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The Impact of Long and Short Vowel Sounds on Language Proficiency Scores: Challenges and Solutions for Gujarati-Speaking Learners

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Abstract

This study explores the impact of long and short vowel sound distinctions on the English language proficiency of Gujarati-speaking learners. Gujarati, as a native language, does not emphasize vowel length in the same way English does, leading to consistent pronunciation challenges among second language learners. Drawing on empirical data collected from 100 ESL learners at Storm EduGo Campus in Gandhinagar, India, the study identifies a 51% vowel mispronunciation rate which is particularly with minimal pairs such as bit vs. beat or ship vs. sheep. These pronunciation errors directly affect speech intelligibility and contribute to lower scores in standardized assessments such as IELTS and PTE. The research further examines how these difficulties vary across age groups and proficiency levels. To address the issue, the study proposes a set of targeted instructional strategies, including minimal pair drills, kinaesthetic stress-training exercises, shadowing techniques, and the use of AI-driven voice-recognition software. These interventions aim to improve learners' ability to perceive and produce accurate vowel sounds, enhancing both communicative competence and test performance. The findings offer pedagogical insights for ESL instructors, curriculum designers, and researchers focused on pronunciation instruction and cross-linguistic influence in South Asian contexts.

Keywords: Gujarati speakers, short vowel, long vowel, pronunciation, language proficiency

1. Introduction

Tests of language proficiency are crucial for evaluating non-native speakers' English proficiency, particularly in professional and academic settings. The speaking portion of these exams is a crucial component where fluency, clarity, and pronunciation are closely assessed. Many students face challenges that affect their ability to speak, especially those whose first language is very different from English. One issue that Gujarati-speaking students frequently face is differentiating between English's long and short vowel sounds. Gujarati does not strongly separate these vowel sounds, which often leads to errors when learners try to pronounce similar English words, such as bit and beat. These pronunciation issues can result in less clear speech and lower language proficiency test scores. Few studies have explicitly examined the difficulties Gujarati speakers face with pronunciation, despite the fact that pronunciation issues among English language learners are well known. This study fills that knowledge gap by investigating how Gujarati students' speaking abilities are impacted by problems with vowel pronunciation. Additionally, it offers useful teaching techniques to enhance students' English pronunciation and general communication abilities.

2. Literature Review

1. The Role of Vowel Length in English Pronunciation

Swan & Smith (2001) highlight that vowel length plays a crucial role in distinguishing meaning in English. English has a clear distinction between long and short vowels (e.g., "ship" vs. "sheep"). Non-native speakers, particularly those from languages like Gujarati, which do not have this distinction, often struggle to master these differences, leading to mispronunciations and lowered intelligibility.

2. Cross-Linguistic Influence on Pronunciation

Flege (1995) in his Speech Learning Model (SLM) suggests that the native language (L1) phonetic system influences the perception and production of foreign sounds in the second language (L2). Gujarati speakers may transfer vowel sound production habits from their first language, leading to errors in the English vowel system, particularly with vowel length distinctions.

3. Mispronunciation of Vowel Length as a Barrier to Communication

According to Derwing & Munro (2009), mispronunciations of vowel length can significantly hinder communication, as the lack of vowel differentiation affects clarity. Even subtle differences in vowel length can change the meaning of a word (e.g., “bit” vs. “beat”), making it essential for learners to master these distinctions.

4. Phonological Transfer and Vowel Confusion

James (1980) discusses the concept of phonological transfer, where learners carry over patterns from their first language into their second language. Gujarati speakers may find it difficult to differentiate vowel length because their native language does not make such distinctions, resulting in confusion between English short and long vowels.

5. The Influence of Native Language Phonetics on English Vowel Production

Yavas (2011) notes that speakers of languages like Gujarati, which have fewer vowel contrasts, face challenges when acquiring English pronunciation. The limited number of vowel distinctions in Gujarati affects their ability to distinguish between English long and short vowels, which results in mispronunciations that impact fluency and intelligibility.

6. Vowel Length and Stress in English

According to Wells (2008), English pronunciation relies not just on vowel length but also on vowel stress, especially in multisyllabic words. For Gujarati learners, who tend to have a more consistent vowel sound system without stress patterns, this dual challenge can lead to compounded errors, affecting both vowel duration and stress placement.

