

Decoding Phonological Hurdles: An In-depth Study of Alveolar and Velar-Alveolar Consonant Cluster Mispronunciations among SMA PERSADA Lampung Students

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Abstract

English, as a global language, is widely taught in Indonesia from elementary to high school. However, Indonesian learners often experience difficulties in mastering English pronunciation, particularly in producing consonant clusters, which are uncommon in Indonesian. This study investigates mispronunciations of velar and velar–alveolar consonant clusters occurring at the end of English words and identifies the causes of these errors. The study employed audio recordings as the primary data collection method. Five senior high school students from Persada Senior High School, Bandar Lampung, whose first language is Indonesian, participated in the research. The participants were asked to read sentence-based materials taken from their English learning modules. Data were collected over three meetings, resulting in 250 pronunciation tokens (5 respondents × 25 English words). The findings reveal frequent pronunciation errors involving alveolar–alveolar and velar–alveolar consonant clusters in word-final positions. Two main types of errors were identified. The first is interlingual interference, where Indonesian phonological rules influence English pronunciation. This includes the deletion of final consonants in clusters (e.g., the omission of [d] in kind), devoicing of voiced consonants, the insertion of schwa [ə] between consonants, and consonant substitution to simplify articulation. The second type is intralingual error, which results from overgeneralization or improper combination of English pronunciation rules. These findings suggest that both native language interference and limited mastery of English phonological rules contribute to consonant cluster mispronunciation among Indonesian learners.



Keywords: English pronunciation; consonant clusters; interlingual interference; intralingual errors; Indonesian EFL learners

INTRODUCTION

English plays a crucial role as a global language in modern society and functions not only as a medium for international communication but also increasingly in local contexts. Its status as a universal language encourages people worldwide, including Indonesians, to learn English to meet global communication demands. Jenkins (2000:5) notes that English has been taught since the 15th century to non-native speakers, a condition reflected in Indonesia where English is introduced early through parental language imitation and later reinforced through formal education. Indonesian students learn English from kindergarten through high school and are expected to master reading, writing, listening, and speaking skills. However, pronunciation remains one of the most challenging aspects of English learning for EFL students.

Pronunciation is a fundamental component of effective oral communication. Fraser (2000) emphasizes that pronunciation is a key factor in how speakers are evaluated by listeners, while Naji (2019) highlights the importance of articulation in producing clear speech sounds. Morley (1998) argues that pronunciation directly affects intelligibility, and its mastery equips learners to communicate appropriately in social contexts (Alrefae & Al-Ghamdi, 2019). Poor pronunciation may lead to misunderstanding, reduced confidence, and negative impacts on learners' character, as effective communication cannot rely on simplified pronunciation alone (Lund, 2003). Furthermore, pronunciation can influence social perceptions such as prestige, social position, and perceived competence (Gelvanovsky, 2002). Although adult learners can still improve pronunciation through awareness of suprasegmental features, various factors affect pronunciation mastery, including age, phonetic ability, motivation, and mindset (Thompson & Gaddes, 2005; Senel, 2006; Dornye, 2009; Darrin, 2017).

Among these factors, mother tongue interference is considered the most significant influence on EFL pronunciation. Cook (2008) asserts that a speaker's first language is easily identifiable through accent, while Avery and Ehrlich (1992) explain that L1 affects both perception and production of English sounds. Limited exposure to authentic English usage further exacerbates pronunciation difficulties (Al-Harbi, 2019). In the Indonesian context, consonant clusters present a particular challenge due to phonological differences between English and Indonesian. Yuliati (2014:514) states that consonant clusters are difficult for Indonesian learners, even after years of formal instruction. Indonesian students tend to apply native phonotactic



constraints to simplify pronunciation, resulting in persistent mispronunciations.

