



Production of the English Voiceless Labiodental Fricative /f/ by Sundanese EFL Student Teachers: A Case Study

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Abstract

The production of English consonants can be challenging for EFL learners, particularly when the target sounds are absent or have limited use in their first language. This study investigated the production and substitution patterns of the English voiceless labiodental fricative /f/ among Sundanese EFL student teachers in Banten. A qualitative case study design supported by descriptive frequency analysis was employed. The participants were 12 undergraduate English Education students aged 20–21 years who regularly used Sundanese in daily communication and had completed pronunciation and phonetics courses. Data were collected through two oral-reading recording sessions using 30 isolated words and 22 sentences containing English labiodental fricatives. The analysis focused on 78 occurrences of /f/ in initial, medial, and final word positions. The recordings were transcribed using the International Phonetic Alphabet, classified according to their phonetic realizations and phonological environments, and validated by two expert raters. The findings showed that /f/ was substituted with the voiceless bilabial stop [p], voiced labiodental fricative [v], voiced velar stop [g], and voiceless velar stop [k]. The substitution of /f/ with [p] was the most frequently identified pattern. These substitutions occurred across different word positions and were influenced by surrounding sounds and orthographic forms, particularly words containing <ph> and <gh>. The findings highlight the need for explicit pronunciation instruction focusing on articulatory features, phonological environments, and English sound–spelling relationships.

Introduction

EFL learners considered several English sounds are problematic (Huckins, 1987; Dardjowidjojo, 2009; Fromkin, et al., 2011; Kanokpermpoon, 2007; O'Connor, 1980; Owolabi, 2012; and Zhang & Yin, 2009). The different language system of English and learners' first language contribute difficulties as O'Connor (1998) revealed that certain consonants sounds are problematic for Arabic, Cantonese, French, German, Hindi, and Spanish English learners and Thai English learners (Kanokpermpoon, 2007). Specifically, several studies reported that problematic English consonants are /l/, /r/, /w/, /j/, /θ/, and /ð/ sounds in English (Browne and Huckins, 1987; Zhang & Yin, 2009; Owolabi, 2012; Kanokpermpoon, 2007). The highest problematic consonants for the EFL learners are Voiced Dental Fricative (VdDF) /ð/ and Voiceless Dental Fricative (VDF) /θ/. The second highest problem is Voiced Palato-Alveolar Fricative /ʒ/. The next are Voiceless Labio-Dental Fricative (VLDF) /f/, Voiced Labio-Dental Fricative (VdLDF) /v/, and Velar Nasal /ŋ/ (Dardjowidjojo, 2009; Fauzi, 2014; Graepi & Leemann, 2019; Guntari, 2013; Metruk, 2017; Owolabi, 2012; Risdianto, 2017; among others).

When EFL learners are speaking, the tendency of producing the problematic sounds is by doing the substitution, replacing a specific problematic consonant in L2 with a certain sound that is available in their native language (Graeppi and Leeman, 2019), omitting or deleting the problematic sounds (Firdaus, Indrayani, and Soemantri, 2020), and adding specific sound before or after the problematic sound to ease the sound productions.

The imperfect sound production leads to term errors which learners cannot avoid in producing the target language (Ellis, 1994; Selinker & Han, 1999; Xiaoliang, 2013). There are factors causing errors in producing English sounds. It is said that the possibility of error occurrence is influenced by the learner's first language (L1) and second language (L2) system (Altenberg & Vago, 1983; Ellis, 1994; Carruthers, 2006; Derwing et al., 1998; Selinker & Han, 1999; Sabourin, Stowe, and de Haan, 2006; Montrul, 2008; Strange and Shafer, 2008). In terms of sound production, speakers imperfectly learn the pronunciation of English, either by transferring the phonological rules from their L1 into their English speech or through implementing strategies similar to those used in primary language acquisition. They may also create innovative pronunciations for English sounds that cannot be found in the speaker's first language. Another causal factor that has gotten is in the teaching-learning pronunciation. The 'modelling' of the teacher when teaching the students may become the problem.

There are literatures reported about the problems in producing consonants (Graeppi & Leemann, 2019; Kanokpermpoon, 2007; Metruk, 2017; Owolabi, 2012; Zhang & Yin, 2009, among others). However, there are limited numbers of studies who reported the Sundanese EFL sound productions. Syoc (1959) reported the list of Sundanese sounds, meanwhile Sumukti (1959) investigated the problems Sundanese EFL may face when they pronounced the English sounds. Fauzi (2014) and Risdianto (2017) reported that Sundanese face difficulties in producing Labio-Dental and Dental Fricatives. However, studies on in which position the Sundanese EFL learners face difficulties have not been investigated. Therefore, this study tried to seek how the student-teachers produce the Labio-Dental Fricatives (LDF), and in which position in words the student-teachers face difficulties in producing the LDF.

