

**A PHONOLOGICAL ANALYSIS OF MORPHOPHONEMIC ALTERNATED BACK
OPEN ROUNDED VOWEL IN THE SPOKEN ENGLISH OF SELECTED
SECONDARY SCHOOL TEACHERS OF ENGLISH IN WUKARI**

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Abstract

Morphophonemic alternation is the length relationship between the vowels in the root morpheme of cognate words. However, in spoken English of some Nigerian speakers of English, a number of words undergo vowel changes (phonological) as a result of a change in the grammatical (morphological) function of the word. Hence, this study intends to phonologically analyse a morphophonemic alternation of a **back open rounded vowel** /ɔ:/ in the spoken English of selected secondary school teachers of English in Wukari. The primary objective is to describe the respondents' performance in articulation of the test item. The data for the study is drawn from administered questionnaire and read-aloud task. 100 teachers of English are the randomly selected from public and private secondary schools. The Giles and Coupland's *Communicative Accommodation Theory* is used to determine the mutual phonological intelligibility and acceptability among the speakers of English. The data are analysed using Analysis of Variance (ANOVA) and Descriptive Analysis (DA) in order to determine the respondents' performances. The findings showed that out of the total obtainable score of 2,000 of the articulation of the morphophonemic alternated *back open rounded vowel* /ɔ:/ in the test items, only 512 (25.6%) correct elicitation was articulated by the respondents in both sentence-contexts and isolation. This is an indication that the respondents found it difficult to articulate correctly the morphophonemic alternated back open rounded vowel /ɔ/. Thus, pronouncing *locative* as /l??k tiv/, /lokatif/ or /lo:kativ/ respectively instead of /l k t v/. Also, semantic implications are succinctly discussed.

Keywords: back open rounded vowel, morphophonemic alternation, phoneme, pronunciation

Introduction

Language is a tool that is peculiar to human beings to communicate ideas, emotions and desires by the means of a series of speech symbols that are articulated through speech organs. In any speech community, the

language system is the vehicle for communicating thoughts, ideas, attitudes, interrogations and so on.

Nevertheless, there are many languages spoken in the world today such as Spanish, German, Arabic, Chinese, French and English

language to mention but a few. English as the target language of this research, is a West Germanic language that originated from Anglo-Frisian dialects brought to Britain in the 5th to 7th centuries A.D. by Germanic invaders and settlers from what is now called Northwest Germany, West Denmark and the Netherlands (Aboki, 2017). Several thousand years ago, the 'ancestral' language from which the Indo-European languages descended was the language of a comparatively small group of primitive people, apparently cattle raising nomads of a Stone Age Culture. The breakup of this Proto-Indo-European into a number of dialects is thought to have occurred around 3000 B.C. or earlier when the original speakers supposedly began to migrate from East Central or Southern Europe.

The periods of development of English are briefly discussed below. They include Old, Middle and Modern English periods. The Old English (Anglo-Saxon) period started in C.500.C-1100, the Middle English period started from 1100-1500 and the Modern English period from 1500 to present day with the Early Modern English period extending to about 1700 (The New Webster's Dictionary of the English Language, 2000).

English was introduced to Africa with the arrival of Europeans as slave traders and colonisers. Despite the departure of Europeans after independence, English has remained in the continent and today, it is used as one of the official or working languages in the African Union. It is used for different communicative purposes in 52 African countries, depending on the language and education policy of each country (Graddol, 1997:10). Owing to this fact, Nigeria is not an exception.

Nigeria as a nation is a multilingual speech community with the population of over 180 million people and about 510 living languages. The first contact of Nigeria with the English language has been viewed differently by different scholars. English

language was chosen as an official language to facilitate the cultural and linguistic unity of the country. It is the language of media, of commerce, of general communication of international transaction. By so doing, this was how English language came to be "naturalised" and "nativised" in Nigeria to this day (Aboki, 2017).

Apart from its "naturalisation" and "nativisation" in Nigeria, it is also used as an official language, language of instruction and is taught as one of the core subjects of the school. Despite all these accolades given to the language in Nigeria, the manner in which the teachers of English in Nigeria teach it especially pronunciation does not go in line with the phonological rules governing pronunciation. However, the motivating factor for carrying out this research is basically hinged on the fact that realisation of spoken language produced by the teachers of English in different phonological and morphological processes especially when a word changes from one lexical category to another, (for instance, 'noun' to 'adjective'), do not directly reflect the phonological competence they claim to have possessed. That is why this present study looks at the phonological analysis of morphophonemic alternated back open rounded vowel in the spoken English of selected secondary school teachers of English in Wukari.

Previously, scholars like Chitulu and Njemanze (2015), Opanachi (2013) have extensively worked on the phonological problems most second language learners encounter while trying to acquire the second or target language, particularly, in non-native environments and the major influence is usually that of the MT interference and the sociolinguistic / sociocultural environments where the speaker/learner lives. Therefore, these scholars pay little or no attention to the articulatory challenge of 'morphophonemic alternated English vowels' faced by most Nigerian speakers of English. Although only few scholars worked on this area, scholars like Josiah and Udoudomi (2012) worked on "Morphophonemic Analysis of Inflectional Morphemes in English and Ibibio Nouns"

without considering the phonological problems encountered as a result of **morphophonemic alternation** of some English vowels in the spoken English of teachers of English in an ESL environment like Nigeria. Although, Ogunrinde (2018) had worked on this area but he only focused on morphophonemic alternated front vowels /i/, /i:/, /e/ and /æ/ without considering other vowels which equally pose more problems. However, this study intends to focus on a phonological analysis of morphophonemic alternated **back open rounded vowel** /ɔ/ in the spoken English of selected secondary school teachers of English in Wukari, Taraba State.

The specific objectives of the study are to describe the respondents' realisation of the alternated back open rounded vowel; analyse the realisation of the test items based on their demographic information; determine their performance in context and in isolation; and discuss the semantic implications of the test items.

CONCEPTUAL CLARIFICATIONS

English Vowels: Monophthongs, Diphthongs and Triphthongs

Roach (2010) postulates that “the most common view is that vowels are sounds in which there is no obstruction to the flow of air as they pass from the larynx to the lips”. In consonance with Roach's assertion, vowel sounds are speech sounds produced with free flow of air from the lungs to the mouth without any form of interruption by the various organs of speech. However, vowels are more difficult to describe because the tongue is ever so far from the roof of the mouth that we cannot use our sense of touch to describe what is happening. Even so, the basic principles are clear enough and easy to put into practice. The English language has a total of twenty vowels consisting of twelve pure vowels or monophthongs which include /i/, /i:/, /e/, /ɛ:/, /æ/, /ɔ:/, /ɒ/, /ɑ:/, /u:/, /ʊ/ and /ʌ/. Also, the English diphthongs are eight and they include /aɪ/, /eɪ/, /ɔɪ/, /aʊ/, /ɔʊ/, /əʊ/ and /ɪə/.

