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PHONEMIC TRANSCRIPTION ERROR ANALYSIS OF UNDERGRADUATE ENGLISH LANGUAGE STUDENTS IN SOUTHWESTERN NIGERIA

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Abstract:
This paper investigates phonemic transcription errors of L2 learners of English, using the undergraduate students of the Department of English Language, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria, as case study and compares performance across levels and phonemes. Twenty (20) randomly selected respondents from each of the four undergraduate levels - a total of eighty (80) participants, were asked to do a phonemic transcription of a researcher-crafted text of two sentences comprising all the 44 English phonemes and one purposively infused triphthong. The Daniel Jones's (2011) Cambridge Pronouncing Dictionary was used as standard in grading the test. The transcriptions were then closely studied, categorized, and analysed. Findings show that L2 learners and users of English committed errors of Substitution (259, 41%), Addition (87, 13%), Replacement (66, 10%), and Omission of Sounds (33, 05%) out of the 675 transcription errors identified. None (00%) out of the 80 participants was able to transcribe the triphthong sound correctly, amounting to 12% of the total errors; while three specific transcription rules, namely the rule of realizing strong vowel sounds in function words as schwa /ə/ which was abandoned in 150 instances (22% of total errors), mostly in 'and' and 'to'; the rule of not realizing vowels as schwa in content words which they applied indiscriminately; and the rule of double slashes inserted at the beginning and the end of a transcribed sentence which none of them observed. The study also finds 60% of vowel errors and 40% of consonant errors, while out of all 44 phonemes, all respondents got only nine (9) consonant sounds correctly, indicating that respondents face greater difficulty with the English vowel sounds. It is concluded that these errors are due mostly to interference and non-adherence to rules symptomized in incorrect articulation and erroneous transcription. Finally, this study emphasizes the crucial role of error analysis in L2

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language learning and development as it provides useful insights into the nature of errors, and points at implications for curriculum improvement, pragmatic methodologies and technology application in language teaching and learning.

Keywords: ESL/L2 learners and users of English, phonemic transcription errors, error analysis (EA), interference, Schwa, vowel sounds, consonant sounds

1. Introduction

Error Analysis [henceforth, EA] is a branch of Applied Linguistics that emerged in the 1960s from the works of Stephen Pit Corder as an alternative to Contrastive Analysis [henceforth, CA]. CA is an approach to language acquisition which compares L1 and L2 with a view to determining the differences and similarities between them (Fisiak, 1981, p. 1). However, according to Keller (2010), Corder's (1967) approach shows that "*errors should be investigated to understand and also improve the linguists attempts of learning a second language. Typical questions which arise are why learners make errors and what reasons do they have?*" (2010, paragr. 2). EA thus punctured CA, as, since the introduction of EA, useful insights have been provided in L2 teaching instances. Errors are mainly deviations in the standard use of a language and this can be syntactic, grammatical, lexical, morphological or phonological. Corder (1973) classifies errors in terms of the difference between the learners' utterance and the reconstructed version and proposes four different categories: omissions, additions, misinformation and disordering. Corder (1967) explains how EA is important in making inferences about the learning process, structuring language and teaching methodologies in order to cater for errors, and also establishes that certain errors learners make are not from their Mother Tongue (Corder, 1967). The study of error is necessary in language development so that learners can build their cognitive processes.

Over the years, educated Nigerians and especially English undergraduates and graduates have had problems with various aspects of English language proficiency being second language (L2) learners and users. However, the phonological aspect is undoubtedly the most problematic. L2 learners and users find it challenging, leading to the lack of proficiency in spoken English, declining interest in phonetics and phonology of English and at times neglect by teachers. One of such challenging areas in Phonology is transcription.

2. Transcription

Atoye, *et al.* (2018) describe Transcription [henceforth, Tranx] as "*the representation of speech in writing. In other words, it is the depiction of speech sounds as visible phonetic or phonemic symbols on paper…by a human transcriptionist or with a computer*" (p. 64). Phoneme is the smallest, independent, contrastive unit of articulatory phonetics that can distinguish meaning in a particular language (Atoye *et al.*, 2018, p. 33; Jones, 2011, p. 571; Birjandi and Salmani-Nodoushan, 2005, p. 9).

English Tranx seems complicated for L2 learners due to "*the opaque orthographic nature of English which makes it impossible for grapheme-to-phoneme correspondence*" (Atoye *et al.* 2018, p. 64), especially when L2 learners are more familiar with the English letters than the English sound symbols. Lado (1957), cited in Awa and Nwani-Grace (2018) had earlier made a case for the difficulty or otherwise of learning an L2 depending on the extent of similarity in the elements in L1 and L2, namely that sounds in L2 would be easy to learn when they are similar to sounds in L1. However, in phonology, this can be demystified and mitigated by getting familiar with the phonemes as a good knowledge of phonemes is expected to aid tranx. Both written and spoken texts can be transcribed.