Literature Review

Studies revealed that some English sounds are considered as problems for EFL (Dardjowidjojo, 2009; Graeppi & Leemann, 2019; Jones, 1987; O'Connor, 1980; Owolabi, 2012; Tarone, 2018; Zhang & Yin, 2009). The differences of the language systems plausibly as the causal factors because the sounds have unique characteristics (Fromkin, et.al, 2011, Boey, 20; Aitchison, 2010; Brinton, 2000). The difference in forming the organ of speech and the air used when producing the sounds establish difference in the production of the sound and it causes confusion to the learners. They can potentially make errors or create their own version in producing the target language (Selinker's term is "interlanguage" (in Celce-Murcia, Brinton, & Goodwin, 2010).

Most EFL faced problems in pronouncing English consonant sounds /l/, /r/, /w/, /j/, /θ/, and /ð/ (Browne and Huckins, 1987; Zhang & Yin, 2009; Owolabi, 2012; Kanokpermpoon, 2007). Thai English language learners faced difficulties in producing sounds /g/, /v/, /θ/, /ð/, /z/, /ʃ/, /ʒ/, /ʒ/, and /dʒ/ because those sounds are not available in Thai language (Kanokpermpoon, 2007b). Zhang & Yin (2009) reported that the absence of English sounds /ð/, /θ/, and /r/ in Chinese is also becoming a great challenge to the English learners. Indonesian English learners found English consonants are problematic because of the difference in sound invention between the two languages (Dardjowidjojo, 2009). The VLDF /f/ and VdLDF /v/ are not in the Indonesian language sound list. Therefore, Indonesian made substitution for the sounds (Dardjowidjojo, 2009). He reported that uneducated or low-class people replaced VLDF /f/ and VdLDF /v/

with Voiceless Bilabial Stop (VBS) /p/. Meanwhile, the educated people, as they are considered know how to pronounce the sound VLDF /f/, substituted the VdLDF /v/ to VLDF /f/, and to VBS /p/. Similar to Indonesian language, the Sundanese language does not have LDF in the list (Djajasudarma, Sofyan, Sumardi, and Marzuki, 1994; Djajasudarma, 2013; Sudaryat, 2017). Therefore, this can be the possible problematic English sounds for Sundanese English learners as they were found to substitute the LDF /f/ and /v/ to bilabial stop [p], or used the voiced and voiceless labio-dental and dental fricatives interchangeably (Sumukti; 1959; Fauzi, 2014).

Several factors causing problems to sound production are bilingualism and the teaching learning process. Bilinguals are language learners who are on a journey to proficiency, affected by developments in motor control, perception of the L2, familiarity with languages outside the L1-L2 pair in question, stress level, and a myriad of other influences the speech (Goronzy, Tomokiyo, Barnard, & Davel, 2006). Beebe (1987) reported that the majority of L2 pronunciation errors are phonetic rather than phonemic as may appear to native listeners (in Goronzy et al., 2006). The other factor, the teaching learning process. Speaking with good pronunciation is understood even accompanied by errors in grammar (Gilakjani, 2012). Similarly, Hinofotis and Baily (1980) stated that without having good pronunciation, a speaker will not be able to communicate orally no matter how good his or her grammar and vocabulary.

The teaching of pronunciation has been explained by Celce-Murcia, et.al (2010). Problem faced in teaching learning pronunciation is the modelling of the teacher when teaching the students. The goals of pronunciation instruction are 1) helping students acquire knowledge, awareness, and skills that will address intelligibility and comprehensibility, 2) promoting the use of effective communication strategies when engaging interlocutors from diverse backgrounds (Daver, 2005; Jenkins, 2000; Kachru and Nelson, 1996). Thus, the goals for students who are prepared for becoming a teacher one of them is that language competency (Brooks, 1958).

The realistic goals in teaching pronunciation were proposed by Morley (1994), Gilbert (1980), and Celce-Murcia et.al. (1996) in Lane (2012) are intelligibility, confidence in speaking, and reduction of feature. Furthermore, learners should be equipped with awareness of using strategies. It is expected that with the help of their strategic awareness, learners can manipulate their pronunciation learning and find out the most appropriate way by themselves (Breitkreutz, Derwing, & Rossiter, 2002). The correct pronunciation teaching-learning process in the classroom makes the learners become more motivated and aware of the importance of both segmental and suprasegmental aspects in order to favour comprehensibility (Marza, 2014).