Monophthongs are those vowels which are produced by the movement of the tongue in one direction only. These are also called pure vowels because they have only one unchanging quality. On the other hand, diphthongs are often characterised by gliding from one vowel to another. Hence, Roach (2010) expresses his view on English vowels and says, 'the most complex English sounds of the vowel type are the triphthongs. These include /aɪə/, /eɪə/, /ɔɪə/ and /aʊə/. They can be rather difficult to pronounce and very difficult to recognise'. A triphthong is a glide from one vowel to another and then a third, all produced rapidly and without interruption.

The parameters for describing vowels according to Williamson (2015) are: openness of the mouth, tongue elevation, position of tongue elevation, lip shape and length of vocalisation. Williamson further explains that the first four of these alter the relative size and shape of the oral cavity. The final parameter (length of vocalisation) influences the duration of production.

In **openness of the mouth**, vowels differ from one another according to the extent to which the jaws are either open or close (not closed, as a complete closure would prevent the free flow of air out of the mouth). To facilitate the description of vowels, a finer grading system is used to define the extent to which the mouth is either close or open. The categories include *close*, *half-close*, *half-open* and *open*. In **close**, the mouth is nearly closed, as we have seen with the vowels /i:/ and /u:/. Also, a **half-close** position is an intermediate between a middle position (in which the mouth is open at most exactly halfway) and the close position. Some examples of these include /ɛ:/ and /ɔ:/. However, a **half-open** position is an intermediate between a middle position (in which the mouth is open almost exactly halfway) and the **open** position; some examples include /e:/ and /ɔ:/. Finally, in open position, the mouth is wide open, as with the vowel /æ/, /a:/ and /ɪ/.

Williamson (2015) further explains Tongue Elevation as one of the parameters of

describing vowels. He adds that the tongue can take up a variety of positions in the mouth. On the vertical axis, it is usually described as taking up one of the three positions: **high**: /i:/, /ɪ/, /u:/, /ʊ/; **mid**: /e/, /ɜ:/, /ɝ/, /ɜ:/ and **low**: /ɒ/, /ɑ:/, /æ/. Whereas, the elevation of the tongue describes the position of the tongue on the vertical axis (high, mid, low), the position of the tongue elevation refers to where this elevation takes place on the horizontal axis. Again, three positions are recognised: **Front**: /i:/, /ɪ/, /e/, /æ/; **Central**: /ɜ:/, /ɝ/, /ɜ:/ and **Back**: /ɑ:/, /ɒ/, /u:/, /ʊ/.

The shape of the lips is an important factor in the classification of the vowels. The shape of the lips directly affects the oral cavity and, thereof, the quality of the vowels. This is also categorised into three positions. These include **Spread**: /i:/, /ɪ/, /e/ /æ/; **Neutral**: /ɑ:/, /ɒ/, /ɜ:/, /ɝ/ and **Rounded**: /ɔ:/, /ʊ/, /u:/, /ʌ/.

The **Length of Vocalisation** vowels are produced with the vocal folds vibrating. They are, therefore, all voiced. In addition, vowels may be sustained for relatively longer and shorter intervals of time. They are categorised as **long vowels**. Osisanwo (2009:30) defines long vowels as sounds enlongated in the course of their production. A long vowel sound can be easily recognised with the presence of the sign (:). They include /u:/, /i:/, /ɑ:/, /ɔ:/ and /ɜ:/. On the other hand, **short vowels**, according to Osisanwo (2009:31), are sounds produced without being elongated. No sign is written or indicated after them. They include /ɪ/, /e/, /ɜ/, /æ/, /ɝ/ and /ʊ/. Therefore, the description of English pure vowels is summarised in *table 1* below.

Table 1: Description of English Pure Vowels

Pure Vowe	Description
/i:/	front close spread vowel
/ɪ/	front half-close spread vowel
/e/	front half-open spread vowel
/æ/	front open spread vowel
/ɑ:/	back open neutral vowel
/ɒ/	back open rounded vowel
/ɔ:/	back half-open rounded vowel
/ʊ/	back half-open rounded vowel
/u:/	back close rounded vowel
/ʌ/	central open neutral vowel
/ɜ:/	central half-close neutral vowel
/ə/	central half-open neutral vowel

Culled from Ogunrinde (2017). Morphophonemics and Morphophonemic Alternations

Morphophonemics is the study of the relationship between **morphology** (study of the internal construction of words) and **phonology** (study of the sound patterns that occur within languages). Morphophonemics involves an investigation of the phonological variations within morphemes, usually marking different grammatical functions. For instance, the vowel changes in “sleep” and “slept,” “bind” and “bound,” “vain” and “vanity,” and the consonant alternations in “knife” and “knives,” “loaf” and “loaves” (Encyclopaedia Britannica, 2009). In other words, 'morphophonemic' is the changes in pronunciation undergone by neighbouring sounds, as the plural allomorphs in cat-s, dog-s, box-es or house versus to house and housing are modified for grammatical reasons in the course of inflection or derivation.

In the same view, Ramlan (2001:83) defines morphophonemics as “the changes of phoneme as a result of the merging of one morpheme and another”. The change of morpheme is based on the sounds that surround it which relates to the correlation between 'morphemes and phonemes'.

Therefore, one can say that its chief focus is the sound changes that take place in morpheme when they combine to form words. It involves an investigation of the phonological variations within morphemes usually marking different grammatical functions; the vowel changes in “sleep” /sli:p/ and “slept” /slept/ “vain” /veɪn/ “vanity” /vænitɪ/ and the constant alternation in “knife” /nɑ:f/ and “knives” /nɑ:vz/.

Morphophonemic alternation, according to Ufot (2007:44), “is the length relationship between the vowels in the root morpheme of cognate words. A number of words undergo vowel change as a result of change in the grammatical (morphological and syntactic) function of the word”. Likewise, Clark, Yallop & Fletcher (2007:114) posit that some allomorphs, however, belong within a general pattern of phonemic alternation. In this case, the allomorphs may be said to be in morphophonemic alternation with each other. An example is cited in Cruttenden (2001:96), the root morpheme 'divine' and 'divinity' display a relationship (called morphophonemic alternation between the long vowel /a / and the short vowel / /). Originally, this was an alternation between the short vowel and a long vowel of the same quality, the alternation resulting from the different rhythmic structure of the two words (it will be noted that the shorter words generally have the long vowel and the longer words the short vowel). So, in the case of the morpheme *divine*, the alternation was between long [i:] and short [i]. However, historically, the long vowels underwent the Great Vowel Shift, so that the correspondences are no longer between vowels of the same quality. For instance, the second 'i' in the word 'divine' is a diphthong /a / while the medial 'i' in 'divinity' is a short vowel/ /.

