



Research Article

Pronunciation Errors in English Dental Fricatives and Postalveolar Affricates Among Indonesian EFL Learners

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ABSTRACT

Accurate pronunciation is essential for intelligible oral communication, yet English consonants absent from the Indonesian phonological system remain challenging for English as a Foreign Language (EFL) learners. This study investigated pronunciation errors involving the English dental fricatives (/θ/ and /ð/) and postalveolar affricates (/tʃ/ and /dʒ/) among 21 Indonesian vocational high school students and examined the factors contributing to these errors. A descriptive mixed-methods design within the Error Analysis framework was employed. Quantitative data were collected through a 40-word pronunciation test, while qualitative data were obtained from written interviews. The findings identified 557 pronunciation errors, with /θ/ producing the highest error rate (33.39%), followed by /ð/ (23.34%), /dʒ/ (21.54%), and /tʃ/ (20.83%). The interview results indicated that interlingual transfer from Indonesian and Javanese was the primary factor underlying students' pronunciation difficulties, while low learning motivation and limited pronunciation practice also contributed to the errors. These findings highlight the need for explicit and systematic pronunciation instruction for English consonants that have no equivalents in learners' first-language phonological systems.

Keywords: Pronunciation Errors, Error Analysis, EFL Learners, Interlingual Transfer, Vocational High School Students

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INTRODUCTION

Learning a foreign language, particularly English, requires more than mastering grammar rules or memorizing vocabulary. Pronunciation is equally important because it directly affects the intelligibility of spoken communication.

Accordingly, pronunciation has become a central concern in the teaching and learning of English as a Foreign Language (EFL) (Srakaew, 2021). Nevertheless, many learners with adequate grammatical knowledge and vocabulary still struggle to communicate effectively because of inaccurate pronunciation, which often leads to misunderstanding in oral interaction (Kobilova, 2022). Therefore, pronunciation deserves the same instructional attention as grammar and vocabulary, as accurate sound production enables clearer communication between speakers and listeners (Awadh et al., 2024). Furthermore, pronunciation is a fundamental component of speaking proficiency because it enables speakers to convey meaning clearly and be understood by their interlocutors (Almusharraf, 2024). Effective oral communication, in turn, requires the integration of pronunciation, grammar, vocabulary, fluency, and comprehension (Ali et al., 2023).

Despite its importance, pronunciation remains one of the most underemphasized aspects of English language teaching in Indonesia. Most teachers prioritize grammar, vocabulary, reading, and writing, while the phonological system of English is rarely explained systematically before students are asked to produce English sounds. As a result, students often experience persistent difficulties in distinguishing and producing English sounds accurately (Fadillah, 2020). Research has shown that many Indonesian secondary school students continue to make pronunciation errors due to limited classroom practice and low confidence when speaking English (Ajiza et al., 2024). Students who have received explicit instruction in phonetics and phonology, however, report significantly better awareness of English sounds and improved ability to produce them accurately (Ali et al., 2023).

"How learners pronounce English is deeply rooted in the phonological patterns of their first language."

A key factor underlying these difficulties is the phonological distance between English and Indonesian. Because several English consonants have no equivalent in the Indonesian phonological system, learners often substitute unfamiliar English phonemes with the closest sounds from their first language (L1), a process known as interlingual transfer or L1 interference (Diani & Azwandi, 2021). Fatimah, (2020) identifies three primary causes of pronunciation difficulties among Indonesian EFL learners: mother tongue interference, differences between L1 and L2 sound systems, and limited familiarity with phonetic transcription. Given Indonesia's linguistic diversity, these L1 phonological habits are likely to transfer to English pronunciation. The English sounds most frequently mispronounced include the voiceless and voiced dental fricatives /θ/ and /ð/, as well as the voiceless and

voiced postalveolar affricates /tʃ/ and /dʒ/, all of which are absent from or differ substantially in Indonesian. Consequently, learners commonly substitute /θ/ with /t/ or /s/, /ð/ with /d/, /tʃ/ with /c/, and /dʒ/ with /j/ or /y/, substitutions that may distort meaning and reduce intelligibility (Lam & Thi, 2022).

To examine these errors in a principled way, this study adopts the Error Analysis (EA) framework proposed by Ellis 1997, as cited in Ramadani et al. (2022), which involves identifying, describing, explaining, and evaluating learner language errors based on linguistic principles (Ramadani et al., 2022). This framework has been widely applied in Indonesian EFL pronunciation research and has proven effective as a diagnostic tool for identifying systematic error patterns attributable to L1 interference (Awololon et al., 2025).

