

EXPLORING PRONUNCIATION CHALLENGES: INDONESIAN UNIVERSITY STUDENTS' PRODUCTION OF ENGLISH FRICATIVE SOUNDS

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Abstract: This study investigated the production of English alveolar and post-alveolar fricatives by 40 Indonesian university students who are not majoring in English study. The research instruments were a questionnaire, which was used to obtain information about the participants, and a word list, which was comprised of 16 English words with alveolar and post-alveolar fricatives and 9 tricky words. The results revealed two main findings. The first was that most Indonesian non-English major university students who participated in this research were not proficient in producing voiced post-alveolar fricative /ʒ/ which resulted in the substitution of the sound with /z/, /s/, and /ʃ/. The participants, however, were quite great at producing the voiceless post-alveolar fricative /ʃ/ and had no difficulty in producing alveolar fricatives /s/ and /z/. The second was that the results indicated that the participants' problems in pronouncing English fricatives were mainly attributed to native language interference, the absence of the target sound in the sound system of their native language, and limited knowledge of English phonetics. This research recommends that EFL teachers give a special portion of time to train their students to pronounce fricative sounds in English that do not exist in the students' native language and provide them with English sound phonetic knowledge. Both of these things are strongly believed to improve the students' proficiency in English pronunciation.

Keywords: *fricatives; Indonesian; pronunciation; second language acquisition.*

INTRODUCTION

In the realm of higher education having a good command of English will give students and scholars the upper hand (de Wit & Altbach, 2021). Although some teachers consider 'comfortable intelligibility' is paramount in pronunciation skill (Zoghbor, 2018), many employers now require an excellent English proficiency performed by the applicants since it has a high value in the labor markets (Robles,

2012; Zein, 2019).

Pronunciation has long been known as one of the main issues encountered by speakers who are in the process of acquiring English proficiency as a second or foreign language. Non-native learners of English are likely to face some difficulties in pronouncing English sounds (O'Connor, 1980; Plailek & Essien, 2021; Whitehead & Ryu, 2023; Yang & Kongjit, 2022; Yusriati & Selamat, 2019; Zoghbor, 2018). In Indonesians' case, this may be

caused by the interference of their mother tongue (Indonesian) which in return hinders the acquisition of English. Every speaker has embedded the sound system of their mother tongue and by the time they are introduced to another language. Therefore, pronunciation errors may arise (Pal, 2013). Correspondingly, Storkel (2003) cited by Andi-Pallawa & Alam (2013) asserts that a speaker generally transfers the habits of her/his native language structure to the foreign language.

The disparities between phonological elements in native and foreign languages are the second factor that may cause non-native speakers some pronunciation problems (Sulistiyorini & Wibowo, 2021). The nonexistence of some sounds in the foreign language in the mother tongue's phonological system will pose speakers' problems. This is due to the fact that the speakers do not have the slightest idea as to how to produce those sounds and their speech organs are not trained to articulate them. Sometimes, a sound may phonemically exist in both languages, yet it is phonetically pronounced differently in both. This also might arise language learners some issues. For instance, the production of English (1) voiceless post-alveolar fricative /ʃ/, such as in *sure*, *fisherman*, and *harsh*, (2) voiced palato-alveolar fricative /ʒ/ such as in *occasion*, *vision*, and *exposure*, (3) and voiced alveolar fricative /z/ such as in the words *hazelnut*, *houses*, and *tease* by non-native English speakers are not always satisfactory due to the absence of these sounds in the phonological system of their languages. The absence often results in mispronunciation of the aforementioned sounds made by the speakers in the form of substitution or deletion of target sounds.

