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Pronunciation of specific vowel sounds by educated Ghanaians in the University of Cape Coast, Ghana

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Abstract
This study was conducted in the University of Cape Coast as a field work on how educated Ghanaians pronounce some specific vowel sounds in English. Considering that Ghanaians are non-native speakers of English, there is the tendency of educated Ghanaians to pronounce some vowels in peculiar ways. There is also the tendency of a variety of pronunciations even by different educated Ghanaians. The focus of this study was to identify these specific pronunciations from educated Ghanaians of different language backgrounds and to find out the plausible causes for the varieties of pronunciation.

Thirty (30) speakers of English drawn from various ethnolinguistic backgrounds who are pursuing various masters' programmes in the University of Cape Coast were used for this field work. The words containing the specific vowel sounds under study were provided on sheets of paper for these people to read. The pronunciations were then recorded on a tape and were later transcribed broadly. In each word pronounced by each participant, the vowel used (realized) was identified and compared with the native speaker pronunciation.

The instruments used were a tape recorder and an interview with individual participants giving comments on their difficulties (if any) of pronouncing the words. Based on the data collected and on the bases of the different language backgrounds of the respondents, it was revealed that different factors account for varieties in pronunciations, even in the speech of educated people from different ethnic backgrounds.

Keywords: Phonetic, isochronicity, pronunciation, variation, contrastive

Introduction
Background to the Study
Language, the very essence of our humanity, is an important and effective tool for socialization. Our ability to function in almost all spheres of life depends primarily on our language skills. English, the language in which this country conducts her official business, deserves to be studied both as a core subject and as an elective, [CRDD, 1990; 2] [2]

Therefore, a mastery of the English language is a prerequisite for a successful career in the learned professions and for any educational advancement in Ghana and beyond. A mastery of the English language, which is a second language to Ghanaians, is equally important in communication with the outside world

Despite persistent efforts, most learners of a second language will never become fully native-like, although with practice, considerable fluency can be achieved. It suggests that acquiring a second language can be a lifelong learning process for many.

According to Akpanglo-Nartey, (2002) [1], there are phonological rules that underlie the flow of speech in language. He contended that knowing the phonemes as well as the allophonic components of a language is not enough. The speaker needs to know the actual sequences in which these sound units occur in the language. Few of these phonological rules include:

Phoneme Sequence: this has to do with the combinational possibilities of the sound segments. There are, of course, restrictions on the maximal length of possible consonant sequence as well. This is because not all possible combinations of sounds occur in a language. Akpanglo-Nartey refers to such restrictions on the possible sequences of phonemes in a language as phonotactic constraints. Thus, while combinations as *pl, kr, sp, skw, skt* are

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permissible sequences in English, the combinations such as *sd, kz, lkp* are not permissible and cannot occur in English.

Sound Environment: this has to do with the distribution of the sound in different environments of the two languages in contrast. In English for example, the segments (z, ŋ) never occur word initially but in medial and final positions. However, in other languages such as Ghanaian, these sounds may occur initially but not medial and final. Therefore, where differences occur in sound environment to the second language learner, there is the tendency that the learner will face difficulty in pronouncing such words.

Syllable Isochronicity: Another speech pattern identified to have been a likely factor in phonological difference in languages is syllable isochronicity. Most West African languages are syllable-timed; that is in an utterance, the syllables occur at almost equal intervals of time. English speech is, on the other hand, stress-timed. The stressed syllables occur at almost equal intervals of time, with the unstressed syllables squeezed in between the stressed ones, thus producing a stress isochronous rhythm. The transfer of a syllable isochronous rhythm onto a stress isochronous pattern makes the West African's spoken English sometimes appear strenuous.

From the above, it suggests that no second language learner automatically proceeds from his source language to the target language without committing errors. Therefore, attempts will be made in this study to identify the plausible causes of speech variations to see whether these causes fall in line with what these theorists have said.

Purpose of the Study
Considering that Ghanaians are non-native speakers of English, there is the tendency of educated Ghanaians to pronounce some vowels in peculiar ways. There is also the tendency of a variety of pronunciations even by different educated Ghanaians. The purpose of this study was to identify these specific pronunciations from educated Ghanaians of different language backgrounds and to find out the plausible causes for the varieties in pronunciation.

Hypotheses
This fieldwork is conducted on the following assumptions:
a) That there are differences in speech among second language speakers.
b) That these differences in speech are likely to be found in spoken English among graduate students.
c) That certain vowels in words could be pronounced differently by educated Ghanaians.