English Morphophonemic Alternated Vowels

According to Cruttenden (2008:96), there are five common types of morphophonemic alternated English vowels, which can be

successfully categorised as follows. The first one is front half-close spread vowel alternation /a / - /ɜ/. Examples of this category include 'type-typical', 'recite-recitation', 'divide-division', 'private-privacy', and 'bible-biblical'. The second is front half-open spread vowel alternation /i:/ - /e/. Examples of this include 'serene-serenity', 'athlete-athletic', 'intervene-intervention', and 'supreme-supremacy'. The front open spread vowel alternation /e / - /æ/ is the third. Some of the examples are 'sane-sanity', 'chaste-chastity', 'profane-profanity' and 'grateful-gratitude'. The fourth is back open rounded vowel alternation / / - /ɜ/. Examples of this group include 'mediocre-mediocrity', 'diagnose-diagnostic', 'phone-phonetic', 'nose-nostril' and 'atrocious-atrocity'. The last one is the central open neutral vowel alternation /a / - /ɜ/. Examples are 'pronounce-pronunciation', 'profound-profundity', 'abound-abundant', 'south-southern' and 'found-fundamental' (Aboki, 2017). However, the first four are the concern of this research.

Morphophonemic Alternated Back Vowel

A back vowel is anyone in a class of vowel sound used in spoken languages. The defining characteristic of a back vowel is that the tongue is positioned as far back as possible in the mouth without creating a constriction that would be classified as a consonant. Thus, there are five back vowels which include back open neutral vowel / :/, back open rounded vowel /ɜ/, back half-open rounded /ɜ:/, back half-close rounded vowel /ɜ/ and back close rounded vowel /u:/. The prominent among them in English is the morphophonemic alternated back open rounded vowel. The *table 2* below further illustrates it.

Table 2: Morphophonemic Alternated Back Open Rounded Vowel

THE ALTERNATED BACK CLOSE ROUNDED VOWEL /u:/						
Morphophonemic Alternation	Lexical Category 1	Word	Transcription	Derived Lexical Category 2	Derived Word	Transcription of Alternated Sound in Derived Word
	noun			adj		
/əʊ/ - /ʊ/	n	neurosis	/njʊərəʊsɪs/	adj	neurotic	/njʊərətɪk/
/əʊ/ - /ʊ/	n	episode	/epɪsəʊd/	adj	episodic	/epɪsədɪk/
/əʊ/ - /ʊ/	n	phone	/fəʊn/	adj	phonic	/fəʊnɪk/
/əʊ/ - /ʊ/	n	globe	/gləʊb/	adj	globular	/glɒbjʊlə/
/əʊ/ - /ʊ/	n	mode	/məʊd/	adj	modular	/mɒdjələ/
	verb			adj		
/əʊ/ - /ʊ/	v	locate	/ləʊkeɪt/	adj	locative	/ləʊkətɪv/
/əʊ/ - /ʊ/	v	diagnose	/daɪəgnəʊz/	adj	diagnostic	/daɪəgnɒstɪk/
/əʊ/ - /ʊ/	v	abhor	/əbho:r/	adj	abhorrent	/əbhərənt/
	noun			noun		
/əʊ/ - /ʊ/	n	nose	/nəʊz/	n	nostril	/nɒstrɪl/
	verb			noun		
/əʊ/ - /ʊ/	v	clothe	/kləʊð/	n	cloth	/klɒθ/
/əʊ/ - /ʊ/	v	know	/nəʊ/	n	knowledge	/nɒlɪdʒ/
	adj			noun		
/əʊ/ - /ʊ/	adj	mediocre	/mi:diəʊkə/	n	mediocrity	/mi:diəʊkrɪti/
	adj	atrocious	/ətrəʊʃəs/	n	atrociousness	/ətrəʊʃəs/

Types of Morphophonemic Changes

There are some common types of morphophonemic changes in English. The first is loss of phonemes. Here, the phoneme /n/ of the negative prefix (in-) is lost before the morphemes beginning with sonorant sounds /m/, /r/, /l/ and /ŋ/. Some examples of this include immobile /ɪˈm.ə.bəl/, irregular, /ɪˈre.j.ə.lər/ and illimitable /ɪˈlɪ.mɪ.t.ə.bəl/. Here also, the phoneme /t/ is lost when changing word class; different difference (adj n), divergent divergence (adj n), important importance (adj n). The second is addition of phoneme. Likewise, solemn /səˈlɪ.m/ solemnise /səˈlɪ.m.nə.z/, the phoneme /n/ is added. In 'long /lɒŋ/ longer /lɒŋ.ə/, phoneme /ə/ is added). Also, in 'sword swordsman', 'sale salesgirl', 'craft craftsman', the phoneme

/s/ is added. The third change is simple change of phonemes. For instance, path /pæθ/ paths /pæðz/, mouth /maʊθ/ mouths /maʊðz/, truth /tru:θ/ truths /tru:ðz/ among others. The phoneme /θ/ is changed to /ð/ when pluralised. The last change is stress shift. In many cases, the addition of an affix to a word is accompanied by a shift in stress called "stress shift". For instance, linguist /ˈlɪŋgwɪst/ linguistic /lɪŋgwɪˈstɪk/, democrat /ˈdem.kræt/ democratic /dem.ɒˈkrætɪk/. (Aboki, 2017)

People learning a new language like English cannot use it effectively as a medium of communication; spoken or written unless they know and correctly use its components, one of which is pronunciation (Tsojon & Aji, 2014).

Comparatively, British English has a larger number of vowels than Nigerian English. The

British English has been classified into monophthongs, diphthongs and triphthongs as discussed above. While the monophthongs and some diphthongs are found in “some” Nigerian languages, there is no evidence of triphthongs in any Nigerian language. Second language learners/speakers of English (Nigerian) have a number of difficulties in pronunciation of utterances in English. Difficulties arise mainly from interference of the sound system of English (Aboki, 2017).

