%)	2 (5%)	19 (47.5%)	9 (22.5%)

Table 7 Frequencies and Percentages of Accuracy and Error of the Fricative Consonant /ð/

	Initial Position		Medial Position				Final Position			
	/ð/	/d/	/ð/	/d/	/th/	/t/	/ð/	/θ/	/th/	/t/
/ð/	5 (12.5%)	35 (87.5%)	7 (17.5%)	2 (5%)	8 (20%)	23 (57.5%)	4 (10%)	4 (10%)	4 (10%)	28 (70%)

Table 8 Frequencies and Percentages of Accuracy and Error of the Fricative Consonant /s/

Phoneme	Initial Position	Medial Position	Final Position
	/s/	/s/	/s/
/s/	40 (100%)	40 (100%)	40 (100%)

Table 9 Frequencies and Percentages of Accuracy and Error of the Fricative Consonant /z/

Phoneme	Initial Position		Medial Position		Final Position		
	/z/	/s/	/z/	/s/	/z/	/s/	/t/
/z/	6 (15%)	34 (85%)	11 (27.5%)	30 (75%)	6 (15%)	25 (62.5%)	9 (22.5%)

Table 10 Frequencies and Percentages of Accuracy and Error of the Fricative Consonant /ʃ/

Phoneme	Initial Position		Medial Position		Final Position			
	/ʃ/	/ch/	/ʃ/	/ch/	/ʃ/	/tʃ/	/t/	/th/

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/ʃ/	24 (60%)	16 (40%)	19 (47.5%)	21 (52.5%)	19 (47.5%)	10 (25%)	10 (25%)	1 (2.5%)

Table 11 Frequencies and Percentages of Accuracy and Error in the Fricative Consonant /ʒ/

Phoneme	Medial Position			Final Position				
	/ʒ/	/ʃ/	/ch/	/ʒ/	/dʒ/	/tʃ/	/ʃ/	/t/
/ʒ/	1 (2.5%)	24 (60%)	15 (37.5%)	0 (0%)	6 (15%)	9 (22.5%)	5 (12.5%)	20 (50%)

Table 12 Frequencies and Percentages of Accuracy and Error of the Fricative Consonant /h/

Phonemes	Initial Position	Medial Position
	/h/	/h/
/h /	40 (100%)	40 (100%)

Overall, the results in tables above show that the participants could pronounce the phonemes /f/, /s/ and /h/ accurately at 100 percent. This is because these three sounds in English also exist in their mother tongue. On the other hand, the other six fricative sounds in English are not included in the Thai sound system. Thus, this may be interpreted as a cause of error or first language interference. Accordingly, the learners used the available sounds from Thai, their first language, as substitution, as summarized in Table 13.

Table 13 Frequencies and Percentages of Accuracy and Error in the Fricative Consonants in English

Phonemes	Initial Position	Medial Position	Final Position
/v/	/w/ (77.5%)	/w/ (75%)	/p/ (42.5%)
/θ/	/t/ (75%)	/t/ (77.5%)	Ø (47.5%)
/ð/	/d/ (87.5%)	/t/ (57.5)	/t/ (70%)
/z/	/s/ (85%)	/s/ (75%)	/s/ (62.5%)
/ʃ/	/ʃ/ (60%)	/ch/ (52.5%)	/ʃ/ (47.5%)
/ʒ/	-	/ch/ (37.5%)	/t/ (50%)

The results show that the most problematic sounds in English that Thai learners are faced with are the phonemes /v/, /θ/ and /z/. The discussion of their errors is provided in the following section. The implications of the results of this study are that English teachers who teach pronunciation to Thai students should spend more time on the practice of fricative sounds during the class.

6. Discussion

6.1 Comparison with Previous Studies

This section compares the results of previous related studies in which the participants were from Thai or overseas public universities and this current study where the participants were Thai private university students. It seems that being a university student is not the main variable for the accuracy of pronunciation as studying at a private university does not mean that they will have a better pronunciation than students in public universities. The phonemic errors appear to be the same and the substitution is also similar. Therefore, Thai EFL learners in general have the problem of pronouncing the phonemes /v/, /θ/ and /z/.