Delimitations
This study was carried out in the University of Cape Coast during the Sandwich Semester for various post-graduate students. The focus was only on post-graduate students pursuing various Masters' Programmes in the University. The scope of the topic under focus was on pronunciation of some specific vowels in context.

Limitations
The following are the setbacks that characterized this study:
The transcription of the words was time-consuming. Series of replay needs to be done to be sure of the actual realizations of individual pronunciations. Some pronunciations are also very difficult to listen. Few of these were characterized with background noise.

Again some of the pronunciations made were not even heard properly and could not be broadly transcribed. That, notwithstanding, has not affected the reliability of the outcomes in the study. This is because a sample of thirty (30) respondents/participants were selected out of the thirty-four. The selected participants were those whose pronunciations the researcher was able to transcribe.

Again, there were few instances of hesitations from the respondents, which really delayed the study.

Literature Review
Introduction
This chapter reviews the related literature on the problems of mother tongue interference on second language learning. Both empirical and theoretical findings of the authors on the subject and their significance on learners' errors are discussed. The literature is reviewed on the following topical issues: phonology, first and second language acquisition, contrastive analysis and the factors of speech difference.

Phonology
Cruttenden, (2001:6) explains the term, phonology as "how sounds function in a systemic way in a particular language". According to him, the traditional approach to phonology is through phonemics, which analyses the stream of speech into a sequence of contrastive segments, 'contrastive' here meaning contrasting with other segments which might change the meaning. The phonemic approach to phonology is not the only type of phonological theory but it is the most accessible to those with no training in linguistic theory.

According to Akpanglo-Nartey (2002) [1], phonology involves the ability to extract regularities from the various physical sounds uttered by the different speakers of a language. It involves the ability to establish the set of rules that guides the changes that take place in these sounds when they occur with other sounds in different positions.

Roach (2000) also shared the same view and explained that phonology studies how sounds are organized and used in natural languages and that the phonological system of a language includes the rules which specify how sounds interact with each other in a language as well as an inventory of sounds and their features. Roach emphasized that phonology analyses the sound patterns of a language by determining which phonetic sounds are significant and explaining how these sounds are interpreted by the native speaker. He concluded that phonology is the basis for further work in morphology, syntax, discourse and orthography design. At one extreme, phonology is concerned with anatomy and physiology-the organs of speech and how individuals learn to use them. At another extreme, phonology shades into socio-linguistics as it considers social attitudes to features of sound such as accent and intonation. And part of the subject is concerned with finding objective standard ways of recording speech, and representing this symbolically.

The above explanations of the term are very useful to this study in establishing and determining which English sounds are significant to the Eʋe speaker and explaining how these sounds are interpreted by the native speaker.

First Language and Second Language Acquisition
According to Cruttenden, (2001), a person's mother tongue is the first language that is acquired at the early stages of language development, rather than a language learnt at

school or as an adult. The mother tongue of an individual refers to the native language or immediate language with which the individual is born.

A second language on the other hand, refers to a target language that the person is learning or intends to learn. It therefore suggests that before the second language (L2) learner begins to learn his language, he has already established, consciously or unconsciously, the rules of grammar and phonology of his mother tongue (L1) in the mind. These rules will serve as a platform for him to begin his second language learning. Ever since the inception of inquiries into second language acquisition there has been great controversy among many linguists as the role the existing language (L_1) plays in the learning of second language.

Cohen A.D (1990) considers the learning of a language as accepting a culture and therefore, in some degree, a personal identity. To him, the significance of the cultural aspect of language for a learning process comes partly through the fact that a learner's attitude strongly influences his learning. This assertion is agreed upon because the way one thinks and expresses his thought is influenced by culture. Language is the expression of culture; thus, one cannot acquire fluency in language without acquiring one's understanding of the culture, which that language expresses.

Reid, J.M (1995) continued the argument on the topic of second language learning by stating that some aspects of learning change with age. To them age makes an important difference in learners. The intellectual powers of the adolescent or adult is superior in many ways to those of a child of three. Children's memory span is limited to a few words or syllabus at first, but it increases rapidly during the school years. Ability to memorize verbal materials, and pronounce words correctly including nonsense syllabus as well as connected discourse, also improve with age. On the other hand, it is obvious that adult's techniques and the capacities are not necessary to learn a language. A child learns one language and learns it well between 18 months and four years. In fact there is evidence that the brain of a child has capacities for language learning that do not exist in that of an adult, (Reid, 1995).

