ADVANCE SOCIAL SCIENCE ARCHIVE JOURNAL
Available Online: https://assajournal.com
Vol. 04 No. 01. July-September 2025.Page#.577-594
Print ISSN: 3006-2497 Online ISSN: 3006-2500
Platform & Workflow by: Open Journal Systems
https://doi.org/10.55966/assaj.2025.4.1.052

The Impact of Phonological Processes on Speech Intelligibility of Students at the University of Lakki Marwat

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ABSTRACT
Phonological processes are natural and systematic changes in sounds that occur during speech. These changes often impact non-native speakers' understanding, particularly in contexts where English is used as a foreign language (EFL). This issue is prevalent in multilingual nations like Pakistan, where students' native languages can interfere with learning a second language. The current study aims to investigate the phonological processes that influence the speech clarity of sixth-semester students from different departments at the Gambila Campus, University of Lakki Marwat (ULM), Khyber Pakhtunkhwa (KP). A mixed-method approach was used in this research, incorporating both qualitative and quantitative methods. Data were gathered through recordings of selected words, sentences, and a paragraph from students. The analysis involved IPA transcription, comparison with Received Pronunciation (RP), and thematic analysis of their feedback. The study's results indicated that the most frequent phonological processes affecting clarity included vowel substitution, elision, intrusion, rhoticity, deaspiration, and diphthong simplification. These issues were mainly due to the students' native language (Pashto), a lack of phonological awareness, and overgeneralization from written English. The study concludes that these phonological processes significantly impede students' speech clarity, which affects effective communication in both academic and social settings. In the EFL classrooms at ULM, where both students and teachers are non-native English speakers, the influence of first language

interference on pronunciation is substantial, underscoring the need for better pronunciation teaching and awareness of Standard English phonology.
***Keywords**: Phonological Processes, Pronunciation, Speech Intelligibility, EFL Classes, ULM*

INTRODUCTION

English is known worldwide as a key means of communication, trade, education, and diplomacy (Asikin & Ibrahim, 2020). Its function as a common language makes being skilled in it crucial for both social interactions and academic or career advancement. In nations like Malaysia, Pakistan, India, Japan and China, English is taught as a second language and is seen as an important part of the school curriculum (Li & Lu, 2021). Becoming fluent in English involves skills in reading, writing, listening, and speaking. Among these, speaking is especially important because it allows for direct communication and is closely tied to pronunciation, which is vital for being understood (Faez & Karas, 2019). Mispronunciations can obstruct effective communication, making it hard for listeners to grasp what the speaker is saying, particularly when the speaker's native language heavily influences their English. Pronunciation, which is the standard way to say a word, is a key part of communication skills and is necessary for clear and precise speech (Gilakjani 2016, p. 2). The difficulties in mastering correct English pronunciation are made worse by the phonological differences between English and the learners' first language, especially in vowel and consonant sounds. One major challenge EFL learners encounter is the transfer of phonological rules from their native language to English (Nguyen & Dao, 2019). This linguistic interference often leads to mistakes that impact the clarity of spoken English. Many learners also do not have enough meaningful interactions with native English speakers, which limits their exposure to proper pronunciation examples. Consequently, students may depend on written forms or rules taught in class, which do not always represent natural speech. Language serves not just as a means of communication but also as a mirror of cultural identity, and this cultural influence shapes pronunciation, grammar, stress patterns, and conversational habits (Sidabutar, 2020). As a result, learners from various linguistic backgrounds engage with English in unique ways, shaped by their cultural and linguistic contexts. The human voice, which can change in pitch, tone, volume, and rhythm, serves as the primary means of communication (Finegan, 2015, pp. 7-16). Speech enables people to convey thoughts, ideas, and feelings, making it a crucial part of language. However, there has been little focus on how phonological interference affects Pakistani learners of English as a Foreign Language (Ambalegin, Suhardianto, & Kaprawi, 2017, p. 122). At the University of Lakki Marwat (ULM), students at the Gambila campus come from a wide range of linguistic and cultural backgrounds. Many of them are native Pashto speakers who struggle with accurately pronouncing English words. These students often depend on the spelling of words instead of their standard pronunciations, such as Received Pronunciation (RP). Others rely on the pronunciation techniques taught by their teachers, which may not always conform to standard English practices. Due to limited exposure to native pronunciation examples and the strong influence of their first language, ULM students frequently apply Pashto phonological rules to English, resulting in persistent pronunciation mistakes. These challenges are often evident in classroom discussions, oral presentations, and reading exercises, where students inadvertently mispronounce English words because of unfamiliar vowel sounds, incorrect stress placement,

and improper consonant articulation. These pronunciation difficulties are associated with phonological processes, natural simplifications in speech that happen during language learning. While these processes can aid in acquiring a first language, they can hinder pronunciation in a second language. Such processes include elision, assimilation, intrusion, and substitution, all of which can diminish clarity in spoken English. At ULM, students experience phonological processes that disrupt effective communication in both academic and social settings. Although these issues are evident, there has been limited research aimed at systematically pinpointing which phonological processes are most common among these students. It remains uncertain if these errors are uniform across various academic departments or if they are affected by students' previous exposure to English, their educational backgrounds, or the environments in which they learn languages. These unknowns reveal a significant gap in the current literature, especially regarding the context of Pakistani EFL.