Transcription could be phonemic or phonetic. Usually enclosed within two slanting lines, the former is also known as 'broad transcription' because detailed information involving the use of diacritics depicting the specific behaviour of a phoneme during production is missing in the tranx, as it allocates very simple symbols to indicate the pronunciation of a given word and retains only the information necessary for meaning (Atoye *et al.*, 2018, p. 66). The latter, also known as 'narrow transcription', is used when meaning is not required from the transcription as it provides more symbolic details representing "*the minute details of articulation of any sound using different diacritics*" (Atoye *et al.*, 2018, p. 66). The following transcriptions were taken from Daniel Jones' (2011) Cambridge English Dictionary (18th ed.) to show the difference between the two kinds of transcription:

SN	Words	Transcription	
		Phonemic	**Phonetic**
i.	Pot	/pɔt/	[pʰɔt]
ii.	Cool	/ku:l/	[ku:ɬ]
iii.	Fridge	/frɪdʒ/	[frɪdʒ]
iv.	Queen	/kwi:n/	[kʷwi:n]

Some linguists (e.g. Lintunen, 1991) however apply the two terms interchangeably because phonemic transcription is contained in phonetic transcription.

Phonemic transcription [henceforth, PhTranx] is a crucial aspect of English that graduates of English must be conversant with as many end up as teachers of the language, particularly when spelling is an unhelpful representation of phonemic shapes. PhTranx is therefore a teaching method that has traditionally been used for foreign language learners of English, especially at advanced levels. Gomes de Matos (2002:314) lists Tranx reading skills as one of the basic abilities that every foreign language learner should master, and certainly most books for EFL learners include phonemic symbols in vocabulary sections, and there are Tranx workbooks such as Garcia Lecumberri & Maidment (2000), and Morris-Wilson (1984). Unfortunately, phonemic symbols are often neglected in teaching, especially at the secondary school levels, although in varying degrees. Improved phonemic awareness, in turn, is expected to aid learners' pronunciation skills (Mayer & Wells, 1996).

3. Statement of Research Problem

Due to reasons of technicality usually associated with phonetics and phonology research, there are relatively few empirical studies (e.g. Lintunen, 1999; Hjollum and Mees, 2012; Al-Badawi, 2012; Trzeciakowska, 2016; etc.) on aspects of phonemic transcription errors by ESL/L2 learners. It has been observed that most students of English find it difficult to adequately represent sounds with symbols, and usually come up with errors in Tranx exercises even after taking courses and drills in Phonetics and Phonology as students of English Language. It will be helpful to undertake an empirical study to understand this better for quality and informed generalizations. There has been a number of error analysis done on L2/ESL learners in different aspects, however, those on phonemic transcription have been quite minimal, perhaps due to its technicality.

Understanding L2 learners' errors also holds significant implications for L2 teachers, researchers, and learners. Ultimately, this research is expected to motivate learners about the need to be proficient in transcription beyond school exams and would in turn help groom tutors in advancing the teaching of English phonology, particularly phonemic transcription, especially in the secondary schools. The findings will help students establish their errors and understand how better to avoid them. By avoiding these errors, proficiency can be achieved and errors can be avoided or limited.

4. Aim and Objectives

This study investigates the kind of PhTranx errors that ESL/L2 undergraduate students of English Language make while transcribing from a written text, using the Department of English, Obafemi Awolowo University Ile-Ife, Nigeria as case study. Specifically, it sets out to identify, categorize and analyse the PhTranx errors by L2 English Language students at all undergraduate levels [100 to 400], and compare performance across levels and phonemes. It also seeks to explain the reasons for the errors and why students tend to find Tranx difficult.

5. Theoretical Framework

5.1 Error Analysis and Contrastive Analysis

Etymologically, the word 'error', from Old French *err(o)ur*, and from Latin *errare* meaning 'to stray or to wander', dates back to the 13th century and refers to an action that has been made or is made. In applied linguistics, an error is an unintended deviation from the immanent rules of a language made by an L2 user or learner, especially in such technical aspects as Syntax and Phonology. Error appears to be an inevitable part of language learning. Through identifying errors, learners can correct themselves, and this can ensure improved competence and proficiency in performance. It is therefore safe to say that errors are a positive thing for both teachers and learners.

Norrish (1987) defines 'error' as "*…a systematic deviation, when a learner has not learnt something and consistently gets it wrong*" (p. 7), while Cunningworth (1987) describes it as "*systematic deviations from the norms of the language being learned*" (p. 87). The term 'systematic deviation' suggests that the errors being made are done continuously. 'Mistakes' and 'errors' appear synonymous; however, while 'errors' are systematic, consistent deviations, 'mistakes' are inconsistent deviations. According to Norrish (1983), a mistake is "*inconsistent deviation*", and a learner sometimes gets it right or wrong (p. 8). Richards *et al* (1985) argue that "*a mistake made by a learner when writing or speaking is caused by lack of attention, fatigue, carelessness, or other aspects of performance*" (p. 95). This seems to suggest that mistakes arise from knowledge but the rules are not applied, while errors on the other hand arise from absence of knowledge.

Pit Corder (1971) classifies errors into two, namely Competence errors which is not self-corrected because one is unaware of the deviation committed as a result of the poor understanding of the structural principle of a target language; and Performance errors which occur as a result of emotional anxieties, drunkenness, tiredness, or some other emotional states, otherwise known as mistakes, which, according to Corder (1971), are easily corrected by the monitoring device in the brain. Corder (1971) divides competence errors into Interlingual Errors and Intralingual Errors. Interlingual errors depend on linguistic differences between the first language and the target language, a phenomenon traditionally interpreted as *Interference*; while Intralingual errors relate to a misapplication of linguistic rules in a target language and manifests itself as a universal phenomenon in any language learning process. According to Corder (1981), interlingual and intralingual errors could help indicate evidence of learner progress and grounds remaining to cover, thereby functioning, according to Kaweera (2013) as "*a means of feedback for…teachers reflecting how effective they are in their pedagogical methodology*" (p. 15).

