

## Vowel Articulation Errors in Nigerian Secondary Students' Spoken English: An Error-Analysis Study

Victory T. Asonibare

*Languages Department, Thomas Adewumi University, Oke, Kwara State, Nigeria.*

Corresponding author: [victorypeniel@gmail.com](mailto:victorypeniel@gmail.com)

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### Abstract

Language plays a crucial role in human interaction, and errors in speech can significantly affect the conveyance of meaning. This study evaluates errors in the spoken English of selected S.S.1 students at Army Day Secondary School, Sobi, Kwara State, Nigeria, focusing on the articulation of English pure vowels. Data were collected through voice recordings of twenty respondents during informal interviews. Using an error analysis approach, the study identifies errors in the articulation of five vowels: [ə, ʌ, æ, ɜ:, ɔ:]. Analysis of recordings from 20 students aged 13–16 revealed that vowel errors were most frequent in [ə] and [ʌ], with substitution and omission as the dominant error types. A total of 97 vowel tokens across the five target vowels were analysed, with substitution errors accounting for 97.9% and omission for 2.1%. These recurring, unmonitored patterns suggest early-stage fossilisation. The findings indicate that pronunciation difficulties among learners are primarily linked to grapho-phonological interference, first-language influence, and inadequate phonetic instruction. The findings suggest that these articulation issues hinder effective communication. The paper concludes that articulation errors can be addressed, and communicative competence in English can be enhanced by incorporating targeted pronunciation drills into Nigeria's English curriculum, providing specialised teacher training, and using engaging phonological activities. While the study provides valuable insights into students' spoken English errors, its limited sample size and single-school focus restrict generalizability.

**Keywords:** Spoken English, Second Language Learning, Error Analysis, Curriculum Development.

### Introduction

Language systems are composed of four skills—the receptive skills of listening and reading and the productive skills of speaking and writing. Listening and speaking are considered primal in child language acquisition and learning of a (second) language. The child or language learner is initially exposed to the sound system of the target language through listening. Adequate receptiveness to the speech sounds translates to the development of the speaking skill.

The link between listening and speaking is evidenced by the experience of persons with aphasic conditions. For instance, individuals with receptive aphasia, who have difficulties in understanding spoken or tactile speech symbols as a result of impairment in their auditory centres, tend to be equally defective in speaking. People born with total hearing impairments can only acquire an imbalanced form of speaking skill through thorough,

intensive and rigorous processes of speech therapy. Thus, listening can be seen as prelusive to speaking, which in turn precedes reading and writing.

Speaking and listening entail complex cognitive and articulatory processes that integrate the perception, planning, and production of speech. Recent research (e.g., Hickok, 2012; Kearney & Guenther, 2019) shows that speech production requires tightly synchronised physiological control and higher-level cognitive planning supported by auditory feedback monitoring. Foundational works on phonetics and phonology (e.g. Clark and Yallop, 1990; Clark, Yallop and Fletcher, 2007) established that even interactions that appear simple, such as exchanging greetings, depend on speakers' and listeners' ability to comprehend each other. This mutual understanding relies on proper function of body organs, such as the brain, lungs, larynx, and ears, as well as the ability to recognise the other person's pronunciation and interpret sound patterns.

Investigations into these organs, known as articulators, and their interactions in speech sounds production are the focus of articulatory phonetics. Additionally, phonetic categories are usually described with reference to the articulators they originate from. For example, consonants are classified as *dental* when the teeth are used in articulating them; as *velar* when they originate from the velum; and as *labiodental* when the upper teeth and lower lip are involved in their articulation.

Although all these speech organs are present in all humans—except where there is a defect—the speech sounds they are used to articulate slightly differ from language to language. Also, these sounds are strung together differently in various languages. Phonology, is that level of linguistic analysis that studies “what sounds a language has and how these sounds combine to form words” (Saeed, 2003, p.3). Phonology involves the examination of individual discrete sound segments (i.e., vowels and consonants) as well as the analysis of features which extend beyond the level of single sounds unto syllables, words and sentences, e.g., stress, intonation, rhythm, pitch, etc. Accordingly, phonology can be segmental or suprasegmental/non-segmental. Learning a second language involves having knowledge of both the segmental and the suprasegmental aspects of its sound system.