To fill this gap, the current study aims to analyze the pronunciation patterns of sixth-semester students from different departments at the Gambila campus of ULM. It investigates how their native phonology impacts their spoken English, identifying the prevalent phonological processes that influence their pronunciation. The objective is to offer insights that can enhance teaching strategies in EFL classrooms, particularly for learners who speak Pashto. By understanding the specific difficulties these students encounter, educators can adapt their teaching methods and implement pronunciation-focused interventions that improve speech clarity and communication skills. Ultimately, this research seeks to aid in the creation of a more phonologically aware English language curriculum at ULM, providing students with the necessary tools to speak English accurately and with confidence.

The following are the research objectives:

i. To identify the phonological processes that influence the pronunciation of sixth-semester students at the Gambila campus, ULM.
ii. To examine the effect of these phonological processes on the intelligibility and clarity of speech among EFL students at ULM.

LITERATURE REVIEW

The research on phonological processes in second language (L2) acquisition shows how these natural speech phenomena affect pronunciation accuracy for learners of English as a Foreign Language (EFL). Phonological processes like assimilation, elision, substitution, and vowel insertion or deletion are natural simplifications in speech that happen during language production. These processes are particularly common among L2 learners whose first language (L1) is quite different from English in terms of sound systems and phonotactics. Students frequently replace unfamiliar English sounds with those from their native language or completely omit sounds when they find them hard to pronounce, resulting in ongoing mispronunciations. These patterns are not random; they are influenced by underlying phonological rules that transfer from L1 to the L2 context. Students learning English in situations where their L1 lacks certain phonemes like the /θ/ or /ð/ sounds often substitute these with similar sounds from their L1, which diminishes speech clarity. For instance, learners might replace /θ/ with /t/ or /ð/ with /d/, especially when these sounds are not present in their native phonetic system. This is particularly evident among learners at the University of Lakki Marwat (ULM), many of whom

speak Pashto. The impact of Pashto phonology leads to consistent pronunciation mistakes in their spoken English. These learners often try to approximate English sounds using familiar Pashto pronunciations, and this adjustment results in ongoing mispronunciations that hinder effective communication. The impact of L1 on L2 pronunciation is well established in research on second language acquisition. Jarvis and Pavelenko (2008) claim that L1 patterns significantly shape second language phonology, while Guiora (2006) points out that learners face challenges when they come across unfamiliar sounds that are not present in their native language. Even when L1 and L2 have similar sounds, learners might still find it hard to produce them accurately because of variations in articulation, stress, or placement. Researchers like Jette et al. (2008) and Ellis (1994) have noted that similarities between languages can facilitate learning, but discrepancies in sound systems can lead to persistent errors. These interference patterns are often predictable and necessitate focused phonological training for correction. In Pakistan, English is seen as a prestigious language and is widely used in education, government, and business. Despite its significance, many students, particularly those from rural backgrounds, receive little phonetic training, which causes them to depend on L1 pronunciation habits. According to Kachru's (1986) World Englishes model, Pakistani English is classified in the "outer circle," which includes areas where English serves institutional purposes but is not the first language. The adoption of Received Pronunciation (RP) as a teaching standard in numerous Pakistani institutions further underscores the conflict between local English usage and global pronunciation standards. RP, often linked to prestige and authority in the UK, continues to be a reference model for formal and academic English in Pakistan, even though learners seldom reach it due to insufficient exposure and instruction.

Multiple studies offer empirical evidence for these findings. For instance, Hakim (2012) explored the pronunciation challenges encountered by Javanese students, especially with phonemes like /d/ and /ð/, which were often misarticulated because of L1 limitations. In a similar vein, Hamzah, Ahmad, and Yusuf (2017) investigated Malaysian and Chinese EFL learners, uncovering that vowel discrepancies and confusion between /r/ and /l/ were affected by the learners' respective L1S. The replacement of tense vowels with lax ones, along with consonants that have similar native sounds, was a common problem. These results align with phonological difficulties noted among ULM students, who frequently insert, omit, or misplace phonemes when speaking English. Further research conducted by Ambalegin and Arianto (2018) analyzed the English pronunciation of Indonesian President Joko Widodo, noting frequent substitutions of dental fricatives /θ/ and /ð/ with /t/ and /d/. This pattern of substitution is also observed among learners from various L1 backgrounds, including Pashto. Sidabutar (2020) discovered that Batak Toba students faced challenges with fricatives and affricatives, with fricative errors occurring in more than 50% of instances. Such errors often arise from the absence of these sounds in the learners' L1 phonemic inventory. In another investigation, Bin Hadijah and Hamzah (2020) concentrated on Yemeni EFL learners, examining their production of /p/, /v/, /θ/, and /tʃ/. Devoicing and stopping were common, and their acoustic phonetic analysis highlighted the influence of word position on pronunciation mistakes. Likewise, Ambalegin (2021) and Ambalegin & Kaprawi (2017) stressed the importance of teaching the connection between spelling and pronunciation, as well as addressing aspects like aspiration, schwa usage, and