The morphophonemic alternation of front vowels among the teachers of English may be rare due to their linguistic background. Phonologically, what supposed to be heard is the change in sound during the process of morphophonemic alternation of the vowels in their spoken English; but that is a different thing altogether when paying keen attention to their speeches or when speaking

Methodology

Administering of questionnaire and a read-aloud tasks were used to obtain information from the respondents. The population of this study was made up of both public and private secondary schools in Wukari metropolis. Thus, a random sampling technique was adopted in collecting the data from one hundred respondents in the following selected secondary schools.

The data were obtained via text-based instrument to test the alternation of the front vowels in the spoken English of some teachers of English. These instruments consist of a questionnaire and a tape recorder. The recorder was used for recording the respondents' readings in order to assess their phonological processing skills and to determine whether they are mindful of morphophonemic alternated front vowels which are considered as the prominent challenges. The latest 18th edition of Daniel Jones' *Cambridge English Pronouncing Dictionary*, the CD Talking Software Dictionary and Phonetiser application were employed to determine the

correct elicitation of the test items in the recorded tasks. The questionnaire was made up of two sections. Section 'A' contained twenty test items of words in isolation with the alternated front vowels while section 'B' contained precisely short sentences involving the test items. The data for the study is drawn from administered questionnaire and read-aloud task. The respondents are the randomly selected 100 teachers of English from public and private secondary schools. The Giles and Coupland's *Communicative Accommodation Theory (CAT)*, was used as theoretical framework. CAT determines the mutual phonological intelligibility and acceptability among speakers of English, especially in an ESL environment like Nigeria. The data were analysed using Analysis of Variance (ANOVA) to determine the *mean, standard deviation* and the *level of significance* (p-value) of the variables (respondents' demographic information). Also, CHI-Square gives a Descriptive Analysis (D.A.) of the data collected. D.A. accounts for the number of frequency recorded in respondents' performances of their correct and incorrect articulation of the test items. The Descriptive Analysis is presented in simple percentage. The data collected are compiled in accordance with the set down hypothesis, sample percentage calculated and for the purpose of this study.

The Giles and Coupland's *Communicative Accommodation Theory*, was used as theoretical framework. *Communicative Accommodation Theory (CAT)* determines its mutual phonological intelligibility and acceptability among speakers of English, especially in an ESL environment like Nigeria. It was developed by Howard Giles, Donald Taylor and Richard Bouhris (Giles *et al*, 1973).

Data Presentation, Analysis and Discussion

This section presents the respondents' performance in the articulation of the test items based on their sex, qualification, and special training in phonetics. Likewise, it presents the respondents' performance in the

articulation of the morphophonemic alternated back open rounded vowel in words. It further reveals their overall performance in the articulation of the test items. It also unfolds the overall performance of the test items in words-in-isolation and sentence-contexts respectively. Finally, semantic implication of the respondents' wrong articulation of the test items is presented.

Analysis of The Respondents' Performance in the Articulation of the Test Items Based on their Demographic Information

In an effort to establish the significance of the respondents' demographic information on the articulation of the alternated back open rounded vowel, the study explicitly measures the relationship between the variables and their relation using the ANOVA (analysis of variance) statistical tool. However, the aftermath of such measurements are presented below.

Analysis of the Respondents' Performance Based on Sex

The sample population of the study consists of 50 males (50%) and 50 females (50%) consisting of 100 teachers of English. Therefore, the ANOVA statistical analysis of these variables revealed that the P-value for the two variables measured was not significant. This is because the P-value of 0.56 was greater than 0.05 level of significance. In like manner, the analysis showed that the males' Std. Dev. score was 6.744 while their females counterparts' was 6.850 respectively. The scores were very close, which proves that the respondents' sex has no effect on the articulation of the tested items.

The analysis also revealed that out of the total obtainable scores of 2,000, instances of the articulation of the test items in words-in-isolation and sentence-contexts, male respondents scored 732 (36.6%), while the female counterparts scored 776 (38.8%). Despite the fact that both (male and female) performances were very poor, because it was not up to below-average, the analysis of the result showed that the females had an advantage over the males, having 38.8% success against the males' 36.6%. This means that the female teachers of English in Wukari performed better than the male teachers in the articulation of test items despite their insignificant performance. The table 3 below

Variable s (sex)	No. of Respondents (100)	Arti-culation Scores	Mean	Std. Dev.	P-value p>0.05
Male	50	732 (36.6%)	16.64	6.744	0.56
Female	50	776 (38.8%).	18.40	6.850	

Analysis of Respondents Based on Qualifications

This section presents the analysis of the respondents against their level of academic qualification-using ANOVA which measures variables that are more than two. The variables include NCE, First Degree (B.A) and Second Degree (M.A). The reason for this was to test whether the level

of the respondents' highest educational attainment had effect on their realisation of the front vowels alternation. However, the result revealed that the level of respondents' academic highest qualification was not significant. This is because the P-value of 0.32 was greater than 0.05 level of significance.

The analysis also revealed that out of the total

obtainable scores of 2,000, instances of the articulation of the test items in words-in-isolation and sentence-contexts, respondents with M.A. certificate scored 782 (39.1%), the ones with B.A certificate scored 732 (36.6%), while the ones with NCE scored 763 (38.2%). This is not significant because none of these categories scored up to 40% below average let alone 50% average performance.

Also, the analysis showed that NCE's Std. Dev. score was 4.578, (B.A) First Degree Std. Dev. score was 4.314 and (M.A) Second Degree's Std. Dev. was 7.071 respectively. This means that there were no significant differences between them. See the table 4 below for better illustration

Table 4: Respondents' Performance Based on Their Highest Educational Qualifications

Variables	No of Respondents (100)	Articulation Scores (%)	Mean	Std. Dev.	P. Value P>0.05
NCE	52	763 (38.2%)	8.81	4.578	0.32
B.A	46	732 (36.6%)	8.61	4.314	
MA	2	782 (39.1%)	9.23	7.071	

The table above shows the respondents' performance based on their highest

educational qualifications. The result shows that the variables are not significant as the mean scores stood at close ranges which are 8.81, 8.61 and 9.23.

Analysis of Respondents Based on Special Training in Phonetics and Phonology

This section aims at measuring the effects of the special training in Phonetics and Phonology on test items. The analysis of the two tested variables includes 76 teachers who received special training in Phonetics and Phonology (YES) and 24 teachers who did not receive special training in phonetics and phonology (NO). The analysis also revealed that out of the total obtainable scores of 2,000, instances of the articulation of the test items in words-in-isolation and sentence-contexts, respondents with YES scored 812 (40.6%), while the ones with NO

scored 502 (25.1%). This is significant because the ones who received special training in phonetics and phonology performed better than the ones who did not. It should be note that 40.6% percentage is an above-below-average performance compared to the 25.1% poor performance.