While several studies have investigated pronunciation difficulties among Indonesian EFL learners (Khoirunnisa & Misnadin, 2022), most of them focus on vowel errors (Fadillah, 2020) or consonant difficulties in general (Ristati et al., 2024) rather than examining /θ/, /ð/, /tʃ/, and /dʒ/ as an integrated group (Ramadani et al., 2022). Moreover, studies in vocational high school contexts remain limited, particularly those that investigate both pronunciation error patterns and the factors contributing to them. This study was conducted at SMK Pancasila 1 Kutoarjo, where preliminary observations during the Teaching and Learning Practice (PLP) program showed that students in Class X TOKR D frequently mispronounced these target sounds (e.g., *think* as *tink*, *the* as *de*, *chair* as *cair*, and *job* as *yob*). Without appropriate instructional support, such errors may become fossilized and hinder students' communicative competence in academic and professional contexts (Al-khresheh, 2024).

This study was conducted at SMK Pancasila 1 Kutoarjo to analyze pronunciation error patterns involving the English consonants /θ/, /ð/, /tʃ/, and /dʒ/ among tenth-grade students and to examine the factors contributing to these errors. To achieve these objectives, the study addressed the following research questions:

- (1) What types and patterns of pronunciation errors do Indonesian vocational high school EFL students produce when pronouncing the English consonants /θ/, /ð/, /tʃ/, and /dʒ/?
- (2) What factors contribute to Indonesian vocational high school EFL students' pronunciation errors in producing the English consonants /θ/, /ð/, /tʃ/, and /dʒ/?

The findings of this study are expected to contribute to the understanding of English pronunciation difficulties among Indonesian vocational EFL learners and to provide pedagogical insights for more effective pronunciation instruction.

LITERATURE REVIEW

Pronunciation has long been recognized as one of the most fundamental aspects of learning English as a foreign language (EFL), yet it remains the aspect most often neglected in classroom teaching practices. Pronunciation is not only related to the

technical accuracy of sounds, but it is also directly linked to a speaker's ability to convey meaning clearly to their interlocutor, making its role in oral communication indispensable (Susanto & Nanda, 2024). Weak pronunciation skills have been shown to impede overall oral communication, even when aspects of grammar and vocabulary are well mastered by learners (Kobilova, 2022). Therefore, the study of pronunciation in the EFL context, particularly in Indonesia, remains a relevant and urgent topic for continued development.

Pronunciation in the Context of EFL in Indonesia

In Indonesia, English is learned as a foreign language and is primarily used in formal settings such as classrooms and academic examinations, providing students with limited opportunities to use English in daily communication (Srakaew, 2021). Consequently, limited exposure to authentic English speech hinders students' ability to develop accurate pronunciation. This challenge is compounded by classroom practices that emphasize grammar, vocabulary, reading, and writing, while pronunciation receives relatively little instructional attention. As a result, many students who can read English texts still struggle to communicate orally with accurate pronunciation.

This issue is particularly important in vocational high schools (SMKs), where English serves not only as an academic subject but also as a practical skill required in the workplace. Since SMK graduates are expected to communicate effectively in professional settings, pronunciation accuracy becomes an essential competency (Reza & Sutanti, 2025). However, SMK students remain highly susceptible to pronunciation errors due to limited pronunciation-focused instruction and low motivation to learn English (Kurnia & Jabu, 2023). Many students also perceive English as having little relevance to their daily lives, reducing their willingness to practice speaking and increasing their fear of making mistakes, which further limits opportunities to improve pronunciation (Diana et al., 2024).

Differences in Phonological Systems and L1 Interference

One of the primary causes of pronunciation difficulties among Indonesian EFL learners is the difference between the phonological systems of English and Indonesian. Indonesian has a relatively simple and consistent phoneme inventory, whereas English contains a wider range of phonemes and more complex articulation patterns (Fitria, 2024). Consequently, learners often replace unfamiliar English sounds with the closest phonemes available in their first language (L1), a phenomenon known as interlingual transfer or L1 interference (Ramadani et al., 2022). Fatimah (2020) identifies three main causes of pronunciation difficulties in Indonesian EFL learning, namely native language interference, differences in sound systems between L1 and L2, and unfamiliarity with phonetic transcription. Although these findings provide a useful framework, Fatimah (2020) identifies three main causes of pronunciation difficulties among Indonesian EFL learners: mother tongue interference, differences between L1 and L2 sound systems, and limited familiarity

with phonetic transcription. However, the study was based on a literature review and data from a single region, limiting its applicability to other contexts, including vocational high school students in Central Java. Similarly, Kurnia & Jabu (2023) reported that pronunciation errors among Indonesian high school students were influenced by mother tongue interference, phonological interference, cross-language transfer, and avoidance strategies. Nevertheless, because their study focused on regular high schools in Makassar, its findings may not fully represent vocational high school students in Central Java, who are also influenced by Javanese.