Previous studies consistently demonstrate that Indonesian learners' pronunciation of English is strongly influenced by their first language. Mathew (1997) conducted a qualitative study on Acehese and Gayo EFL learners and found frequent errors in English consonants, particularly in final stops, sibilants, affricates, and interdental, which were often devoiced, deleted, or substituted with sounds from the learners' L1. Similarly, Wardhana (2007) examined the English pronunciation of less-educated tourist guides in Yogyakarta and concluded that limited formal education and mother-tongue interference significantly affected their deviation from standard English pronunciation. Daho (2015), in a case study of a Papuan ELESF student, identified pronunciation errors primarily related to English silent letters, indicating difficulties caused by differences between English and the learner's native phonological system. Krisostomus (2008) also reported that Dayak Embaloh learners tended to eliminate final silent letters and substitute English consonants with native sounds due to the absence of equivalent phonemes in their first language. Among these studies, Yulianti (2014) most closely aligns with the present research, as it specifically addresses the simplification of English final consonant clusters by Indonesian learners and its impact on intelligibility. Yulianti found that learners frequently simplify final consonant clusters because such structures do not exist in Indonesian phonological rules. Collectively, these studies support the assumption that first language interference plays a crucial role in English pronunciation errors among Indonesian speakers from various linguistic backgrounds and provide a theoretical foundation for examining mispronunciation of alveolar–alveolar and velar–alveolar consonant clusters in this study.

Differences between English and Indonesian sound systems, such as the absence of interdental consonants [θ] and [ð] in Indonesian and differing rules for velar nasals and consonant clusters, contribute significantly to these errors. Wardhana (2007:44) demonstrates that Indonesian speakers mispronounce English words like *mosque* [mask] due to the absence of final consonant clusters in Indonesian. Based on these phenomena, this study aims to identify the types of pronunciation errors made by Persada Lampung High School students when producing final consonant clusters, specifically alveolar–alveolar and velar–alveolar clusters, and to analyze the underlying causes of these errors through contrastive analysis between English and Indonesian.

RESEARCH METHOD

Object of the Study

The participants of this study were five students of SMA Persada Bandar Lampung whose



mother tongue is Indonesian and who use Indonesian in daily communication. These students were selected because Indonesian adolescents are commonly exposed to English through formal education and informal media such as films, music, and social media. All participants had learned English since elementary school, and some since kindergarten, which suggests a relatively long exposure to English instruction. The English words analyzed in this study were taken from the students' learning module, *Bahasa Inggris Tingkat Lanjut Kelas XII*, to ensure familiarity with the lexical items used in the pronunciation task.

Approach of the Study

This study employed a phonological approach to address the research problems related to pronunciation patterns and errors. The approach was chosen because it allows systematic analysis of speech sounds and identification of phonological patterns emerging from learners' pronunciation. Through this approach, differences between the English and Indonesian sound systems were examined to explain pronunciation deviations, particularly in final consonant clusters, and to support the analysis of the proposed hypothesis.

Data Collection

Data were collected through two main procedures: participant selection and audio recording. A brief group interview was conducted to confirm that all participants were native speakers of Indonesian, with clarification provided regarding the distinction between mother tongue and national language. The pronunciation data were obtained by recording participants as they read aloud sentence-based materials containing English words with final alveolar–alveolar and velar–alveolar consonant clusters. The materials were taken from the students' English module to maintain natural pronunciation without highlighting target words. Recordings were produced using mobile phones in high-quality audio format. This study adopted North American English (NAmE) phonetic standards, including the pronunciation of post-vocalic /r/, since American English was used by the participants' English teachers.

Data Analysis

The data analysis followed the error analysis procedures proposed by Gass and Selinker [20], which include identifying, classifying, quantifying errors, and analyzing their sources. First, all recordings were carefully transcribed phonetically and tabulated for each participant, who was coded anonymously. Pronunciations were categorized as correct or incorrect based on the



realization of final consonant clusters. Second, error patterns were identified by summarizing correct and incorrect pronunciations across participants. Finally, the causes of mispronunciation were determined by comparing learners' productions with standard English phonetic transcriptions, allowing identification of first-language interference and providing explanations for the observed pronunciation errors.