Rivers (1964) stated that teaching methods rest on the careful scientific analysis of the contrasts between the learner's language and the target language and that the learning of one thing may influence the later learning of something else. Interactions between the effects of old and new learning can be both facilitating and interfering and it is difficult to state many general ways under what conditions transfer of training will be positive or negative or zero. He continued that the degree of interaction between materials learned at different times depends partly upon how well each is learned. If the first learning is carried to a high degree of perfection, it will interfere much less with later similar materials being learned, perhaps, because a well-learned material is better discriminated by the subject. When two sets of materials to be learned are quite different or are easily discriminated by the learner, there is relatively little interaction; that is learning one has little effect upon learning the other. If they are similar in such a way that the learning of one serves as partial learning of the other, there may be facilitation or positive transfer.

This assertion by Rivers (1964) on language acquisition is still tenable because the already existing knowledge has an influence over the one being learnt. Evidence can be seen in

learning of new sounds like /θ/, /ð/, /æ/, /ʌ/, /ə/, /ɜ/ //), which are non-existent in Eʋe.

Again Akpanglo-Nartey (2002) [1] stated that the youngest one starts to learn a second language, the better change one has to develop a native –like pronunciation. He called this "Native Pronunciation Condition". This is in accordance with the view that children learn a language at early stage better than the adult does. A child learns a language well between 18 months and 4 years of age. With this, there is a period of primary language acquisition beginning at about 15 months and continuing until puberty. During this period, the brain of a child or adolescent has developed sufficiently for language learning to begin. Akpanglo-Nartey (2002) [1] summarized second language acquisition in three assumptions:

i. "The closer two languages are to each other genetically and typologically, the quicker a speaker of one will learn the other". This assumption means that when two languages are closer to each other, learning becomes much easier. For instance a child, whose parents are ethnically different, is likely to learn both languages-from the father and the mother. Moreover, when a child finds himself in a place or society which shares a border with another society, he/she is in better position to learn and understand the other language because of its closeness.

ii. "When two languages share the same feature learning is facilitated," His second assumption suggests that if a feature is common in both languages, learning those languages becomes easier. For example, if sounds like /u/ and /i/ are in both L_1 and L_2, the child will find it easier to learn L_2 based on existing knowledge of it in L_1.

iii. "Differences between two languages interfere when speakers set out to learn the other". This view of his is in line with Rivers (1964), which says that learning of one thing may influence the later learning of another. If languages share no common features, learning the other one becomes difficult. Mutual intelligibility is absent since there are differences in the two languages.

Methodology
Study Area
The area of the study was Cape Coast Metropolis, which is in the Central Region of Ghana. Cape Coast is the capital of the Central Region bordered by the Gulf of Guinea to the South, Komenda/ Edina/ Eguafo/ Abirem Municipality to the West, Abura/ Asebu/ Kwamankese District to the East and Twifo/ Heman/ Lower Denkyira District to the North. It has a total surface area of 2255 km². According to the 2010 population census, the population stands at 169,894. Due to its boundary to the sea, the main occupations of the indigenes are fishing and petty trading. One very significant asset of the community is the University of Cape Coast where this actual study was carried. This university is one of the renowned universities in Ghana where people from all walks of life come to attain high learning. In addition to the petty trade, the indigenes work in the university as clerks and casual workers.

Population and Sample Selection
Post-graduate students who are pursuing various programmes in the University of Cape Coast constitute the target population for the study. Out of this target group,

thirty-four of them have been sampled out to respond to the questionnaire (treatment) administered. These thirty-four (34) constitute the control group, out of which an experimental group of thirty (30) were used to generalize the findings. It is worth noting that these categories of students were drawn from different ethnic backgrounds thus: Ewe, Fanti, Twi, Nzema, Hausa, Kaachi, Buem, Dagaare and Walla.

Instrumentation
The instruments used were a tape recorder and an interview with individual participants giving comments on their difficulties of pronouncing the words.

Data Collection Procedures
A list of words containing the vowel sounds in focus was provided to the respondents to read. The researcher explained the relevance of the field work as part of his course work to the respondents and asked them to feel relax and pronounce the words as natural as they would use them in speech. The following is the word list with the vowels under focus:

1. feel
2. ten
3. fill
4. turn
5. half
6. mast
7. must
8. wanted
9. grounded
10. watches
11. dogs
12. books
13. square
14. fire
15. little
16. tear (in crying)
17. tear (rip off)
18. been
19. being
20. hop
21. listen
22. ladle
23. above
24. teacher

Each respondent has a separate wordlist. This enabled the researcher to deal with the individuals pronunciations and transcriptions separately. Demographic data of the respondents were also captured on the wordlist. This includes native language, age group, residence, other Ghanaian languages spoken and the programme of study in the University. Provision was also made on the wordlist for respondents to give comments in relation to difficulties they face with some of the words. (Samples of the wordlist are attached to this report).