It will not be a big issue for the speakers to master the characteristics of the foreign language if their native languages have closely similar structures to those of English. The pronunciation issue, however, will arise if the structures of both languages are different as they might have to replace it with something similar that exists in their first language or even omit it. This is often the problem faced by non-native speakers of English, including those in Indonesia. They typically solve the pronunciation issue by replacing the nonexistent English sounds with ones in the Indonesian phonological system that are similar enough. They also probably produce reduced pronunciation (Wanrooij & Raijmakers, 2021)

Since many non-native speakers and learners

of English often face difficulties in producing English fricatives, the production of English fricative sounds by non-native English speakers has received scant attention from many scholars in the field study (Jehma & Phoocharoensil, 2014; Rahman & Idris Asmaradhani, 2020; Sulistiyorini & Wibowo, 2021; Wanrooij & Raijmakers, 2021; Weda & Sakti, 2017; Diani & Azwandi, 2021; Utami et al., 2017) Regarding to English fricative consonant pronunciations. it was found that the majority of the participants, who are Indonesian, failed in accurately producing /ʃ/ and /ʒ/ and they often substitute /s/, /z/, or /f/ for both sounds (Weda & Sakti, 2017). Similarly, Pattani-Malays were also found to have some difficulties in correctly articulating /ʃ/, /ʒ/, as well as /z/ and resulted in the substitution of the sounds as well (Jehma & Phoocharoensil, 2014). Furthermore, Wanrooij and Raijmakers found reduced pronunciation by non-native English speakers (Wanrooij & Raijmakers, 2021). However, these studies did not specifically touch on a certain English sound pronunciation and generally used student English major university students as research participants.

In the context of Indonesian learners, it seems that the influence of Indonesian phonological feature on students' English pronunciation skills is significant, but there has been little to detailed investigation regarding the production of English post-alveolar fricatives /ʃ/ and /ʒ/, as well as voiced fricative /z/ and voiceless fricative /s/, particularly by non-English. To fill the gap it is necessary to conduct further research on it.

The specific objective of the present study is to investigate the ways in which Indonesian non-English major college students produce four English fricative sounds, specifically /s/, /z/, /ʃ/, and /ʒ/. The researcher also focused on figuring out which of the aforementioned fricatives the participants found difficult to pronounce by identifying the mispronunciations made by them. The findings of this study are expected to give insights and guide lecturers in teaching pronunciation for non-English major college students. In communication, proper pronunciation is essential. It aids students in resolving challenging comprehensibility issues (Widagsa et al., 2019).

To achieve its objectives, the following research questions will drive the study: (1) Are Indonesian university students who are not majoring in English capable in accurately pronouncing four English fricative sounds, specifically /s/, /z/, /ʃ/, and /ʒ/? (2) Do the score of English subject and informal English tutor play

role in influencing the participants' pronunciation? (3) Based on the phonological errors found, which of /s/, /z/, /ʃ/, and /ʒ/ the students find difficult to pronounce?

METHOD

Adapting Owolabi's (Owolabi, 2012) and Metruk's (Metruk, 2017), forty (40) Indonesian undergraduate students registered on their sixth until final semester (8th or more) were recruited as the participants of this research. The undergraduate students in their year were chosen. It was assured that they had taken the obligatory English subject before. Moreover, one of the criteria for the participants was that they must not follow a non-English study program on account of the assumption that English major students will possibly be more advanced with regard to pronunciation in comparison to those who are not.

Table 1 *List of English target words pronounced by the participants*

No.	Words	Phonetic Symbols
1	sunny	[sʌn.i]
2	see	[si:]
3	sarcastic	[sɑ:r'kæs.tɪk]
4	soap	[soʊp]
5	zipper	[zip.ə]
6	zebra	['zi:.brə]
7	zoo	[zu:]
8.	zone	[zoʊn]
9	shoulder	['ʃoʊl.də]
10	shadow	['ʃæd.oʊ]
11	shelter	['ʃel.tə]
12	shop	[ʃɑ:p]
13	asia	[ei.ʒə]
14	usual	['ju:.ʒu.əl]
15	azure	['æʒə(r)]
16	casually	[kæʒ.u.ə.li]

This study utilized two instruments: a word list and a questionnaire. First, the word list was comprised of twenty-five English words that were constructed to be pronounced by the participants. The words were divided into five groups. There was a total of sixteen target words for four groups (four words each) wherein each group focused on different fricatives, namely alveolar fricatives /s/ and /z/ as well as post-alveolar fricatives /ʃ/ and /ʒ/. One group consisted of nine words without the four fricatives, which were selected randomly, served as additional words to distract the participants. To be more specific, only the pronunciations of sixteen English words that use the four fricatives in word-initial (and medial for /ʒ/) position were assessed (see Table 1). It must be noted that post-alveolar fricative /ʒ/ scarcely

ever occur in word-initial position in English is the rationale for choosing the word-medial position for the sound. The other nine tricky words, on the other hand, were not analyzed. Therefore, there were 640 out of 1000 data of the participants' pronunciations which were employed for qualitative and quantitative analyses. The following table presents twenty-five English words pronounced by the participants.