The result of the analysis revealed that special training in Phonetics and Phonology was not significant to the respondents' articulation of the test items as a result of the fact that the P-value of 0.02 was lesser than 0.05 level of significance. As shown in table below, the analysis revealed that the mean score of those received Special Training in Phonetics and Phonology (YES) stood at 12.18 which is greater than those who do not which stood at 3.33. Likewise, the Standard Deviation of both variables was recorded with a range of difference of 6.775 and 2.355. All these indications show that the variables are significant. See the table 5 below for better explanation.

Table 5: Respondents' Performance Based on Special Trainings

Variables	No. of Respondents (100)	Articulation Scores (%)	Means	Std. Dev.	P-value P > 0.05
Yes	76	812 (40.6%)	12.18	6.775	0.02
No	24	502 (25.1%)	3.33	2.355	

Respondents' Overall Performance in the Articulation of the Morphophonemic Alternated Back Open Rounded Vowel

The result of the analysis showed that out of the total obtainable score of 2,000 of the articulation of the morphophonemic alternated *backopenroundedvowel/?/* in the test items, only 512 (25.6%) correct

elicitation was articulated by the respondents in both sentence-contexts and isolation. As a result of this, 1,488 (74.4%) was equally recorded as the percentage of

the respondents' wrong articulation of the test items in both sentence-context and isolation. See table 6 for further explanation.

Table 6: Respondents' Articulation of Morphophonemic Alternated Back Open Rounded Vowel /ɒ/

Variable	S/ N	Test Items	Transcriptions of Respondents' Pronunciations	Score (%)	Transcriptions of Respondents' Pronunciations	Score (%)	No. of Resp. Tested Per Item
			Correct Articulation		Wrong Articulations		
Isolation	1	locative	/lɒkətɪv/	18	/lɒkətɪf/, /lɒ:kətɪv/, /læukətɪv/	82	100
	2	neurotic	/njʊərətɪk/	17	/niurotɪk/, /niuro:tɪk/, /nu:rəutɪk/	83	100
	3	episodic	/epɪsɒdɪk/	15	/epɪsɒdɪk/, /epɪsɒ:dɪk/, /epɪsəɒdɪk/	85	100
	4	phonic	/fɒnɪk/	21	/fɒnɪk/, /fɒ:nɪk/, /fəʊnɪk/	79	100
	5	globular	/glɒbjʊlə/	20	/glɒbula/, /glɒ:bula/, /gləʊbula/	80	100
	6	modular	/mɒdjələ/	16	/mɒdula/, /mɒ:dula/, /məʊdula/	84	100
	7	diagnostic	/daɪəgnɒstɪk/	12	/daɪəgnɒstɪk/, /-ɒ:stɪk/, /-əʊstɪk/	88	100
	8	nostril	/nɒstrɪl/	32	/nostrɪl/, /no:stɪl/, /nəʊstrɪl/	68	100
	9	cloth	/klɒθ/	35	/klot/, /klot:t/, /kləʊθ/	65	100
	10	mediocrity	/mi:dɒkrɪti/	30	/mediokɪti/, /-ɒ:kɪti/, /-əʊkɪti/	70	100
Total				216 (21.6)		784 (78.4)	1000
Sentence-context	1	locative	/lɒkətɪv/	26	/lɒkətɪf/, /lɒ:kətɪv/, /læukətɪv/	74	100
	2	neurotic	/njʊərətɪk/	25	/niurotɪk/, /niuro:tɪk/, /nu:rəutɪk/	75	100
	3	episodic	/epɪsɒdɪk/	23	/epɪsɒdɪk/, /epɪsɒ:dɪk/, /epɪsəɒdɪk/	77	100
	4	phonic	/fɒnɪk/	29	/fɒnɪk/, /fɒ:nɪk/, /fəʊnɪk/	71	100
	5	globular	/glɒbjʊlə/	28	/glɒbula/, /glɒ:bula/, /gləʊbula/	72	100
	6	modular	/mɒdjələ/	24	/mɒdula/, /mɒ:dula/, /məʊdula/	76	100
	7	diagnostic	/daɪəgnɒstɪk/	20	/daɪəgnɒstɪk/, /-ɒ:stɪk/, /-əʊstɪk/	80	100
	8	nostril	/nɒstrɪl/	40	/nostrɪl/, /no:stɪl/, /nəʊstrɪl/	60	100
	9	cloth	/klɒθ/	43	/klot/, /klot:t/, /kləʊθ/	57	100
	10	mediocrity	/mi:dɒkrɪti/	38	/mediokɪti/, /-ɒ:kɪti/, /-əʊkɪti/	62	100
Total				296 (29.6)		704 (70.4)	1000
Grand Total for both in Isolation and Sentence				512 (25.6)		1488 (74.4)	2000

Test Item 1: 'locative'

As shown in the table above, the respondents found it difficult to pronounce correctly some alternated morphophonemic words that have **back open rounded vowel /ɒ/**. An example includes 'locative' with respondents' poor performance of 22% which was not up to below average in both sentence-context and in isolation. However, 'locative' was wrongly articulated by the respondents as /lɒkətɪf/, /lɒ:kətɪv/ or /lɪ??k tɪv/ whereas the correct pronunciation is /l ɒ k t ɪ v/. In other words,

they alternated / / with /o/, /o:/ and / / in the articulation of the morphophonemic alternated back open rounded vowel in the test items as shown in table 6.

The reason that could be adduced to the wrong pronunciation is that some respondents were not aware of the morphophonemic processes or rules that were used in the test item. The process states that whenever a lexical category changes, the quality of some phonemes in the word may change and morphophonemic alternation will take place. For instance, the grapheme 'o' in the root word

'locate' /lʔʔ kɛ t/ as a **verb** is pronounced as a *closingdiphthong* /ʔʔ/ but when the lexical category changes from verb to adjective 'locative', there would be morphophonemic

alternation of phonemes. The *closingdiphthong* /ʔʔ/ will be morphophonemically alternated with *backopen rounded vowel* / / (lʔʔ kɛ t / /l k .t v/). Another reason that could be adduced to the wrong articulation is the interference of the respondents' Mother Tongue. In some Nigerian indigenous languages, grapheme 'o' is usually pronounced as /o/ because /ʔʔ/ is not attested in their sound systems. Finally, Some African ELS speakers tend to express **vowel lengthening** in their articulation, for instance, /o/ for /o:/.

