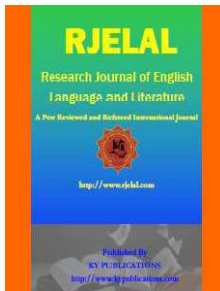RESEARCH ARTICLE

FREQUENCY OCCURRENCE OF PRONUNCIATION ERRORS OF ENGLISH VOWELS OF SAUDI STUDENTS OF ENGLISH
-EXPERIMENTAL APPROACH

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ABSTRACT

This study addresses the occurrence frequency of the errors of English vowels which Saudi students of English make learning English pronunciation. The study aims at giving information about the most frequent errors of English vowels that Saudi students make attaining these vowels. The material of the study included English vowels which we embedded in meaningful English words read by ten Saudi students of English. Importantly, selecting these words we carefully considered the distribution of vowels' positions on the words' level. The study approached data through a quantitative method of data analysis which permits statistical analysis. Moreover, the study made some predictions regarding the frequent errors of English vowels that students make while learning the vowel sounds of English for comparison purpose. Results show that the errors which students make in the area of front, central and back English vowels form the highest percentage of occurrence frequency all through the data. Some substitutions of diphthong vowels with short and long vowels are also frequent. The more frequent the vowels are the more vulnerable to error making they are.

Kew Words: Occurrence frequency, recorded material, phonological information, errors, English vowels .

1.1 INTRODUCTION

This study attempts to measure the occurrence frequency of the learning errors of English vowels of Saudi students of English. Linguists and researchers have been concerned with the learning problems of English pronunciation resulting from incorrect learning of English vowels describing their negative effect on oral communication. Many foreign speakers/ listeners claim to achieve successful oral communication when in fact they did not. Speakers, for example, may produce an utterance to mean something that does not mean anything; the result is intelligibility problem (Derwing and Munro 2015). Specifically, research about Saudi learners of English addressed the learning problem of English vowels from different directions producing useful findings about pronunciation errors of English vowels that were made by Saudi students of English. Part of research findings reported that Saudi students of English have intelligibility problem which requires them to modify the implementation of English vowels (Ali 2015, Flege and Port 1981). Importantly, the occurrence of the learning errors of English vowels becomes more

problematic when it figures high frequency throughout the learners' production and perception of vowels on either isolated words or in connected speech. Therefore, the description of the occurrence frequency of the errors of English vowels across this study may mean something. It may provide data relating to error frequency, density, influence on speech intelligibility, acoustic properties of English vowels etc., which may lead to deep understanding of the problem. Previous studies reported that differences of frequency distribution of vowels' properties differ from a language to language. These differences may result in learning complications of vowels across languages. The way how infants learn Japanese phonemic categories from the input represents a decisive factor accounting for the distribution acoustic properties. This appears clearly in the natural distribution of vowels where most of the vowels in the corpus are short, which affect the vowels' learning (Bion, Miyazawa, Kikuchi and Mazuka (2013). This study focuses on the investigation of the occurrence frequency of pronunciation errors that Saudi students make learning English vowels. The study bases on an experimental analysis of recorded materials of English vowels of Saudi students of English. It specifically, attempts to collect information on frequency occurrence of pronunciation errors of English vowels for deep understanding of the topic at issue. The insight we obtain may provide us with inspirations and hints regarding the frequent occurrence of these errors.

2.1. Literature Review

Al Saqqaf and Vaddapalli (2012) attempted to find teaching method of English vowels in Arabic classroom. They intended to find a suitable way to address English vowel phonemes to Arab learners whose L1 has a small number of vowels in comparison to English. On experimental Method, Al-Saqqaf and Vaddapalli revealed that Arab learners ignore length feature of following English vowel (also see Mitleb 1981 and Munro 1993). They found that knowledge of phonological system of the learners' L1 can help teachers of English to effectively present the English vowels. In that Arab learners of English have difficulty attaining English