Evidence from other Asian EFL contexts supports the importance of L1 interference. Lam & Thi (2022) found that L1 phonological transfer was a major source of consonant pronunciation errors among Vietnamese EFL learners, particularly for sounds absent from the learners' native language. Likewise, Awololon et al. (2025) reported that both interlingual and intralingual factors contributed to systematic pronunciation errors among junior high school students in Bali. Although these studies differ in linguistic and educational contexts, they consistently demonstrate that L1 interference is a major factor in English pronunciation difficulties. However, limited evidence is available regarding how these interference patterns affect Indonesian vocational high school students, particularly those whose pronunciation is influenced by Javanese. This gap highlights the need for the present study.

The Most Problematic Consonant Sounds

Among the English consonants that challenge Indonesian EFL learners, the dental fricatives /θ/ and /ð/ and the postalveolar affricates /tʃ/ and /dʒ/ are consistently reported as the most problematic. Fadillah (2020) identifies fricatives and affricates as the consonant categories that most frequently cause pronunciation errors among Indonesian EFL learners. The voiceless dental fricative /θ/ is commonly replaced with /t/, /d/, or /s/ because it has no direct equivalent in Indonesian (Ramadani et al., 2022). Likewise, the voiced dental fricative /ð/ is typically substituted with /d/, resulting in frequent pronunciation errors among Indonesian learners (Huda & Dewanti, 2022). The postalveolar affricates /tʃ/ and /dʒ/ are also difficult to produce because their articulation differs from that of Indonesian consonants, leading learners to simplify them into more familiar sounds (Maulina & Wennyta, 2021).

Although previous studies have documented pronunciation errors involving these consonants, they have generally examined only part of the target sounds or focused on learners from different educational contexts. Dyani et al. (2025) investigated the pronunciation of /θ/ and /ð/ among university students but did not include the postalveolar affricates /tʃ/ and /dʒ/. Similarly, Maulina & Wennyta (2021) focused on /tʃ/ and /dʒ/ without examining the dental fricatives. Consequently, evidence on the pronunciation of all four consonants among Indonesian vocational high school students remains limited. This gap highlights the need for the present study, which examines the four target consonants simultaneously in the vocational high school context.

Error Analysis as a Framework

To systematically examine pronunciation error patterns, this study uses the Error Analysis (EA) framework developed by Ellis 1997, in (Ramadani et al., 2022). Error Analysis provides a systematic procedure for identifying, classifying, and interpreting learners' language errors based on actual language production rather than predicting errors solely from differences between the first and second language (Ramadani et al., 2022). Its diagnostic nature makes it particularly suitable for identifying recurring pronunciation error patterns among EFL learners. Although Error Analysis cannot account for pronunciation forms that learners deliberately avoid producing, this limitation was addressed by combining pronunciation test data with written interviews to explore the underlying factors contributing to the observed errors.

The usefulness of Error Analysis has been demonstrated in previous Indonesian studies. Maulina & Wennyta (2021) applied the framework to identify pronunciation errors among university students, while Awololon et al. (2025) employed it to examine pronunciation errors among junior high school students in Bali. Although both studies confirmed the effectiveness of Error Analysis as a diagnostic framework, neither specifically examined the four English consonants /θ/, /ð/, /tʃ/, and /dʒ/ as a single focus. Therefore, this study applies Error Analysis to these four targets sounds simultaneously and examines their pronunciation across different word positions to provide a more comprehensive description of Indonesian vocational high school students' pronunciation errors.

Research Gap and Contribution of This Study

Based on a review and critical evaluation of existing studies, there are at least three gaps that need to be addressed. First, most research on English consonant pronunciation errors among Indonesian EFL learners has focused only on one or two sounds, without examining the four sounds /θ/, /ð/, /tʃ/, and /dʒ/ in an integrated manner within a single study (Dyani et al., 2025). Second, the majority of existing studies have been conducted in the context of university students or regular high school students, while the vocational high school context, which has specific professional communication demands, is still underrepresented in the literature (Kurnia & Jabu, 2023). Third, the influence of the Javanese regional language as the first language used by students simultaneously with Indonesian in daily life has not received adequate attention, even though the existence of these two mother tongues has the potential to exacerbate the patterns of phonological interference that occur.