Richards (1971) identifies four main causes of errors, namely overgeneralization, incomplete application of rules, false concepts hypothesized, and ignorance of rule restriction. Brown (1980) also mentions four causes of errors as interlingual transfer, intralingual transfer, context of learning, and communication strategies; while Norrish (1983) classifies causes of errors into three, namely carelessness, first language interference, and translation. There are other proposals, but these three would suffice for our purpose. In sum, they all seem to have proposed what amounts to the same thing, namely the misapplication of rules of the target language due to their L1 context and level of competence.

Contrastive Analysis [henceforth, CA], generally grounded in Contrastive Linguistics, is a hypothesis founded by Robert Lado (1957) to account for the second language acquisition in a systematic way by comparing the first language system and culture to the second language system. Fisiak (1981) describes CA as "*a sub-discipline of linguistics concerned with the comparison of two or more languages or subsystems of language in order to determine both the differences and similarities between them*" (p. 1). For Selinker and Gass (2008), CA is a method to distinguish between what is needed and not needed to learn by the target language learner by evaluating languages. In the light of

distinguishing between what is needed to learn and what is not, Jie (2008) argues that "*[c]ontrastive analysis stresses the influence of the mother tongue in learning a second language in phonological, morphological, lexical and syntactic levels. It holds that second language would be affected by first language*" (Jie, 2008, p. 36). According to Lado (1957), "*[t]he 'fundamental assumption' is transfer; individuals tend to transfer the forms and meanings, and the distribution of forms and meanings of their native language and culture to the foreign language and culture*" (p. 2)

The key distinction between EA and CA is that according to James (1980), CA research usually involves two languages based on the assumption that languages have enough in common to be compared (p. 3). While CA attributes errors to L1, EA attributes errors to L1 and other crucial factors. For instance, EA distinguishes between 'error' and 'mistake' each of which it claims arises from different factors (Corder, 1981) such as corrigibility (self-correction), and intentionality (James, 2013), while CA does not. Thus, CA fails to give the correct degree of difficulty faced by an L2 learner as it solely attributes errors "*to the learner's first language*" (Al-Sobhi, 2019, p. 52), nor fully capture learners' errors. According to Gass & Selinker (2008), "*there are other factors that may influence the process of acquisition such as innate principle of language, attitude, motivation, aptitude, age, other languages known…*" (p. 102). According to Al-Sobhi (2019), CA has been criticized bitterly, although several linguists and teachers still find it useful in various respects (p. 52).

The development of Error Analysis by Pit Corder "*provides a broader range of possible explanations than Contrastive Analysis for researchers/teachers to use to account for errors, as the latter only attributed errors to the native language*" (Gass & Selinker, 2008:102). Charles Fries (1945) already argues that "*the most efficient materials are those that are based upon a scientific description of the languages to be learned, carefully compared with a parallel description of the native language of the learner*" (Fries, 1945:9).

Error analysis is "*a type of linguistic analysis that focuses on the errors learners make*" (Selinker and Gass, 2008, p. 102) both in writing and speaking. For them, it is *"[a] procedure for analyzing second language data that begins with the errors learners make and then attempts to explain them*" (Selinker and Gass, 2008, p. 517). Richards *et al.* (1985) defines EA as "*the study of errors made by second and foreign language learners*" (p. 96); Brown (1980) sees it as "*…the processes to observe, analyse, and classify the deviation of the rules of the second language…to reveal the systems operated by the learner*" (p. 166); while Crystal (2010) captures it as 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 (Crystal, 2010). In sum, it is a study that investigates, identifies, describes, classifies, interprets, evaluates and seeks to reduce the errors made by L2 learners.

Pit Corder (1967) considers errors as the evidence of the learners' inherent syllabus which demonstrated how L1 and L2 learners advance an independent system of language. According to Ellis and Barkhuizen (2005), samples of learners' productive English comprise the best technique to investigate second language acquisition. For

Corder (1967) and Brown (2000), investigating language learners' errors helps to display the state of the learners' knowledge, as "*the importance of error analysis is something beyond merely eliminating them*" (Corder, 1967), and should thus be taken seriously as they show development features for language learning. Corder (1981) highlights the significance of error analysis from various stakeholders' perspectives. For teachers, it would manifest students' current level of learning; for researchers, it would reveal the way language is learned and structured; while for students these errors can be utilized as a learning device to improve language proficiency (Corder, 1981). EA is not without its criticism; however, in spite of its limitations, "*research into errors continues to provide a fruitful way of investigating the processes underlying FL [foreign language] acquisition*" (Crystal, 2010, p. 377).

5.2 Previous Works

Lintunen (1999) did a pilot study on transcription data collected from a 14-week spoken English course for first-year university students of English language and reports improved transcription skills after the course. Olawe (2021) investigated the production of English vowels by Yoruba-English bilingual undergraduates from five departments at the University of Nigeria, Nsukka, by asking the respondents to pronounce a list of English words, and finds that there are variations and deviations in the realization of some English vowels by Yoruba-English bilinguals. Similarly, Hjollum and Mees (2012) investigated consonant sounds pronunciation by Faroese speakers of English as L2, using audio recordings and find that Faroese speakers have problems with certain phonemic contrasts that are similar to other ESL learners.