Intelligibility deals with the understood speech. Intelligibility is the ability of the listener to recognize individual words or utterances (Smith and Nelson, 1985). Insistence on 'correct' pronunciation according to one standard model may have produced students who could speak intelligibly (in the technical sense) and regard others as intelligible as long as the interlocutors were using the same sound inventories and phonological permutation rules (Nelson, 2011:90). Thus, in learning English, learners need no more than a comfortably intelligible pronunciation. To be intelligible, Gimson (2008:7) suggested that learners need not sound like native speakers, but by substituting particular consonants for ones they are unable to produce. To be intelligible, Jenkins (2000) proposed the essential changes in teaching pronunciation to English learners. It discusses the simplifications of segmentals and suprasegmentals to be intelligible speakers.

However, Dogancay-Aktuna & Hardman (2018) argued that apparently there are still many teachers who denote to the prestigious standardized varieties of English, generally Standard British and/or American English. Standard as mentioned by Thomas (2004) has two meanings: a unified form or consistency and levels of attainment. She continually said that the Standard

English should fulfil the appropriateness; refers to the appropriate context (both public and formal spectrum) and prestigious contexts. Additionally, the participants in this research are teacher candidates, they should be appropriate models for their students (Celce-Murcia et al., 2010), therefore they are suggested first, to have complete comprehension on the sound system and the sound production process. Second, they understand the bad effects to students' intelligibility. Third, they comprehend the features that can be taught to students.

Methods

Research Design

This study employed a qualitative case study design supported by descriptive frequency analysis. The case study design was selected because the investigation focused on a bounded group of Sundanese student-teachers who shared similar linguistic and educational backgrounds (Bogdan & Biklen, 1998; Creswell, 2012). The qualitative analysis was used to identify the phonological realizations and substitution patterns of the English voiceless labiodental fricative /f/, while frequency counts were used to summarize the occurrence of each pattern across participants and word positions.

Participants

The participants were 12 undergraduate students enrolled in an English Education Department in Banten. They were selected purposively based on the following criteria: they had completed the Pronunciation Practice and English Phonetics and Phonology courses; were between 20 and 21 years old; had acquired Sundanese during childhood; regularly used Sundanese when communicating with family members, neighbours, friends, and classmates; reported being able to speak and write Sundanese; and occasionally inserted Sundanese elements when communicating in Indonesian or English. Purposive selection was used to ensure that the participants represented Sundanese-speaking EFL learners relevant to the focus of the study (Cohen & Manion, 1994). To maintain confidentiality, the participants were coded as ST1 to ST12.

Research Instrument

The data were elicited through an oral reading test consisting of 30 isolated words and 22 sentences. The complete test materials contained 145 occurrences of English labiodental fricatives, comprising 78 occurrences of the voiceless labiodental fricative /f/ and 67 occurrences of the voiced labiodental fricative /v/. However, because the present article specifically focuses on the production of /f/, only the 78 target occurrences of /f/ were included in the detailed analysis.

The /f/ targets were distributed across three word positions: 37 occurrences in the initial position, 15 in the medial position, and 26 in the final position. The test items represented different phonological environments in which /f/ was preceded or followed by vowels and consonants. They also included different orthographic representations of /f/, such as <f>, <ph>, and <gh>, because these spelling patterns were relevant to several pronunciation substitutions identified in the results.

Data Collection Procedures

The oral reading test was administered in two recorded sessions. The first session was conducted at the beginning of the data collection process, while the second session served as a follow-up observation. As the study did not investigate pronunciation improvement or the effect of an intervention, the two sessions were treated as repeated observations rather than as pretest and posttest measurements.

During each session, the participants read the prepared words and sentences aloud. Their speech was recorded in video format to enable repeated listening and careful examination of individual sound productions. To reduce anxiety and minimise the influence of the researcher's presence, the participants operated the recording device themselves under the researcher's guidance. Only the oral reading data were included in the present analysis because the article does not report findings from the interviews.

Data Transcription and Coding

All recorded productions were repeatedly listened to and transcribed using the International Phonetic Alphabet. Each realization of the target phoneme /f/ was coded according to four analytical categories: the participant producing the sound, the position of /f/ in the word, the immediately preceding or following phonological environment, and the phonetic realization produced by the participant.

A production was classified as accurate when the target /f/ was realized as [f]. Non-target productions were classified according to the substitution identified in the recordings, including [p], [v], [g], and [k]. For example, the production of /f/ as [p] was coded as /f/ → [p], while its production as [v] was coded as /f/ → [v]. The phonological environments were subsequently formulated using conventional notation, such as #_V for a word-initial sound followed by a vowel, V_V for a medial sound occurring between vowels, and V_# for a word-final sound preceded by a vowel.