syllabic stress. Furthermore, Ambalegin (2022) examined how African-accented English in the Black Panther film illustrated various phonological processes like assimilation, deletion, and epenthesis, reinforcing the notion that first language phonology greatly affects English pronunciation, even in media representations. Nusrath and Halik (2022) looked into vowel mispronunciations among Sri Lankan university students and found that vowels such as /iː/ were frequently reduced to /i/, again highlighting the influence of the first language and a lack of phonological awareness. Research has also underscored the significance of phonological awareness in pronunciation. Ketut Wardana et al. (2022) showed that phonological training led to notable improvements in students' articulation, stress accuracy, and intonation. Their results emphasize the necessity for pronunciation-centred interventions in English as a Foreign Language (EFL) programs to enhance speech clarity. Agustin and Firdaus (2023) found that Indonesian students were often unaware of phonemic symbols and stress patterns, leading to frequent mispronunciations of diphthongs due to insufficient listening practice. Rethinasamy et al. (2023) investigated Malaysian Chinese students and discovered that their educational experiences had a significant impact on their ability to pronounce /l/ and /r/ correctly, especially in final and medial positions. This suggests that pronunciation teaching should take into account sociolinguistic elements in addition to phonological skills. A similar observation was made by Al-Khresheh (2024) among Saudi EFL learners, who often replaced /p/ with /b/ due to phonemic constraints in Arabic. These recurring trends demonstrate the predictable nature of phonological interference across various L1 groups. Pronunciation difficulties are influenced by various environmental, social, and educational factors. These studies highlight the impact of phonological processes and the influence of native languages on English pronunciation. Although there is extensive international research, Pashto-speaking learners in Pakistan's higher education have received minimal empirical focus. This study aims to fill that gap by examining how the first language affects English pronunciation among ULM students and identifying the phonological processes that most commonly influence intelligibility. The results are intended to promote teaching strategies informed by phonology, which can improve the clarity and effectiveness of students' spoken English in EFL classrooms.

RESEARCH METHODOLOGY

This research utilized a constructivist–interpretivist framework, employing a mixed-methods strategy that integrated both qualitative and quantitative techniques to explore the phonological processes that impact speech intelligibility among sixth-semester EFL students at the Gambila campus of the University of Lakki Marwat. The qualitative aspect included semi-structured interviews and audio recordings of students articulating selected English words, sentences, and a paragraph aloud. The quantitative part involved transcribing and analyzing students' speech against Received Pronunciation using IPA charts and To Phonetics tools to pinpoint mispronunciations and classify them into phonological processes such as elision, substitution, and intrusion. Error frequencies were computed to identify the most prevalent pronunciation challenges affecting intelligibility. The study adhered to grounded theory, applying open coding, axial coding, and selective coding to develop themes and ultimately construct a theory regarding the impact of phonological errors on speech clarity. Thirty non-native undergraduate participants (average age 22) were chosen through simple random sampling. Although there was variation in

gender representation, all participants were native Pashto speakers enrolled at ULM. Data collection was carried out ethically and transparently: participants were briefed on the study's objectives, potential risks, and benefits, and were guaranteed confidentiality and voluntary participation. Interviews and readings were recorded in a comfortable environment, with bilingual communication (English and Urdu) employed to enhance clarity and ease. The study adhered to rigorous ethical standards, ensuring participant anonymity and preventing any physical, emotional, or social harm. The findings of this research are intended to inform future enhancements in pronunciation teaching and phonological awareness within EFL classrooms.

DATA ANALYSIS

This chapter discusses and examines data gathered from recorded pronunciations of 15 English words by 30 EFL students at the Gambila Campus, ULM. The aim was to determine how certain phonological processes affected pronunciation accuracy in comparison to Received Pronunciation (RP). The analysis showed that frequent mistakes were due to interference from the students' first language, primarily Pashto. Common phonological issues included vowel substitution, rhoticity, deaspiration, and intrusion.

1.1. Words

1.1.1. Chair

It is important to note that only five participants pronounced the word "chair" correctly according to Received Pronunciation (RP), while most made errors. The main problem was the addition of an intrusive /r/sound at the end of the diphthong /eə/, which is not present in RP. Most participants pronounced the word as /tʃeər/, influenced by rhoticity and overgeneralization from American English or their L1. Their tendency to insert the /r/sound shows interference from Pashto phonology.

Accurate = 5, Inaccurate = 25

1.1.2. Lion

A notable finding is that only one participant was able to pronounce "lion" accurately. Most participants replaced the RP diphthong /aɪə/ with /ɔː/ or simplified it to /laɪn/, dropping the schwa sound. These mistakes were due to vowel substitution, syllable elision, and the influence of L1 pronunciation rules. The word was often pronounced as it is spelt, disregarding the English diphthong structure.

Accurate = 1, Inaccurate = 29

1.1.3. Computer

None of the 30 participants could pronounce "computer" according to RP standards. A common mistake was substituting the initial schwa /ə/ with /ɔː/ and adding a final intrusive /r/. Unaspirated /k/ and misplaced stress were also common. These errors reflect L1 influence, pronunciation based on spelling, and a lack of exposure to aspirated and unstressed syllables in English.

Accurate = 0, Inaccurate = 30

1.1.4. Stop

The majority of participants pronounced "stop" correctly as /stɒp/, with only seven students changing /ɒ/ to /ɑː/, resulting in /stɑːp/. This mistake is due to vowel substitution from being more familiar with American English and having trouble distinguishing between similar short and

long vowels. This indicates that regular exposure helps in pronouncing simpler, common words accurately.