Al-Badawi (2012) investigated common phonetic, morphological and syntactic errors by Saudi BA Students who are native Arabic-speaking learners of English in a speaking task, using qualitative interviews and audio-recorded field interviews and finds a number of errors in all aspects investigated, which he attributes to ESL incompetence.

Fauzi (2014) investigated the common errors made by Sudanese students who have taken pronunciation class in the English Letters Department in 2013, using descriptive qualitative approach and finds that Sudanese students of English Letters Department committed some errors of omission and addition on the vowel and consonant sounds except the fricative sounds where error of selection is found.

Trzeciakowska (2016) also investigated the Phonemic Transcription errors by Polish EFL Teacher Training College Students and finds that little attention has been given to the relationship between pronunciation and transcription, while suggesting an interwoven of simplified transcription and pronunciation practice.

Zaky (2019) investigated the kind of segmental errors by freshmen of the English Study Program of Diponegoro University, using observation assisted with note-taking from listening to reading the audio recordings, and finds that participants committed phonemic and phonetic errors caused by interference of Indonesian language and lack of familiarity with the English language sound system.

While most of these studies (Al-Badawi, 2012; Hjollum & Mees, 2012; Fauzi, 2014; and Zaky, 2019) have placed focus on pronunciation, using audio recordings to gather

data, this present study uses written technique, namely PhTranx test to gather data as in Lintunen (2005) and Trzeciakowska (2016).

6. Methodology

Our method of data collection was by means of a short phonemic transcription test at the segmental level. The text comprised two sentences purposively crafted by the researchers to capture the whole 44 sounds in English, namely 24 consonant sounds, and 20 vowel sounds comprising 12 monophthongs and 8 diphthongs. One triphthong sound was purposively infused into the text asides the several occurrences of all the 44 sounds in English. All this was to ensure that participants were tested in all the sounds so as to ascertain where their errors may lie.

Twenty (20) undergraduate students of the Department of English in Obafemi Awolowo University, Ile-Ife, Nigeria, were randomly selected from each of the 100, 200, 300 and 400 levels, referring to the first, second, third and final year students respectively, making a total of Eighty (80) students, so as to give room for comparison across all undergraduate levels. They have all been introduced to some level, the least being one semester, and the highest being four semesters, of aspects of phonetics and phonology, including transcription drills. The respondents were requested to transcribe the text which was then given a close analysis using the procedure of an error analyst, Rod Ellis (1994) who provides the steps in a typical error analysis research which include collection of samples of the learner language, identification of the errors, description of the errors and finally evaluation of the errors (p. 48). Thus, our method was to identify errors, categorize them, describe them, discuss them, and compare performance across levels and phonemes. The analysis was both quantitative and qualitative.

This study is on phonemic transcription as a segmental feature of phonology only, and includes neither the phonetic transcription nor the supra-segmental aspects like the stress, intonation and syllables. Only the English Language - not the Literature-in-English - undergraduates were selected as respondents. This is to ensure that only respondents who have passed through phonology classes were investigated.

Furthermore, a comparison among all four levels examined showcases that the typology of errors is more prevalent in lower academic levels with errors in first year and second year students tallying a total of 200 errors and 158 errors respectively. In contrast, third year and fourth-year students' errors sum up to a total of 148 errors and 126 errors respectively.

The analysis of the transcription errors was based on Daniel Jones' (2011) English Pronouncing Dictionary. This is to ensure correct and standard transcription. Following phonological transcription convention, slanting lines / / indicate correct tranx while square brackets [ ] indicate incorrect tranx.

7. Data Analysis, Findings and Discussion

The typology of errors identified includes substitution, replacement, addition, omission of sounds, triphthong error, and abandonment of the rules of transcription. Two separate tables are presented below to show the errors and their frequencies.

Table 1: Typology of errors and frequency of occurrence

SN	Typology of Errors	Frequency (100 Level)	Frequency (200 Level)	Frequency (300 Level)	Frequency (400 Level)	Total
1.	Substitution	75	67	65	52	259 (38%)
2.	Replacement	26	15	12	13	66 (10%)
3.	Addition	34	21	19	13	87 (13%)
4.	Omission	10	7	9	7	33 (05%)
5.	Triphthong	20	20	20	20	80 (12%)
6.	Abandonment of Rules of Transcription	42	39	35	34	150 (22%)
	Total	207 (31%)	169 (25%)	160 (24%)	139 (21%)	675 (100%)

Table 2: Frequency of errors among sounds

SN	Typology of errors	Consonants	Vowels			Total
			Monophthong	Diphthong	Triphthong	
1.	Substitution	120	87	52	-	259
2.	Replacement	29	20	17	-	66
3.	Addition	87	-	-	-	87
4.	Omission	33	-	-	-	33
5.	Triphthong	-	-	-	80	80
6.	Rules abandonment	-	150	-	-	150
	Total	269 (39.85%)	257 (38.07%)	69 (10.22%)	80 (11.85%)	675
	Total	269 (39.85%)	406 (60.15%)			

7.1 Substitution

The substitution category comprises of errors in vowel and consonant sounds drawn from swapping certain sounds with another. The consonant errors of substitution are referred to as the fortis and lenis errors. Fortis and lenis refers to pronunciation of consonants with the voiced and voiceless distinction. The vowel counterpart often includes substituting certain sound with another sound both of which are articulated with close similarity. There are more instances of the vowel substitution than the consonant sounds. The errors made by the students at different levels are mostly similar, but they are more or less in some levels than the others. In the first year, there are 75 instances of substitution, 67 from the second year, 65 from the third year and 52 instances from the fourth-year respondents. Generally, there are 120 instances of consonant substitution and 139 instances of vowel substitution across all levels. The table below shows the consonant sounds substituted and the ones they are substituted with.