Since this study focuses on the former aspect – i.e., segmental phonology and in particular, on the articulation of English vowels, it is imperative to examine the classification of vowels in English language. Vowels in English are broadly grouped into monophthongs (pure vowels) and diphthongs. A diphthong is formed from two monophthongs and a combination of two sounds from these two groups results in the formation of a triphthong. Monophthongs may be either short or long and are classified according to three parameters:

- I. Part of the tongue used in articulating them – According to this parameter, a vowel could be front, back or central.
- II. Height of the tongue – Along this line, vowels could be high (close), half-close, mid, half-open, or low (open).

- III. Posture of the lips – Under this parameter, vowels could be either rounded or unrounded.

The chart below is a representation of all vowel phonemes in English classified in terms of part of the tongue used in articulating them and the height the tongue attains during their production:

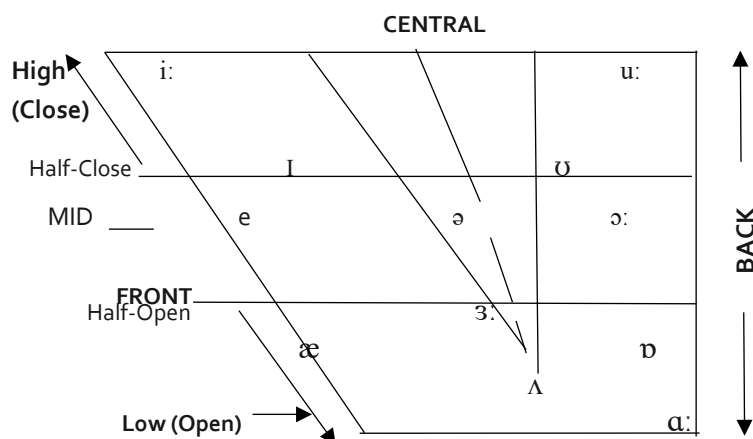


Fig. 1: Chart of English Monophthongs  
(Adapted from Ofuya, 2007)

As observable from the chart above, vowels have two prosodic features: long and short. There are seven (7) short vowels and five (5) long vowels in English. Long vowels are marked by the diacritic mark (:).

Understanding these classifications provides the foundation for examining how learners produce English vowel sounds, as mastering them poses notable challenges for second-language (L2) learners.

### Problem Statement and Research Questions

In the Nigerian ESL context, despite the widespread emphasis on English proficiency in the education system, oral proficiency, especially in vowel articulation, remains one of the most challenging aspects of English learning (Idowu, 2018). These pronunciation difficulties are often influenced by first-language phonological systems. Studies such as Senam and Senam (2017), Idowu (2018), and Amoniyan (2025) show that regional vowel inventories and orthographic inconsistencies contribute to systematic misarticulation of English pure vowels among learners, often diverging from Received Pronunciation (RP) norms. Amoniyan's (2025) research on ethno-regional varieties in Nigerian English further reveals that formant variation among Yoruba and Igbo speakers significantly affects vowel realisation and intelligibility.

These findings underscore the need for focused analysis of vowel articulation at the secondary school level, where pronunciation habits are still forming. While previous research in Nigeria has addressed error patterns in both written and spoken English, fewer have examined the articulation of English pure vowels by Senior Secondary (S.S.1) students

in natural classroom settings. This gap limits current understanding of how foundational pronunciation skills affect broader oral language competence. Addressing this gap is crucial for improving phonological pedagogy and early pronunciation instruction in Nigerian schools.

In line with this identified gap, the present study is guided by the following research questions:

1. What types of pronunciation errors do S.S.1 students make in articulating English pure vowels?
2. Which of the five target vowels show the highest frequency of errors?
3. What linguistic or contextual factors account for the recurring pronunciation errors among the students?

### **English as a Second Language: The Nigerian Situation**

Given that language is a societal artefact, it is entrenched in the milieu of its speakers. Language is inseparable from the group of people that use it. Hence, in a study that concerns itself with errors in the spoken English of recipients who are part of Nigeria, as a sociolinguistic group, it is imperative to consider the general situation of English as a second language in the Nigerian context.