vowels due to quality and length properties. As result, the learners resort to their mother tongue. Packer and Lorincz (2013) stated that Saudi students have problems producing front English vowels /ɪ/ and /e/ in regard to height and backness, which mirrors intelligibility problems due to the close proximity of several groups of vowels. The problem appears clearly in the pronunciation of /ɪ/ and /e/, the first is lowed and the second is raised. The process causes mergence of the two vowels. Moveover, Smith's (2005) claim that Saudi participants are merging [ɒ] and [ʌ]; because these sounds are not represented in modern Arabic. Flege and Port (1981) explain that to avoid such intelligibility issues, Saudi speakers need to "modify Arabic patterns of phonemic implementation or acquire novel English-specific ones. Furthermore, [ɒ] has been lowered and more centralized, shifting closer to both [ɒ] and [ʌ]. In addition, his pronunciation of [ɔ] varies by 301 Hz in regard to the F2, which suggests that it is heavily accented, though, as Koffi (2012) asserts, the F2 does not have significant bearing on intelligibility. This is because English vowels [ɒ], [ʌ] produced with Saudi-accented English. Results revealed that English vowels of Saudi speakers are heavily accented; i.e. /ɪ/, /e/ and /æ/. Similar problems occur in back vowels /ʊ/ and /ɔ / where they merge closer to each other. Smith (2005) reported that some English vowels are merged by Saudi students. For example, / ɑ / is merged with / ʌ /, which is totally absent from Arabic vowel inventory. Similarly, /e/ which is not in Arabic vowel inventory frequently merges with /ɪ/ which exists in Arabic. Interestingly, /ʊ/ and /uː/ have representations in Arabic, and yet will also pose intelligibility concerns for participants. Ali (2015: a) reported learning problems of English vowels of Saudi students. The problems included the substitutions of /e/ for /ɪ/, /ʊ/ for /ɔ/ and /ɒ/ for/ ʌ/ interchangeably due to the amalgamation of boundaries and to L1 interference. Ali (2015: b), Alfallaj (2012) and Altaha (1995) found that front English vowel /e/ was mispronounced as /ɪ/. Students are not familiar with English front vowel /e/, which totally is absent from Arabic vowel

inventory. Ali (2015:b) and AlFallaj (2012) refer this problem to the relationship between English spelling and pronunciations. Best and Tyler (2007) and Flege (1995) stated that mismatch between English and Arabic vowels result in poor identification of English vowels such as /ɑ/, /ɔ/, /æ/, /ʌ/. However, it was considered possible that these L2 vowels would be perceived as "new" or "uncategorized" vowels and thus with greater accuracy, but less stability, than vowels assimilated to native categories. Shafiro, Levy, Dakwar and Kharkhurin (2012) reported that low and back vowels of English proved to be the most difficult. The vowels, namely, include /ɑ/, /ɔ/, /æ/ respectively. Listeners heard /ɑ/ in 'hod' most often as /æ/ in 'had' followed closely by confusions with /ʌ/ in 'hud'.

For Arab listeners, this may reflect the mapping of more numerous mid and low phones onto the single low /a/ category in Arabic. In general, the pattern of vowel confusions in both groups suggested that acoustic and articulatory distances were not always a reliable predictor of vowel confusions for either group. Mousa (2015) reported that Saudi learners have persistently produced /ɔ:/ for /əʊ/ and /e: / for /eɪ/, respectively. For example, Saudi learners failed to produce the English vowel /əʊ/ in words such as *home, hope, coat, rope*, etc; i.e. it is frequently replaced by /ɔ:/. This is probably because the English long vowel sounds like Arabic /aw/. A similar problem was detected in the speech of Saudi learners regarding the pronunciation of /ɔ:/ and /e:/. In fact, with the exception of /aʊ/, /aɪ/, and /ɔɪ/, RP diphthongs are realized as long vowels by Saudi learners. In the latter's speech, words such as *home, hope, both, coat*, and so on were all misproduced as monophthong /ɔ:/, whereas words such as *rain, stain, state, train, safe*, and so on were misarticulated as monophthong /e:/. Saudi learners of English do not have centralized vowels/ mid high vowel in their vocalic system; therefore, almost all English words bearing these vowels were pronounced with the nearest vowels in their phonemic inventory. Binghadeer (2011) found that English vowels' pronunciation of Saudi university learners in a teaching training program was evaluated against their phonetic textbooks. There are many incorrect substitutions of six vowels /ɪ:/, /ɪ/, /e/, /ɔ:/, /ʊ/, and /u:/and two diphthongs /eɪ/ and /əʊ/. Results of the study proved that there were systematic errors in the students' pronunciation that appeared each time of the year. Measurement of the correct material against the students' errors in vowel and diphthong sounds confirmed that the textbooks did not provide adequate practice material. It was concluded that new textbooks should be designed to target such problematic sounds and provide training specifically tailored to answer for learners' phonological needs especially those errors that are based on their native language background. Results revealed that /e/ was frequently substituted for /ɪ/, /ɪ:/ for /ɪ/. Although the long vowel /ɪ:/ proved to be the easiest vowel for the learners, it undergoes often substitutions with /eɪ/, /e/ and / ɪ/. Al- Badawi (2013) reported that 40% of the Saudi students substituted /ə/ for /ʊ/, 37.5% substituted /ə/ for /ɔ/, 50% substituted /e/ for /ɪ/ and 55% substituted /ɪ/ for the diphthong /eɪ/ due to the paucity of knowledge of English vowels.