Table 3: Showing Consonant sounds substitution error

Consonant Sounds	Substituted with
/s/	/z/
/z/	/s/
/tʃ/	/ʃ/
/ð/	/d/
/ɵ/	/t/
/dʒ/	/j/
/ŋ/	/n/
/ð/	/ɵ/

The above table shows some instances of the fortis-lenis errors. Respondents substituted some consonant sounds with some others as can be seen further in the following instances:

1) Participants found it hard to differentiate between the alveolar fricatives /s/ and /z/. In words like 'days' /deiz/ [deis], 'used' /ju:zd/ [ju:sd], 'ideas' /aidiəz/ [aidiəs], and 'reminiscing' /reminisiŋ/ [reminiziŋ], /z/ was substituted for /s/ and vice versa.
2) The dental fricative sounds /ɵ/ and /ð/ were substituted with each other in several cases. 'Those' was transcribed as [ɵəuz] instead of /ðəuz/. Other examples are 'this' /ðis/ [ɵis], 'their' /ðeə/ [ɵeə] and 'garth' /ga:ɵ/ [ga:ð].
3) There are few instances of the palatal sound /j/ being used instead of the palato-alveolar sound /dʒ/ in the word 'forgery' /fɔ:dʒri/ [fɔ:jri].
4) There is also the misrepresentation of the alveolar sound /d/ being used in place of the dental sound /ð/ such as in [dis] instead of /ðis/ for the word 'this'.
5) Few instances of the substitution of /ʃ/ instead of /tʃ/ also occurred in the word 'Chirton' /tʃʒ:tən/ [ʃʒ:tən].
6) Respondents also substituted the nasal sound /ŋ/ with /n/ in the words 'reminiscing' "/reminisiŋ/ [reminisin] and 'remembering' /rimembriŋ/ [rimembrin].

   There are also examples of vowel substitution in the following table:

Table 4: Showing Vowel Sounds Substitution Error

Vowel Sounds	Substituted with
/iə/	/eə/
/eə/	/iə/
/ei/	/ai/
/ai/	/ei/
/ɔ/	/ʌ/
/u/	/u:/
/i/	/i:/
/ɔ/	/ɔ:/

1) Most of the respondents found it difficult to differentiate between words that have the long vowels and those with the short vowels. There are a lot of errors with /i/

being used instead of /i:/, /ɔ/ used in place of /ɔ:/, /u/ used instead of /u:/ and vice versa. Instances include 'Forgery' – [fɔdʒri] instead of /fɔ:dʒri/, 'Long' [lɔ:ŋ] instead of /lɔŋ/, 'We' [wi] instead of /wi:/, 'Look' [lu:k] instead of /luk/.

2) Diphthong sounds /ei/ and /ai/ also posed problems as they found it difficult to distinguish between the diphthongs in 'days' /deiz/ and 'nights' /naits/ where /deiz/ was substituted with [daiz] and /naits/ substituted with [neits].
3) The three central vowels /ʌ/, /ʒ:/ and /ə/ were also substituted in some instances. Words like 'chirton' /tʃʒ:tən/, 'sun' /sʌn/ and 'success' /səkses/ were substituted as [tʃʌtən], [sən] and [sʌksəs] respectively.
4) Also, the diphthongs /iə/ and /eə/ were substituted with each other in the words 'here' /hiə/ [heə] and 'there' /ðeə/ [ðiə].

7.2 Replacement

Replacement error occurs when respondents replace a sound with another which is not like it at all, such as replacing a monophthong with a diphthong, and replacing any sound with schwa and vice versa. There are 37 vowel replacement errors and 29 consonant replacement errors identified in our data. Instances of these can be seen below:

1) Respondents used monophthongs instead of diphthongs and vice versa in the words such as 'Story' /stɔ:ri/ [stəuri], 'Reminiscing' /reminisiŋ/ [reminaisiŋ], 'Those' /ðəuz/ [ðɔz], and 'Sure' /ʃuə/ [ʃɔ:].
2) Most of the students also have problems identifying the palate-alveolar sound /ʒ/. In the word 'measure' /meʒə/, transcription errors like [meʃə] and [meiə] were made.
3) There are also a lot of instances where the schwa sound /ə/ was used in place of some other vowels. The only explanation for this error is the abandonment of rules by respondents in their transcription, and this has been discussed under 'Abandonment of transcription rules' below. However, in our data, we find that whenever respondents do not know what vowel sound to use, schwa comes in handy for them. The replacement of vowel sounds with schwa constitutes more than half of the transcription errors identified under replacement error.

7.3 Addition

Respondents added sounds that are not supposed to be added, although, this seems to be comparatively few. Examples can be found in the alveolar approximant /r/ and the alveolar lateral sound /l/.

