

An Analysis of Aspirated Allophones Produced by UINSU Students in English Pronunciation

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Abstract. Pronunciation is an essential component of language learning because it influences intelligibility and communication effectiveness. One important feature of English pronunciation is aspiration, which occurs in the voiceless stop consonants /p/, /t/, and /k/ under specific phonological conditions. This study aims to analyze how UINSU students produce aspirated allophones in English pronunciation and identify factors influencing their production. This research employed a qualitative descriptive approach involving three students from the English Education Study Program at UINSU. Data were collected through interviews and voice-note recordings. The findings indicate that students generally understand the concept of aspiration and can apply it in appropriate phonological environments. However, their production remains inconsistent, particularly during spontaneous speech. Several factors influencing students' pronunciation include first-language transfer, limited pronunciation practice, phonological awareness, and classroom instruction. The study concludes that although students have developed awareness of English aspiration, more explicit pronunciation training is necessary to achieve consistent and accurate production.

Keywords: aspiration, allophones, pronunciation, phonology, EFL learners

Abstrak. Pelafalan merupakan komponen penting dalam pembelajaran bahasa karena memengaruhi tingkat keterpahaman (intelligibility) dan efektivitas komunikasi. Salah satu aspek penting dalam pelafalan bahasa Inggris adalah aspirasi, yang terjadi pada konsonan hambat tak bersuara /p/, /t/, dan /k/ dalam kondisi fonologis tertentu. Penelitian ini bertujuan untuk menganalisis bagaimana mahasiswa UINSU memproduksi alofon beraspirasi dalam pelafalan bahasa Inggris serta mengidentifikasi faktor-faktor yang memengaruhi produksinya. Penelitian ini menggunakan pendekatan deskriptif kualitatif yang melibatkan tiga mahasiswa Program Studi Pendidikan Bahasa Inggris UINSU. Data dikumpulkan melalui wawancara dan rekaman pesan suara (voice note). Hasil penelitian menunjukkan bahwa mahasiswa pada umumnya memahami konsep aspirasi dan mampu menerapkannya dalam lingkungan fonologis yang sesuai. Namun, produksi aspirasi mereka masih belum konsisten, terutama dalam ujaran spontan. Beberapa faktor yang memengaruhi pelafalan mahasiswa meliputi transfer bahasa pertama (bahasa ibu), keterbatasan latihan pelafalan, kesadaran fonologis, dan pengajaran di kelas. Penelitian ini menyimpulkan bahwa meskipun mahasiswa telah memiliki kesadaran terhadap aspirasi dalam bahasa Inggris, pelatihan pelafalan yang lebih eksplisit masih diperlukan untuk mencapai produksi yang konsisten dan akurat.

Kata kunci: aspirasi, alofon, pelafalan, fonologi, pembelajar bahasa Inggris sebagai bahasa asing (EFL).

1. BACKGROUND

Pronunciation plays a fundamental role in second-language acquisition because it directly affects intelligibility, comprehensibility, and successful communication. Regardless of learners' mastery of grammar and vocabulary, ineffective pronunciation may lead to misunderstandings and communication breakdowns. Therefore, pronunciation competence is widely recognized as one of the essential components of communicative competence in English language learning (Celce-Murcia et al., 2010; Derwing & Munro, 2015). For learners of English as a Foreign Language (EFL), accurate pronunciation is particularly important because it facilitates interaction with both native and non-native speakers in academic, professional, and social contexts.

Within the field of pronunciation, phonology occupies a central position because it examines how speech sounds are organized and function within a language system. According to Yule (2020), phonology investigates not only individual sounds but also the systematic patterns that govern their distribution and interpretation. One important concept in phonology is the distinction between phonemes and allophones. Phonemes are contrastive sound units that differentiate meaning, whereas allophones are predictable phonetic variants of the same phoneme that do not alter lexical meaning (Odden, 2013). Although allophonic variations do not affect meaning directly, they contribute significantly to naturalness, fluency, and native-like pronunciation.