The second research instrument of this study was a questionnaire. The questionnaire was purposely made to obtain the participants' information and to ease the process of categorizing the participants into different groups based on their responses. The questionnaire itself was comprised of several questions regarding (1) participants' major or study program, (2) participants' score of English subject taken in their respective universities (in A, B, or C), (3) participants' participation in an informal English course, and (4) participants' attitudes towards English in general.

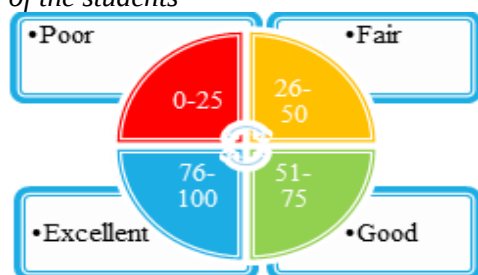
The process of data collection was done in three steps. First, the questionnaire was distributed to the participants through social media. To maintain the research ethics, the recording process was done once the participants submitted their responses, considering the form of consent was included in the questionnaire.

The participants recorded their pronunciation of the words themselves by using the voice recorders on their mobile phones. In order to obtain quality voice recordings, the participants were given several instructions to read the prepared written materials. Firstly, their name or initials at the start of the recording must be stated to facilitate the process of assessing the pronunciation individually. Secondly, the words were to be pronounced in order by stating the number. Thirdly, a brief pause (approximately three seconds) must be given in between the pronunciations to avoid any pronunciation with an unstable voice. Lastly, they need to pronounce the list of the words twice to prevent any loss of data due to the inaudible pronunciations. Consequently, the participants sent the audio through social media platforms (i.e., WhatsApp and LINE). Only then the researcher's data analysis of the pronunciations of all the sixteen English words commenced.

Once all the audios were gathered, the researcher downloaded and stored them on Google Drive to avoid a loss of the research data. Each of the audio was then listened to by the researcher to ensure each participant has said their name or initial at the beginning and pronounced all 25 words on the list. Simple rating scale format

(Albaum et al., 2017) was applied for the articulated fricatives in the target words. The assessment of the pronunciations of the participants was initiated by giving them scores on a scale of 0 to 100, which then was converted into a scale from poor, fair, good, and excellent.

Figure 1. Score to assess the pronunciation skills of the students



The grading was based on the accuracy and fluency of the pronunciation itself. If phonological errors, such as substitution, devoicing, and deletion of the fricative sounds were detected, a lower score will be given, either fair or poor. On the other hand, those who succeeded in pronouncing the sounds in each word accurately will earn a higher score. For instance, participant A substituted /z/ for /ʒ/ and participant B replaced /ʒ/ with /s/. Since both /z/ and /ʒ/ are voiced fricatives, participant A will obtain a higher score than that of participant A who performed a devoicing for substituting /s/ for /ʒ/.

Since there were four words for four fricative sounds pronounced by a total of 40 participants, the sum of the four words' score was divided by four in order to find the mean of each of four groups of fricatives. Therefore, a total of 640 pronunciation was analyzed and every participant contributed sixteen data of pronunciation.

Once the process of assessing the pronunciation of sixteen words was completely done, the comparative analyses were then commenced to answer the second question. The first comparative analysis was done to the first batch which was comprised of twenty participants whose score of English subjects they took at college are A and the second group consisted of the remaining twenty participants whose score of English subjects are B and C or lower than A. The second analysis done to the second batch of participants was also taken into account, which was comprised of twenty-four participants who have taken informal English courses and sixteen participants who have never taken informal English courses before. The categorization was done based on the data collected from the third and fourth questions in the questionnaire respectively.

The qualitative analysis was done by descriptively interpreting the results of the assessment of the general score and the comparative analyses of both batch 1 and batch 2, which have been explained in the previous paragraph. Ultimately, narrative analysis is carried out throughout the current work by looking at the themes listed below, which are crucial for interpretation and ultimately lead to the significant findings and conclusion. The analysis included drawing comparisons, contrasts, and correlations between the results of earlier studies.