Firstly, the phoneme /θ/ is substituted by the use of /t/. For example, the word *thank* is pronounced *tank*. The error of this feature is a common problem among EFL learners in many locations, such as Thai, Arab, Indonesian, Slovak, and Vietnamese university students. To support this statement, Vietnamese students replace the phoneme /θ/ by /t/ and /z/. For example, the word *teeth* was pronounced *teet,* and the word *whether* was pronounced *whezer* (Bui, 2016). Indonesian EFL learners substituted /θ/ with /t/. For example, the pronunciation of the word *with* was *wit* (Firdaus et al., 2020; Trisnawati et al., 2020). Metruk (2017) also mentioned that Slovak EFL students replace the phoneme /θ/ by using /t/. Moreover, Jahara and Abdelrady (2021) found that Arab students replaced the phoneme /θ/ with /s/.

Table 14 Substitution of the Phoneme /θ/ by Other Variants

First Language	Substitutions
Thai	/t/
Vietnamese	/t/ or /z/
Indonesian	/t/
Slovak	/t/
Arabic	/s/

Despite replacement by several phonemes, Table 14 shows that the fricative consonant /θ/ was found to be a common problem of EFL learners from different nations. Bui (2016) had an opportunity to interview the participants, and they agreed that this phoneme is a difficult sound for them to pronounce. This error frequently occurs, as the phoneme /θ/ does not exist in their language (Firdaus et al., 2020; Trisnawati et al., 2020). Jahara and Abdelrady (2021) supported the point that EFL learners do not have sufficient chances to speak English outside their English classrooms. This is considered the primary reason that this common problem has never been eradicated.

Secondly, Thai EFL learners replace the phoneme /v/ by the use of /w/. This result agrees with Boodsee and Boonmoh (2019) and Plailek and Essien (2021), who investigated Thai EFL university learners' pronunciation problems by examining students at a public university in Thailand. For example, the word *victory* was pronounced as *wictory*. Nevertheless, a different substitution of the phoneme /v/ is /p/. This result was found by Jehma and Phoocharoensil (2014), whose participants were Pattani-Malay in Thamvittaya Mulniti School, Yala, and Muangphruek (2018) whose sample were undergraduate students from the Faculty of Innovation, Thammasat University. Although these groups had the same error with the phoneme /v/, they replaced it by the phoneme /p/, especially at the final position at 33 percent. The different substitutions seem to depend upon whether the position of the phoneme /v/ is in the initial position or the final position of the words. In addition, the current study shows both similarities and differences with Panichkul's (2018) study, in which the researchers studied the errors of fricative consonants by Thai ground staff via their announcements. Frequent errors were found with the phoneme /v/ in the final position, which was replaced by the phoneme /f/.

Table 15 Substitution of the Phoneme /v/ by Other Variants

First Language	Substitutions
Thai	/w /
	/f/ or /p/

A point to discuss here is the differences in the groups of participants between Thai undergraduate students (Boodsee & Boonmoh, 2019; Plailek & Essien, 2021) and employees in a company (Panichkul, 2018). The undergraduate students usually replaced the phoneme /v/ by /p/, whereas Thai employees tend to replace the phoneme /v/ by /f/ in the same position of words. This indicates two points, which are social status and occupation. People are more likely to be careful about their pronunciation when they are representatives of an institution. These errors are likely to be reduced because of their job training. Thus, training and experience seem to be the important points in this aspect.

Thirdly, the phoneme /z/ is substituted by /s/. The results of this study showed consistency with a number of previous studies. Panichkul (2018) reported that the Thai learners' pronunciation of /z/ in the initial

position almost always occurs as /s/ at 90 percent. This is in agreement with Piyamat and Deekawong (2021), who noticed the problems of Thai university students' pronunciation with the phoneme /z/.