One of the most notable examples of allophonic variation in English is aspiration. Aspiration refers to the brief burst of air that accompanies the articulation of certain voiceless stop consonants, particularly /p/, /t/, and /k/, under specific phonological conditions (Roach, 2009). In English, these consonants are typically aspirated when they occur at the beginning of stressed syllables, as in *pin* [p^hɪn], *top* [t^hɒp], and *cat* [k^hæt]. Conversely, aspiration is generally absent when the same consonants follow the fricative /s/, as in *spin*, *stop*, and *skill* (Ladefoged & Johnson, 2015). Although aspiration does not create a contrast in meaning and is therefore considered an allophonic feature rather than a phonemic one, it remains an important characteristic of English speech and contributes to listeners' perceptions of pronunciation accuracy and fluency.

For Indonesian learners of English, mastering aspiration can be particularly

challenging because aspiration is not a phonologically distinctive feature in Bahasa Indonesia. Unlike English, Indonesian voiceless stop consonants are generally produced without the strong burst of air associated with aspiration. As a result, Indonesian EFL learners often transfer articulatory habits from their first language when speaking English, leading to deviations from target-like pronunciation patterns. This phenomenon can be explained through the theory of first-language transfer, which suggests that learners tend to rely on familiar phonological systems when producing sounds in a second language (Lightbown & Spada, 2021).

Numerous studies have highlighted the influence of first-language interference on English pronunciation among Indonesian learners. Ristati et al. (2025) found that native-language transfer remains one of the most significant factors affecting pronunciation accuracy among Indonesian university students. Similarly, Medi et al. (2026) reported that phonological errors frequently occur because learners continue to apply Indonesian sound patterns when producing English speech. Other studies have also demonstrated that Indonesian EFL learners experience difficulties with various phonological features, including consonant production, vowel contrasts, consonant clusters, and suprasegmental aspects of pronunciation (Fadillah, 2020; Jamilumulkillah et al., 2023; Zalha & Lefiandi, 2024).

In addition to first-language influence, pronunciation development is also affected by phonological awareness, instructional practices, and opportunities for language exposure. Phonological awareness refers to learners' ability to recognize, analyze, and manipulate speech sounds within a language. According to Celce-Murcia et al. (2010), learners with greater phonological awareness are more likely to notice differences between their own pronunciation and target-language norms, thereby facilitating pronunciation improvement. Supporting this view, Luthfi et al. (2025) found that Indonesian university students perceived phonological knowledge as essential for improving both pronunciation and listening comprehension. Their findings emphasize the need for explicit phonological instruction to help learners acquire sound patterns that are absent from their first language.

Despite the growing body of research on English pronunciation among Indonesian EFL learners, studies focusing specifically on aspirated allophones remain relatively limited. Existing research has predominantly concentrated on general

pronunciation problems, consonant articulation, vowel production, or consonant clusters, while the production of English aspiration has received comparatively little scholarly attention. Consequently, there is still insufficient understanding of how Indonesian learners apply aspiration rules in actual speech production and what factors contribute to their success or difficulty in producing aspirated sounds accurately.

Considering the importance of aspiration in English pronunciation and the limited research addressing this topic in the Indonesian EFL context, further investigation is necessary. Students enrolled in the English Education Study Program at Universitas Islam Negeri Sumatera Utara (UINSU) have received formal instruction in English phonology; however, it remains unclear whether their theoretical knowledge is reflected in their actual pronunciation performance. Therefore, this study aims to analyze the production of aspirated allophones among UINSU students and to identify the linguistic and educational factors influencing their pronunciation. The findings are expected to contribute to the development of more effective pronunciation teaching strategies and provide insights into the phonological competence of Indonesian EFL learners.