RESULT

The Distribution of English Final Alveolar-Alveolar and Velar-Alveolar Consonant Clusters

This research focuses on the pronunciation of final alveolar-alveolar and velar-alveolar consonant clusters in English as produced by the participants. The reading materials were taken from the Class XI advanced English module to ensure familiarity. A total of twenty-five English words containing these consonant clusters were identified from four stories: *Monkey and Crocodile*, *Jhony's Story*, *Momotaro or Little One Preaching*, and *Nyai Bagendit*. Among these words, one contains a velar-alveolar cluster, twenty-one contain alveolar-alveolar clusters, and three contain final clusters consisting of three consonants.

1. English Words with Final Alveolar-Alveolar Consonant Clusters

There are twenty-one English final alveolar-alveolar consonant clusters that are used in this research.

a. Stop-Fricatives

Here are the sentences that have those three English words.

- "One night when the people of Jhony's village are sleeping, the Dark Land **knights** attacked Ins village. (The Story of Jhony, p.17)."
- "**Besides** this, be made every kind of preparation for his journey to the island of the devus and set out, (fomotars or Linie Preaching, p.39)"
- "A shark came **closed** to him. He tried to swim avoiding the shark as fast possible but he failed and at last the shark swallowed him (The Story of Jhony p.17)"
- "... but they **pressed** still inwards and at last encountered the chief of the devils (Momotaro or Little Preaching, p.39)"

Table 2. Phonetic Transcription of English Final Fricatives Stop Alveolar Consonant Clusters

No	English Words	Phonetic Transcription
1	Parents	[pearənst]
2	Pressed	[prest]



3	Fast	[fæst]
4	Last	[læst]
5	Closed	[kloʊzd]

b. Nasal Stop

Here are the sentences that have the four words ending with nasal-stop alveolar consonant clusters.

- “So, the crocodile turned **around** and swam back to the bank of the river. (Monkey and Crocodile, p.9)”
- “Once upon a time, there was a village in South Dream **Island**. (The Story of Jhony, p.17)”
- “Jhony **and** his parents lived in a fishermen village. (The Story of Jhony, p.17)”
- “Besides this, he made every **kind** of preparation for his journey to the island of the devils and set out.(Momotaro or littel Preaching, p.39)”

Table 3. Phonetic Transcription of English Final Nasal-Stop Alveolar Consonant Clusters

No	English Words	Phonetic Transcription
1	Around	[əraʊnd]
2	Island	[allənd]
3	And	[ænd]
4	Kind	[kʌɪnd]

c. Nasal-Fricatives

Here are the sentences consisted of the two English words and the phonetic transcription in the following table.

- “**Once** upon a time, there was a village in South Dream Island. (The Story of Jhony, p.17)”
- “**Since** then, people named the lake as Situ Bagendit. (Nyai Bagendit, p.52)”

Table 4. Phonetic Transcription of English Final Nasal-Fricatives Alveolar Consonant Clusters

No	English Words	Phonetic Transcription
1	Once	[wʌns]
2	Since	[sɪns]



d. Laterals-Stop

There are five English words ending with laterals-stop consonant cluster in the reading material. Here are the sentences that consist of those five English words.

- “A shark came closed to him. He tried to swim avoiding the shark as fast as possible but he **failed** and at last the shark swallowed him. (*The story of Jhony*, p.17)”
- “Momotaro! What have you there hanging at your **belt**? (*Momotaro or littel Preaching*, p.93)”
- “... but they pressed still inwards and at last **encountered** the chief of the devils. (*Momotaro or little preaching*, p.39)”
- “The crocodile **told** the monkey o jump on its back (monkey and crpcodilep.9)”
- “Because I didnt bring my **heart** with mw (*Momotaro or littel Preaching*, p.39)”

Table 5. Phonetic Transcription of English Final Lateral-Stop Alveolar Consonant Clusters

No	English Words	Phonetic Transcription
1	Failed	[felld]
2	Belt	[belt]
3	Encountered	[Inkaʊntərd]
4	Told	[tɔʊlt]
5	Heart	[ha:rt]

2. English Words with Final Velar-Alveolar Consonant Cluster

Here is the sentence in The Story of Jhony that consists of velar-alveolar consonant clusters in the final position followed with the table of the phonetic transcription.