This study aims to address all three of these gaps simultaneously by conducting an integrated error analysis of the pronunciation of four consonant sounds /θ/, /ð/, /tʃ/, and /dʒ/ among 10th-grade students in TOKR D at SMK Pancasila 1 Kutoarjo, a context that, geographically, linguistically, and institutionally, has never previously been the focus of similar research. By employing the Error Analysis framework supplemented with written interview data, this study not only intends to map the existing error patterns but also to explore the underlying

factors in greater depth. The findings of this study are expected to provide specific and practical contributions to the development of pronunciation teaching strategies at the vocational high school level, particularly for sounds that have no equivalents in the phonological systems of either the Indonesian or Javanese languages.

METHOD

Research Design and Context

This study employed a descriptive mixed-methods research design to obtain a comprehensive understanding of students' pronunciation performance. Mixed-methods research involves systematically collecting and analyzing both quantitative and qualitative data to address a research problem, and then integrating the two forms of data and their results within a specific research design (Creswell & Clark, 2017). This approach is further supported by the view that mixed-methods research serves as an integrative methodology that combines the strengths of quantitative and qualitative traditions to produce a more comprehensive understanding of complex research problems (Tashakkori et al., 2020). In this study, quantitative data from a pronunciation test were used to identify error patterns involving the English consonants /θ/, /ð/, /tʃ/, and /dʒ/, while qualitative data from written interviews were used to explore the factors contributing to those errors.

The study was conducted at SMK Pancasila 1 Kutoarjo, a vocational secondary school in Central Java, Indonesia. As a vocational institution, the school prepares students for the workforce, making oral English communication skills particularly important. The researcher became familiar with the school through the Teaching and Learning Practice (PLP) program, during which preliminary classroom observations indicated that students experienced persistent difficulties in producing the target English consonants. These observations provided the rationale for conducting the present study.

Participants

The participants in this study were twenty-one Indonesian vocational high school students, which consisted of students from Class X TOKR D majoring in Light Vehicle Engineering. Participants were selected using purposive sampling, which allows researchers to deliberately select individuals who are most relevant to the study objectives (Dahal et al., 2024). Class X TOKR D was chosen based on preliminary observations during the Teaching and Learning Practice (PLP) program, which indicated that students experienced difficulties in pronouncing the English consonants /θ/, /ð/, /tʃ/, and /dʒ/. All twenty-one students present during the data collection period participated in the study.

They had received basic English instruction and represented vocational high school EFL learners whose primary languages were Indonesian and Javanese. These linguistic backgrounds were considered relevant because first-language phonological transfer was expected to influence students' pronunciation of English consonants.

Tabel 1*The relevant characteristics of the participants*

Characteristic	Description
Grade Level	Tenth Grade
Class	X TOKR D
Number of Participants	21 Students (all male)
First Language	Indonesian and Javanese
English Proficiency Level	Beginner to Elementary

All participants were male tenth-grade students from Class X TOKR D and were categorized as beginner-level EFL learners based on their classroom English performance and the school's instructional context.

To protect participants' privacy and maintain confidentiality, each student was assigned a participant code (S1–S21), which was used consistently throughout the data collection, analysis, and reporting processes. Prior to data collection, participants were informed about the purpose of the study, and their participation was entirely voluntary. All data collected were used solely for research purposes, and participants' identities were kept confidential throughout the study.

Data Collection

Two instruments were used to collect the data. The first was a pronunciation test consisting of a word-reading task with 40 words, representing the four target sounds /θ/, /ð/, /tʃ/, and /dʒ/ (10 words for each sound) across initial, medial, and final word positions. The word list was developed by the researcher based on English vocabulary commonly encountered by tenth-grade vocational high school students. Words were selected according to three criteria: (1) the presence of the target consonants, (2) their distribution across word positions, and (3) their familiarity to the participants. To reduce the influence of lexical difficulty, most words consisted of one to three syllables, ensuring that pronunciation errors reflected difficulties with the target sounds rather than unfamiliar vocabulary.

The second instrument was a written interview containing of one broad open-ended question that encouraged students to explain the factors they believed affected their English pronunciation, including the influence of their first language, learning motivation, pronunciation practice, and other perceived difficulties. Follow-up prompts were provided when necessary to obtain richer responses. The interview data addressed the second research question.

Data were collected in three sessions. The first two sessions were devoted to the pronunciation test, which was administered individually under consistent classroom conditions. Students read the word list aloud without assistance, and all responses were recorded using a digital voice recorder to enable repeated listening during analysis (Ramadani et al., 2022). The third session consisted of the written

interview. To encourage natural pronunciation, students were given a brief familiarization period with the word list before the recording began.

Data Analysis

The data were analyzed using both quantitative and qualitative procedures. The quantitative data obtained from the pronunciation test were analyzed following the five steps of Error Analysis proposed by Ellis (1997): (1) collecting a sample of learner language, (2) identifying the errors, (3) describing the errors, (4) explaining the errors, and (5) evaluating the errors. In this study, one word mispronounced on its target sound was counted as one error, regardless of the number of deviating sounds within that word.