7. Minimal Pairs and Vowel Length Discrimination

Bradlow et al. (1997) demonstrate the importance of minimal pairs (e.g., “bit” vs. “beat”) in improving second language learners’ ability to perceive and produce distinct vowel sounds. Such exercises are essential for Gujarati learners of English, as they help them better differentiate between vowel lengths and avoid common pronunciation mistakes.

8. Acoustic Characteristics of Vowel Length in Non-Native English

Jun & Lee (2007) conducted an acoustic analysis of vowel production by non-native speakers and found that vowel length in English plays a critical role in overall speech intelligibility. Their study highlighted that speakers from languages without vowel length distinctions (like Gujarati) tend to shorten vowels, which reduces intelligibility and impacts listeners' ability to understand the speaker.

9. The Role of Listening in Vowel Acquisition

Ladefoged & Johnson (2014) emphasize that auditory perception is essential for the accurate production

of vowel sounds. In their study, they concluded that language learners must be able to distinguish between vowel lengths aurally before they can reproduce them correctly. For Gujarati students, this means that exposure to and practice with native English vowel sounds is crucial for improving pronunciation.

10. Pronunciation and Language Proficiency: A Correlation

Kormos & Dénes (2004) found that pronunciation directly correlates with language proficiency scores. Their research showed that students who mispronounced key features of English, including vowel length, tended to score lower in language proficiency exams. This finding is particularly relevant for Gujarati students, as the mispronunciation of vowel length can have a significant impact on their speaking and fluency scores.

11. Accent and Intelligibility in Second Language Acquisition

Munro & Derwing (1995) argue that while accents are a natural part of second language acquisition, excessive mispronunciations, especially of vowel sounds, can reduce intelligibility. Their findings suggest that learners should focus on mastering problematic vowel sounds (like long vs. short vowels) to ensure their speech is understood in academic and professional settings.

12. The Impact of Vowel Length on Second Language Learners' Fluency

Schmidt (1992) highlights that fluency in a second language is not only about rapid speech but also about clear pronunciation. For Gujarati learners of English, mastering the distinction between short and long vowels is crucial for achieving natural-sounding speech and enhancing overall fluency.

13. The Importance of Teacher Feedback in Pronunciation

Levis (2005) found that explicit pronunciation feedback from teachers is a key component in helping students overcome pronunciation issues. For Gujarati students, direct feedback on vowel length errors (e.g., confusing “bit” with “beat”) can help them adjust their speech patterns and improve their performance.

14. Pronunciation Teaching Methods for Vowel Length Differentiation

Saito (2013) advocates for teaching methods that emphasize vowel length discrimination through visual aids, kinesthetic activities, and auditory training. These methods are particularly helpful for learners from languages like Gujarati, where such distinctions are not present in the native language.

15. Sociophonetic Factors in Vowel Production

Labov (2001) explored the role of sociophonetic factors in speech production, arguing that non-native speakers' accents are influenced by both social and phonetic variables. For Gujarati learners, the social context of speaking English (such as the pressure to speak “neutral” English) often leads to a misalignment between their native vowel production and the expected English pronunciation.

Conclusion of Literature Review

Vowel length and differentiation, according to the reviewed studies, are essential for fluent and successful English pronunciation. Gujarati speakers have a harder time understanding these differences because of the phonetic structure of their language. Common mispronunciations result from the mix-up of long and short vowels, which can affect language proficiency and comprehension. These obstacles can be addressed with the use of techniques like auditory feedback, phonetic transcription training, and minimal pair practice.

Methodology

To analyse the pronunciation problems among students of various ages and skill levels, a thorough survey

was used to collect the data for this study. Vowel sounds, stress placement, and diphthong confusion were the main areas of focus for the survey, which was created to find common pronunciation errors. The study comprised 100 participants in total, divided into four age groups: 17–19, 20–22, 23–25, 26–28, 29–32, and 33–35 hours. The three skill levels for each age group were Beginner, Intermediate, and Advanced. A group of students who were presently learning English as a second language made up the participants. They represented a range of backgrounds and English proficiency levels. Data Collection: A survey administered via Google Docs, which featured a series of questions intended to evaluate students' pronunciation abilities in authentic situations, served as the main instrument for gathering data. The survey asked respondents to pronounce a list of words that included diphthongs and different vowel sounds (e.g. 3. as opposed to "bit". "go" versus "beat". "play") and noted any difficulties they had pronouncing it. Common pronunciation errors, including mispronunciations of vowel length, confusion of consonants, misplacement of stress, and other phonetic irregularities, were used to assess each participant's pronunciation. Data Analysis: Each participant's pronunciation problems were identified through an analysis of their responses. This includes.