2. THEORETICAL REVIEW

a. Phonology and Allophonic Variation

Phonology is concerned with the sound system of a language and the rules governing how sounds are organized and interpreted. According to Yule (2020), phonology does not merely examine individual sounds but also explores the patterns and relationships that enable speakers to communicate meaning effectively. Within phonological studies, an important distinction exists between phonemes and allophones. Phonemes are contrastive sound units that can differentiate meaning, whereas allophones are different realizations of the same phoneme that do not change the meaning of a word (Odden, 2013). Allophonic variation is a natural phenomenon in spoken language. Native speakers generally apply allophonic rules unconsciously, while second-language learners often struggle to acquire them because such variations are rarely emphasized in classroom instruction. Consequently, investigating learners' production of allophones can provide valuable insight into their phonological

competence.

b. Aspirated Allophones in English

One of the most common examples of allophonic variation in English involves aspiration. Roach (2009) explains that the voiceless stop consonants /p/, /t/, and /k/ are typically aspirated when they occur at the beginning of a stressed syllable. Thus, words such as pin, top, and cat are pronounced with a noticeable burst of air. However, aspiration is generally absent when these consonants follow /s/, as in spin, stop, and skill.

Because aspiration does not create a difference in lexical meaning, it is considered an allophonic rather than a phonemic feature. Nevertheless, mastery of aspiration contributes to more natural pronunciation and can influence listeners' perceptions of fluency and comprehensibility. Ladefoged and Johnson (2015) emphasize that aspiration is one of the most recognizable phonetic characteristics of English voiceless stops and serves as an important indicator of pronunciation accuracy.

c. First Language Transfer in Pronunciation

Research in second-language acquisition has consistently shown that learners' first language influences their pronunciation of a target language. Lightbown and Spada (2021) argue that learners often transfer familiar sound patterns from their native language when producing unfamiliar sounds in a second language. As a result, pronunciation difficulties frequently occur when the target language contains phonological features that are absent from the learner's first language.

In the Indonesian context, aspiration is not a phonologically significant feature. Therefore, Indonesian learners may produce English voiceless stops without the degree of aspiration expected in native English speech. A recent study by Rinaldi and Harlan (2025) found that cross-linguistic interference remains a major factor affecting Indonesian EFL learners' pronunciation performance. Their findings suggest that learners frequently rely on Indonesian phonological patterns when producing English sounds, leading to deviations from target-like pronunciation.

d. Pronunciation Challenges among Indonesian EFL Learners

Pronunciation continues to be one of the most challenging aspects of English learning for Indonesian students. A literature review conducted by Fadillah (2020) identified several recurring problems among Indonesian EFL learners, including difficulties with consonants, vowels, and sound patterns that do not exist in Bahasa Indonesia. The study concluded that differences between the Indonesian and English sound systems significantly influence learners' pronunciation accuracy.

Similarly, research by Zalha and Lefiandi (2024) revealed that Indonesian university students frequently experience difficulties in producing English consonant sounds accurately. Their findings indicate that limited exposure to authentic English input and differences between the native and target language sound systems contribute substantially to pronunciation errors.

Furthermore, Jamilumkillah et al. (2023) found that Indonesian EFL learners often encounter challenges when producing English consonant clusters because certain sound combinations are uncommon in Indonesian. The study highlights how phonological differences between English and Indonesian continue to influence learners' speech production.

e. Phonological Awareness and Pronunciation Development

Phonological awareness plays a crucial role in pronunciation learning. Celce-Murcia et al. (2010) argue that learners who are able to recognize subtle sound distinctions are more likely to produce those sounds accurately. In pronunciation learning, phonological awareness enables learners to notice differences between their own speech and target-language pronunciation.

Evidence from Indonesian EFL contexts also supports the importance of phonological awareness. A recent study conducted by Luthfi et al. (2025) found that university students considered phonological knowledge essential for improving pronunciation and listening comprehension. The participants emphasized the need for more explicit instruction in phonology because many English sounds and sound patterns do not exist in their first language.

f. Previous Studies and Research Gap

Previous studies have demonstrated that Indonesian EFL learners face pronunciation difficulties due to first-language interference, limited exposure to

English, and insufficient phonological training. However, most existing studies focus on general pronunciation problems, consonant production, vowel contrasts, or consonant clusters.