The researcher asked the respondents to read the words on the sheet. This was recorded on a tape and was later transcribed broadly. In transcribing, the vowels used by each respondent in each word were identified. In comparison, the researcher first transcribed the words as they are in native-like English from the dictionary to enable him to provide a valid judgment on each respondent's pronunciation. Below is the dictionary transcription of the words in focus.

1. feel   [fi:l]
2. ten   [ten]
3. fill   [fil]
4. turn   [tə:n]
5. half   [ha:f]
6. mast   [ma:st]
7. must   [mʌst]
8. wanted   [wʌn.tid]
9. grounded   [graun.did]
10. watches   [wɔ.tʃis]
11. dogs   [dɔgz]
12. books   [buks]
13. square   [skweə]
14. fire   [faiə]
15. little   [li.tl]
16. tear (in crying)   [tieə]
17. tear (rip off)   [teə]
18. been   [bi:n]
19. being   [bi:iŋ]
20. hop   [hɔp]
21. listen   [li.sn]
22. ladle   [læ.dl]
23. above   [əbʌv]
24. teacher   [ti.tʃə]

The transcription of the vowels used in this work is clearly of the comparative phonemic sort. It uses symbols which are to some extent indicative of the usual qualities of those vowels. Thus, the short vowels (i, ə, æ, u) are given different symbols from the long vowels (i:, ə:, u:, a:) to show that they are different in quality as well as length. At the same time, the length mark is still used with the long vowels.

Data Analysis Plan
The data collected was edited and analyzed for consistency and the results were processed and analyzed. All responses were coded into definite categories (gender, age group, programme of study, native language, etc) for easy and adequate analysis. People's responses were tabulated and some were presented in a graphical form to give a more visual impression and description of the findings. Simple percentage and frequencies were also used to tabulate the data. These are illustrated in the next section of this report.

Results, Findings and Discussions

Table 1: Gender of Respondents

Gender	No: of Respondents	Percentage (%)
Male	14	46.66
Female	16	53.33
Total	30	100

The table above illustrates the gender of the participants drawn from various language backgrounds for the study. Out of thirty (30) participants, 14 of them are men, representing 46.66% while the remaining 16 are women, representing 53.33%.

Table 2: Age Group of Respondents

Age	No: of Respondents	Percentage (%)
20 – 30	5	16.6
31 – 40	13	43.3
41 – 50	8	26.6
51 – 60	4	13.3
Total	30	100

This table gives the age groups within which the participants drawn for this study fall. It is seen that the highest number of respondents for within the age group of 31 – 40, representing 43.3% of the total number of respondents. This is followed by 41 – 50 age group, having the second highest number of respondents. It could be said from this data that most Ghanaians students pursue their Masters' Programme (2nd Degree) at the age of 31 through 40 to 50 years.

Table 3: Academic Programme of Respondents

Programme	No: of Respondents	Percentage (%)
M. Phil	2	6.66
M. Ed	16	53.33
M. A	0	0.00
M. Sc	6	20.00
MBA	5	16.66
ICT	1	3.33
Total	30	100

The table above gives an illustration of the various academic and professional programmes that respondents to this study are pursuing in the University of Cape Coast. Out of the thirty (30) respondents, sixteen (16) of them are pursuing Master's Programme in Education (M.Ed). This represents 53.33% of the total number of respondents. The rise in number of M.Ed students in this study is basically because of its usefulness in the classroom situations, since teachers constitute the medium through which language learning is transmitted to the Ghanaian students. Critical attention should be paid to their pronunciations. This information is clearly presented on a bar graph below.