- “One night when the people of Jhony's village are sleeping, the Dark Land knights **attacked** his village. (*The Story of Jhony*, p. 17)”

Table 6. Phonetic Transcription of English Final Velar -Alveolar Consonant Clusters

No	English Words	Phonetic Transcription
1	Attacked	[ətækt]

3. English Words End with Three Consonants as Final Consonant Cluster

This research also examines final consonant clusters consisting of three consonants. Five English words with such clusters were identified, involving alveolar-alveolar and velar-alveolar combinations. Two words were taken from *Monkey and Crocodile*, one from *The Story*

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of *Jhony*, one from *Momotaro and Little Preaching*, and one from *Nyai Bagendit*. Here are the sentences that consist of the English words.

- “Because I didn't bring my heart with me. (Monkey and Crocodile, p 9)”
- “So, the crocodile turned around and swam back to the bank of the river. (Monkey and Crocodile, p.9)”
- “Jhony and his parents lived in a fishermen village (The Story of Jhony, p.17) but they pressed still inwards and at last encountered the chief of the devils. (Momotaro or Little Preaching, p.39)”
- “Nyai Bagendit immediately asked her to go. (Nyai Bagendit, p. 52)”

Table 7. Phonetic Transcription of English Word with Three Consonant as Final Consonant Clusters

English Words	Phonetic Transcription	Consonants
Didn't	[dɪdnt]	Stop- Nasal- Stop alveolar
Parents	[pearənst]	nasal- stop- fricative alveolar
Inwards	[ɪnwɹədʒ]	Lateral- nasal- fricative alveolar
Asked	[æskt]	Fricative alveolar-stop velar-stop alveolar

Mispronunciations of English Words with Final Alveolar-Alveolar Consonant Clusters

1. Stop-Fricatives

For stop-fricative consonant clusters, pronunciation accuracy was generally low. In the word *knight* [naɪtst], only six participants pronounced the cluster correctly, while most errors involved deleting the cluster and producing [naɪt] or simplifying it to [naɪs]. One participant mispronounced the word as [naɪks] due to focusing on the letter *g*. In the word *besides* [bəsaɪdz], no participant produced a correct pronunciation. Common errors included omission of the final [z] and devoicing of [d] to [t], resulting in pronunciations such as [bəsaɪt] and [bəsaɪts], reflecting Indonesian final consonant devoicing as noted by Dardjowidjojo [21].

Table 8. Phonetic Transcription of English Final Stop -Fricative Alveolar Consonant Clusters

English words	C	IC
Besides	9	1
Knight	8	2



2. Fricatives Stop

For fricative–stop consonant clusters, relatively few mispronunciations occurred in *fast* [fæst] and *last* [ləst], mainly due to omission of the final alveolar stop [t]. Errors were limited because these clusters do not contain voiced consonants. In *pressed* [prest], some participants mispronounced the cluster as [sd] instead of [st]. In contrast, none of the participants pronounced *closed* [kləʊzd] correctly in the first meeting, as voiced consonants [z] and [d] were frequently devoiced to [s] and [t], or omitted entirely. These patterns reflect Indonesian learners' tendency to reduce or devoice voiced consonants in final positions, as explained by Dardjowidjojo [21].

Table 9. Phonetic Transcription of English Final Fricative Stop Alveolar Consonant Clusters

English words	C	IC
Closed	5	5
Fast	8	2
Last	6	4
Pressed	8	2

3. Nasal stop

In general, the participants showed similar pronunciation errors in producing nasal–alveolar stop consonant clusters, mainly through the deletion of the final stop consonant. In the first meeting, only P3 and P5 were able to pronounce the clusters correctly. In the words *around* and *kind*, all participants omitted the alveolar stop [d], resulting in pronunciations such as [əraʊn] and [kɪn]. A similar pattern was found in the words *wind* *island* and *arrogant*, where most participants deleted the final stop consonant [d] or [t]. These findings indicate a consistent tendency among participants to reduce or omit alveolar stop consonants in final consonant clusters.