The advent of English language in Nigeria dates as far back as the 1550's when English men paid frequent visits to the Nigerian shores. Colonialism made the language much more rooted and since, its pervasive influence has been felt in important spheres of national affairs – the legislature and judiciary, higher education, international as well as intra-national business transactions, finance, journalism, etc.

Before the incursion of English, however, a wide range of linguistic means already existed in the adjoining bodies of land mapped as Nigeria. Nigeria exhibits such a high degree of ethno-linguistic diversity. Recent mappings show that the country is home to about five hundred and twenty (520) languages. Along the lines of Kachru's (1985) dichotomy, Nigeria falls within the outer circle of English since the language is non-native but serves as *lingua franca*.

The co-existence of English alongside the diversity of other indigenous languages in Nigeria has been quite problematic. This is only to be expected since no two languages are linguistically or culturally the same. The linguistic nature of English is markedly different from that of Nigerian indigenous languages. Hence, the insertion of non-native English into the Nigerian context has resulted in a clash between its sociolinguistic (and cultural) system and that of native Nigerian languages. Ekpe (2010) made a valid argument for this:

A foreign language (English) left its native environment and met with another language or languages (Nigerian indigenous languages). It is true that the culture and values of the people are embedded in the language they speak... So, when two languages meet, then two cultures have met and there is likely to be a lot of changes in that society. The changes will affect the culture and the language of the recipient society or speech community, and

the effect will have impact on the entire recipients' society, which in this instance is Nigeria and its citizenry. (pg. 12 – 13)

Not only is the recipient's language and society impacted, as Ekpe says, the target language is equally affected.

Ogunsiyi (2006), citing Igboanusi (2000), asserts that "when speakers who have acquired the habit of one language want to learn a second language, there is the tendency for the speech habits of their first language to interfere in their effort at learning and using the second language" (p. 60). English language users in the Nigerian context tend to lean upon the pre-existing and internalised linguistic system of their own language in using the L2. Such negative interference results in errors.

Various studies have established that these errors—or what some consider linguistic variations (e.g., Ohakamike, 2016)—permeate all levels of language. These may include lexical or grammatical errors (Ojetunde, 2013; Madu, 2019; Onwuegbuchunam, 2022; Zabbey & Isaac, 2024), syntactic errors (Obiegbo, 2018; Opara, 2019; Ogunjobi & Akindutire, 2020), and phonological errors (Jauro & Ahmed, 2018; Jatau, Shehu, & Abdulrauf, 2024; Otuyemi & Akinmusayo, 2025). These studies often focus on diverse sociolinguistic groups in order to understand the nature and patterns of such errors. The current research contributes to this body of work by examining phonological errors within a distinct linguistic group.

### **Theoretical Background**

The linguistic technique of *Error Analysis* (EA) can be regarded as an offshoot of Contrastive Analysis to which it is closely related. A contrastive approach to language learning began with the work of Fries (1945) – *Teaching and Learning English as a Second Language*. However, it was largely developed and popularised by Lado (1957).

The methodology holds that it is possible to identify the difficulties a particular foreign language will pose for its learners (who are native speakers of other languages) by systematically comparing both linguistic systems and cultures. Crystal (2008) posits that Contrastive Analysis of two languages involves identifying areas of structural difference and then studying them as areas of potential difficulty (interference or 'negative transfer') in foreign-language learning. According to Lado (1957), the degree of expected difficulties is directly proportional to the extent of difference between the L1 and L2. Where the languages and cultures are similar, no problems in learning will be expected. This claim is known as the Contrastive Analysis hypothesis.

This overgeneralisation attracted criticism from certain linguists. It was argued that language transfer does not totally account for errors—other extra-linguistic factors such as age of learners, language aptitude, and motivation also come to play in second language learning—; hence, the primary concern should not be on the contrast between language systems (see Corder, 1974). A 'top-down' approach was therefore proposed as an alternative. This was called *Error Analysis*. Unlike Contrastive Analysis which begins with a comparison of two linguistic systems and predicts only the areas of difficulty or error for the

second language learner; Error Analysis begins with the identification of errors then proceeds to ascertain their sources, implications and possible remedies.