Graphical Presentation of Academic Programmes of Respondents
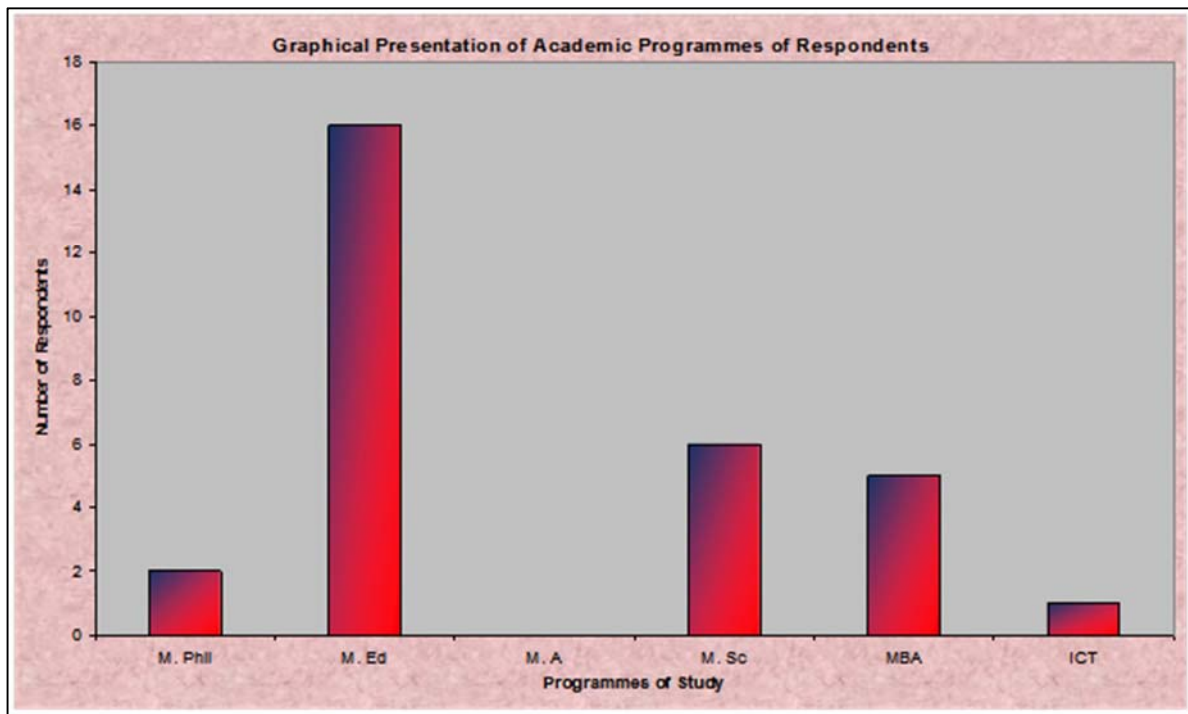
Table 4: Native Language of Respondents

Native Language	No: of Respondents	Percentage (%)
Fanti	6	20.0
Ewe	9	30.0
Hausa	2	6.6
Twi	7	23.0
Walla	1	3.3
Nzema	1	3.3
Dagaree	1	3.3
Kaachi	2	6.6
Buem	1	3.3
Total	30	100

This table presents the native language of the respondents. Dominant among the native languages of these respondents are Ewe, Twi and Fanti, which have nine (9), seven (7) and six (6) respondents respectively. The variation in the number of respondents is due to the problems associated with the transcription of some of the scripts which could not find their way into this sample. This information is also presented on a bar graph below for clearer understanding.