The researcher began by transcribing all audio recordings and systematically classifying errors according to target sound and word position. No additional software was used in the analysis process; instead, all coding and classification were conducted manually through repeated listening to the recordings. The frequency and percentage of each error category were then calculated using the formula proposed by Levin and Fox, as cited in Ramadani et al. (2022):

$$P = F / N \times 100\%$$

Where P refers to the percentage of errors in a given category, F is the frequency of errors in that category, and N is the total number of all errors recorded.

To ensure the trustworthiness of the analysis, the transcription and error classification were verified through repeated listening sessions. The qualitative data obtained from the written interviews were analyzed using thematic analysis. Students' responses were read repeatedly, coded, categorized, and interpreted to identify recurring themes related to the causes of pronunciation errors, particularly interlingual transfer and learning motivation.

To enhance the trustworthiness of the findings, the quantitative pronunciation test results were triangulated with the qualitative interview responses to examine the consistency between the observed pronunciation errors and the factors reported by the participants. This triangulation strengthened the credibility of the findings by providing a more comprehensive understanding of students' pronunciation difficulties.

FINDINGS

Pronunciation Errors on /θ/, /ð/, /tʃ/, and /dʒ/

Target Sound Error Distribution

To address the first research question, the quantitative data obtained from the pronunciation test were analyzed using Error Analysis procedures. A total of 557 pronunciation errors were identified across the four target consonant sounds. Each error was counted and converted into a percentage of the total number of errors using

the formula $P = F/N \times 100\%$. The overall distribution of errors is presented in Table 1.

Table 1.

Percentage of Pronunciation Errors per Target Sound

No.	Target Sound	Total Errors (F)	Total Errors (N)	Percentage (P)
1	/θ/ (Voiceless Dental Fricative)	186	557	33.39%
2	/ð/ (Voiced Dental Fricative)	130	557	23.34%
3	/tʃ/ (Voiceless Postalveolar Affricate)	116	557	20.83%
4	/dʒ/ (Voiced Postalveolar Affricate)	120	557	21.54%
Total	557	557	557	100%

Note: F = total errors per sound; N = total errors across all sounds; $P = F/N \times 100\%$

The /θ/ sound resulted in the highest number of errors with 186 occurrences (33.39%), followed by /ð/ with 130 errors (23.34%), /dʒ/ with 120 errors (21.54%), and /tʃ/ with 116 errors (20.83%). This pattern indicates that the dental fricative sounds (/θ/ and /ð/) are generally more difficult to master compared to the postalveolar affricate sounds (/tʃ/ and /dʒ/).

Word Error Distribution

To identify the words that are most frequently mispronounced, an error analysis per word was conducted. Considering that each target sound was tested through 10 words, Table 2 presents the words with the highest error frequency for each target sound as a representation of the most prominent error patterns.

Table 2.

Words with the Highest Mispronunciation Frequency per Target Sound

No.	Target Sound	Word	Position	Students' Errors (F)	N	P (%)
1	/θ/	think	Initial	21	557	3.77%
2	/θ/	thank	Initial	20	557	3.59%
3	/θ/	three	Initial	20	557	3.59%
4	/θ/	teeth	Final	20	557	3.59%
5	/ð/	breathe	Final	19	557	3.41%
6	/ð/	though	Initial	17	557	3.05%
7	/ð/	there	Initial	16	557	2.87%
8	/tʃ/	chair	Initial	17	557	3.05%
9	/tʃ/	chapter	Initial	16	557	2.87%
10	/dʒ/	page	Final	20	557	3.59%
11	/dʒ/	bridge	Final	17	557	3.05%
12	/dʒ/	agent	Medial	16	557	2.87%

Note: F = number of students who mispronounced the word; N = total errors across all sounds (557); $P = F/N \times 100\%$. Words listed in descending order of error frequency per target sound.

For the /θ/ sound, the word 'think' recorded the highest error frequency with 21 students (3.77%), followed by 'thank,' 'three,' and 'teeth,' each mispronounced by 20 students (3.59%). The errors predominantly involved the stopping of the voiceless

dental fricative /θ/, whereby the target sound was realized as the voiceless alveolar stop /t/. For example, 'think' was pronounced as 'tink' and 'thank' as 'tank'.

For the /ð/ sound, the word 'breathe' recorded the highest number of errors with 19 students (3.41%), followed by 'though' (3.05%) and "there" (2.87%). The errors primarily involved the stopping of the voiced dental fricative /ð/, which was consistently realized as the voiced alveolar stop /d/. For example, 'the' was pronounced as 'de' and 'there' as 'dere'.