Research specifically examining the production of aspirated allophones among Indonesian university students remains limited. While aspiration is recognized as an important feature of English pronunciation, relatively few studies have investigated how Indonesian learners apply aspiration rules in actual speech production. Therefore, this study seeks to fill this gap by analyzing the production of aspirated allophones /p/, /t/, and /k/ among UINSU students and identifying the factors that influence their pronunciation.

3. RESEARCH METHODS

This study employed a qualitative descriptive design. The research was conducted at UINSU and involved three students from the English Education Study Program.

Data were collected through two techniques:

- a. Interviews, which were used to explore participants' awareness, experiences, and perceptions regarding aspiration in English pronunciation.
- b. Voice-note recordings, which were used to analyze participants' actual pronunciation of selected words containing /p/, /t/, and /k/ in different phonological environments.
- c. The collected data were analyzed descriptively by comparing participants' pronunciation with established English phonological rules concerning aspiration.

4. RESULT AND DISCUSSION

The findings reveal that the participants generally demonstrated awareness of aspirated allophones. Most students successfully produced aspiration in words such as pin, top, and cat. However, the strength of aspiration varied among participants.

The recordings also showed that students tended to produce less aspiration in words beginning with /s/ clusters, such as spin, stop, and skill. This indicates that participants were able to recognize and apply English phonological rules to some

extent

Nevertheless, consistency remained a challenge. In several instances, aspiration was noticeably weaker than expected. Some students produced only slight bursts of air, while others occasionally omitted aspiration altogether.

Interview results further revealed that students were generally aware of aspiration but rarely paid conscious attention to it during everyday communication. Most participants reported focusing more on vocabulary and fluency than on detailed pronunciation features.

Discussion

The findings suggest that UINSU students have begun to develop awareness of aspirated allophones but have not yet achieved complete mastery. Most participants were able to produce aspiration correctly in controlled pronunciation tasks; however, their performance was less consistent during spontaneous speech.

This finding supports the study conducted by Ristati et al. (2025), which found that Indonesian EFL learners often experience pronunciation difficulties due to the influence of their first language. Since Indonesian does not emphasize aspiration, students naturally transfer Indonesian articulation patterns into English pronunciation.

The findings also align with Medi et al. (2026), who reported that limited pronunciation practice contributes significantly to phonological errors among university students. Participants in the present study admitted that they rarely engage in intensive pronunciation practice outside the classroom, which may explain their inconsistent production of aspiration.

Another important factor identified in this study is phonological awareness. Students who consciously paid attention to pronunciation tended to produce aspiration more accurately. This finding suggests that awareness plays a crucial role in pronunciation development, although awareness alone is not sufficient without regular practice and exposure.

The study also highlights the importance of classroom instruction. Participants reported that lecturers serve as their primary pronunciation models. Consequently, explicit instruction regarding allophonic features such as aspiration could help students

improve their pronunciation accuracy and confidence.

Overall, the results indicate that pronunciation development is influenced by a combination of linguistic and educational factors. While students demonstrate an emerging understanding of aspiration, continued instruction and practice remain necessary to strengthen their phonological competence..

5. CONCLUSION

This study examined the production of aspirated allophones among UINSU students in English pronunciation. The findings show that students generally understand and apply aspiration in appropriate phonological environments. However, their production remains inconsistent and often reflects the influence of Indonesian phonological patterns.

Several factors contribute to these difficulties, including first-language transfer, limited pronunciation practice, phonological awareness, familiarity with words, and classroom instruction. Among these factors, first-language influence appears to be the most significant.

The study suggests that English pronunciation teaching should place greater emphasis on allophonic features, particularly aspiration. More explicit instruction, pronunciation-focused activities, and regular exposure to authentic English speech may help students develop more accurate and consistent pronunciation.

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