Data Validation

Two expert raters were involved in validating the recordings, phonetic transcriptions, and classifications of the participants' productions. The first rater was an English lecturer from Banten with more than ten years of experience teaching Pronunciation Practice and English Phonetics and Phonology. The second rater was a language researcher from Kantor Bahasa Banten who had conducted research on language use in Banten Province. The raters reviewed the recorded productions and compared their judgments with the researcher's coding to strengthen the credibility of the analysis (Van Moere, 2013). Any differences in classification were re-examined through repeated listening and discussed until an agreement was reached.

Data Analysis

The analysis was conducted in several stages. First, all realizations of /f/ were identified from the recordings. Second, each realization was classified as either the target production [f] or a non-target substitution. Third, the substitutions were grouped according to their phonetic realizations, namely [p], [v], [g], and [k]. Fourth, the patterns were compared across initial, medial, and final word positions and according to their surrounding vowels or consonants.

The frequency of each substitution was calculated based on the total number of valid participant-by-token realizations. The number and proportion of student-teachers producing each pattern were also reported. Because the study involved a small and specifically selected case-study group, the analysis was descriptive and was not intended to make statistical generalisations beyond the participants investigated.

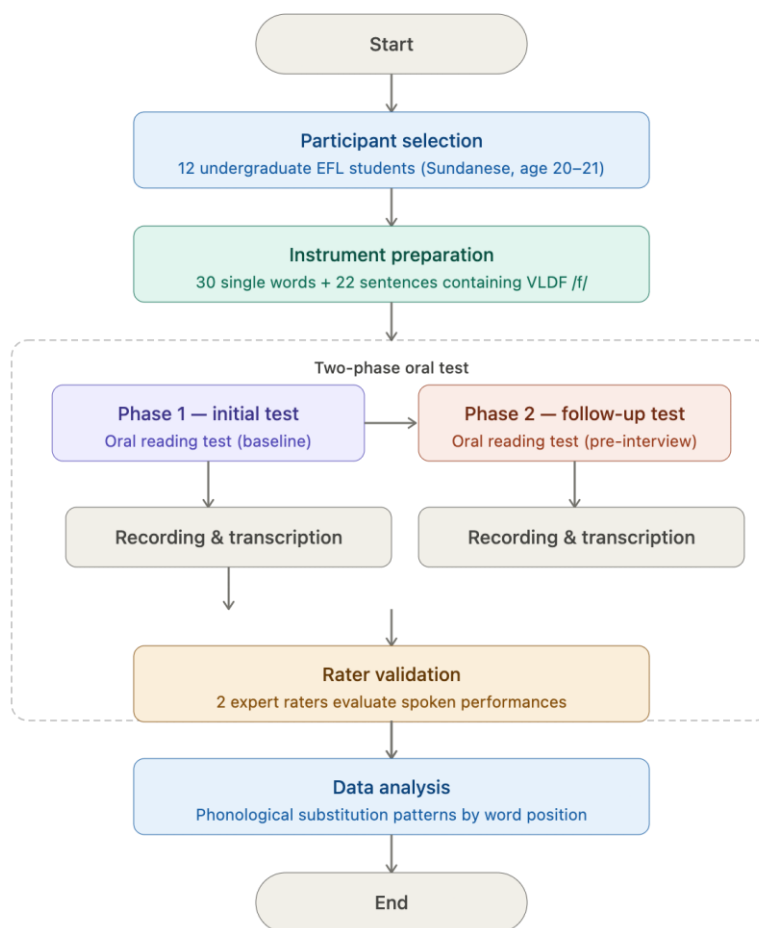


Figure 1. Diagram of research procedure

Figure 1. Research data collection and analysis procedures

Results and Discussion

The student-teachers' Voiceless Labio-Dental Fricative (VLDF) /f/

The result shows the student-teachers produced the voiced and voiceless LDF by substituting the VLDF /f/ and VdLDF /v/ interchangeably, using voiceless bilabial stop (VBS) [p], and substituting the sounds to voiceless velar stop (VVS) [k] and voiced velar stop (VdVS) [g]. The substitutions are below.

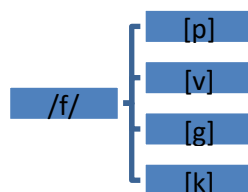


Figure 2. The substitution of VLDF /f/

The student-teachers used the Bilabial instead of the Labio-Dental to produce the VLDF /f/. They did a blockage in the area of the bilabial; thus, the resulting sound was VBS [p]. When the blockage was done in the area of the velar, the resulting sounds were VVS [k] and VdVS [g]. The student-teachers did the modification in the vocal cord, thus the sound that should be

produced by vibrating the vocal cords was produced without vibrating the vocal cords as in the substitution of the VdLDF /v/ to VLDF [f].