Table (1) Prediction of the frequency of the pronunciation errors of English vowels expected to be made by Saudi students

Vowel	Frequency of Learning error
/æ/ /ɑ/	Often realized as /a/ since it is not in Arabic
/ʌ/ and /ə/	High frequency which is totally absent from Arabic
/ɜ:/ and /ə/	Confused or substituted with /e/. Absent from Saudi vowel inventory
/eɪ/	Reduced to /e/.
/u:/	It may be substituted for tense vowels like /ɔ:/ or /u://u/ .
/ɑ:/	Absent from Arabic. It may be difficult to recognize or pronounce.
/ɔ:/	It may be difficult to recognize or pronounce and is often substituted for English /ɔ/.
/ɔ:/ /əʊ/	Frequent and substituted for short vowels
/ʊ//u://ɪ//i:/	Expected to be less problematic and less frequent
/ɪ//e//æ//ʌ/	Expected to be an area of confusions

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measurements included total mean and substitutions.

1.3 Purpose

The major purpose of this study is to trace the occurrence frequency of English vowels that Saudi students make. Much literature addressed the same topic using different methods and rich analysis strategies, their results revealed different patterns of learning errors of English vowels. Their results also provided rich descriptions of the nature, classification the vowel errors accounting for their causes. This study attempts to run survey on the occurrence frequency of these learning errors seeking insight into how and why the errors occur frequently through experimental work. The survey of this type might give insight into about the vowels figure highest frequency. Thus, the study will give hints more suitable methods of investigation regarding the topic at issue.

1.4 The Study design

Method used The study adopts a quantitative method which emphasizes statistical process of data. The quantitative method targeted the data collected by means of experiments aiming at the measurement of total mean, frequency and the confusion matrix of error occurrence frequency of data.

Material: The material for this study was taken from a number of 10 Saudi university EFL learners, who were asked to read English vowels in isolated words. The purpose was to find the frequency of the errors of English vowels made by these learners. The priority of selection of these learners bases on the level of the learners. Therefore, information obtained can provide quantitative data that can be used for the solutions of the problem.

Procedure of error analysis: The main reason for evaluation and rationale for this study is to get priorities right: what most frequent and what trivial error. Through the quantitative method, the study seeks answers for how and what to count errors in the following terms: type-token relationship, constitutions occurrence of an error, the sources of errors and frequency rates (James 2013). Classification of errors of this study bases on the use of statistical measurements using SPSS, where the

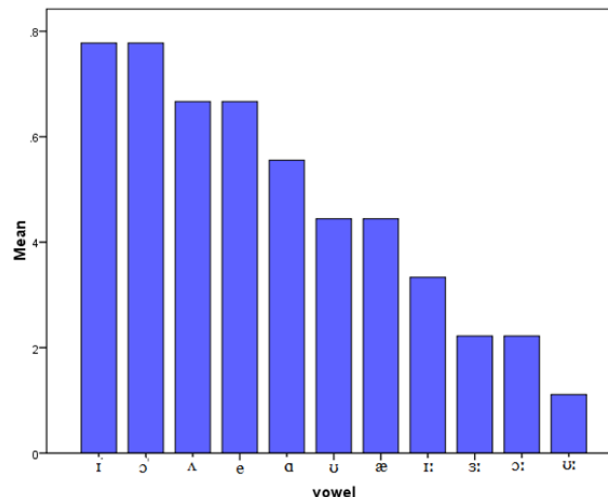**1.5 Results and discussion**

Figure (1) Mean percentage of the pronunciation errors English of vowels represent the most frequent pronunciation errors of English vowels made by Saudi students and Arab learners.