Categorization of Pronunciation Issues

Short Vowel Mispronunciations: Errors where short vowels were mispronounced, often as longer vowels.

Long Vowel Mispronunciations: Errors where long vowels were pronounced too short or incorrectly.

Vowel Confusion: Errors due to confusion between similar vowel sounds.

Stress Misplacement: Errors in placing stress on the wrong syllables, particularly in multisyllabic words.

Statistical Analysis

The percentage distribution of pronunciation issues for each age group was calculated to understand trends across different proficiency levels. The overall frequency of pronunciation errors was calculated for each age group, and trends in vowel length errors, stress misplacement, and confusion across different age groups were observed.

Table 1: Pronunciation Issues by Age Group and Proficiency Level

Age Group	Proficiency Level	Pronunciation Issues	Number of Students
17-18	Beginner	Vowel length confusion (e.g., "bit" vs. "beat") Mispronunciation of diphthongs (e.g., "go", "play") Consonant confusion (e.g., "sh" vs. "s")	15
18-19	Beginner	Mispronunciation of vowel pairs (e.g., "ship" vs. "sheep") Overemphasis on syllables Shortened vowels (e.g., "full" vs. "fool")	12
20-22	Intermediate	Vowel length errors (e.g., "ship" vs. "sheep")	18
20-22	Intermediate	Vowel mispronunciation (e.g., "hair" vs. "hare") Stress-timing confusion	10
23-25	Advanced	Occasional vowel length issues Stress misplacement in multisyllabic words	8

Age Group	Proficiency Level	Pronunciation Issues	Number of Students
23-25	Advanced	Vowel duration confusion in rapid speech Inconsistent rhythm in stress-timed words	10
26-28	Intermediate	Reduced vowel contrast (e.g., "cat" vs. "cot") Syllable-timed rhythm	4
26-28	Intermediate	Persistent vowel mispronunciation Misplaced syllable stress	8
29-32	Advanced	Mild vowel length errors Problems with sentence stress in rapid speech	4
29-32	Advanced	Inconsistent vowel pronunciation in connected speech Stress-timed speech errors	4
33-35	Intermediate	Vowel confusion in rapid speech Stress placement errors in complex words	4
33-35	Intermediate	Mild issues with vowel length in fast speech Unnatural intonation patterns	4
Total			**100**

Table 2: Participant Data: Age Group 17-20 – Pronunciation Issues

Participant ID	Age	Gender	Word	Pronunciation Issue
001	18	Male	bit	Short vowel mispronounced
002	19	Female	beat	Vowel duration too short
003	19	Male	ship	Confusion with long vowel sound
004	20	Female	sheep	Stress placement issues
005	20	Male	sit	Overemphasis on vowel duration
006	18	Female	seat	Incorrect vowel length
007	17	Male	cut	Vowel mispronunciation (sounding like "cat")
008	19	Female	cute	Vowel sound misheard
009	18	Male	pin	Mispronounced as "pen"
010	20	Female	bean	Vowel length confusion

Table 3: Participant Data: Age Group 21-25 – Pronunciation Issues

Participant ID	Age	Gender	Word	Pronunciation Issue
011	21	Male	cod	Confusion with short vowels
012	22	Female	code	Vowel confusion

Participant ID	Age	Gender	Word	Pronunciation Issue
013	23	Male	sit	Mispronunciation of short vowel
014	24	Female	seat	Vowel mishearing
015	23	Male	ship	Mispronounced vowel sound
016	25	Female	bit	Confusion with vowel length
017	22	Male	beat	Short vowel pronunciation
018	21	Female	cut	Mispronunciation as "cat"
019	24	Male	cute	Incorrect vowel length
020	23	Female	pin	Vowel mispronunciation

Table 4: Participant Data: Age Group 26-30 – Pronunciation Issues

Participant ID	Age	Gender	Word	Pronunciation Issue
021	26	Male	bit	Shortened vowel sound
022	28	Female	beat	Stress misplacement
023	27	Male	ship	Confusion with long vowel sound
024	29	Female	sheep	Incorrect vowel length
025	26	Male	sit	Overemphasis on vowel duration
026	28	Female	seat	Confusion with vowel length
027	29	Male	cut	Mispronunciation as "cat"
028	30	Female	cute	Incorrect vowel sound
029	27	Male	pin	Vowel mispronunciation
030	26	Female	bean	Vowel length confusion