RESULTS AND DISCUSSION

To give an in-depth discussion of the results, this section will be divided into several sub-sections. The first one will present the overall result of pronunciation done by all forty (n=40) participants. The second one will focus on the pronunciation made by the first group of participants in terms of their scores in English subjects they have taken in university. Lastly, the third sub-section centers on the pronunciation done by the second group of participants with regard to their participation in attending English courses.

Overall results of pronunciation by non-English major Indonesian university students

Responding to the first question, the majority of non-English major Indonesian university students appeared to be not proficient in producing an accurate pronunciation of words containing /ʒ/ sound, which is a voiced post-alveolar fricative, in medial position. As shown in Table 3, words which have voiced post-alveolar sound were found as the sounds with the lowest score, with an average of 59.1 and is considered as an average performance. Based on the results, it was found that the word 'azure' was the word that most of the participants find most difficult to pronounce based on the fact that it had the lowest score among other words, which is 56.5. Right behind 'azure', 'asia' was following with 59.5 and followed by 'casually' and 'usual' with the average score of 60.2 and 60.1.

The fact that the participants were unable to produce an accurate pronunciation of these voiced post-alveolar fricatives is very possibly due to the absence of this particular sound from their native language's phonological system (Derakhshan & Karimi, 2015; Utami et al., 2017a). For that reason, in this case, it was revealed that the sound [ʒ] was frequently substituted by [z] as in ['æzə(r)] for 'azure' ['æʒə(r)]; [s] as in ['jusuəl] for 'usual' ['ju:ʒu.əl]; [ʃ] as in ['kæʃuəl] for 'casually' ['kæʒ.u:əl] and sometimes by [dʒ] as in ['eidʒər]

for ‘azure’ [‘æʒə(r)]. A case of consonant devoicing was also identified. The sound of [ʒ] is a voiced consonant in nature and some participants devoiced it by replacing it with voiceless consonants such as [s] and [ʃ]. These findings were in conformity with that of prior studies, namely Jehma & Phoocharoensil (2014) and Mulyadi et al. (2018) for Pattani-Malay learners of English. Since voiced post-alveolar sound does not exist in the participants’ first language, they ended up replaced [ʒ] with sounds owned by their native languages: voiceless alveolar [s]; voiced alveolar [z]; and voiceless post-alveolar [ʃ]. This proved that the interference of mother language may hinder the acquisition of second or foreign language.

Table 3. *Overall score of 40 students’ pronunciation of 16 English words with alveolar and post-alveolar fricatives*

Sound	Target Words	Mean
/s/	sunny	90.1
	sarcastic	85.6
	soap	79.6
	see	90.3
	Mean	86.4
/z/	zipper	87.8
	zone	89.0
	zoo	89.3
	zebra	86.4
	Mean	88.1
/ʃ/	shoulder	80.7
	shop	87.1
	shadow	88.7
	shelter	84.5
	Mean	85.2
/ʒ/	usual	60.1
	asia	59.5
	casually	60.2
	azure	56.5
	Mean	59.1

Conversely, the majority of the students were found to do an excellent job in producing alveolar fricatives [z] and [s] as well as voiceless post-alveolar [ʃ] with the average score of 88.1, 86.4, and 85.2 respectively. The word which held the highest score, on the other hand, was ‘see’ with the average score of 90.3. in the second place was ‘sunny’ with the average score of 90.1 and following closely behind was ‘zoo’ with 89.3.

Generally, the results of this study indicated that the participants succeeded in articulating voiceless alveolar [s], voiced alveolar [z], and voiceless post-alveolar [ʃ]. This may be caused by the existence of the three sounds in the phonological system of Indonesian. There were, however, several cases of substitution in spite of

the high average scores. A replacement of [ʃ] by [s] was done by several students. For example, ‘shoulder’ was pronounced as [soldə(r)] and ‘shelter’ as [‘seltə(r)]. The study revealed some participants mistaken [s] as [ʃ] and vice versa. For instance, a participant who was capable in pronouncing ‘shop’ as [ʃɑ:p], yet that participant failed in accurately pronouncing ‘soap’ for it was pronounced as [ʃɑ:p] as well. The results were in conform with that of Risdianto (2017b) wherein some Sundanese university students replaced [s] with [ʃ] when pronouncing ‘gas’ and substituted [s] for [ʃ] when pronouncing ‘she’. Interestingly, no phonological errors were identified in the pronunciation of [z] in this study.