The VLDF /f/ found to be substituted to four sounds, VBS [p], VdLD [v], VdVS [g], and VVS [k]. The following table shows the substitution occurrences.

Table 1. The occurrences of the VLD /f/ substitution

	Occurrences	ST
/f/ → [p]	32/78	8/12
/f/ → [v]	20/78	7/12
/f/ → [g]	4/78	4/12
/f/ → [k]	1/78	1/12

The table above shows that the substitution of sound VLD /f/ to VBS [p] has the highest substitution percentage from the other sounds (41%), 32 substitutions of VLDF /f/ to VBS [p]. There were 8 student-teachers (66%) the substitutions. The substitution of VLDF /f/ to VdLD [v] occurred 20 times (26%) admitted by 7 student-teachers (58%). Meanwhile, four student-teachers substituted the VLDF /f/ to VdVS [g], and there was 1 student-teacher substituted /f/ sound to VVS [k].

The position of problematic LDF

The LDF sound were inserted in 145 words. The VLDF /f/ was inserted in 78 words: 37 in the initial, 15 in the medial, and 26 in the final position. Meanwhile the VdLDF /v/ was inserted in 67 words: 21 in the initial, 29 the medial, and 17 in the final position.

Voiceless Labio-dental Fricative /f/

Results showed that VLDF /f/ was substituted to VBS /p/ and VdLD /v/. Besides, the findings revealed that the VLD /f/ was substituted to VdVS /g/ and VVS /k/. The substitutions occurred when the VLD /f/ was put in certain positions. It relates to the environment where the sound is placed. However, not all VLD /f/ was substituted. The sound could be produced correctly by some students in certain positions.

Initial Position

Substitution of VLD /f/ occurred when the sound was put in the initial position. It was substituted when the sound followed certain vowels and certain consonants. The patterns of the substitution can be seen below.

/f/ → [v]/#_V

/f/ → [v]/#_C

/f/ → [p]/#_V

/f/ → [p]/#_C

The patterns show the allophones of the VLDF /f/ are VdLDF [v] and VBS [p] in word initial followed by vowel and the allophones of the VLDF /f/ are VdLDF [v] and VBS [p] in word initial followed by consonant.

The substitution of VLDF /f/ to VdLDF [v] occurred when it was followed by vowels: /aɪ/, /æ/, /u:/, /ʊ/, /i:/, /ɪ/, /e/, and consonant /r/. The highest substitution in initial word was when the VLDF /f/ was followed by vowel /aɪ/ in words <finally, fire, five, and family>.

The substitution of VLDF /f/ to VdLDF [v] occurred when it was followed by vowels: /aɪ/, /æ/, /u:/, /ʊ/, /i:/, /ɪ/, /e/, and consonant /r/. The highest substitution in initial word was when the VLDF /f/ was followed by vowel /aɪ/ in words <finally, fire, five, and family>.

The substitution occurred when the VLDF /f/ was followed by centring diphthong /aɪ/ and vowel /æ/ in word. There was no substitution in the other vowels.

/f/ + /aɪ/ → [v] in words: <five, finally, fire>

/f/ + /æ/ → [v] in word: <family>

The substitution of VLDF /f/ to VBS [p] occurred when it was followed by closing diphthong /əʊ/.

/f/ + /əʊ/ → [p] in words: <phone. phobia>

/f/ + /ɑ:/ → [p] in word: <farm>

/f/ + /r/ → [p] in word: <friend>

There were four student-teachers who did the substitution, ST 1, ST 6, ST 8, and ST 12. They consistently used the substitute VBS [p] for the VLDF /f/.

Table 2. The VLDF /f/ to VBS [p]

Followed by	Word	Q	ST no
_əʊ	phone	4	ST 1, ST 6, ST 8, ST 12
	phobia	4	ST 1, ST 6, ST 8, ST 12
_ɑ:	farm	1	ST 8
_r	friendly	1	ST 8

The table shows that the substitution of VLDF /f/ to VBS [p] when it followed /əʊ/ occurred eight times in words <phone, phobia> and one substitution occurred when the VLDF /f/ was followed by vowel /ɑ:/ and consonant /r/ in words <farm, friendly>.

Medial Position

The findings revealed that the realization of the VLDF /f/ in medial position was substituted when it was between certain vowels and consonants.

/f/ → [v]/V_C

/f/ → [v]/V_V

/f/ → [p]/V_C

/f/ → [p]/V_V

/f/ → [g]/V_V

/f/ → [k]/V_V

The patterns show that the realization of VLDF /f/ in medial position of a word are VdLDF /v/ between vowel – consonant and between vowels, VBS /p/ between a vowel – consonant, and between vowels, VdVS /g/ between vowels, and VVS /k/ between vowels.