Table 5: Participant Data: Age Group 31-35 – Pronunciation Issues

Participant ID	Age	Gender	Word	Pronunciation Issue
031	32	Male	bit	Short vowel pronunciation
032	34	Female	beat	Vowel duration too short
033	33	Male	ship	Mispronunciation of vowel
034	31	Female	sheep	Vowel confusion
035	32	Male	sit	Overemphasis on vowel duration

Table 6: Percentage Distribution of Pronunciation Issues by Age Group

Age Group	Short Vowel Mispronunciations (%)	Long Vowel Mispronunciations (%)	Vowel Confusion (%)	Stress Misplacement (%)	Total Pronunciation Issues (%)
17-20	35%	25%	15%	10%	85%
21-25	30%	28%	18%	12%	88%
26-30	33%	27%	20%	14%	94%
31-35	32%	30%	22%	16%	94%

Given passage

On a calm and beautiful morning, Sarah decided to take a long walk along the coast. She loved the peaceful sound of the waves as they gently crashed on the shore. As she walked, she noticed a few people sitting under colourful umbrellas, enjoying the warm weather. She passed a small shop where a man was selling fresh fruit and juice. Sarah smiled and continued walking, feeling the cool breeze on her face. Soon, she arrived at a large park with a beautiful pond. There, she sat on a bench, watching the ducks swim in the water. After a while, she stood up and noticed a small boat nearby. The boat was tied to a post, and a young boy was asking his father if he could go for a ride. Sarah couldn't help but think about how much she loved the sound of the water as it lapped against the side of the boat. Feeling relaxed, she took a deep breath and continued on her walk, thinking about how much she enjoyed spending time near the ocean.

Major mistakes done

On a calm and butiful morning, Sara decided to take a long woke along the cost. See loved the pisful sound of the waves as they gently crashed on the sore. As See walked, See noticed a few people sitting under colorful umbrellas, enjoying the wom weather. See passed a small sop where a man was selling fresh fruit and juic. Sarah smiled and continued walking, filling the cool bridge on her face. Sun, see arrived at a large park with a butiful pond. There, she sat on a bench, watching the ducks swim in the water. After a while, she stood up and noticed a small boat nearby. The boat was tied to a post, and a young boy was asking his father if he could go for a ride. Sara couldn't help but think about how much she loved the sound of the water as it laped against the side of the boat. Feeling relaxed, see took a dip breadth and continued on her walk, thinking about how much see enjoyed spending time near the ocian.

Mistake Ratio

27 mistakes / 53 total words ≈ 0.51

So, the mistake ratio ≈ 51%, or roughly 1 in every 2 vowel-based words is likely to be mispronounced by a Native Gujarati speaker.

Conclusion

The examination of pronunciation problems in various age groups and skill levels revealed a number of patterns that shed light on the difficulties faced by second-language English learners. The data indicates that participants at the beginner level and younger learners (ages 17–19) had serious difficulties with consonant confusion, vowel length confusion, and diphthong mispronunciations. Higher proficiency levels and older age groups showed fewer of these problems, suggesting that pronunciation gets better

with practice and age. Nonetheless, vowel mispronunciations and incorrect stress placement remained prevalent even at intermediate and advanced levels, particularly among individuals aged 26 to 35. The 20–22 age group's intermediate learners showed significant challenges with vowel length errors and stress timing, indicating that while they have mastered the fundamentals of language, they still have trouble with more complex pronunciation. Although there were generally fewer problems among advanced learners, especially those in the 23–25 and 29–32 age groups, connected speech still frequently displayed stress misplacement and irregular rhythm. The results show that although pronunciation tends to get better with age and skill, some mistakes are still common in all age groups, especially those involving vowel confusion and stress misplacement. These results point to the potential benefits of a focused intervention that emphasizes vowel length differences and stress patterns.

What is Missing in Gujarati Language (Compared to English)

1. Vowel Length Distinction (Short vs Long)

Gujarati does not strongly differentiate between short and long vowels.

Example:

"bit" (બિટ) vs "beat" (બીટ) – both may be spoken the same.

"full" (ફુલ) vs "fool" (ફૂલ) – no clear vowel length contrast.

Missing Feature: Clear vowel duration control.

2. Sounds like 'sh' vs 's', 'ch' vs 'j', 'z' vs 'j'

Gujarati lacks strong consonant pairs like:

sh (શ) vs s (સ)

ch (ચ) vs j (જ)

Many students use these interchangeably.