Table 5: Addition errors

SN	Words	Correct transcription	Wrong transcription	Additional sounds
1.	Cloister	/klɔistə/	[klɔister]	/r/
2.	Garth	/ga:ə/	[ga:rə]	/r/
3.	Under	/ʌndə/	[ʌnder]	/r/
4.	Talk	/tɔ:k/	[tɔ:lk]	/l/

Respondents made a total of 87 addition errors (14% of total errors) distributed as 100Level: 34 errors, 200Level: 21 errors, 300Level: 19 errors and the final year respondents: 13 errors. There is no instance of vowel addition error.

7.4 Omission of Sounds

Omission of sounds refers to an act of leaving out or missing a particular sound. There are a few instances in the data where respondents omit one or two sounds which appears to be because they do not know the correct sound and do not want to put incorrect sounds. The act of omitting a sound is identified in the glottal sound /h/, the first sound in 'here' which happens to be the first word in the tranx text. The word 'here' /hiə/ was transcribed as [iə] by a total of 33 (41.2%) respondents out of 80, omitting the glottal sound /h/. The state of the glottis while pronouncing the glottal sound should be voiced because it is a consonant sound but most people produce the sound as voiceless as a result of interference and other intralingual factors. There were no omission of vowel sounds in our data.

Also, omission errors may be inadvertent or caused by an oversight. An oversight is a situation where a sound(s) or word(s) is left out or forgotten. Few respondents left out certain words not transcribed and this is assumed to be an oversight. Examples of the words left out are conjunction 'and' and the preposition 'to' which are function words. This oversight may either be because the words have just a few sounds which respondents might consider insignificant or because the two function words occurred twice and thrice respectively in the text. Perhaps these respondents erroneously assumed that it is needless transcribing what has been transcribed earlier.

7.5 Triphthongs

A triphthong is a sound that contains three vowel elements realized as a single sound. In English, a small number of words contain the triphthong, such as /aiə/ and /auə/ realized in 'tyre' /taiə/ and 'hour' /auə/ respectively. In the phonemic test given out, an instance of triphthong, namely 'ours' transcribed as /auez/ was inserted purposively in the text. Out of 80 respondents, no single respondent (00%) got it right, and only 36 (45%) respondents attempted to transcribe the triphthong sound as they seemed not to have noticed the presence of the triphthong sound in the text or simply ignored it or found it difficult to transcribe.

Table 6: Triphthong error

SN	Triphthong word	Trans-cription	Respondents who attempted to transcribe the sound	Respondents who did not attempt to transcribe the sound	Respondents who got it right	Total
1.	Ours	/auəz/	44 (55%)	36 (45%)	00 (00%)	80 (100%)

The triphthong sound thus qualifies as the only sound that none of the respondents got right. This indicates the fact that most people, especially L2 learners of English, do not usually give much thought to triphthong or are not familiar with this vowel category and its usage, perhaps due to the fact that it is least consciously used in their interactions, least expected in the PhTranx text, and not available in their L1, namely Yoruba.

7.6 Abandonment of Transcription Rules

Most times, errors occur when learners are not familiar with the correct sound articulation and transcription rules, as it appears that most of the respondents did not take cognizance of at least three of such transcription rules.

First is the rule of the double slashes (//) which are inserted at both ends of a sentence (Atoye *et al*, 2018, p.71), perhaps to signify the beginning and end of the sentence/utterance. None of the 80 respondents observed the rule of the double slashes to mark the beginning and end of each of the two sentences in the PhTranx text. This suggests that the respondents are not familiar with the rule.

Second is the rule that in sentence/utterance tranx, every vowel sound in such function words as articles, conjunctions, preposition and auxiliary verbs must be realized as a weak form and be transcribed as a schwa /ə/ sound. From our data, it appears that most of the respondents are not familiar with this rule and so did not observe it as the strong forms were used in the tranxs in place of the weak form and schwa. For instance, the vowel /a/ in the function word "and" should be realized as /ənd/ and not as /and/. Although transcribing 'and' as /and/ is not wrong, it does not follow the rule of phonology in sentence/utterance tranx. The rule of realizing strong vowel sounds in function words as schwa /ə/ in transcription was abandoned in 150 instances (See Table 2), mostly in 'and' and 'to'.

The third rule abandoned also concerns the Schwa sound. Schwa is the mid-central vowel sound and the twelfth vowel sound in English. There is a rule that any written vowel sound can have the schwa sound, and so the schwa sound can occur in function words, unstressed syllables, phrasal words and sentences but not in content words. Due to this, most students apply the sound in content words where it is not allowed while forgetting to use it in function words where it is required.

8.1 Performance Comparison Across Levels and Phonemes

We find that out of all the 44 sounds (consonants and vowels), only nine (9) sounds, namely /b/, /f/, /g/, /k/, /l/, /m/, /p/, /r/, and /w/ were transcribed correctly in all their occurrences in the text by all respondents. All the nine are voiced consonants, while only one of them is voiceless, namely the labio-dental fricative /f/ while no vowel sound is included. This shows that ESL/L2 learners have problems with the English consonant voice distinction, but greater difficulty with the vowel sounds - especially the schwa, the diphthongs and the triphthongs than with the consonant sounds. There is no single vowel sound that is transcribed correctly by all respondents as we have under the consonant

sounds. Also, the fact that none of the eighty (80) respondents got the triphthong right, including the second-year students who had two consecutive semesters of phonology courses in that session, is an indication that the L2 learners have real difficulty with the vowel sounds, and are especially too far away from the triphthong sound.