Error Analysis (EA) is often criticised for its tendency to analyse errors in isolation—that is, without adequately accounting for their source, particularly the discrepancies between the learner's first language (L1) and second language (L2). This has led to the concern that EA focuses the investigator's attention on errors, excluding other aspects of learner language from consideration. Nevertheless, EA remains critical for detecting possible difficulties in a second language learning. The approach does not entirely rule out the importance of Contrastive Analysis. Instead, its underlying assumption is that identifying errors precedes determining their source; in other words, contrasting two linguistic systems only helps to *explain* errors that have already been discovered rather than forecast them. In his seminal paper, *the significance of learners' errors*, Corder (1967) submits that this approach is important given that errors are not only inevitable, they are a very important and necessary feature of the learner's language, without which improvement cannot occur.

Error Analysis aims at identifying and describing *systematic deviations* from a selected norm or set of norms in a target language, i.e., errors, by a language learner. Such errors are believed to be a reflection of a language learner's level of competence which is perceived to be a *dynamic, flux and evolving system*. Corder uses the term "transitional competence" to describe this notion. According to Crystal (2008), Error Analysis is a "technique for identifying, classifying and systematically interpreting the unacceptable forms produced by someone learning a foreign language, using any of the principles and procedures provided by linguistics" (p.173). Richards (1971, as cited in Khansir, 2012) posits that Error Analysis deals with "the differences between the way people learning a language speak and the way adult native speakers of the language use the language" (p.1027). This "difference" may be described as the learner's *interlanguage*.

This notion of *interlanguage* came from Selinker (1972) who used it to describe the speech output in second language learners. It is regarded as an 'approximate system' sharing features of the learner's first language and the target language. Crystal (2008) similarly defines it as "the linguistic system created by someone in the course of learning a foreign language, different from either the speaker's first language or the target language being acquired". This description of the interlanguage is in consonance with Corder's concept of transitional competence. A language learner's interlanguage is made up of elements of the target language and transfers from his L1.

In Error Analysis, an attempt is made to "describe learners' interlanguage (i.e. learners' version of the target language) independently and objectively" (James, 1998 cited in Heydari & Bagheri, 2012, p.1583). Ohakamike (2016) posits that errors are a normal aspect of interlanguage; and that Error Analysis helps to determine the flux of a language learner's interlanguage and ultimately, has pedagogic value. As Zafar (2016) puts it, "the importance of Error Analysis lies in the fact that errors can be minimized only if they are identified" (p. 298). Thus, not only is Error Analysis advantageous to the language teacher, it is equally useful to the researcher or linguist and language learners themselves. Results from Error

Analysis provide insights on how a second or foreign language can be more efficiently taught and learnt. Furthermore, it helps in improving existing methods of teaching and learning and developing suitable teaching materials.

Taking necessary measures after Error Analysis has been conducted may prevent errors from becoming fossilised. *Fossilization*, a term introduced by Selinker, refers to characteristics of the speech of bilinguals becoming permanent irrespective of the age at which the second language is learnt or the amount of instruction or practice in it. Baralo (in Ciesielkiewicz & Márquez, 2015) opines that fossilization is “a mechanism in which the speaker is prone to keep some elements, rules and linguistic subsystems of the native language in his/her interlanguage when speaking a second language”. Fossilization, as Ciesielkiewicz and Márquez rightly note, does not allow the eradication of errors.

Given the importance of Error Analysis, it has received increasing scholarly attention, particularly in ESL and EFL teaching and learning. This growth reflects the international status of English and its role as a tool for wider communication and socio-economic mobility. Amoakohene (2017) conducted an analysis of student’s essays in which she uses first year students of the University of Health and Allied Sciences as case study. Ciesielkiewicz and Márquez (2015) explored the relevance of Error Analysis to teaching ESL composition among Spanish students. More recent work, such as Zabbey & Isaac’s (2024) examination of grammatical errors in the *Tide Newspaper*, highlighted issues such as tense errors, punctuation errors, and incorrect capitalisation.