For the /tʃ/ sound, the word 'chair' had the highest number of errors with 17 students (3.05%), followed by 'chapter' with 16 students (2.87%). Students generally replaced /tʃ/ with the /c/ sound in Indonesian, resulting in 'chair' being pronounced as 'cair' and 'chapter' being pronounced as 'capter'. Errors in the /tʃ/ sound in this study tended to be concentrated at the beginning of words.

For the /dʒ/ sound, the word 'page' had the highest frequency of errors with 20 students (3.59%), followed by 'bridge' (3.05%) and 'agent' (2.87%). Errors in the /dʒ/ sound involved substitution with the /j/ or /y/ sounds in Indonesian, for example, 'job' being pronounced as 'yob' and 'page' being pronounced as 'pey'.

The quantitative findings presented above indicate that students experienced systematic difficulties in producing all four target consonants, particularly the dental fricatives /θ/ and /ð/. To address the second research question, the qualitative data obtained from the written interviews were analyzed thematically. The analysis revealed two major factors contributing to students' pronunciation errors: low learning motivation and interlingual transfer.

Factors Causing Pronunciation Errors (RQ 2)

Motivation and Learning Engagement Factors

Analysis of the written interview responses revealed two closely related factors contributing to students' pronunciation errors: low learning motivation and limited learning engagement. Several participants perceived English as difficult and lacked confidence in their pronunciation abilities, as reflected in the following excerpts: "I think English is difficult to learn because I often have trouble pronouncing English words correctly" (S5, interview results) and "I find English difficult because I cannot speak it well. I am more accustomed to using Indonesian and Javanese" (S18, interview results). These responses suggest that students' negative perceptions of English reduced their confidence and willingness to practice pronunciation, which may have contributed to the recurring pronunciation errors identified in the pronunciation test.

The interview responses also showed limited learning engagement outside the classroom. As illustrated by S7, "I rarely practice English vocabulary or pronunciation at home because I only use English during school lessons," and S12, "I rarely practice speaking English outside the classroom because I find the pronunciation difficult," students had few opportunities to practice English independently. These findings suggest that limited pronunciation practice restricted

students' exposure to English sounds and may have contributed to the persistent pronunciation errors observed in the pronunciation test.

Interlingual Transfer Factor

Most participants reported relying on Indonesian and Javanese pronunciation patterns when speak English because these sound systems were more familiar to them, indicating the influence of interlingual transfer on their pronunciation. This influence was further supported by both the pronunciation test and the written interview responses, which consistently showed that students tended to substitute unfamiliar English consonants with more familiar sounds from their first-language phonological systems.

Written interview data revealed that many students admitted not considering English an important subject in their daily lives, resulting in less attention during the learning process. When asked to speak or pronounce words in English, some students tended to immediately say they were unable without trying first. This attitude has been observed since the Field School Introduction (PLP) activities, where many students spontaneously expressed statements such as reflected in the systematic phonological processes identified in the students' speech. The target sounds /θ/ and /ð/ underwent stopping, as the dental fricatives were consistently replaced by the alveolar stops /t/ and /d/, respectively. This process reduced articulatory complexity by replacing fricatives, which require continuous airflow through a narrow constriction, with stops that are more familiar in the learners' first-language phonological systems. In addition, the affricates /tʃ/ and /dʒ/ were replaced with /c/, /j/, or /y/, indicating consonant substitution based on phonetic similarity and the influence of Indonesian and Javanese sound categories.

Furthermore, the pronunciation test demonstrated that the dental fricatives /θ/ and /ð/ were the most problematic sounds for the participants, accounting for 33.39% and 23.34% of the total pronunciation errors, respectively. Most students consistently replaced /θ/ with /t/ (e.g., think → tink) and /ð/ with /d/ (e.g., the → de), indicating a systematic stopping process. These substitutions suggest that learners relied on familiar alveolar stops available in Indonesian and Javanese when attempting to produce unfamiliar English dental fricatives.

The interview data also support this interpretation. Several participants reported that they tended to pronounce English words using Indonesian or Javanese pronunciation patterns because these sound systems were more familiar to them (e.g., S18). This finding indicates that the observed substitutions were influenced by interlingual transfer rather than random pronunciation mistakes. In other words, the quantitative findings and interview responses consistently indicate that students experienced systematic difficulties in producing the English dental fricatives and postalveolar affricates. The higher error rates for /θ/ and /ð/ suggest that dental fricatives posed greater articulatory challenges than postalveolar affricates because these sounds are absent from the Indonesian phonological inventory.