Test Item 2: 'neurotic'

The analysis in table 6 revealed that respondents equally found it difficult to pronounce correctly the alternated morphophonemic word that have **back open rounded vowel** / / such as 'neurotic' with respondents' poor performance of 21% which also was not up to below average. Some of the respondents articulated the grapheme 'o' in 'neurotic' as /ʔʔ/, some as /o/ and others as /o:/. It was only a few respondents that could pronounce it correctly as / / articulating 'neurotic' as /nu.rʔʔ tik/, /niurotik/ and /niuro:tik/ instead /nj . rʔʔ t k/ which is the correct pronunciation. It was also discovered that respondents could pronounce correctly the grapheme 'o' in 'neurosis' as /ʔʔ/.

Therefore, it could be concluded that the respondents did not master or were not aware of the morphophonemic process that took place between the words which states that when a lexical category of the word changes, for instance, from **noun** to **adjective** (neurosis neurotic), the morphophonemic alternation process will take place and consequently, the quality of the phonemes will also change (/ʔʔ/ / / /), pronouncing 'neurosis' as /nj . rʔʔ sis/ and 'neurotic' as /nj . rʔʔ t k/ respectively.

However, they pronounced grapheme 'o' in 'neurotic' as /ʔʔ/, /o/ and /o:/. See table 6 for better illustration.

Test Item 3: 'episodic'

It was discovered that the respondents found it difficult to articulate correctly the morphophonemic alternated **back open rounded vowel** /ʔ/ in the word 'episodic'. The poor performance of 19% in both sentence and isolation which was not up to below average was recorded. They pronounced 'episodic' as / pisʔʔ dik/, / pisodik/ and /episo:dik/ instead of /ep sʔʔ d k/. This is an indication that they had problem with articulation of the morphophonemic alternated phoneme in the test item.

The reason that could be adduced to this problem is the respondents' wrong assumption that "if grapheme 'o' in 'episode' is pronounced as /ʔʔ/, therefore, the same grapheme 'o' in 'episodic' should also be pronounced as / /". Unfortunately, it does not work that way. This is an indication that some of the respondents were not aware of the morphophonemic alternation process that takes place when the lexical category of a word changes. The lexical category of 'episode' is a **noun** and the grapheme 'o' in the medial position is pronounced as / / (/ep sʔʔ d/). But when the morphophonemic alternation process takes place, the noun changes an **adjective** (episode episodic) and the grapheme 'o' in the derived word is morphophonemically alternated to **backopenroundedvowel** / / . See table 6 for more illustration.

Test Item 4: 'phonic'

The analysis in table 6, revealed that the respondents could not pronounce correctly some alternated morphophonemic words that have **back open rounded vowel** /ʔ/. For instance, they pronounced the morphophonemic alternated vowel /ʔ/ that is represented with grapheme 'o' in 'phonic' as /o/, /o:/ and /ʔʔ/ pronouncing /fonik/, /fo:nik/ or /fʔʔ nik/ instead of /fʔʔ k/. It is pertinent to note that 'phone' as a *noun* is pronounced as

/f??n/ but 'phonic' as an *adjective* is pronounced as /f??n k/ and not /f??nik/ as pronounced by some respondents. However, 50 (25%) out of 200 times of number of articulation of the test items in both sentence and isolation was recorded as the respondents' performance which was not up to a below average. The reasons that could be attributed to this poor performance had been extensively discussed earlier. See the table above for better illustration.

Test Item 5: 'globular'

Analysis in the table 6 showed that out of the total obtainable score of 200 in the test items both in sentence and isolation, only 48 (24%) had the correct elicitations. This means that the respondents had problem with the articulation of the morphophonemic alternated vowel /?/ in the word 'globular'. In other words, many of the respondents articulated grapheme 'o' in the medial position of the word 'globular' as /o/, /o:/ or /??. Therefore, pronouncing the entire word as /lobula/, /lo:bula/ or /l??bula/ instead of /l?bj.l/. This problem arose because the respondents thought that the grapheme 'o' in the word 'globe' (noun) is pronounced the same way with the 'o' in 'globular' (adjective). Whereas, the grapheme 'o' in 'globe' is pronounced as /??. while the one in 'globular' is pronounced as / / respectively but many respondents were not aware of these morphophonemic alternation processes.

Test Item 6: 'modular'

From the table 6 above, analysis showed that out of 200 obtainable scores in the test items in both in sentence and isolation, the respondents scored 40 (20%). Therefore, the respondents' performance was not up to a below average. The respondents wrongly pronounced the grapheme 'o' in 'modular' as /o/, /o:/ or / / as the case may be. In other words, the respondents were not aware of the morphophonemic alternation rules that take place between 'module' and

'modular'. The earlier is a noun and pronounced as /??. while the latter is the alternated or derived word which is an adjective and it is pronounced as /??. However, some respondents pronounced it as /modula/, /mo:dula/ or /m??dula/ instead of /m dj.l/. This evinces that respondents had problem with the articulation of the morphophonemic alternated back open rounded vowel / / in their spoken English.

Test Item 7: 'diagnostic'

Analysis revealed that out of 200 obtainable score in the test items, the respondents scored 36 (18%) in both sentence and isolation. This could be concluded that their performance was very poor. This also indicated that the respondents had problems in the articulation of a word that has morphophonemic alternated back open rounded vowel / /. It is important to note that grapheme 'o' in 'diagnosis', as a noun, is pronounced as /??. but 'o' in 'diagnostic', as an adjective, is pronounced as / /. It was equally discovered that many respondents pronounced 'diagnostic' as /daia n??stik/, /daia nostik/ or /daia no:tik/ instead of /dɑ n?st k/. This is an indication that they were not aware of the morphophonemic alternation processes (See table 6).

Test Item 8: 'nostril'

From the analysis in table 6, it was revealed that out of the 200 obtainable scores in the test items, the respondents' score 72 (36%) in the articulation of the word that has the morphophonemic alternated word with back open rounded vowel /??. This performance is not up to a below average which also shows that they had problem with its articulation. That is why the respondents pronounced 'nostril' as /nostril/, /no:strial/ or /n??strial/ instead of /n?str l/. See table 6 for better illustration.