Graphical Presentation of Nativity of Respondents
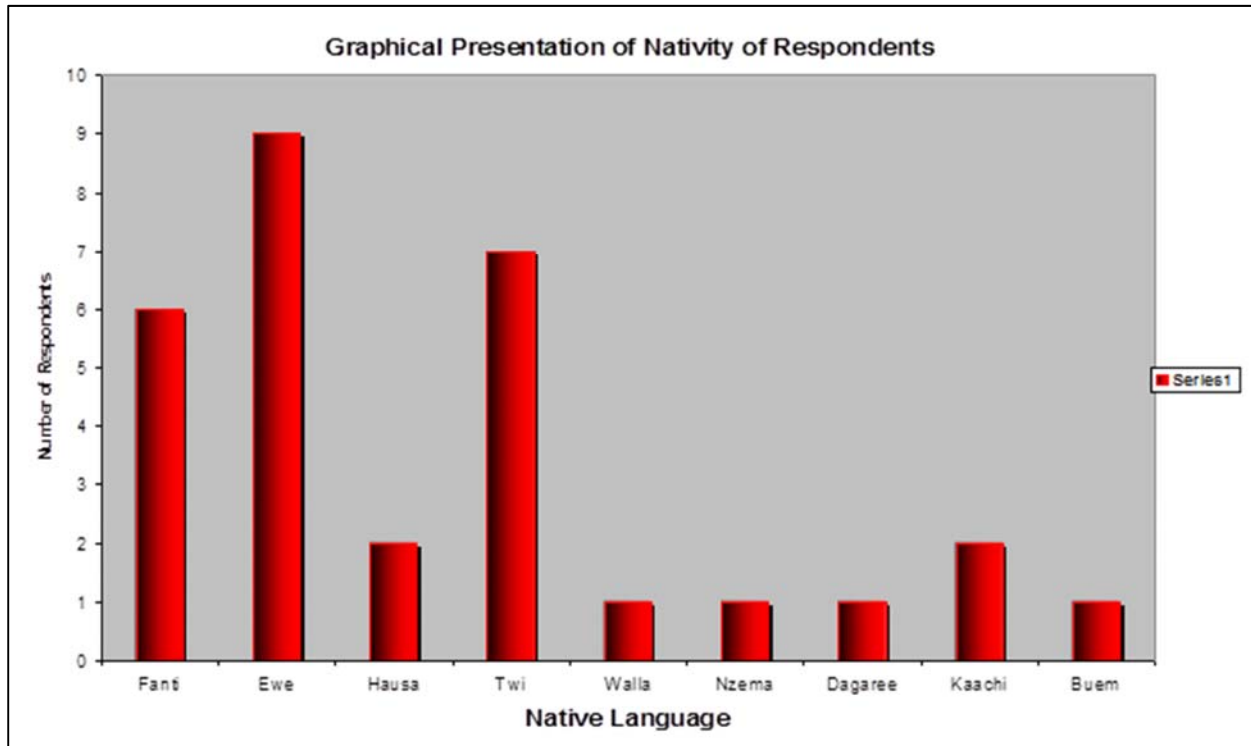
Findings from the Transcription

After listening to the respondents pronounce the words in focus and having broadly transcribed them separately for each individual respondent, the result is tabulated to give a clear impression on those who sound native-like and those who do not. The following are the results:

Table 5: Vowel [i:]

Vowel [i:] as in *feel*		Percentage (%)
Native-like	17	56.66%
Non Native-like	13	43.34%
Total	30	100

In this word, those who sounded non-native used the near-equivalent vowel sound [i] in place of the long one instead.

Table 6: Vowel [e]

Vowel [e] as in *ten*		Percentage (%)
Native-like	21	70%
Non Native-like	9	30%
Total	30	100

Table 7: Vowel [i]

Vowel [i] as in *fill*		Percentage (%)
Native-like	22	73.33%
Non Native-like	8	26.67%
Total	30	100

Most of the respondents who sounded native-like at feel and fill were very sure of their pronunciations but could not tell what accounts for the difference

Table 8: Vowel [ə:]

Vowel [ə:] as in *turn*		Percentage (%)
Native-like	15	50%
Non Native-like	15	50%
Total	30	100

Table 9: Vowel [a:]

Vowel [a:] as in *half*		Percentage (%)
Native-like	22	73.33%
Non Native-like	8	26.67%
Total	30	100

Table 10: Vowel [a:]

Vowel [a:] as in *mast*		Percentage (%)
Native-like	4	13.34%
Non Native-like	26	86.66%
Total	30	100

Table 11: Vowel [ʌ]

Vowel [ʌ] as in *must*		Percentage (%)
Native-like	24	80%
Non Native-like	6	20%
Total	30	100

Table 12: Vowel [i]

Vowel [i] as in *wanted*		Percentage (%)
Native-like	10	33.33%
Non Native-like	20	66.67%
Total	30	100

Table 13: Vowel [i]

Vowel [i] as in *grounded*		Percentage (%)
Native-like	10	33.33%
Non Native-like	20	66.67%
Total	30	100

Table 14: Vowel [ω]

Vowel [ω] as in *watches*		Percentage (%)
Native-like	30	100%
Non Native-like	00	00%
Total	30	100

Table 15: Vowel [ω]

Vowel [ω] as in *dogs*		Percentage (%)
Native-like	30	100%
Non Native-like	00	00%
Total	30	100

Table 16: Vowel [u]

Vowel [u] as in *books*		Percentage (%)
Native-like	30	100%
Non Native-like	00	00%
Total	30	100

Table 17: Diphthong [eə]

Diphthong [eə] as in *square*		Percentage (%)
Native-like	25	83.33%
Non Native-like	5	16.66%
Total	30	100

Table 18: Triphthong [aiə]