Beyond written language, scholars have also examined phonological error patterns in second-language contexts. Demirezen (2010) explored the difficulties in the perception and articulation of the English schwa phoneme by Turkish English teachers and students. Maiunguwa (2015) conducted research on the perception and production of English fricatives among Hausa speakers. Wheelock (2016) adopted an EA approach to examine phonological difficulties encountered by Italian learners of English, while Otuyemi & Akinmusayo (2025) focused on the phonological features in the speech of educated Ikale and Ondo speakers of Nigerian English.

### **Methodology**

This study adopted a qualitative descriptive approach to examine recurrent vowel realisation patterns in the spoken English of Nigerian secondary school learners. Twenty Senior Secondary School One (SSS1) students (10 males, 10 females), aged 13–16 years, were purposively selected from Army Day Secondary School, Sobi, Kwara State. Inclusion criteria were active participation in English-medium classroom activities and absence of reported speech or hearing impairments. Institutional permission was granted by the school management, and participants provided assent; parental consent was not required due to school policy allowing in-school research participation. Anonymity, voluntary participation, and secure handling of audio files were ensured.

Speech data were elicited in the classroom environment to minimise performance anxiety and preserve natural speaking conditions. Each participant responded individually to five open-ended prompts designed to generate spontaneous, natural speech on familiar topics:

1. Tell us about your best friend.
2. Tell us about your desired career.
3. What is your preferred sport, and why is it your favourite?
4. What do you assist your parents in doing after school?
5. Who is your favourite teacher, and why?

Speech was recorded using a Samsung Galaxy S3 smartphone (44.1 kHz, 16-bit PCM), positioned approximately 25 cm from the speaker in a quiet classroom. Recordings were then manually transcribed by the researcher using the International Phonetic Alphabet and analysed using Corder's (1967) Error Analysis framework. Although no second rater was engaged, rigour and reliability were maintained through iterative listening and phonetic cross-checking consistent with qualitative phonetic fieldwork practice.

A total of 97 vowel tokens were extracted, comprising [ə] (84 tokens), [ʌ] (8), [æ] (2), [ɜ:] (1), and [ɔ:] (2), representing naturally occurring tokens in spontaneous speech. The number of target vowels per student varied by speech length, with an average of approximately tokens per participant. Error analysis was applied to identify patterns of vowel realisation, with reference to Standard British English targets. Patterns were summarised by intended–realised correspondence and frequency of error types, and interpreted with respect to possible sources of interference and language learning challenges.

### Data Presentation and Analysis

This section presents the analysis of vowel errors observed in the pronunciation of 17 lexical items extracted from the recorded interviews of 20 students. Five English pure vowels were targeted: [ə], [ʌ], [æ], [ɜ:], and [ɔ:]. A total of 97 vowel tokens across 20 participants were analysed for accuracy and error patterns.

**Table 1: Error Distribution by Vowel and Type with 95% Confidence Intervals**

| Target Vowel | Word Examples                                                                                                             | Most Common Substituted Sound(s) | Error Type(s)                    | Error Frequency (Count) | Error Rate (%) | 95% CI        |
|--------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|-------------------------|----------------|---------------|
| [ə]          | Monitor, Investigator, Teacher, Literature, Lawyer, Person, Action, Communication, Government, Future, Doctor, Understand | [ɔ:], [ɑ:], [eɪ], [ɒ], [ɪ], [ɜ:] | Substitution, Omission (Syncope) | 84                      | 86.6           | 79.4% – 92.9% |
| [ʌ]          | Fun, Money, Communication, Come, Love, Government, Understand                                                             | [ɒ], [ɔ:]                        | Substitution                     | 8                       | 8.2            | 3.7% – 15.6%  |
| [æ]          | Action, Understand                                                                                                        | [ɑ:]                             | Substitution                     | 2                       | 2.1            | 0.6% – 7.3%   |
| [ɜ:]         | Person                                                                                                                    | [e]                              | Substitution                     | 1                       | 1.0            | 0.2% – 5.4%   |

|       |        |            |              |    |      |             |
|-------|--------|------------|--------------|----|------|-------------|
| [ɔ:]  | Chores | [əʊ], [ɔɪ] | Substitution | 2  | 2.1  | 0.6% – 7.3% |
| TOTAL |        |            |              | 97 | 100% |             |