Table 4 is expected to answer the second question. It revealed the frequency of the occurrences of mispronunciation made by the participants of this study and thus identify which of these four fricatives the participants found most difficult to produce. The third column from the left represents the total occurrences of mispronunciation of a word while the other occurrences column represents the frequency of each substitution.

Table 4. *The frequency of mispronunciation of alveolar and post-alveolar fricatives made by students*

Sounds	Occurrences	Substitution	Occurrences
[s]	4	[ʃ]	4
[z]	0	-	0
[ʃ]	13	[s]	13
[ʒ]	89	[z]	53
		[s]	42
		[ʃ]	30
		[dʒ]	2

Based on Table 4 it is fair to say that all 40 students were proficient in producing alveolar and voiceless post-alveolar fricatives due to their excellent performance and that they had problems in pronouncing voiced post-alveolar fricative. It can be seen that there were relatively small to no mispronunciation of alveolar fricatives and a high frequency of mispronunciation of voiced and voiceless post-alveolar fricatives made by the participants. Words containing voiced post-alveolar fricative [ʒ] appeared as the one with the most dominantly mispronounced words out of four fricatives. On the contrary, there was no mispronunciation of words containing [z] reported in this study.

According to the results, it was found that the sound [ʒ] in medial position was frequently substituted by [z] by the participants with the total of 53 mispronunciations, followed by [s] and [ʃ]

with 42 and 30 occurrences of mispronunciations. There were only thirteen mispronunciations of voiceless post-alveolar made by the participants. There were thirteen times of substitution done by the participants from [ʃ] to [s]. Out of four words with [s] sound, only 'soap' was mispronounced by four participants in this study and they substituted [ʃ] for [s].

Comparison between students whose English subject's score was A and below A

This sub-section will give the answer whether the actual performance in English class influence the university students' proficiency in pronouncing English alveolar and post-alveolar fricatives. The following table presents the comparison of the pronunciation between the students who achieved A and the students who achieved score below A, as in B or C. As shown on Table 5, although not very distinctive, there was indeed a difference in the average score of the pronunciation of four fricatives by both groups. The participants who achieved a score of A for English subject appeared to perform a better pronunciation of alveolar and post-alveolar fricatives. Those whose English subject's score was below A, on the other hand, were less proficient in producing the four fricatives. In spite of the fact that the second group seemed to give a better performance when pronouncing most of words which have /s/ and /z/ sounds, the overall performance is still below that of the first group.

Table 5 *Comparison of pronunciation's score between students who achieved A and below A for English subject*

Sounds	Score "A" (n=20)	Score below "A" (n=20)
/s/	87.1	85.7
/z/	88.2	88.1
/ʃ/	85.9	84.5
/ʒ/	60.9	57.2

Generally, language learners who have just started learning English after finishing their education tend to face some major difficulties in acquiring comprehensible pronunciation (Gilakjani et al., 2011). All participants have been taught English perhaps since the first year of elementary school. Their excellent performance in English class may slightly, although not significantly, influence the acquisition of intelligible pronunciation. That may also affect the overall pronunciation of students whose score is below A.

Another factor may play a role in influencing

one's capability in having a good English pronunciation. Motivation for learning English and acquiring good English pronunciation can also influence the students' actual pronunciation (Gilakjani, 2012). A desire to be proficient in spoken and written English, including to achieve a native-like pronunciation may boost up students' confidence and motivation. A student who achieved a score of A for English subject conveyed that she likes English for it enables her to widen her web of connection with people around the world and thus she is comfortable in using English daily.