Triphthong [aiə] as in *fire*		Percentage (%)
Native-like	15	50%
Non Native-like	15	50%
Total	30	100

Table 19: Syllabic lateral [i]

Syllabic lateral [i] as in *little*		Percentage (%)
Native-like	30	100
Non Native-like	00	00
Total	30	100

Table 20: Vowel [i]

Vowel [i] as in *fill*		Percentage (%)
Native-like	22	73.33%
Non Native-like	8	26.67%
Total	30	100

Table 21; Triphthong [ieə]

Triphthong [ieə] as in *tear* (crying)		Percentage (%)
Native-like	20	66.66%
Non Native-like	10	33.33
Total	30	100

Table 22: [eə]

Vowel [eə] as in *tear* (rip off)		Percentage (%)
Native-like	10	33.33%
Non Native-like	20	66.67%
Total	30	100

Most respondents could not make out the difference in these two vowel sounds. When asked to give their comments, few who interchanged the sounds in pronunciation complained they could not see the explanations given alongside the words. Those who sounded native-like in the two pronunciations agree that context determines the pronunciation of the word.

Table 23: Vowel [i:]

Vowel [i:] as in *been*		Percentage (%)
Native-like	23	76.67%
Non Native-like	7	23.33%
Total	30	100

Table 24: Vowel [i:]

Vowel [i:] stressed with [ŋ] as in *being*		Percentage (%)
Native-like	8	26.67%
Non Native-like	22	73.33%
Total	30	100

Table 25: Vowel [ω]

Vowel [ω] as in *hop*		Percentage (%)
Native-like	30	100
Non Native-like	00	00
Total	30	100

Table 26: Vowel [i]

Vowel [i] as in *listen*		Percentage (%)
Native-like	29	96.66%
Non Native-like	1	3.33%
Total	30	100

Table 27: Vowel [æ]

Vowel [æ] as in *ladle*		Percentage (%)
Native-like	3	10%
Non Native-like	27	90%
Total	30	100

Table 28: Vowel [ə]

Vowel [ə] as in *above*		Percentage (%)
Native-like	7	23.33
Non Native-like	23	76.67%
Total	30	100

Table 29: Vowel [ə]

| Vowel [ə] as in *teacher*		Percentage (%)
Native-like	12	40%
Non Native-like	18	60%
Total	30	100

Findings from the Study

The summary table shown above revealed interesting findings from the study.

1) A total of 720 pronunciations were received from thirty (30) graduate students of the University of Cape Coast on the wordlist in relation to the vowels in focus.
2) Out of this number, a total of 447 are exactly native-like English in pronunciation of these words. This represents 62% of the respondents.
3) A total of 273 deviated from native pronunciations and used near-equivalent vowel sounds in place of the exact native speaker pronunciations. This number represents 38% of the respondents sampled for this study.
4) Twelve (12) English vowel sounds were dispersed in 24 different words. They include nine (9) pure vowels: [i:], [i], [e], [æ], [ə], [ʌ], [ω], [u], [a:]; one (1) diphthong: [eə] and two (2) triphthongs: [aiə], [ieə]. This means that majority of these vowel sounds were distributed in different environments. This agrees with Akpanglo-Nartey's (2002) [1] theory of phonotactic constraints that the combinational possibilities of the sound segments account for differences in speech of most people from different ethnic backgrounds. This is because not all possible combinations of sounds occur in a language.
5) The summary table also revealed the following vowel sounds that appeared to have posed problem to the respondents in terms of pronunciation:

i. [i:] poses problem to a maximum of thirteen (13) students
ii. [i] poses problem to a maximum of twenty-two (22) students
iii. [æ] poses problem to a maximum of twenty-seven (27) students
iv. [ə] poses problem to a maximum of twenty-three (23) students
v. [a:] poses problem to a maximum of twenty-six (26) students
vi. [eə] poses problem to a maximum of twenty (20) students
vii. [aiə] poses problem to a maximum of fifteen (15) students

6) The above vowel sounds appeared to have been non-existent in most Ghanaian languages. This is likely to account for the difficulty in speech of these graduate students. This is in line with the contrastive analysis hypothesis which is based on the assumption that the learning difficulties of a second language learner are basically the result of the sound differences between his L1 system and the system of L2.