DISCUSSION

Interpretation of RQ 1 Findings: Pronunciation Error Patterns

The high error rates in producing the sounds /θ/ (33.39%) and /ð/ (23.34%) compared to /tʃ/ and /dʒ/ can be understood through the articulatory characteristics of each sound. The dental fricative sounds /θ/ and /ð/ require specific tongue placement and airflow control that are not present in either Indonesian or Javanese. As a result, students do not possess an articulatory reference from their first language to guide the production of these sounds. In contrast, although /tʃ/ and /dʒ/ do not have exact equivalents in English, they share certain phonetic similarities with consonants that are familiar to Indonesian learners. This may explain why the error rates for these affricates were lower than those for the dental fricatives. Fadillah (2020) similarly reported that dental fricatives constitute one of the most problematic consonant categories for Indonesian EFL learners.

A comparable pattern was identified by Dyani et al. (2025), who found that /θ/ and /ð/ generated the highest error rates among university-level EFL students. Furthermore, Haryani et al. (2020) argued that affricates tend to be easier to acquire than fricatives because they share partial similarities with the Indonesian consonant system.

The substitution patterns observed in this study indicate that students did not make errors randomly. The voiceless dental fricative /θ/ frequently underwent stopping and was realized as the alveolar stop /t/, while the voiced dental fricative /ð/ underwent a similar process and was realized as /d/. In addition, the affricates /tʃ/ and /dʒ/ were commonly replaced by /c/, /j/, or /y/, reflecting learners' tendency to rely on familiar phonological categories from their first language. This finding is consistent with Lam & Thi (2022), who described such substitutions as sound feature changes that occur when learners modify the phonetic characteristics or manner of articulation of a target consonant because the sound is absent from their native-language inventory.

Similar substitution patterns were also reported by Awololon et al. (2025) among seventh-grade EFL learners in Bali. Their findings suggest that the influence of first-language phonology on English pronunciation is not limited to a particular region but may occur across different Indonesian learning contexts. One finding that differs slightly from previous research concerns the distribution of /tʃ/ errors. In the present study, most /tʃ/ errors occurred in word-initial position. In contrast, Haryani et al. (2020) reported a more even distribution of errors across word positions. This discrepancy may be related to differences in the composition of the word lists used in each study. Therefore, caution should be exercised when generalizing the present finding to broader EFL contexts.

Interpretation of RQ 2 Findings: Factors Causing Errors

The identification of low motivation and interlingual transfer as the two main contributing factors is consistent with a substantial body of EFL pronunciation research. However, an important finding of the present study is the way these factors appear to interact within the vocational high school context. Low motivation reduces students' willingness to practice pronunciation beyond classroom activities, limiting opportunities to receive corrective feedback and improve their production of unfamiliar English sounds. As a consequence, pronunciation habits influenced by the first language may persist and gradually become more stable over time.

At the same time, persistent first-language interference may further reduce students' confidence in speaking English. When students repeatedly experience difficulty producing English sounds that differ from those of their native language, they may become reluctant to participate in oral activities. This situation creates a mutually reinforcing cycle in which limited motivation reduces practice opportunities, while continuing pronunciation difficulties further weaken students' motivation and confidence.

The role of low motivation identified in this study is consistent with the findings of Maulina & Wennyta (2021), who reported that low motivation and limited exposure to English contribute significantly to recurring pronunciation errors. A similar pattern was observed by Fatimah (2020), who found that only a small proportion of students regularly practiced pronunciation outside the classroom. This limited engagement with pronunciation practice was considered one of the factors contributing to persistent pronunciation difficulties.

The relationship between motivation and pronunciation development is further supported by Kurnia & Jabu (2023), who found that low self-confidence and fear of making mistakes often discourage students from participating in oral practice activities. As pronunciation improvement requires frequent and meaningful practice, students who avoid speaking opportunities are less likely to develop accurate pronunciation skills.

Interlingual transfer emerged as the most dominant factor contributing to pronunciation errors in the present study. The findings indicate that students frequently relied on Indonesian and Javanese phonological patterns when attempting to pronounce unfamiliar English consonants. This tendency was particularly evident in the stopping of the dental fricatives /θ/ and /ð/, whereby these sounds were realized as the alveolar stops /t/ and /d/. Similar phonological processes were also observed in the replacement of the affricates /tʃ/ and /dʒ/ with more familiar sounds from the learners' first-language phonological systems.

The predominance of interlingual transfer as a contributing factor has also been confirmed by various previous studies. Dyani et al. (2025) identified L1 phonological interference as the main source of errors in /θ/ and /ð/ in Indonesian EFL learning. Similarly Fatimah (2020) argued that differences between the sound

systems of learners' first and second languages constitute one of the major causes of pronunciation difficulties.