As applicable to all other vowel and consonant sounds that they did not fully get right, some respondents got the consonant sounds /n/ and /s/ right in some words such as in 'nights', 'reminiscing', 'sun', 'and', 'when', 'now', and 'in'; and got them wrong in some others such as in the table below:

Table 7: Showing instances of wrong /n/ and /s/ sounds realizations

SN	Word	Right	Wrong
1.	Nights	/naits/	[naitz]
2.	Us	/əs/	[əz]
3.	This	/ðis/	[ðis]
4.	Success	/səksɛs/	[səksɛz]
5.	Reminiscing	/rɛminisiŋ/	[rɛminiziŋ]
6.	Chirton	/tʃʒ:tən/	[ʃʒ:tən]
7.	Under	/ʌndə/	[ʌdə]

This shows that ESL/L2 learners are still conflicted regarding realizing several vowel and consonant phonemes correctly in tranx, especially when tranx is also a reflection of their pronunciation skill.

From our data, it has been comparatively established that first-year students made the most errors (207, 31%), followed by those in the second year (169, 25%), to the third year (160, 24%) and then the fourth-year students (139, 21%) out of a total of 675 tranx errors identified. Table 1 which shows typology of errors is represented below as Table 8:

Table 8: Showing typology of errors and frequency of occurrence

SN	Typology of Errors	Frequency (100 Level)	Frequency (200 Level)	Frequency (300 Level)	Frequency (400 Level)	Total
1.	Substitution	75	67	65	52	259 (38%)
2.	Replacement	26	15	12	13	66 (10%)
3.	Addition	34	21	19	13	87 (13%)
4.	Omission	10	7	9	7	33 (05%)
5.	Triphthong	20	20	20	20	80 (12%)
6.	Abandonment of Rules of Transcription	42	39	35	34	150 (22%)
	Total	207 (31%)	169 (25%)	160 (24%)	139 (21%)	675 (100%)

From this result, we can state that tranx gets better with an increase in the level of knowledge in phonology. As shown in the above table, the final year students recorded the least errors in all the categories of tranx errors. This shows that with more intensive drilling, the margin of tranx errors can be drastically reduced.

8.2 Reasons for The Transcription Errors

Phonemic tranx errors are those that are committed over and over and it seems there is no redeemable way out of it except they are learnt and re-learnt. From our data, the reasons for these phonemic tranx errors are largely due to two factors, namely interlingual transfer and intralingual transfer.

8.2.1 Interlingual Transfer

Interlingual transfer, technically known as Interference, is one of the factors affecting the competence of the ESL/L2 students in phonemic transcription. L2 learners of English add another phoneme which is present in their L1 (e.g. Yoruba – most respondents have Yoruba as L1) to the pronunciation and transcription of L2 words such as the sounds /j/and /g/. This transference of the L1 posed a lot of problems in the data gathered. The sound error of using /g/ or /j/ instead of /dʒ/ is suggestive of the interference of L1, namely Yoruba, which has /g/ or /j/ as sounds in its sound repertoire.

There is a tendency among Nigerian learners of English to replace the palato-alveolar affricate /tʃ/ with its fricative counterpart /ʃ/ because of the influence of the L1. The interchangeable use of the alveolar fricatives /s/ and /z/ suggests that the sound /z/ is not available in most Nigerian languages, thereby posing problems for L2 learners and users. For instance, the word 'days' was transcribed incorrectly as [deis] rather than as /deiz/ which occured as an influence of the mother tongue. L2 learners tend to de-voice /z/ because the sound is quite an obstacle for them. The problem with the mother tongue interference occurs mostly due to the fact that some phonemes present in their L1 (namely Yoruba) are absent in their L2 (namely English). Most times, learners try to replace a consonant sound (e.g. /z/) with one present in their mother tongue (e.g. /s/). Most of the errors identified in this work are due to L1-L2 interference, especially regarding Substitution and Replacement, such as the inability to distinguish between long and short vowel sounds, between diphthongs, triphthongs, and the three central vowel sounds /ʌ/, /ɛ/ and /ə/. For instance, none of the respondents got the triphthong tranx right, while 45% did not even attempt to transcribe it at all. Regarding consonants, respondents had difficulty with the alveolar plosive /d/ and dental fricatives /θ/ and /ð/; the nasal sounds /ŋ/ and /n/; etc. For instance, of all the English consonant sounds, the respondents got only nine (9) correctly, namely /b/, /f/, /g/, /k/, /l/, /m/, /p/, /r/, and /w/. This is due to interlingual transfer between L1 and L2.

The above suggests that L2 learners face difficulty in pronouncing and transcribing the vowel and consonant sounds of English, but vowel sounds seem to be more difficult to learn and pronounce for L2 Yoruba learners than the consonant sounds. This has been attributed to the presence of most of the consonant sounds and absence of most of the vowel sounds in the learner's L2 repertoire. According to Alawe (2021), Yoruba has seven (7) oral vowel sounds, namely /a, e, ɛ, i, o, ɔ, u/ and five (5) nasal vowel sounds which in Yoruba orthography "*are usually indicated by a vowel + 'n'…*" (p.4). According to Olawe (2021), "the vowel sounds /i, e, u, ɔ, a/ are similar in both languages (Yoruba and English) while the three English central vowels /ʌ, ə, ɜ:/ are non-existent in

Yoruba" (p. 4, *insertion in brackets ours*). This shows that there are only five points of similarity in both English Yoruba vowel sounds.