7) The vowel sounds that appeared to have posed problem to the respondents in terms of pronunciation are arranged in order of difficulty, as shown below:
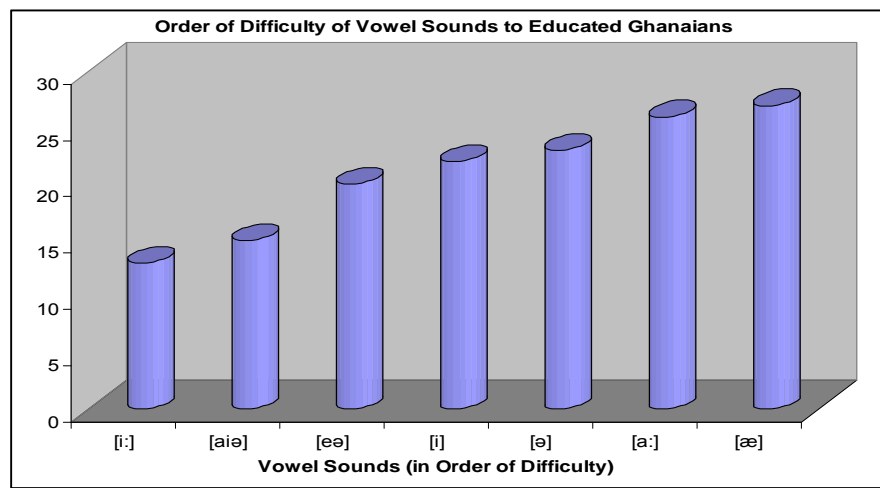
Conclusions

This study explored the pronunciation patterns of graduate students pursuing various programmes in the University of Cape Coast. The focus was on some selected vowels and how these vowels could be realized differently in spoken English of most educated Ghanaians.

The entire study was sectionalized into four (4) different categories. The first section looked at the background discussion of the topic under study. Few theories were reviewed in relation to speech patterns and speech differences among second language speakers and the possible factors that may account for the difference in speech pattern. The second section dealt with the methodology employed to arrive at the findings. Here, the population and sample size, the instruments used to collect data and the data collection procedures were discussed. In the third section, the results of the study and the findings that emerged from the study were analysed and discussed thoroughly. Here, data collected was edited and analyzed for consistency and the results were processed and analyzed. All responses were coded into definite categories (gender, age group, programme of study, native language, etc) for easy and adequate analysis. People's responses were tabulated and some were presented in a graphical form to give a more visual impression and description of the findings. The final section of the report looked at the summary and conclusions.

Summary Table of Transcription

Vowel No:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Grand Total	Percent-Age (%)
Vowel	i:	e	i	ə:	a:	a:	ʌ	i	i	ω	ω	u	eə	aiə	i	ieə	eə	i:	i:	ω	i	æ	ə	ə		
Native-Like	17	21	22	15	22	4	24	10	10	30	30	30	25	15	30	20	10	23	8	30	29	3	7	12	447	62.00%
Non Native-Like	13	9	8	15	8	26	6	20	20	0	0	0	5	15	0	10	20	7	22	0	1	27	23	18	273	38.00%
Total	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	720	100%

Graphical Presentation of English Pronunciation by Graduate Students in UCC
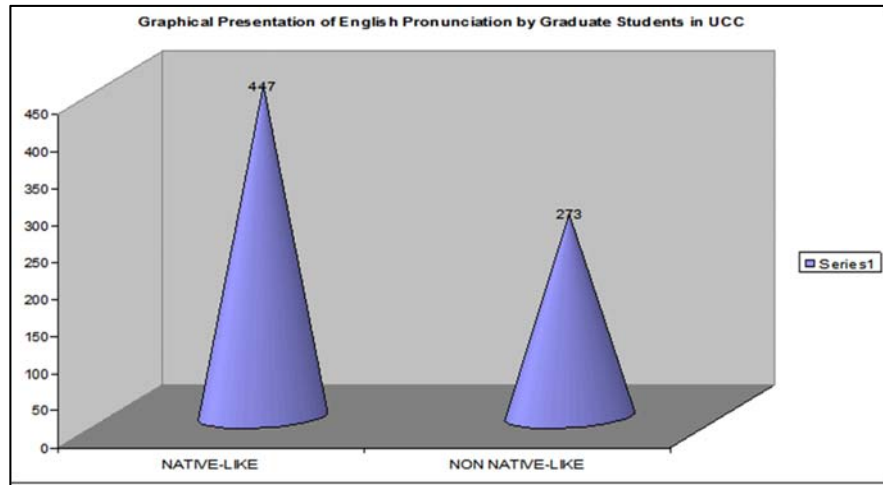
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