Table 10. Phonetic Transcription of English Final Nasal-Stop Alveolar Consonant Clusters

English Words	C	IC
Around	5	5
Island	9	1
Kind	9	1
And	8	2



4. Nasal Fricatives

Only a few errors were found in nasal–fricative consonant clusters. One error occurred in the word *once* [wʌns], produced by P3 in the first meeting, where the alveolar fricative [s] was changed to the palatal fricative [ʃ], likely influenced by the mispronunciation of a preceding word. In the word *since* [sɪns], P2 made an error by deleting the alveolar fricative [s] and also mispronouncing the vowel. Overall, most participants were able to pronounce nasal–fricative consonant clusters correctly.

Table 11. General Summary of Participants Result of English Final Nasal-Fricative Alveolar Consonant Clusters

English Words	C	IC
Since	9	1
Once	9	1

5. Laterals-Stop

Several pronunciation errors were found in final consonant clusters. In the word *belt* [belt], P5 mispronounced the cluster in the first meeting by changing the final voiceless [t] into a voiced [d], resulting in [beld], while the other participants pronounced it correctly. For the word *failed* [feɪld], three participants mispronounced the cluster by changing the voiced alveolar stop [d] into the voiceless [t] or by adding a vowel such as schwa [ə], producing forms like [feɪlt] or [feɪləd]. In the word *encountered* [ɪnkaʊntərd], only three participants pronounced the consonant cluster correctly, while others changed the final [d] into [t] or were unsure of the correct pronunciation. Overall, these errors reflect first-language influence, where voiced consonants tend to become voiceless in final positions, as explained by Dardjowidjojo [21].

Table 12. General Summary Of Participants Result Of English Final Lateral -Stop Alveolar Consonant Clusters

English Words	C	IC
Belt	9	1
Encountered	3	7
Failed	7	3
Heart	4	6



Mispronunciation of English Word with Final Velar-Alveolar Consonant Cluster

As noted earlier, the final velar–alveolar consonant cluster appeared in only one word, *attacked* [ətækt]. Most participants (P1, P2, P3, and P5) pronounced the cluster correctly, while one participant mispronounced it. The most common error involved deleting the alveolar voiceless stop [t], resulting in the pronunciation [ətæk]. Another error occurred when one participant pronounced the final *-ed* as a voiced alveolar stop [d], whereas it should be realized as a voiceless stop [t] in final position.

Table 14. General Summary of Participants Result Of English Final Velar- Alveolar Consonant Clusters

English Words	C	IC
Attacked	9	1

Mispronunciations of English Words with Three Consonants as Final Consonant Cluster

Pronunciation of English words containing three final consonants proved particularly difficult for the participants, as only a limited number of correct pronunciations were produced. For *didn't*, only P1, P4, and P5 pronounced the final consonant cluster correctly, while the others omitted the final alveolar stop [t]. In the word *parents*, only P1 produced the cluster accurately at the first meeting, whereas P2, P3, P4, and P5 omitted one or more consonants, most frequently deleting the alveolar stop [t] or the final alveolar fricative [s]. For *inwards*, correct pronunciations were produced only by P1, P2, and P5, while the remaining participants showed errors such as devoicing or deletion of the medial alveolar stop [d]. In the case of *asked*, only P4 and P5 pronounced the three-consonant cluster correctly, whereas other participants omitted final consonants or reordered the cluster, most commonly producing [æks]. These findings indicate that increased consonant cluster complexity leads to higher mispronunciation rates, with consistent deletion, substitution, and simplification patterns among Indonesian learners.

Table 14. General Summary of Participants Result oof English Final More Than Two Consonant Clusters

English words	C	IC
Didn't	8	2
Parents	5	5
Inwards	5	5



Asked	6	4
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1. Interlingual and Interference Errors

Interlingual or interference errors arise from the influence of a learner's first language on the second language. In this study, most mispronunciations of final alveolar–alveolar and velar–alveolar consonant clusters were caused by Indonesian phonotactic constraints. Participants frequently omitted the final consonant in clusters consisting of nasal–stop alveolar, stop–fricative alveolar, velar–alveolar, and three-consonant combinations, which are unfamiliar in Indonesian. For example, one participant mispronounced *fast* [fæst] by deleting the final voiceless alveolar stop [t]. The following is a list of words with the last consonant in consonant clusters frequently used by participants.