Accurate = 23, Inaccurate = 7

1.1.5. Banana

Most participants pronounced "banana" correctly as /bəˈnɑːnə/, showing general familiarity with the word. However, five students replaced the central /ɑː/ with /æ/, leading to /bəˈnænə/. This error was due to vowel substitution and the influence of spelling. The correct pronunciations likely come from repeated exposure in academic settings.

Accurate = 25, Inaccurate = 5

1.1.6. Think

The participants did not pronounce "think" correctly as /θɪŋk/ in RP. The common mistake was substituting the velar nasal /ŋ/ with the alveolar nasal /n/, resulting in /θɪnk/. The lack of /ŋ/ in Pashto, along with unfamiliarity with nasal clusters, contributed to this error. These results emphasise the impact of L1 phonological limitations.

Accurate = 0, Inaccurate = 30

1.1.7. Plate

The pronunciation of "plate" was correct for 24 participants. The other six mispronounced it by adding /aː/ and not aspirating the /p/, resulting in /paːleɪt/. These mistakes reflect phonological processes like epenthesis and deaspiration, influenced by the structures of their native language. Despite this, the majority's accuracy suggests they were familiar with the word.

Accurate = 24, Inaccurate = 6

1.1.8. Dog

Only two participants could correctly say "dog" as /dɒg/. The common mistake involved substituting /ɒ/ with /ɑː/ or /ɔː/, influenced by exposure to American English and L1 effects. Most students pronounced it as it is spelt, indicating a lack of awareness of English vowel differences.

Accurate = 2, Inaccurate = 28

1.1.9. So

Only three participants successfully pronounced "so" as /səʊ/. The others used /soʊ/, showing diphthong substitution influenced by American English and spelling interference. This preference for a spelling-based method indicates insufficient phonological training.

Accurate = 3, Inaccurate = 27

1.1.10. School

Every student mispronounced "school," not aspirating the initial /k/ sound. They all produced /skuːl/, but none followed the RP pronunciation of /skʰuːl/, showing a lack of awareness of aspiration. This common mistake arises from L1 interference and limited understanding of English phonetic features.

Accurate = 0, Inaccurate = 30

1.1.11. Rabbit

Participants regularly pronounced "rabbit" with /r/ instead of the RP /ɹ/. Although communication was unaffected, this substitution shows a failure to distinguish between similar approximant sounds. This is likely due to their native phonological system and insufficient training in articulatory distinctions.

Accurate = 0, Inaccurate = 30

1.1.12. Time

All participants pronounced “time” without aspiration, using /taɪm/ rather than the correct RP /tʰaɪm/. The absence of aspiration in their speech is a result of L1 interference, particularly the non-aspirated /t/ in Pashto. This phonological process of deaspiration was evident in all responses.

Accurate = 0, Inaccurate = 30

1.1.13. Nose

Only six participants pronounced “nose” as /nəʊz/ according to RP, while most replaced the diphthong with /oʊ/, resulting in /noʊz/. The diphthong substitution was influenced by L1 and exposure to American English. This consistent replacement underscores the difficulties students encounter with RP diphthongs.

Accurate = 6, Inaccurate = 24

1.1.14. Call

Ten participants accurately pronounced “call” as /kɔːl/, while twenty mispronounced it, replacing /ɔː/ with /ɑː/ and neglecting aspiration on /k/. These mistakes were influenced by vowel confusion and deaspiration. Spelling influence and native articulatory habits also played a role.

Accurate = 10, Inaccurate = 20

1.1.15. Continuous

Most participants pronounced “continuous” almost correctly, particularly the middle syllables. However, a few mispronounced the schwa /ə/ as /ɔː/ and inconsistently stressed /n/ instead of /t/. These differences were influenced by vowel substitution and deaspiration stemming from L1 phonological structure.

Accurate = 21, Inaccurate = 9

Table 1

Words

	Words	**Standard Received Pronunciation (Accurate)**	**Students’ Pronunciations (Inaccurate)**	**Percentage of Accurate Pronunciation**	**Percentage of Inaccurate Pronunciation**
1.	Chair	tʃeə(r)	tʃeər	16.6%	83.3%
2.	Lion	ˈlaɪən	ˈlaɪn or ˈlɔːɪn	3.33%	96.6%
3.	Computer	kʰəmˈpjuːtə(r)	kɔːmˈpjuːtər	0%	100%
4.	Stop	stɒp	Stɑːp or Stɔːp	76.66%	23.33%
5.	Banana	bəˈnɑːnə	bəˈnænə	83.3%	16.6%
6.	Think	θɪŋk	θɪnk	0%	100%
7.	Plate	pleɪt	Pɑːleɪt	80%	20%
8.	Dog	dɒg	dɔːg or dɑːg	6.66%	93.33%
9.	So	səʊ	soʊ	10%	90%
10.	School	skʰuːl	skuːl	0%	100%
11.	Rabbit	ˈɹæbɪt	ˈræbɪt	0%	100%

12.	Time	tʰaɪm	taɪm	0%	100%
13.	Nose	nəʊz	noʊz	20%	80%
14.	Call	kʰɔːl	kaːl	33.33%	66.66%
15.	Continuous	kʰən'tɪnjuəs	kɔːntɪ'njuəs	70%	30%

1.2. SENTENCES

1.2.1. The sun sets beautifully over the horizon.

None of the participants pronounced the full sentence accurately in RP. Common errors included vowel substitutions in "the," diphthong misuse in "over," and intrusive /r/ in "horizon." Phonological processes like elision, assimilation, and linking were not correctly applied. L1 interference and overgeneralization significantly influenced mispronunciations.