Table 3. The VLDF /f/ to VdLDF [v] in medial

Between	Word	Q	ST no
e ə	elephant	2	ST 1, ST 6
ɪ θ	fifth	1	ST 9
ɪ r	refreshing	1	ST 9
ʌ ə	buffalo	1	ST 1

The table shows that the VLDF /f/ was substituted to VdLDF [v] when it was between close vowel /ɪ/ and VDF /θ/ and between close vowel /ɪ/ and VdApF /r/ in words <fifth, refreshing>. Consistently, the sound was substituted by one student-teacher, ST 9.

The VLDF /f/ was substituted to VdLDF [v] when the sound was preceded by vowel /e/ and /ʌ/ and followed by open vowel /ə/. The sound was substituted in words <elephant, buffalo>. From the three occurrences, ST 1 did two substitutions meanwhile ST 6 did one substitution in word <buffalo>.

VLDF /f/ to VBS [p]

The substitutions can be seen in the table below.

Table 4. The VLDF /f/ to VBS [p] in medial word

Between	Word	Q	ST no
ɑ: s	Stuffs	4	ST 1, ST 6, ST 8, ST 10
ə ɒ	Performance	3	ST 1, ST 6, ST 8
e ə	Elephant	2	ST 3, ST 5
ɪ r	Refreshing	1	ST 8
ɪ θ	Fifth	1	ST 10
ɪ r	Refreshing	1	ST 10
n l	Influenza	1	ST 8

The highest problematic production of VLDF /f/ in medial single word was between long vowel /ɑ:/ and consonant in word <stuffs> admitted by four student-teachers. Three student-teachers (ST 1, ST 6, and ST 8) did the substitution in word <performance> and two student-teachers (ST 3 and ST 5) in word <elephant>. Meanwhile, when it was between vowel and consonant, the substitution was done by ST 8 in word <refreshing>ST 10 did the substitution when the sound was between vowel /ɪ/ and consonant /θ/ in word <fifth> and when the VLDF /f/ was between vowel /ɪ/ and consonant /r/ in word <refreshing>. The last was the substitution found between consonants /n_l/ in word <influenza> admitted by ST 8.

VLDF /f/ to VdVS [g]

The occurrences of the substitution were into sound VdVS [g] in the <coughing>.

Table 5. The VLDF /f/ to VdVS [g] in medial word

Between	Word	Q	ST no
ʌ ɪ	Coughing	4	ST 5, ST 6, ST 8, ST 9, ST 10

The table shows that four student-teachers (ST 5, ST 8, ST 9, and ST 10) did the substitution of VLDF /f/ to VdVS [g].

Table 6. The VLDF /f/ to VVS [k] in medial word

Between	Word	Q	ST no
ʌ ɪ	Coughing	1	ST 6

The substitution of VLDF /f/ to VVS [k] occurred once admitted by ST 6.

Therefore, from the findings, it can be shown that the substitution occurrences happened when the VLD /f/ was between in this environment:

The substitution of VLDF /f/ to VVS [k] occurred once admitted by ST 6.

Therefore, from the findings, it can be shown that the substitution occurrences happened when the VLD /f/ was between in this environment:

/ɪ/ + /f/ + /θ/ → [v]

/ɪ/ + /f/ + /r/ → [v]

/ɛ/ + /f/ + /ə/ → [v]

/ʌ/ + /f/ + /s/ → [p]

/ə/ + /f/ + /v/ → [p]

/ɛ/ + /f/ + /ə/ → [p]

/ʌ/ + /f/ + /ɪ/ → [g]

/ʌ/ + /f/ + /ɪ/ → [k]

Final Position

In the final position, the findings showed that the substitutions of VLDF /f/ in final position were to VdLDF [v], VBS [p], and VdVS [g]. The patterns of substitutions can be seen below.

/f/ → [p]/V_#

/f/ → [p]/C_#

/f/ → [v]/V_#

/f/ → [g]/V_#

The patterns above explain that the realization of the VLDF /f/ in the final position of a word can be VBS [p] when it is preceded by vowel and or consonant. Next, the VLDF /f/ is realized as the VdLDF [v] when it is preceded by a vowel. The last is the VLDF /f/ can be realized as VdVS [g] when it is preceded by a vowel.

The first substitution was when the VLDF /f/ preceded by a vowel or a consonant. It was substituted to VBS [p].