**Observation:** Across the data, error rates were highest for the schwa [ə] (86.6%, 95% CI: 79.4–92.9), followed by [ʌ] (8.2%, 95% CI: 3.7–15.6). Low-frequency error rates were observed for [æ], [ɜ:], and [ɔ:], each below 3%. The schwa was frequently substituted with [ɔ:], [ɑ:], [eɪ], [ɒ], [ɪ], and [ɜ:], with only two documented cases of omission.

Table2 Confusion Matrix

| Target Vowel   | Realised as |     |      |     |     |      |      |      |      |             |
|----------------|-------------|-----|------|-----|-----|------|------|------|------|-------------|
|                | [ɔ:]        | [ɒ] | [ɑ:] | [ɪ] | [e] | [eɪ] | [ɜ:] | [əʊ] | [ɔɪ] | Deleted (Ø) |
| [ə]            | 25          | 1   | 34   | 1   | –   | 20   | 1    | –    | –    | 2           |
| [ʌ]            | 5           | 3   | –    | –   | –   | –    | –    | –    | –    | –           |
| [æ]            | –           | –   | 2    | –   | –   | –    | –    | –    | –    | –           |
| [ɜ:]           | –           | –   | –    | –   | 1   | –    | –    | –    | –    | –           |
| [ɔ:]           | –           | –   | –    | –   | –   | –    | –    | 1    | 1    | –           |
| Total (n = 97) | 30          | 4   | 36   | 1   | 1   | 20   | 1    | 1    | 1    | 2           |

**Interpretation:** The substitution of [ə] with [ɔ:] and [ɑ:] represents the most frequent confusion pattern. These patterns reflect vowel centralisation toward back vowel positions, consistent with L1 interference among Yoruba-dominant speakers.

Inferential Test

To determine whether vowel error frequency differed significantly across categories, a chi-square test of independence was conducted.

Table 3: Chi-Square Test for Vowel Error Distribution

| Test Statistic   | df | N  | p      | Effect Size (Cramer's V) |
|------------------|----|----|--------|--------------------------|
| $\chi^2 = 58.16$ | 4  | 90 | < .001 | .80                      |

Results demonstrated a significant association between vowel identity and likelihood of error,  $\chi^2 (4, N = 90) = 58.16, p < .001$ , with a strong effect size (Cramer's V = .80). This shows that vowel category strongly predicts error rates, with reduced vowels presenting the greatest challenge.

Discussion of Findings

Summary of Key Findings

Analysis revealed that substitution was the dominant error type overall (97.9%), a pattern consistent with observations in studies of Nigerian English phonology. Omission errors occur infrequently (2.1%) and are largely limited to connected speech contexts such as “literature” and “government”.

Vowel articulation errors were most frequent for [ə] and [ʌ], together representing 94.8% of all errors. The schwa [ə] alone recorded the greatest number of substitutions and deletions, suggesting persistent difficulty in both perception and articulation. Errors occur particularly in word-final and unstressed positions, it was frequently substituted with back vowels such as [ɔ:] (e.g., in words ending with *-tor* “monitor”, “investigator”, and “doctor”) and [ɑ:] (e.g., in words with *-er* “teacher”, “understand”, and “lawyer”). In words with the *-tion* suffix “action” and “communication”, it is realised as [ɒ] and [ɔ:] respectively.

Omission occurs medially in “literature” and “government”. This omission of the vowel within the words, which is peculiar to connected speech, is a form of elision called syncope. The vowel [ʌ] was consistently replaced with either [ɔ:] or [ɒ] across lexical environments, including monosyllabic words (“come”, “love”) and polysyllabic items (“money”, “government”).