Accurate = 0, Inaccurate = 30

1.2.2. She enjoys reading mystery novels in her free time

All 30 participants deviated from RP, especially in "reading," "mystery," and "her." Misuse of /r/sounds, vowel shifts, and rhotic insertions were frequent. Errors stemmed from a lack of awareness of non-rhotic RP norms, stress shifts, and L1 phonological interference.

Accurate = 0, Inaccurate = 30

1.2.3. A strong password helps protect online accounts.

No participant produced the sentence in full RP accuracy. Common errors occurred in "protect" and "account," where schwa and vowel substitutions were made. Mispronunciations were shaped by weak vowel awareness, elision, and glottalization, reflecting native language interference.

Accurate = 0, Inaccurate = 30

1.2.4. The cat jumped onto the windowsill and fell asleep

Every participant mispronounced parts of the sentence. Errors included vowel substitutions in "the," "onto," and "sill," along with failure to apply elision, linking, and glottalization. Issues arose due to orthographic pronunciation and a lack of familiarity with RP vowel reduction.

Accurate = 0, Inaccurate = 30

1.2.5. He goes to Japan for a business conference.

All 30 students mispronounced at least one word. Stress shifts and vowel substitutions were common in "Japan," while an intrusive /r/ was added in "for," and "conference" was often shortened. Processes like elision, assimilation, and flapping were poorly executed.

Accurate = 0, Inaccurate = 30

1.2.6. Learning a new language requires patience and practice.

All participants made noticeable mistakes, particularly in "learning," "requires," and "patience." The intrusive /r/ and mispronunciation of /ʃ/ and /ə˞/ sounds showed a deviation from RP. Rhotic influence and a lack of awareness regarding vowel colouring and elision were significant problems.

Accurate = 0, Inaccurate = 30

1.2.7. The internet has revolutionized the way people communicate.

Every participant mispronounced "revolutionized," often substituting /ʃ/ with /t/ or omitting fricatives. Problems also arose in "internet" and "communicate," with glottal stops and flapping

being misapplied. RP norms such as linking, assimilation, and stress patterns were not adhered to.

Accurate = 0, Inaccurate = 30

1.2.8. Freshly baked bread smells amazing in the morning.

Surprisingly, all participants pronounced the sentence clearly and in line with RP standards. While they didn't use many phonological processes, their pronunciation was consistent, albeit influenced by their reading style.

Accurate = 0, Inaccurate = 30

1.2.9. Exercising daily improves both physical and mental health

Errors were identified in the words "exercising," "improves," and "both," which included the addition of /r/, changes in vowel sounds, and confusion with diphthongs. All participants strayed from Received Pronunciation (RP) due to substitutions, vowel reductions, and interference from their first language.

Accurate = 0, Inaccurate = 30

1.2.10. The company introduced a new policy for remote work

None of the participants correctly pronounced the entire sentence. Common issues included schwa deletion in "company," rhoticity in "for," and vowel shifts in "remote." Problems with aspiration and syllabic consonants revealed a lack of understanding of RP phonology.

Accurate = 0, Inaccurate = 30

Table 2

Sentences

No.	Sentences	RP Standards (Key Words)	Student Errors	Phonological Issues	Accurate percentage (%) of phonological processes used	Inaccurate Percentage (%) of phonological processes used
1.	The sun sets beautifully over the horizon.	/ðə/, /ˈəʊvə/, /həˈrʌɪzən/	/ðɪ/, /ˈoʊvər/, /hɒˈrɪzɔːn/	Vowel substitution, intrusive /r/, lack of assimilation, L1 interference	0%	100%
2.	She enjoys reading mystery novels in her free time.	/ˈɹiːdɪŋ/, /ˈmɪstəri/, /həː/	/ˈriːdɪŋ/, /ˈmaːtəri/, /həːr/	Rhoticity overuse, vowel substitution, lack of elision	0%	100%
3.	A strong password helps protect	/prəˈtekt/, /əˈkaʊnts/	/prɒˈtekt/, /æˈkaʊnts/	Schwa replacement, vowel substitution, and	0%	100%