Table 15. English Word with the Omission of Last Consonant in the Consonant Cluster

NO.	English words	Phonetic Transcription of Mispronunciation
1	Besides	[bɪsaldz]
2	Knights	[nɔlts]
3	Pressed	[prest]
4	Around	[əraʊnd]
5	Kind	[kʌlnd]
6	Island	[allənd]
7	And	[ænd]
8	Attacked	[ətækt]
9	Didn't	dɪdnt]
10	Inwards	[ɪnwrədʒ]

Mispronunciations frequently occurred when participants were unfamiliar with certain English words. This is evident in the contrast between *heart* [hɑ:rt] and *around* [əraʊnd]. The word *heart* was generally pronounced correctly because it is familiar to participants through frequent use in songs and daily expressions, allowing them to imitate commonly heard pronunciation. In contrast, *around* was often mispronounced due to unfamiliarity with the final consonant cluster [nd], which does not exist in Indonesian phonotactic rules. Participants also tended to change voiced consonants into voiceless ones, as seen in *told* [tɔʊld], which was



often pronounced with [t] instead of [d]. This reflects L1 transfer, as Indonesian voiced stops are typically devoiced in final positions [21]. Additionally, some participants inserted a schwa [ə] to ease pronunciation when a consonant cluster involved the letter /e/, such as in *failed* [feɪld], producing [feɪləd], a pattern predicted by Dardjowidjojo [21]. Another recurring error involved consonant swapping, as in *asked* [æskt], which was commonly pronounced as [æks], aligning with permissible Indonesian consonant cluster patterns such as in *teks*.

2. Intralingual Errors

Intralingual errors result from overgeneralization or incomplete mastery of second-language rules [22]. In this study, five mispronunciations were attributed to intralingual errors. Two errors occurred when P4 mispronounced the final letter /d/ in *attacked* [ə'tækt] and *pressed* [prest] by pronouncing it as a voiced stop [d], despite the rule requiring a voiceless stop [t] following a voiceless consonant. Three additional errors occurred when P3 mispronounced the final consonant cluster in *once* [wʌns] as [wʌnʃ], changing the alveolar fricative [s] to the palatal fricative [ʃ]. This error was influenced by inappropriate linking with the following word *upon* [əpən], which was also mispronounced, demonstrating failure to apply pronunciation rules within appropriate boundaries.

CONCLUSION

This study concludes that first language influence plays a significant role in Indonesian learners' pronunciation of English final consonant clusters. From 250 pronunciation tokens, 76 errors were identified, indicating persistent difficulties with final alveolar–alveolar and velar–alveolar consonant clusters. Most errors were interlingual or interference errors (71 cases), mainly involving deletion of final consonants, devoicing of voiced stops, schwa insertion to ease articulation, and consonant swapping, all of which reflect Indonesian phonotactic constraints. A small number of errors (five cases) were intralingual, resulting from overgeneralization of English pronunciation rules, such as mispronouncing final as a voiced stop or altering fricatives due to inappropriate linking with adjacent words. Overall, the findings confirm that differences between English and Indonesian sound systems strongly influence learners' pronunciation accuracy.

Students are encouraged to actively improve their pronunciation by seeking guidance from teachers and increasing exposure to authentic English through songs, films, and other media. English teachers are advised to provide clear instruction on English pronunciation rules, particularly consonant clusters, and to offer continuous practice opportunities with corrective



feedback to help students overcome first-language interference.

FUTURE DIRECTIONS

This study suggests that students of SMA Persada Bandar Lampung should be more actively engaged in learning English, particularly in improving their pronunciation by consulting teachers and increasing exposure to authentic English through songs and movies spoken by native speakers. Regular listening and imitation can help students develop more accurate pronunciation. Additionally, English teachers are encouraged to ensure that students clearly understand pronunciation rules by providing accurate explanations of English sound systems and offering continuous practice opportunities. Teachers should facilitate more reading and speaking activities accompanied by constructive feedback to help students gradually improve their pronunciation skills.

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