Comparatively fewer errors were recorded for [æ], [ɜ:] and [ɔ:] (5.2% altogether). [æ] is articulated as [ɑ:] in “action” and “understand”. [ɜ:] is articulated as [e] in its occurrence in the first syllable of “person”. In its occurrence in “chores”, [ɔ:] is replaced by two recipients with [əʊ] and [ɔɪ]. These patterns suggest a systematic difficulty with weak-form vowels and central vowel contrasts.

Although this study does not employ a longitudinal design, some pronunciation patterns indicate the likelihood of error fossilisation. Certain errors recur consistently across lexical items and were produced without signs of self-monitoring. For instance, as discussed above, the monophthong [ʌ] is consistently replaced with [ɔ:] by all participants without attempts at self-correction. Similarly, all recipients who used the words ending in *“-ture”, “-tion”* and *“-tor”* as outlined in the foregoing, substituted [ə] with [ɔ:]. This implies that recipients experience difficulty articulating [ə]. This recurring pattern may indicate incipient fossilisation, especially considering its consistency across different lexical items.

These findings align with documented variation in Nigerian English vowel production and support earlier studies reporting persistent challenges with reduced vowels and central vowel quality among Nigerian learners. Consistent with Senam & Senam, (2017), Idowu (2018), and Utulu (2019), learners tend to avoid weak vowels in unstressed syllables, preferring more salient full vowel realisations. This behaviour reflects rhythmical differences between English and many Nigerian languages and confirms Oladipupo’s (2021) observation that one of the major phonological differences between Standard British English and Nigerian English is “the absence of vowel reduction; that is, the inability of Nigerian English (NigE) speakers to weaken vowels in unstressed syllables that typically undergo reduction and shorter duration in native varieties”. The observed preference for back vowels over central ones also corroborates studies highlighting L1 vowel-space transfer and reduced exposure to native-like phonetic models in Nigeria (Amoniyon, 2025). The misreading of orthographic segments (e.g., *-tion*, *-tor*, *-ture*) echoes findings on grapheme-phoneme interference in West African ESL phonology (Adepoju, 2022; Ozim & Melefa, 2024), suggesting that orthographic reliance remains a strong influence on spoken performance.

### Mechanisms Explaining Observed Patterns

Four mechanisms appear to underpin the error patterns observed:

- i. **L1 Transfer:** Learners map English vowel targets onto available native phoneme categories, which often lack central vowels or weak-form distinctions. This leads to the systematic substitution of [ə] with [ɔ:] and [ɑ:], reflecting influence of vowel inventories in many Nigerian languages, particularly Youruba.
- ii. **Orthographic Interference and Grapho-phonological Confusion:** A prominent source of error lies in learners' reliance on the written form of words as the primary cue for pronunciation. This type of confusion occurs when learners rely on the visual form of a word for pronunciation, causing a misalignment between the written form (grapho) and its corresponding sound (phonological). The assumption that English sounds should be realised as words are spelt reflects challenges posed by English's deep orthography compared to the more phonemic and relatively transparent orthographies of many Nigerian languages. This mechanism explains substitutions such as [æ] (in "action" and "understand") with a long vowel, [ɑ:]; as well as the replacement of [ɜ:] (in "person") with [e], where vowel choices appear visually motivated rather than phonologically grounded.
- iii. **Over-generalisation of English Grapheme–Phoneme Rules:** Beyond simple spelling reliance, some learners extend familiar English grapheme–phoneme correspondences to inappropriate contexts. For example, learners generalise the pattern of *o* graphemes mapping to diphthongs: *o* → [əʊ] (as in *go, know, show*) or *oi/oy* → [ɔɪ] (as in *boy, soil*). Such generalisation is evidenced in the data in the realisation of *chores* as /tʃəʊs/ or /tʃɔɪs/, illustrating developmental rule-extension, not simple orthographic confusion. This aligns with typical L2 phonological acquisition processes, where learners over-apply emerging rules before stabilisation.
- iv. **Instructional and Exposure Factors:** Pronunciation training in many Nigerian secondary schools remains theoretical rather than practice-oriented. Limited access to oral models, minimal focus on phonetic drills, and lack of systematic correction may facilitate error persistence and limit self-correction.