	online accounts.			elision/glottalization were ignored		
4.	The cat jumped onto the windowsill and fell asleep.	/ðə/, /ˈɒntə/, /sɪl/	/ðɪ/, /ˈɒntuː/, /sæl/	Vowel substitution, stress misplacement, and vowel reduction issues	0%	100%
5.	He travels Japan for a business conference.	/ʤəˈpæn/, /fɔː/, /ˈkɒnfərəns/	/ʤəpˈaːn/, /fɔːr/, /ˈkɒnfərəs/	Intrusive /r/, elision, vowel substitution, stress shift	0%	100%
6.	Learning a new language requires patience and practice.	/ˈləːnɪŋ/, /rɪˈkwaɪəz/, /ˈpeɪʃəns/	/ˈlɜrnɪŋ/, /rɪˈkwaɪəz/, /ˈpeɪtʃəns/	R-coloring, consonant substitution, vowel coloring, and elision	0%	100%
7.	The internet has revolutionized the way people communicate.	/rɛvəˈluːʃənaɪzd/	/rɛvəˈluːtənd/, /ˈɪntərnɛt/, /kəˈmjuːnɪkeɪ?/	Elision, flap, mispronunciation of fricatives and diphthongs	0%	100%
8.	Freshly big bread smells amazing in the morning.	All the words match with RP.	No mispronunciation, but no use of linking, elision, etc.	Lack of connected speech processes (linking, intrusion, assimilation)	0%	100%
9.	Exercising daily improves both	/ˈɛksəsʌɪzɪŋ/, /bəʊθ/, /ɪmˈpruːvz/	/ˈɛksərsʌɪzɪŋ/, /ɪmˈpruz/, /bɔːθ/	Intrusive /r/, vowel shortening,	0%	100%

	physical and mental health.			diphthong replacement		
10.	The company introduced a new policy for remote work.	/ˈkʌmpəni/, /ɪntrəˈdjuːst/, /fə/, /rɪˈməʊt/	/ˈkʌmpni/, /ɪntrəˈdjuːzd/, /fər/, /rɪˈmɒt/	Schwa deletion, deaspiration, rhoticity, vowel substitution	0%	100%

1.3. PARAGRAPH

The only one paragraph was given to them to pronounce to identify the mispronunciations and the phonological errors in their data.

The baby rabbit ran rapidly around the big, bright, busy market. The sun was shining brightly in the clear blue sky. He bought ripe, red apples and a bunch of fresh, green grapes. Then he quietly quit the market and quickly ran home.

The paragraph reading task showed that none of the 30 participants pronounced all the words accurately according to Received Pronunciation (RP). Common mispronunciations were found in words like “rabbit,” “ran,” “rapidly,” “market,” “clear,” “green,” and “home.” Most students replaced the RP approximant /ɹ/ with the tapped /r/ sound and substituted vowels inconsistently, such as using /æ/ instead of schwa /ə/, /iː/ instead of /ɪ/, and /ɔ/ instead of the diphthong /əʊ/. These errors reflected American influence, spelling pronunciation habits, and strong interference from the participants' first language.

Several phonological processes were absent or incorrectly applied, including elision (e.g., “and a bunch” → /ən ə/), assimilation (“green grapes” → /griːŋ greɪps/), vowel reduction, glottalization, and syllable omission (e.g., /ˈræpɪdli/ → /ˈræpli/). Features like t-flapping, h-dropping, and stress shifts further deviated from RP norms. The consistent pattern of errors reveals a lack of awareness regarding non-rhotic RP pronunciation, insufficient exposure to British phonology, and the dominant role of L1 phonetics in shaping L2 speech production.

Table 3

Paragraph

No	Type	Examples	Phonological detail	Influence (cause)
1.	Rhoticity transfer	rabbit, ran, ripe, red, rapidly, green, around	/ɹ/ => tapped /r/ [ɾ]	L1 transfer from rhotic/tapped /r/ languages
2.	Vowel insertion	around => /æraʊnd/	Schwa /ə/ replaced with /æ/; over-articulation	Hypercorrection, L1 influence

3.	Vowel misarticulation	market => /kiːt/, blue => /blu/, home => /hɔm/	Lax /ɪ/ => Tense /iː/, /uː/ => /u/, Diphthong /əʊ/ => Monophthong /ɔ/	Orthography, AmE influence, L1 vowel system
4.	Diphthong misuse	home /həʊm/ => /hɔm/	/əʊ/ replaced with monophthong /ɔ/	L1 phonological constraints
5.	T-flapping	market and => /mɑɹkɪr ən/	/t/ becomes [ɾ] in intervocalic American English-style contexts	AmE influence
6.	Glottalization	market => /mɑːʔkɪt/	/t/ becomes glottal stop [ʔ]	Regional (e.g., Estuary English) influence
7.	Th-flapping	the => /və/	/ð/ => /v/	L1 phoneme substitution
8.	H-dropping	he => /iː/	/h/ is elided	Regional accent influence, informal speech
9.	Syllable omission	rapidly => /ˈræpli/, quietly => /ˈkwaɪtli/	Deletion of unstressed syllables	Natural speech simplification
10.	Degemination	quit the => /kwɪ ðə/	One of two adjacent identical consonants is dropped	Connected speech, simplification
11.	Elision	and a bunch => /ən ə bʌntʃ/	Elision of /d/ in “and” and weakening of vowels	Casual connected speech
12.	Assimilation	green grapes => /griːŋ greɪps/	/n/ => (ŋ) due to the following velar sound /g/	Place assimilation
13.	Glide formation	he ate apples => /hiː <=> jæt æplz/ (hypothetical)	Insertion of /j/ glide to link vowels	Connected speech rule
14.	Stress shift	quietly quit => stress on quit	Emphatic or contrastive stress placement	Prosodic/emphatic expression
15.	Linking	he ate apples => /hiːjæt æplz/ (hypothetical)	Use of glide /j/ between vowel-ending and vowel-beginning words	Natural speech flow