7. Conclusions

This current study investigated the error analysis of fricative consonants as produced by Thai EFL learners who are currently undergraduates studying at a Thai private university. The results suggest that the participants in this study did not have problems with the phonemes /f/, /s/ and /h/ because these three sounds exist in the Thai language, and thus, they are familiar with these sounds and did not have much difficulty pronouncing them. However, the phonemes /θ/, /v/ and /z/ are not articulated accurately as these sounds are not found in their mother tongue. Therefore, they have difficulties pronouncing these sounds and are likely to replace these sounds by using others. For example, the sound /θ/ is substituted with /t/ and the sound /v/ is substituted by using /w/. Once English language teachers know that this problem is common among EFL learners, including Thai EFL learners, they should be encouraged to correct their own problems in addition to those found in their phonetics courses or English language classrooms. Due to the limited number of the participants in this study, the results of the study may not gain external validation as expected. For future research, it is recommended that the development of *Computer Assisted Language Learning* (CALL) or *Web-based Instructions* for practicing English pronunciation would help improve the accuracy of EFL learners' English pronunciation.

8. References

Boodsee, P., & Boonmoh, A. (2019). English word pronunciation of Thai high school students. *The Liberal Arts Journal, Faculty of Liberal Arts, Mahidol University, 2*(1), 18-42.

Bui, T., S. (2016). Pronunciations of consonants /ð/ and /θ/ by adults Vietnamese EFL learners. *Indonesian Journal of Applied Linguistics*, *6*(1), 125-134.

Chakma, S. (2014). Difficulty in pronunciation of certain English consonant sounds. *Sripatum Chonburi Journal*, *10*(3), 110-118.

Firdaus, S. F., Indrayani. L., M., & Soemantri, Y. S. (2020). The production of interdental fricatives by English as a Foreign language students in English course Bandung. *Linguistics and English Teaching Journal, 8*(1), 1-9.

Jahara, S. F., & Abdelrady, A. H. (2021). Pronunciation problems encountered by EFL learners: An empirical study. *Arab World English Journal, 12*(4), 194-212.

Jehma, H., & Phoocharoensil, S. (2014). L1 Transfer in the production of fricatives and stops by Pattani-Malay learners of English in Thailand. *Asian Social Science*, *10*(7), 67-78.

Le, H. T., & Boonmoh, A. (2020). Thai students' production of English coda clusters: An experiment on sonority with Thai university students taking an English fundamental course. *Human Behavior, Development and Society, 21*(2). 18-29.

Metruk, R. (2017). Pronunciation of English dental fricatives by Slovak university EFL students. *International Journal of English Linguistics, 7*(3), 11-16.

Muangphruek, P. (2018). Exploring pronunciation errors through a song: A case study on 3rd year students, Thammasat University. Independent Study, Thammasat University Language Institute, Thammasat University, Thailand.

Panichkul, S. (2018). Exploring Thai English airline announcements: A look at fricative sounds. *The 1st International Conference on English Studies: Innovation in English Language Teaching and Learning. 102-113.* The Department of Western Languages, Faculty of Humanities and Social Sciences, Thaksin University, Songkhla, Thailand.

Piyamat, B., & Deekawong, K. (2021) Phonological variations and problems in English pronunciation among Thai EFL learners: A case study of undergraduate students at Huachiew Chalermprakiet University. *Liberal Arts Review*, *16*(1), 70-84.

Plailek, T., & Essien, A. M. (2021). Pronunciation problems and factors affecting English pronunciation of EFL students, *Turkish Journal of Computer and Mathematics Education*, *12*(12), 2025-2033.

Roengpita, R. (2011). An acoustic study of English and Thai Fricatives produced by Thai speakers. *ICPHS*, *XV*(II), 1698-1701.

Shea, C., & O'Neill, S. O. (2021). Phonetics. Joyce Bruhn de Garavio & John W. Schieter (eds.). In *Introducing Linguistics: Theoretical and Applied Approaches* (pp. 26-113). Cambridge University Press.

Trisnawati, I., Mulyani, S., & Syam, A. (2020). Errors analysis on English consonant pronunciation produced by the fifth semester students of English education. *Tamaddun*, *19*(2), 118-131.

Winaitham, W., & Suppasetseree, S. (2012). The investigation of English pronunciation errors and factors affecting English pronunciation of Thai undergraduate students. *Silpakorn, Educational Research Journal, 4(2), 304-320.*