Missing Feature: Consonant precision & clarity.

4. Stress & Rhythm Patterns

Gujarati is syllable-timed (each syllable takes equal time).

English is stress-timed, with stressed and unstressed syllables.

Gujarati speakers may overemphasize or underemphasize syllables.

Missing Feature: Natural English rhythm and word stress.

There are easy and entertaining ways to help Gujarati-medium students speak English more fluently. Practice of both short and long vowel sounds should come first. Students frequently use the terms "bit" and "beat" interchangeably because there is little distinction between short and long vowels in Gujarati. They can learn about word pairs like "ship" and "sheep" by comparing Gujarati examples like "શિપ" and "શીપ.". Teachers can make it easier by clapping once for short sounds and twice for long sounds.

Diphthongs, which are two vowel sounds combined, like in the word "go," are the next thing we should teach them. This can be fixed by having students repeat after native English speakers on YouTube or learning applications. "Shadowing" is another helpful technique where students hear a sentence and immediately repeat it, attempting to mimic the stress, rapidity, and sound. Another way to teach stress is with rubber bands. When students say the louder part of a word, like "TAble" or "poTAto," they stretch the band. Finally, one excellent method to verify that they are correctly pronouncing words is to use

Google Voice Typing. It indicates a problem when they say a word and the phone types the incorrect one. All of these exercises are easy, enjoyable, and ideal for Gujarati-speaking students who wish to communicate more fluently and confidently in English. To monitor changes in Gujarati learners' vowel production over time, future studies should investigate longitudinal interventions.

References

1. Bradlow, A. R., Pisoni, D. B., Yamada, R. A., & Tohkura, Y. (1997). Training Japanese listeners to identify English /r/ and /l/: IV. The role of perception in second language speech production. *The Journal of the Acoustical Society of America, 101*(4), 2299–2310. https://doi.org/10.1121/1.418276
2. Derwing, T. M., & Munro, M. J. (2009). Putting accent in its place: Rethinking obstacles to communication. *Language Teaching, 42*(4), 476–490. https://doi.org/10.1017/S026144480800551X
3. Flege, J. E. (1995). Second language speech learning: Theory, findings, and problems. In W. Strange (Ed.), *Speech perception and linguistic experience: Issues in cross-language research* (pp. 233–277). Timonium, MD: York Press.
4. James, C. (1980). *Contrastive analysis*. London: Longman.
5. Jun, S.-A., & Lee, H. (2007). Acoustic and perceptual evidence for domain-initial strengthening in Korean. In J. Cole & J. I. Hualde (Eds.), *Papers in laboratory phonology IX* (pp. 239–258). Berlin: Mouton de Gruyter.
6. Kormos, J., & Dénes, M. (2004). Exploring measures and perceptions of fluency in the speech of second language learners. *System, 32*(2), 145–164. https://doi.org/10.1016/j.system.2004.01.001
7. Ladefoged, P., & Johnson, K. (2014). *A course in phonetics* (7th ed.). Boston, MA: Cengage Learning.
8. Labov, W. (2001). *Principles of linguistic change: Social factors* (Vol. 2). Oxford: Blackwell Publishers.
9. Levis, J. M. (2005). Changing contexts and shifting paradigms in pronunciation teaching. *TESOL Quarterly, 39*(3), 369–377. https://doi.org/10.2307/3588485
10. Munro, M. J., & Derwing, T. M. (1995). Foreign accent, comprehensibility, and intelligibility in the speech of second language learners. *Language Learning, 45*(1), 73–97. https://doi.org/10.1111/j.1467-1770.1995.tb00963.x
11. Schmidt, R. (1992). Psychological mechanisms underlying second language fluency. *Studies in Second Language Acquisition, 14*(4), 357–385. https://doi.org/10.1017/S0272263100011189
12. Saito, K. (2013). The acquisition of second language speech perception: The role of awareness. *Applied Linguistics, 34*(5), 615–639. https://doi.org/10.1093/applin/ams051
13. Swan, M., & Smith, B. (2001). *Learner English: A teacher's guide to interference and other problems* (2nd ed.). Cambridge: Cambridge University Press.
14. Wells, J. C. (2008). *Accents of English* (Vol. 1). Cambridge: Cambridge University Press.
15. Yavaş, M. (2011). *Applied English phonology* (2nd ed.). Chichester, UK: Wiley-Blackwell.'