Comparison between participants who have and have never taken English course

The last sub-section will center its focus on comparing the pronunciation of twenty-four Indonesian university students who have taken informal English course between the remaining sixteen students who have never taken one before. Table 6 presents the score of pronunciation of both groups:

Table 6 *Comparison of pronunciation's score between students who have and have never taken English course*

Sound	Have Taken Course (n=24)	Have Never Taken Course (n=16)
/s/	85.4	87.8
/z/	87.8	88.5
/ʃ/	85.3	85.1
/ʒ/	59.3	58.7

The results presented in the table show that participants who have participated in an informal English course were more advanced in producing voiceless and voiced post-alveolar fricatives, the sound that most participants found difficult to articulate, with the average score of 85.3 and 59.3 respectively. Those who have never taken English course, on the contrary, were more proficient in producing [s] and [z], sounds with which Indonesian are familiar.

The result indicated that the exposure towards English that the participants receive outside their academic realm indeed plays a role in influencing their pronunciation. This can be proven since the discrepancies between the two group was significant.

The exposure to English outside the classroom received by the students who joined English courses may facilitate them in acquiring eligible English pronunciation, specifically sounds which many Indonesians' speech organs are not

accustomed to articulating. Language acquisition can be achieved successfully by language learners generally from large amounts of comprehensible input received by them before they are able to speak (Gilakjani, 2012). Exposure equals to input and thus if the students are exposed to English more often, they may overcome some of the difficulties in English pronunciation.

CONCLUSION

This study investigated the Indonesian university students' performances in producing English alveolar fricatives /s/ and /z/ and post-alveolar fricatives /ʃ/ and /ʒ/. Pronunciation is perhaps one of the biggest challenges faced by non-native language learners in order to have an excellent English proficiency. This can be proven by the results revealed in the present study wherein the majority of non-English major Indonesian university students were proven to give an excellent performance in producing voiceless alveolar /s/ and voiced alveolar /z/, as well as great at producing voiceless post-alveolar /ʃ/ fricatives despite of some mispronunciations made. This study also revealed that informal English course the participants took plays a bigger role in influencing the eligibility of the participants pronunciation, compared to their English subject's score.

The study showed that voiced post-alveolars fricative /ʒ/ was the sound which most of the participants failed at accurately pronounce, judging from the good performance, which obviously can be improved, from the score of pronunciation and the frequency of mispronunciation's occurrences. Moreover, the phonological errors reported in this study were of two types: substitution and devoicing.

There are several factors which influenced the performance of the participants in producing these four English fricatives. Firstly, and most importantly, the different sound system of both languages plays a big role in affecting the students' pronunciation. The discrepancies between the phonological system of the participants' mother language, Indonesian, and the foreign language, English pose them pronunciation issues. Due to the absence of voiced post-alveolar, for instance, resulted in the substitution of the target sound into sound which exist in Indonesian's sound system. The participants did this frequently and this may happen because their speech organs are not accustomed to produce such sounds.

Secondly, the interference of mother language

also was proven to hinder the process of second language acquisition of the participants. Since most of the participants were not familiar with voiced post-alveolar and some were also not used to produce voiceless post-alveolar, they ended up borrowing a sound from their native language's phonological system. As mentioned in the previous paragraph, voiced post-alveolar was most frequently substituted by sounds which exist in Indonesian, namely /s/, /z/, and /ʃ/. Lastly, it seems that pupils' poor pronunciation of English fricative sounds stems from a lack of specialized training and a limited understanding of English phonetics.

It is well recognized that the majority of speech instruction methods used today are reactive and infrequent (Huensch, 2019). It is anticipated that this study will provide useful information on how to pronounce alveolar and post-alveolar fricatives for Indonesian English learners and speakers as well as English instructors. The study's pedagogical implications include the recommendation that English instructors in higher education, in particular, use the study's results to improve pronunciation instruction in their classrooms. Despite the fact that shared interlanguage knowledge may help nonnative listeners comprehend nonnative speech from speakers of the same first language (L1) (Fishero et al., 2023), the accuracy of English sound pronunciation should be improved.

Hopefully, English teachers can become more aware of the importance of having a good and comprehensible pronunciation by start engaging the students in improving their pronunciation in classroom. Building a habit of asking the teachers or open up dictionary may help university students in lessen their burden in attempting to have a good pronunciation while enhancing their pronunciation at the same time. This research recommends further research that examines the difficulty of pronunciation of sounds in English, especially those that are not found in Indonesian, in order to obtain a mapping of the difficulty of pronunciation of this language by Indonesian students. (Suzukida & Saito, 2022) proposed the mapping should include segmental and suprasegmental features of English.

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