16.	Spelling mispronunciation	blue => /bleu/, market => /kiːt/	Influence of orthography on sound	Misinterpretation of English spelling-sound
17.	L1 interference	General misarticulations	L1 rules affect the production of English phonemes	L1 phonemic inventory vs. English phonemes
18.	Lack of RP process use	Failure to elide, reduce, or assimilate	Over-pronunciation or hyperarticulation	Inexperience with connected speech in RP
19.	Rhoticity awareness gap	Insertion of /r/ in clear, market	Misuse of rhotic elements	Exposure to rhotic (e.g., AmE) accents

FINDINGS AND DISCUSSIONS

This chapter outlines the main findings of the study, which is based on a phonological analysis of recorded speech samples from third and sixth-semester EFL students at the Gambila Campus, University of Lakki Marwat. The participants read aloud 15 words, 10 sentences, and a paragraph, and their pronunciations were analyzed using the British Received Pronunciation (RP) model along with grounded theory methodology. The aim was to identify common phonological processes that affect students' spoken English and assess how these processes influence intelligibility and clarity.

Through both qualitative and quantitative methods, consistent patterns of mispronunciation were observed among all participants. These patterns were classified as substitution, elision, intrusion, stress misplacement, rhoticity interference, vowel simplification, de-aspiration, and spelling-based pronunciation. A notable number of students exhibited errors that were closely linked to L1 interference, especially from Pashto and Urdu. The phonological process of substitution was prevalent, with learners substituting unfamiliar English sounds with those from their native language. For instance, the voiceless dental fricative /θ/ in "think" was often replaced with /t/, and /ð/ was frequently pronounced as /d/. Vowel substitution was also common, such as replacing the RP diphthong /əʊ/ in "so" with the monophthong /o/. These alterations changed the phonemic identity of words, making them more difficult for listeners to understand. Furthermore, elision, which involves the omission of weak syllables or sounds, was observed in rapid or casual speech. Participants often dropped consonants in clusters (e.g., "protect" pronounced as /prɒtɛk/), resulting in a loss of word structure and clarity. Intrusion, adding extra sounds between words, was another significant finding. Learners often inserted an /r/ sound between words that ended in vowels and those that started with vowels, a phenomenon inconsistent with non-rhotic RP. This seemed to be an overgeneralization stemming from exposure to American English via media. Such intrusions disrupt fluency and create non-standard pronunciation patterns. Likewise, stress misplacement was very common. Students frequently placed primary stress incorrectly in polysyllabic words, such as saying "REcord" instead of "reCORD" (verb), which changed meaning and rhythm. This disruption in suprasegmental features (stress, rhythm, and intonation) greatly affected intelligibility.

Diphthong simplification and vowel distortion were especially problematic. English diphthongs like /eə/, /əʊ/, and /aɪ/ were often simplified into monophthongs, leading to incorrect pronunciation. For example, “chair” was pronounced with an added /r/ and simplified vowels, while “lion” became /lɒɪn/. These mistakes arose from the lack of corresponding sounds in the students’ first language, showing that L1 influence is a constant challenge. Spelling-based pronunciation was also prevalent, where students pronounced words as they are spelt, rather than how they are traditionally spoken. Words like “computer” were mispronounced as /kəmˈputər/ instead of /kəmˈpjuːtə/, indicating a reliance on orthography over phonetics. Another major issue was rhoticity, or the incorrect use of the /r/ sound in non-rhotic contexts. Students often added /r/ sounds at the ends of words where RP would keep them silent. For instance, “over” was pronounced as /ˈoʊvər/ instead of /ˈəʊvə/. This over-rhoticity is mainly due to the influence of American English accents encountered through media and digital platforms. Furthermore, de-aspiration errors were often noted. Plosive sounds like /p/, /t/, and /k/ were produced without the necessary burst. For example, the word "plate" was pronounced as /pɑːleɪt/ and "school" as /skuːl/, without the aspirated /kʰ/, indicating a clear influence from Pashto or Urdu, which have less aspiration. When focusing on clarity, the combined impact of these phonological changes led to a significant decrease in clarity at all speech levels: word, sentence, and paragraph. Mispronunciations, particularly in vowels and stress, affected the listener’s ability to accurately recognize words. At the sentence level, this confused the rhythm and intended meaning. For instance, in the sentence “The sun sets beautifully over the horizon,” participants frequently mispronounced “the,” “over,” and “horizon,” using rhoticity and incorrect diphthongs that obstructed smooth understanding. In longer passages, like the paragraph about the “baby rabbit,” repeated phonological mistakes such as intrusive /r/, vowel changes, and consonant misarticulation rendered the overall message fragmented and hard to follow, leading to listener fatigue and confusion. Errors in rhoticity interrupted the natural flow of speech. Misplacing /r/ sounds affected both stress and prosody, resulting in unnatural speech patterns that demanded more effort from listeners to interpret. Likewise, incorrect stress placement obscured the intended emphasis of words and phrases. Listeners had to mentally piece together meaning from improperly stressed speech, which increased cognitive load. This not only disrupted the flow of conversation but also made the speaker seem less skilled, especially in academic or professional contexts. A significant factor contributing to these clarity problems was the students’ lack of phonological awareness. Most were not familiar with concepts such as aspiration, diphthongs, vowel reduction, or elision. As a result, their speech lacked rhythm, appropriate stress, and smooth transitions. For example, the phrase “She enjoys reading mystery novels in her free time” was pronounced with awkward pauses, misaligned stress, and incorrect sounds. Such phonetic unawareness explains why students struggled to monitor their pronunciation or adapt to the expectations of RP.