Table 7. The VLDF /f/ to VBS [p] in final

Preceded by	Word	Q	ST no
ɪ	cliff	5	ST 6, ST 8, ST 11
v_	off	4	ST 8, ST 11
i:	chief	4	ST 6, ST 11
l_	herself self	3 1	ST 11 ST 11
ʌ_	enough	2	ST 11
e	chef	2	ST 10, ST 11
eɪ	safe	1	ST 11
ɑ:	staff	1	ST 11

u:	roof	1	ST 11
3:	surf	1	ST 11

The table above shows that the highest substitution of the VLDF /f/ was to VBS [p] occurred when the final VLDF /f/ was preceded by the close vowel /i:/ and /ɪ/ in words <chief, cliff> admitted by three student-teachers (ST 6, ST 8, and ST 11). Followed by half open vowel /e/ in word <chef>, and half open vowel /ɒ/ in word <off>, the substitutions occurred four times and were done by three student-teachers (ST 8, ST 10, and ST 11). Meanwhile, when the sound was followed by other half open and open vowels the substitution occurred once in each word and done by only one student-teacher, ST 11.

The highest substitution of VLDF /f/ to VBS [p] in word combination was when it was preceded by the close vowels in words <cliffs, chief>. There were five occurrences detected. The substitution of the VLDF /f/ was found to be the VBS [p] when it was followed by the open vowels /ɒ/ and /ɑ:/ as in word <off, stuff>. The substitution also occurred when the VLDF /f/ was preceded by lateral consonant /l/. Two student-teachers did the substitution, ST 1 and ST 11. The last is the substitution in word <enough> admitted by ST 11.

Table 8. The VLDF /f/ to VdLD [v] in final

Preceded by	Word	Q	ST no
eɪ	safe	1	ST 8

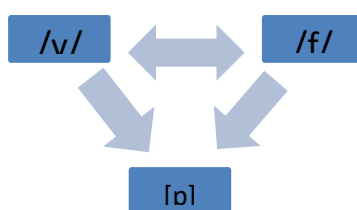
The table shows that the closing diphthong /eɪ/ made the substitution of the VLDF /f/ to VdLD [v]. It occurred in the single word, meanwhile in the word combination, the substitution did not occur. The word <safe> should be pronounced /seɪf/, however, ST 8 pronounced it [seɪv]. The next substitution of VLDF /f/ to VdVS [g]. The substitution existed in both words: <enough, laugh> as below below.

Table 9. The VLDF /f/ to VdVS [g] in final word

Preceded by	Word	Q	ST no
ʌ	enough	4	ST 3, ST 6, ST 8
ɑ:	laugh	2	ST 8 dan ST 10

The table above shows that the substitution occurred when the VLDF /f/ was preceded by open vowel /ʌ/ in word <enough> admitted by ST 3 and ST 8. The substitution occurred when the sound was preceded by the open vowel /ʌ/ and /ɑ:/ in words <enough, laugh> admitted by ST 6, ST 8, and ST 10.

The substitution of the VLDF /f/ and VdLD /v/ to VBS /p/ or using the VLDF /f/ and VdLD /v/ interchangeably had been predicted and reported (Fauzi, 2020; Risdianto, 2017; Sudaryat, 2017). This happens because the labio-dental fricatives do not exist in Sundanese, therefore these sounds will be substituted. VLDF /f/ is substituted to VBS [p] and the VdLD /v/ would be substituted to VBS [p] or VLD [f] (Sudaryat, 2017:79). This is also in accordance with the result of the study done by Risdianto (2017) who stated that Sundanese mispronounced VLD /f/ and VdLD /v/. Sundanese also generalized VdLD /v/, VLD /f/, and VBS /p/ (Fauzi, 2020). The sounds are considered similar in the production process. Therefore, those sounds are allophones for each sound. If we draw the sounds in a diagram, it can be shown below.



The diagram shows that the VdLDF /v/ is substituted to VBS [p] and VLDF [f], meanwhile VLDF /f/ is substituted to VBS [p] and to VdLD /v/. Further, it clarifies the VBS [p] is produced as a substitute for the VLDF /f/ and VdLDF /v/. The diagram also reveals that the VLDF /f/ and VdLDF /v/ are interchangeably used in different environment.

The result of this study showed that the student-teachers produced LDF /f/ and /v/ by substituting VLDF /f/ and VdLDF /v/ interchangeably. In some cases, the substitution to VBS [p] also occurred. It supports the previous studies (Fauzi, 2020; Risdianto, 2017; Sudaryat, 2017a) that the VLDF /f/ and VdLDF /v/ are used interchangeably and substituted to VBS [p]. Accordingly, the process of the production of the sounds made by the student-teachers was different from what it should be done. The VLDF /f/ and VdLDF /v/ as explained by Kelly (2000) are produced by approaching the lower lip close to upper teeth; the air is allowed to go out of the mouth. Furthermore, the VLDF /f/ is voiceless; it means that the force of air from the lung is not strong enough to vibrate the vocal folds. Meanwhile, in producing the VdLD /v/, the air from the lung is strong enough to vibrate the vocal folds. Therefore, the obvious difference between the VLDF /f/ and VdLDF /v/ mainly lies in the modification of the air in the glottis. The student-teachers did the reverse process; the sound that should be produced by not vibrating the vocal folds was done by vibrating the vocal folds and vice versa.