Test Item 9: 'cloth'

Analysis revealed that the respondents did not know how to pronounce correctly the word that has a morphophonemic alternated vowel

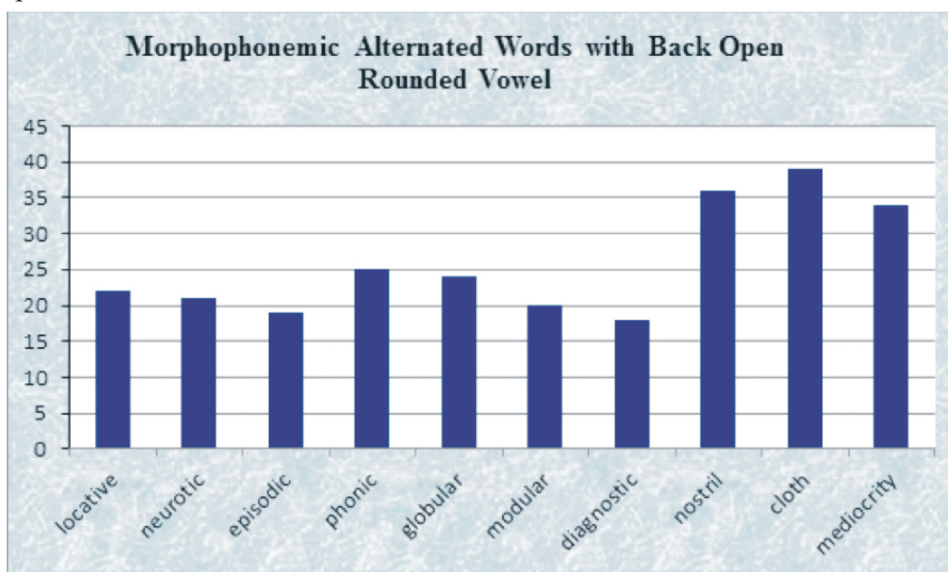
/ʔ/ correctly. This is evident in the respondents' poor performance of 78 (39%) out of the total obtainable score of 200. As revealed in table 6, respondents pronounced 'cloth' as /kɪʔθ/, /klot/ or /klo:t/ instead of /kɪθ/. This is an indication that they were not aware of the morphophonemic alternation rules. See table 6 for better illustration.

Test Item 10: 'mediocrity'

The analysis revealed that out of 200 obtainable score in the test items in the pronunciation of the test items, the respondents scored 68 (34%) in both sentence and isolation. This is a pointer to the fact that they did not performed up to a below average. This also indicates that the respondents had problems in the articulation of words that have a morphophonemic alternated back open rounded vowel/ɔ/. It is important to note that grapheme 'o' in 'mediocre' is pronounced as /ʔ/ but 'o' in 'mediocrity' is pronounced as /ʔ/. As shown in the table above, many respondents pronounced 'mediocrity' as /mediʔkriti/, /mediokriti/ or /mediɔ:kriti/ instead of /mi:dʔkɪti/. This is an indication that they were not aware of the morphophonemic alternation processes (See table 6).

In conclusion, as shown in table 6, respondents found it difficult to pronounce correctly some alternated morphophonemic words that have *backopenrounded/ɔ* such examples include 'locative', 'neurotic', 'episodic', 'phonic', 'globular', 'modular', 'diagnostic', 'nostril', 'cloth' and 'mediocrity'. They were wrongly articulated as /ɪʔkɪv/, /nu:rʔtik/, /pɪsʔdik/, /fʔnik/, /ɪʔbɪl/, /mʔdula/, /daia nʔstik/, /nʔstril/, /kɪʔθ/ and /mediʔkriti/ instead of /ɪʔkɪt v/, /nɪ. rʔt k/, /ep sʔd k/, /fʔn k/, /ɪʔbj.l /, /mʔdj.l /, /dɑ nʔst k/, /nʔstr l/, /kɪθ/ and /mi:dʔkɪti/ respectively. See table 6 for details. This is a clear indication that the respondents had problem in articulating the morphophonemic alternated words that have back open rounded vowel. In the articulation of the test item in the above morphophonemic alternated words, none of the respondents' performance was up to a 40% below average let alone average or above average, the highest percentage was 39. This is an indication that articulation of morphophonemic alternated back open rounded vowel poses difficulties to the respondents both in words-in-isolation and sentence-contexts. See figure 1 for better illustration.

Figure 1: Respondents' Performance in the Articulation of Morphophonemic Alternated Back Open Rounded Vowel /ɔ/ in Words-in-Isolation and Sentence-Contexts



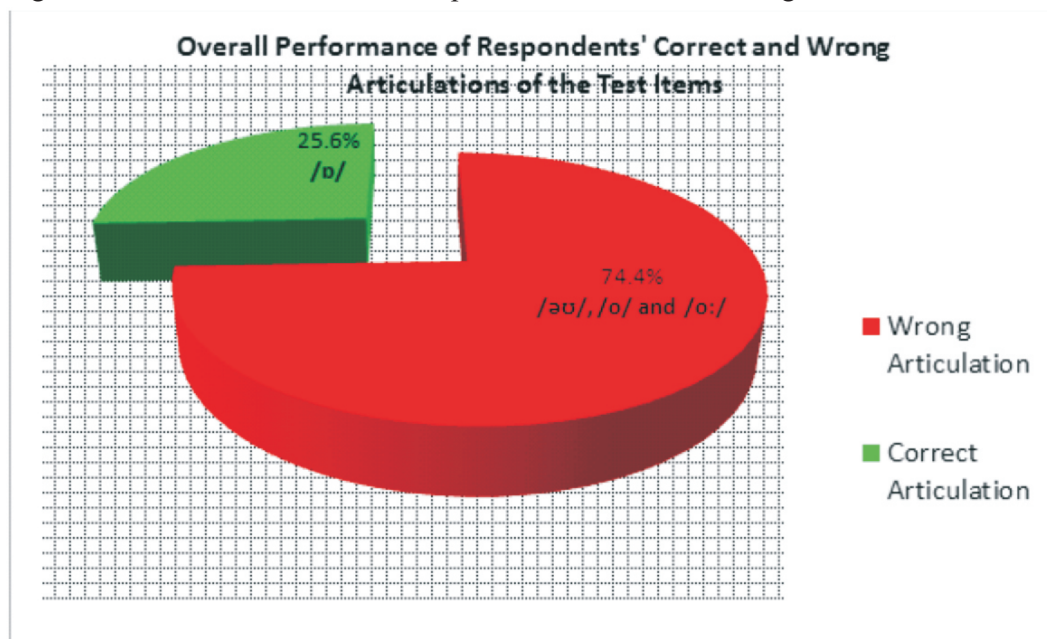
Overall Performance of Respondents' Correct and Wrong Articulations of the Morphophonemic Alternated Back Open Rounded Vowel

Analysis of the findings clearly showed that the respondents found it is difficult to pronounce correctly, the morphophonemic alternated vowel /ɔ/ both in words-in-isolation and sentence-contexts. The reasons behind the poor performances had been succinctly explained.