Discussions

This section primarily highlights the study’s findings concerning previous research discussed in a section of the literature review (see section 2.5, chapter 2) concerning the influence of phonological processes on students’ speech intelligibility, aiming to determine whether the

current study's outcomes support or contradict earlier studies. The influence of Pashto on the English pronunciation of students is evident. Many sounds that do not exist in the Pashto phonological system were substituted with similar sounds from their native language. This is consistent with the findings of Hamzah, Ahmad, & Yusuf (2017), who emphasize that the first language (L1) has a significant impact on the production of second language (L2) phonemes, especially during the early and intermediate phases of learning. The persistent errors, particularly with rhoticity and vowel substitutions, suggest fossilization where incorrect pronunciations become fixed due to a lack of correction. Overgeneralization was also apparent, especially when students applied familiar patterns (like adding /r/ after vowels or pronouncing words based on their spelling) to all words, even when it was inappropriate. Students displayed a lack of awareness regarding elements such as stress patterns, vowel length, diphthongs, and aspiration. Their struggles in recognizing and producing these features indicate a shortfall in the instructional focus on phonology. This aligns with the perspectives of Sidabutar (2020) and Ketut Wardana et al. (2022), who argue that phonological instruction is frequently neglected in EFL curricula, leading to persistent pronunciation difficulties. The students' exposure to American English through movies, television, and social media may have influenced their rhoticity patterns. The addition of /r/ at the end of words and the use of American diphthongs show this influence. This aligns with Ambalegin's findings (2021), which noted how media-influenced pronunciation impacts EFL learners. The common occurrence of certain mispronunciations (such as intrusive /r/ and vowel substitutions) may suggest the development of a localized Pakistani English accent. Although the primary goal of pronunciation teaching is mutual understanding, it is crucial to recognize that localized English varieties are valid forms of communication. However, when intelligibility is compromised, as observed in this study, specific interventions become essential. This research used grounded theory as its theoretical framework. By moving from open coding (identifying substitutions, intrusions, and vowel errors) to axial coding (organizing these into themes), a clear pattern emerged that demonstrated how phonological processes hinder intelligibility. Selective coding emphasized a central idea: phonological processes, shaped by L1 transfer and limited phonological awareness, are significant barriers to clear spoken English among ULM students. The findings suggest a need for curriculum adjustments at ULM to include: Targeted phonetic training using IPA, listening to and imitating RP models, Activities focused on minimal pairs and stress patterns, and Corrective feedback systems. These approaches align with the research of Hamzah et al. (2017) and Bin Hadijah & Hamzah (2020), who highlight the importance of explicit teaching and awareness in reducing pronunciation errors.

CONCLUSION

This research examined how phonological processes affect the speech clarity of EFL students at the University of Lakki Marwat, particularly focusing on sixth-semester learners from the Gambila Campus. The goal was to pinpoint the most prevalent phonological challenges impacting pronunciation and their effect on spoken English clarity. Speech data gathered through word lists, sentence readings, and a paragraph showed consistent error patterns related to vowel substitution, elision, intrusion, deaspiration, stress misplacement, diphthong simplification, and rhoticity. A significant finding was the strong effect of the students' first language, Pashto, on their English pronunciation, indicating considerable L1 interference and a lack of awareness of

English phonological rules. Students often replaced unfamiliar English sounds with equivalents from their native language or pronounced words based on their spelling. Common problems included vowel alterations (e.g., /ɒ/ to /ɑ:/), intrusive /r/ sounds, unaspirated plosives, and diphthong simplifications, all of which affected clarity. These mistakes were frequently due to overgeneralization, spelling influence, and limited exposure to correct pronunciation models. Many students did not grasp essential pronunciation aspects like aspiration, stress, and schwa usage. Consequently, mispronunciations diminished overall intelligibility, hindering effective communication in both academic and social contexts. In conclusion, phonological processes, particularly those affected by L1 transfer, greatly obstruct spoken English clarity among EFL learners at ULM. By identifying key error patterns, this study offers guidance for focused teaching strategies aimed at enhancing pronunciation and communication abilities.

Recommendations

To tackle these problems, the English curriculum at ULM needs to incorporate targeted pronunciation training in EFL courses. Instructors should utilize IPA, phonetic exercises, minimal pairs, and listening tasks with native speakers to enhance students' phonological awareness. It is crucial to focus on correcting frequent mistakes such as vowel substitutions, rhoticity, deaspiration, and diphthong mispronunciation. Additionally, teacher training must prepare educators to identify and address phonological errors with prompt feedback. Outside the classroom, the university should promote speaking initiatives like pronunciation workshops, speaking clubs, and peer discussions. Given that L1 influence significantly contributes to mispronunciation, students should be guided to understand how Pashto phonology impacts their English. Resources such as contrastive analysis, recorded self-assessments, and personalized feedback can assist them in achieving lasting improvements. Together, these strategies will improve speech clarity and enable students to communicate more effectively in English.

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