### Limitations

This study is based on a relatively small cohort drawn from a single school and focused only on five pure vowels. The absence of suprasegmental analysis limits insight into stress-related reduction patterns. Additionally, the cross-sectional design does not allow confirmation of long-term fossilisation; thus, references to fossilisation remain hypothetical and based on recurrent error patterns rather than longitudinal evidence.

### Implications

The findings underscore the need for targeted pedagogical interventions that emphasise weak-form vowels, auditory discrimination, and contextual vowel reduction. Explicit

instruction in grapheme-phoneme correspondence and increased use of auditory models may improve vowel accuracy. Teacher training programmes should incorporate practical phonetics components to equip instructors with tools for diagnosing and correcting persistent segmental errors. These strategies may enhance learners' intelligibility and strengthen foundational phonological competence at the secondary level.

### Conclusion

This study examined vowel realisation patterns among Nigerian secondary school learners in spontaneous speech. The analysis revealed a consistent preference for full and/or tense vowels over reduced central targets. Learners frequently replaced [ə], [ʌ], and occasionally [æ], [ɔ:], and [ɜ:], with peripheral vowels, particularly the back vowels [ɑ:] and [ɔ:], and in some instances [ɒ]. Substitutions also included front vowels such as [ɪ] and [e], the diphthong [eɪ], and, in a few cases, other tense vowels and diphthongs such as [ɜ:], [əʊ], and [ɔɪ]. Notably, while both [ɔ:] and [ɜ:] functioned in the data as target vowels in some lexical environments, they were also used as replacements in others. Instances of orthographically influenced substitutions and rule-based over-generalisation of English vowel correspondences were also recorded.

These patterns suggest interacting effects of L1 phonological transfer, orthographic reliance, and limited access to sustained phonetic practice. While the dataset is modest, the findings contribute to evidence that reduced vowels remain an unstable feature for many young Nigerian English users, particularly in unstressed syllables. Broader claims about Nigerian English phonology are therefore beyond the scope of this exploratory work; however, the patterns observed indicate areas requiring targeted instructional attention.

### Recommendations

In line with the error patterns identified, and recognising the need for classroom-feasible interventions, the following strategies are proposed:

- i. Targeted minimal-pair work on central vowels: Given the frequent substitution of the central vowels [ə] and [ʌ] with back vowels such as [ɔ:] or [ɑ:], focused minimal-pair and syllable-level drills (e.g., *cut–caught*, *luck–lock*; *tə–tɔ:*) can support clearer perception and production of mid-central contrasts. Low-pressure choral and peer-practice formats may enable gradual improvement without performance anxiety.
- ii. Guided grapheme–phoneme mapping activities: To address grapho-phonological confusion and reliance on spelling cues, teachers can introduce structured worksheets and board activities that explicitly contrast orthographic form with phonemic output. These contrasts may include items such as *actor* /'æktə/ vs *doctor* /'dɒktə/ vs *author* /'ɔ:θə/ and stressed-vowel pairs like *luck* /lʌk/ vs *lock* /lɒk/ vs *look* /lʊk/. Highlighting exceptions and predictable patterns can help learners develop more flexible decoding habits.
- iii. Formative feedback rubrics for vowel accuracy: Since inconsistent self-monitoring was evident, simple teacher- or peer-feedback checklists may guide students'

attention to vowel quality during speech tasks (e.g., *Did I reduce unstressed vowels? Did I avoid reading every vowel as written?*). Rubrics should prioritise central vowel contrasts and unstressed-syllable weakening rather than broad penalty-based scoring.

- iv. Low-stakes pronunciation recording tasks: To supplement limited oral practice time in many schools, brief self-recording assignments (e.g., one-minute responses to prompts) can allow learners to rehearse central-vowel realisations and receive feedback. Teachers may provide model recordings where [ə] is emphasised in its weak form and unstressed contexts, and where stressed [ʌ] is modelled in items such as *mother, money, come, and Monday*.

These recommendations are modest, classroom-practical, and aligned with the specific vowel substitution patterns documented. Future work with larger samples and inter-rater transcription validation is needed to further refine pedagogical responses.

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