Further support is provided by Kurnia & Jabu (2023), who explained that learners often interpret unfamiliar English sounds through the phonological framework of their native language, resulting in systematic sound substitutions. Ali et al. (2023) additionally found that learners who have not received explicit instruction in phonetics and phonology frequently struggle to recognize articulatory differences between English sounds and those of their first language. This finding highlights the importance of explicit pronunciation instruction as a means of reducing the impact of interlingual transfer and improving learners' pronunciation accuracy.

Theoretical and Practical Implications

Theoretically, the findings of this study reinforce the relevance of the Error Analysis framework as an effective diagnostic tool for identifying systematic patterns of pronunciation errors in EFL learning. According to Ellis (1997), learner errors provide valuable insights into the language learning process because they reflect the strategies learners use when dealing with unfamiliar linguistic features. The recurring substitution patterns identified in this study further support the usefulness of Error Analysis for examining pronunciation difficulties in EFL contexts (Ramadani et al., 2022).

The findings also provide additional empirical evidence regarding the role of first-language interference in shaping learners' pronunciation performance. Previous studies have shown that Indonesian EFL learners frequently rely on the phonological system of their first language when producing unfamiliar English sounds (Diani & Azwandi, 2021). Similarly Fatimah (2020) argued that differences between the sound systems of the first and second languages constitute one of the major causes of pronunciation difficulties among Indonesian learners.

Furthermore, the present study contributes to the growing body of research on phonological interference by providing evidence from an Indonesian-Javanese bilingual context. The findings suggest that the coexistence of two first-language systems may influence learners' production of English sounds, particularly those that have no direct equivalents in either language. This observation extends previous findings on sound substitution patterns reported by Lam & Thi (2022) who emphasized that learners often modify unfamiliar sounds by replacing them with phonologically similar sounds from their native language.

This finding suggests that pronunciation difficulties in bilingual EFL settings may involve more complex phonological interactions than those reported in monolingual contexts, thereby extending the scope of Error Analysis in pronunciation research.

In addition, the interaction between linguistic factors (interlingual transfer) and affective factors (low motivation) highlights the multidimensional nature of pronunciation learning. This finding supports Ali et al. (2023), who emphasized that successful pronunciation development requires not only awareness of phonetic and phonological differences but also sufficient engagement and practice opportunities. Therefore, the present study contributes to a broader understanding of how linguistic and affective factors jointly influence pronunciation development in EFL learning, particularly within vocational secondary school contexts.

Research Limitations

This study has several limitations. First, it involved only 21 students from a single class at one vocational high school, limiting the generalizability of the findings. Second, the pronunciation test employed a word-reading task, which represents a controlled context and may not fully reflect students' pronunciation in spontaneous speech. Third, the use of written rather than oral interviews limited the depth of information regarding the factors contributing to pronunciation errors. Finally, the influence of Javanese as the participants' first language could not be examined separately from that of Indonesian.

Recommendation

Based on the findings and limitations of this study, several recommendations are proposed. Future research should involve larger and more diverse samples from vocational high schools in different regions to improve the representativeness of the findings. Researchers are also encouraged to collect pronunciation data from more natural speaking contexts, such as spontaneous conversations or free-speaking tasks, to obtain a more comprehensive understanding of learners' pronunciation errors. In addition, longitudinal studies examining pronunciation development before and after instructional interventions are recommended to evaluate the effectiveness of pronunciation teaching strategies. Future studies may also compare learners with different first-language backgrounds, such as Indonesian and Javanese, to better understand the influence of first-language phonology on English pronunciation.

CONCLUSION

This study examined pronunciation errors in English consonant sounds /θ/, /ð/, /tʃ/, and /dʒ/ made by Class X TOKR D students at SMK Pancasila 1 Kutoarjo. The findings revealed that /θ/ produced the highest error rate, followed by /ð/, /dʒ/, and /tʃ/, with the most common pattern being the stopping of dental fricatives, where /θ/ and /ð/ were realized as /t/ and /d/, respectively, indicating a strong influence of learners' first-language phonological systems. Two main factors contributing to these errors were identified, namely interlingual transfer and low learning motivation, with interlingual transfer emerging as the dominant factor, as students consistently relied on Indonesian and Javanese phonological patterns when encountering unfamiliar English sounds. Limited motivation and insufficient pronunciation practice further reinforced these difficulties. These findings underline

the importance of explicit pronunciation instruction, particularly for sounds that have no equivalents in learners' first-language systems, and confirm the usefulness of Error Analysis as a framework for identifying systematic difficulties in bilingual Indonesian-Javanese EFL contexts. Future research is recommended to involve larger participant groups and investigate the effectiveness of targeted pronunciation-teaching interventions in improving learners' overall pronunciation accuracy.

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