The substitution of VLDF /f/ to VBS [p] mostly occurred in words <phone, phobia, elephant>. This case is possible to occur seeing that the writing symbols are different from the pronunciation. When someone pronounces the <ph> to [p], it is said that probably due to a misunderstanding of the meaning of the symbol <ph> because the combination of <ph> has only one normal pronunciation [f] (Wijk, 1966: 97). Therefore, the substitution can be said as misunderstanding of pronouncing the letters <ph>.

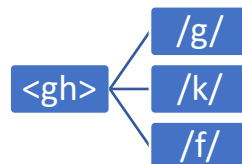
The possibility of substituting VLDF /f/ to VdLDF [v] and VBS [p] as predicted by Sudaryat (2017) is logic, because in Sundanese, the sounds do not exist. It is also proved by previous studies (Fauzi, 2020; Risdianto, 2017). Although Sumukti (1959) stated that Sundanese recognize VLDF /f/ and can produce the sound correctly because most Sundanese speak Indonesian language in which several words from Arabic bear the phoneme /f/. Therefore, Sundanese are considered able to produce the VLDF /f/ based on the correct place of articulation and manner of articulation. The findings showed that some Sundanese could produce the LDF properly; however, the realization of the VLDF /f/ and VdLD /v/ to VBS [p] still occurred in certain cases.

Apart from those findings above, other findings revealed that there were substitutions of VLDF /f/ to VdVS [g] and VVS [k] in a certain environment. The diagram of the VLDF /f/ can be seen below.



Observing the process of producing the sounds, the VLDF /f/, the VdVS /g/ and VVS /k/ is different. As it was explained before, the production of the VLDF /f/ is using the lower lip and upper teeth and allowing the air flow through the gaps between the teeth and the lip. Meanwhile the production of the VS /g/ and /k/ is using the back of the tongue and the soft palate (velum) and the air is totally blocked (Kelly, 2000). The characteristics of VLDF /f/ and VS /g/ and /k/ are different, therefore it is impossible for the student-teacher to do the substitution. However, there were six student-teachers who did the substitution of VLDF /f/ to VdVS [g]. The substitution occurred both in single word and word combination.

The occurrences of the substitution possibly occurred in the case as shown above. The orthographic presentation of the sounds leads EFL learners to mispronounce the sounds. It happened to the words <coughing, laugh, enough>. They contained the letters <gh> that can be mispronounced because the letters <gh> in English words represent three consonant sounds, VdVS /g/, VVS /k/, and VLDF /f/ respectively (Wijk, 1966: 91). The possibility of the pronunciation of <gh> can be seen below.



The pronunciation of <gh>:

<gh> → /g/ as in “ghost”

<gh> → /k/ as in “hough”

<gh> → /f/ as in “laugh”

The mispronunciation of letters <gh> may arise because of the knowledge of pronouncing the letters. The choice of substituting the VLDF /f/ to VdVS [g] and VVS [k] can be based on the orthographic presentation of the words. This orthography may influence speech production therefore this may pose a problem (Hammond, 1982). Dealing with the language acquisition, the student-teachers could produce VLDF /f/ appropriately as it can be seen in the other words productions. Thus, the substitution of VLDF /f/ in words <coughing, laughing, enough> to VdVS [g] and VVs [k] may occur.

Conclusion

The problematic VLDF faced by student-teachers was indicated by the student-teachers' productions of the sounds. The sounds were not produced in the appropriate place of articulation, manner of articulation and vocal cord movement. The sounds were produced by substitution, deletion, and additional sound process. The substitutions of the LDF were to VBS [p], VdLD /v/, VdVS /g/, and VVS [k].

The highest problematic position of labio-dental fricatives faced by the student-teachers was the initial VLDF /f/ when it was followed by closing diphthong /aɪ/ and /əʊ/.

Implication

The current study gives pedagogical implication that the necessity of improving the student-teachers ability in recognizing the rules of pronouncing the sounds in the target language is compulsory. The student-teachers are trained to be models for their students when they are teaching in the classroom. Therefore, knowledge of the pronunciation of English sounds is very required. Awareness of training the organ of speech is very essential to be increased. This refers to the management of training which consists of the following.

First, making an appropriate syllabus that contains clear concepts and implementation procedures so that the training objectives can be achieved properly. Second, the provision of learning resources that is relevant to the training objectives. This is associated with the use of variations of the English language which will be the direction of the training. Third, determine accurately the training materials needed by the training participants.

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