Another key difficulty is the vowel length distinction in the English pure vowel sounds which is non-existent in Yoruba. According to Olawe (2021), "*there is the absence of distinctions of vowel length in Yoruba*" (p. 4).

Also pertinent is the problem of the strong (stressed) and weak (unstressed) vowel forms in English especially as it applies to the schwa sound /ə/. This is non-existent in Yoruba, being a tonal language, and has nothing like stress as a suprasegmental feature, let alone having stressed or unstressed, strong or weak form. In English, "*a syllable which bears no stress is more likely to have one of a small number of weak vowels. The most common weak vowel is one which never occurs in a stressed syllable, the schwa vowel (symbolized ə)…"* (Jones, 2011, p. 574). The problem lies in the way function words are treated in certain context which calls for the use of the weak form, schwa, and which also continues to constitute great difficulty for L2 learners and users of English to decipher. According to Jones (2011),

> "*[a] very important aspect of the dynamics of English pronunciation is that many very common words have not only a 'strong' or 'full' pronunciation (which is used when the word is said in isolation), but also one or more weak forms which are used when the word occurs in certain contexts. Words which have weak forms are, for the most part, function words such as conjunctions… articles… pronouns… prepositions… and some auxiliary and modal verbs…."* (p. 580).

The key issue for an L2 learner and user is the application of these 'rules'. However, it is not very clear whether the listed function words are also the 'certain contexts' referred to in the quotation. There is no similar rule in Yoruba, and this is capable of constituting some difficulty for L2 learners and users as observed in our data in this study.

8.2.2 Intralingual Error

This kind of error occurs from partial learning of the target language, rather than from L1 to L2 transfer. Unlike interlingual errors, Scovel (2001) identifies intralingual error as stating, "*…the confusion a language learner experiences when confronting patterns within the structure of a newly acquired language, irrespective of how the target language patterns might contrast with the learner's mother tongue*" (Scovel, 2001:51). Most times, errors occur when learners are not familiar with the correct sound tranx, production, articulation and the phonological rules, and most intralingual transfers tend to happen in the tranx. For instance, the rule of double slashes marking the beginning and end of a sentence was not applied by all the respondents. The rule of realizing vowel sounds in function words as schwa /ə/ (weak form) was also violated. These are not caused by first language transfer but by non-adherence to the rules of transcription. According to Moran and Fitch (2001), "*one factor that may contribute to the diversity of phonetic transcription skills may be grounded*

in the difference in phonological awareness ability" (p. 85). For instance, most of the transcription errors under Addition and Omission of sounds in our data are due to intralingual transfer arising from over-generalization of phonemic rules, such as omitting the glottal sound /h/ in 'here' and adding the lateral /r/ and /l/ sounds in:

Under	/ʌndə/	[ʌnder]
Talk	/tɔ:k/	[tɔ:lk]

8.3 Implication for Curriculum Improvement

Regarding L1-L2 interlingual and intralingual transference, it is interesting to note that the problem has already been noted by scholars (Awa and Nwani-Grace 2018, Sari, E. M. P 2016, Ogundepo 2015, Adelabu 2014, Oyedokun-Alli 2014, Ojetunde 2013, Egbokhare 2011, p.15, Al-Khresheh 2010, Jie, 2008, p. 36, Akindele and Adegbite 2005, Corder, 2000, Brown, 1994, p. 200, Richards 1974, p. 173, Dulay, Burt and Krashen 1982, p. 118, Langaker 1972, Corder 1971, Banjo 1969, Afolayan 1968, Lado 1964, Lado 1957, etc.). Yet, the problem still persists as reported in this study. This seems to reflect the claim that it is not possible to gain a 100% competence in an L2 through learning like we have in MT/L1 acquisition.

However, if a hundred percent competence attainment is rather impossible, a close enough competence should be desired and this should be the focus of teaching and learning. We believe that this finding has some implications for a pragmatic, functional curriculum improvement and enrichment. For instance, there should be more transcription and pronunciation drills on vowel sounds, especially on diphthongs and triphthongs. It will also help to make learners pass through some practical comparison of the target language with learners' L1 so that all technical difficulties can be identified and eliminated through proper drilling.

It also has implications for pragmatic methodologies and technology application in teaching and learning. Well-equipped language laboratories with latest and easy pronunciation, transcription and drilling software applications will certainly be of help.

9. Conclusion and Recommendation

From the data analysed, we conclude that L2 learners in the southwest Nigeria still find the phonemic transcription of English quite difficult to learn and produce mostly as a result of interference or non-adherence to rules. However, improvement is possible with increased learning practice and familiarity with transcription rules, as we reported that a decline in errors is reflective of the respondent's academic levels. We also conclude that respondents are more familiar with consonant sounds than with vowel sounds and so find the vowel sounds to be more difficult to learn, pronounce and transcribe than the consonant sounds. We further conclude that triphthong is the most difficult for L2 learners to learn, pronounce and transcribe.

It is recommended that L2 learners make conscious efforts to not only master the rules of pronunciation/articulation and transcription, but also use them in their day-to-day interactions. Guided, evaluated as well as self-imposed transcription drills can also help to reduce margin of errors considerably. Also, more strategic attention should be paid to transcription in phonetics and phonology curriculum. Various teaching approaches, aids, and technology could be effectively combined and adopted.

Conflict of Interest Statement

The authors declare no conflicts of interests.

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