Analysis revealed that the respondents' overall performance of the articulation of the back open rounded vowel /ɔ/ in the ten morphophonemic alternated words (locative, neurotic, episodic, phonic, globular, modular, diagnostic, nostril, cloth and mediocrity) in sentence-context and isolation was very poor. In other words, the analysis revealed that out of the total

obtainable score of 2,000 for all the ten alternated vowels tested in sentence-contexts and isolation, only **512 (25.6%)** correct elicitations were articulated by the respondents, while **1,488 (74.4%)** was recorded for the wrong articulation. The above result is an indication that the majority of the respondents were unaware of the rules guiding morphophonemic alternated vowels in English which states that if a lexical category of a word is changed to another, there is a tendency that the alternated phoneme in the derived word will change. For instance, grapheme 'o' in 'locate' (verb) is pronounced as /ɔ/ but when its lexical category changes to adjective and becomes 'locative', the grapheme 'o' in 'locative' will be morphophonemically alternated to /o/ and it will be pronounced as /lɔ:k.tɪv/ not as /lɔ:k.tɪv/, /lɔ:k.tɪv/ or /lɔ:k.tɪv/ as many respondents pronounced. See figure 2 for better explanation.

Figure 2: Overall Performance of Respondents' Correct and Wrong Articulations of the Test Items



Respondents' Overall Performance in Word-In Isolation and Sentence-Context

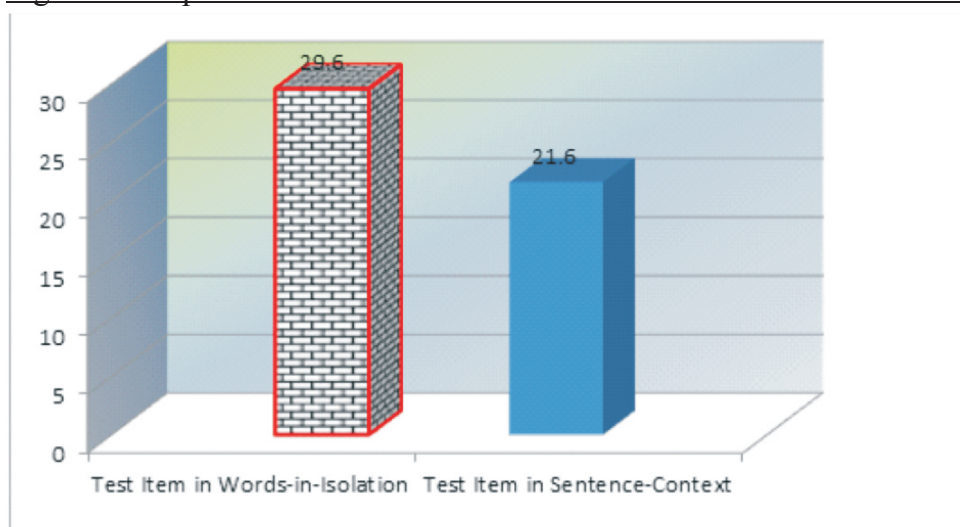
The analysis of the respondents' performance as shown in table 6 above revealed that respondents scored **29.6%** in the articulation of the test items in words-in-isolation and **21.6%** in sentence-context

for correct elicitation. This is an indication that respondents had a poor performance in the articulation of morphophonemic alternated back open rounded vowel /ɔ/ in words and sentence-contexts. Despite the poor performance, the slight margin between the two variables showed that the respondents recorded higher scores of **296** in the correct

articulation of the test items in words-in-isolation than sentence-contexts of 21.6. The reason that could be attributed to the respondents' higher performance in isolation is connected with their inability to use context clues in determining the correct articulation while reading. As a result of a few number of morphophonemic alternated back open rounded vowel in words that make up a reasonable number of sentences, the respondents found it difficult to guess or determine which of the test items was the focus of the research

We also discovered that they had almost finished reading the text before realising that morphophonemic alternated back open rounded vowel was the focus of the research. Unlike in the test items in isolation, the respondents were quick to recognise the focus of the research and they became conscious in their articulation of the test items. See figure 3 below for further illustrations.

Figure 3: Respondents' Overall Correct Performance in Sentence-Context and Isolation



at even though, most of the test items were not correctly articulated by the respondents, the interlocutor/listener had to converge to achieve a mutual intelligibility, which is the purpose of a successful communication. Since what was articulated is still understandable. For instance, instead of the respondents pronouncing the morphophonemic alternated back open rounded vowels underlined in the following words; locative, neurotic, episodic, phonic, globular, modular, diagnostic, nostril, cloth and mediocrity as /l?k .t v/, /nj. r?t k/, /ep s?d k/, /f?n k/, / l?bj .l /, /m?dj .l /, /dɑ n?st k/, /n?str l/, /k1?θ/ and /mi:d ?kr ti/, they wrongly pronounced them as /l??k tiv/, /nu:r?? tik/, / pis?? dik/, /f?? nik/, l??bula/, m??dula/, /daia n?? stik/, /n?? stril/, /k1?? θ/ and

/medi??kriti/. In spite of the wrong pronunciations of the vowel, the interlocutor(s) had to converge and decipher meanings of the words or sentences. In other words, the wrong pronunciations of the alternated vowel did not impair the meanings of the entire words or sentences.

Conclusion

The study captured the phonological problems in the articulation of the morphophonemic alternated back open rounded vowel by the randomly selected respondents from secondary schools in Wukari, Taraba. Based on the findings, it was discovered that those respondents who received special training in phonetics and phonology performed better than the ones who did not. It should be noted that 40.6% percent is an above-below-average

performance compared to the 25.1% poor performance. It was concluded that the respondents' performance in the articulation of the alternated back open rounded vowel in both context and isolation was not up to the expected average percentage of 50% rather, 512 (25.6%) out of 2,000 as the overall score was recorded which far is from average percentage.

However, findings revealed that despite the poor performance, the slight margin between the two variables showed that the respondents recorded higher scores of 296 (29.6%) in the correct articulation. In view of the research findings, the following pieces of advice are given to enhance a better pronunciation of the test items:

1. The teachers should not confine themselves to only checking the meaning and use of words in the dictionaries but also check the accurate transcriptions and listen to correct pronunciation of such words. The Phonetiser Application can be of a great help.
2. Teachers of English should undergo special training in phonetics and phonology to improve their knowledge and skills in Spoken English through organizing workshops, conferences and seminars.
3. The government should provide good language laboratories, libraries and other facilities so as to encourage the teachers and as such, the students under their tutelage will benefit a lot.
4. However, further research could be focused on the phonological analysis of morphophonemic alternated central vowels.

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