As the results in figure (1) show the most frequent pronunciation errors of English vowels of Saudi students occur in the area of short vowels. Interestingly, front /ɪ/, central / ʌ/ and the back /ɔ/ vowels figure the highest rates of error frequency. The vowels /e/, /æ/ and /ɒ/ come next followed by long vowels /ɜː/, /ɔː/ and /ʊː/. However, there are fewer learning errors on long English vowels side. Table (1) provides more accounts.

Table (2) Frequency occurrence percentages**:** substitutions, interchangeability of the pronunciation errors of English vowels made by Saudi students.

No	Substitutions	Interchangeability	Error percentage
1-	/ɪ/ for /e/	Interchangeably	80%
2-	/ɑ/ for /ʌ/and /ə/	-	78%
3-	/ɔː/ for /əʊ/	-	78%
4-	/e/ for /eɪ/	-	67%
5-	/ʊ/ for /ɔ/	-	50%
6-	/eɪ/ for /ɪ/	-	50%
7-	/ɪ/ for /ɪː/	Interchangeably	33%
8-	/ʊ/ for /ʊː/	Interchangeably	34%

Table (2) shows that short front, central and back vowels figure highest rates of substitutions. Diphthong vowels are reduced to short vowels which are closer to them in the vowel space, while low percentages of substitutions are made in the learning of front /ɪ, iː/ and /ʊ, uː/. Importantly, error density is observable in front, central and back vowels, which occur repeatedly throughout the learners' product of vowels. It is possible to suggest that vowel type-token has great influence on the occurrence of these errors. The closer the vowels in the vowel space the more vulnerable to confusion they are. The errors are attributed to wrong implementation, unfamiliarity constitute repetitions of learning errors of English vowels. However, the lack of proper learning of English vowels in a suitable academic context probably forms a major cause of the problem at issue. Interestingly, there is some convergence between the predictions made before this survey and the results where the two data share different facts (see Table 1). In general, the results converge with Flege (1995) and Ali (2015) where most English vowels form learning problems to Saudi students . According to Cruttenden (2014) English diphthongs derive from pure vowels a feature which triggers the reduction potential between pre and diphthongs English vowels. This problem occurs in words such as [*chase, chess, bate, bet/ wait, wet*] *etc.* Foreign learners of English; e.g. Arabic speakers, should make sufficient quantity of length making the correct reduction. A kind of some relationship exists between the occurrence frequency of the errors of English vowels of Saudi students described in table (2) and Cruttenden's (2014) vowel frequency hierarchy. According to Cruttenden the most frequent vowels are /ə/, /ɪ,/,/e/, /aɪ/iː/ /eɪ/ /ʌ/ /ɒ/ /ɔː/ /uː/ ʊ/, /eː/ and /ɔɪ/ respectively. Interestingly, the computation of correlation coefficient between Cruttenden's data of the frequency of English vowels (2014) and our data which treats the frequency of the errors of English vowels showed statistically a significant correlation between the two data where r-value is 520 (0.05). This result suggests that the more frequent the vowels are, the more they are susceptible to error making, a fact which reflects some convergence between the two results.

1.6 Conclusions

- Errors made in the pronunciation of front, central and back English vowels figure the highest percentage of frequency all through the pronunciation of Saudi students.
- Diphthongs are more susceptible to substitutions with the short and long vowels.
- The more frequent the vowels are the more they are vulnerable to pronunciation error making.
- Errors which Saudi students make in the pronunciation of front, central and back English vowels form frequent intelligibility problems.
- Lack of practice, wrong implementation and unfamiliarity of English vowels represent the main factors resulting in frequent occurrence of the pronunciation errors of English vowels.

1.7 Suggestions for further research

- Further studies that measure the effect of intensive listening should take place. This is because intensive listening helps Saudi learners of English to become familiar with the pronunciation of different vowel sounds in isolated words and in connected speech. Moreover, listening to conversations spoken with native speakers provides our learners with phonological information needed for implementation of English vowels.
- Elimination of the glide of diphthongs is important since the realization of some English pure and diphthongs vowels is often vulnerable to problems such as mergence and substitutions.
- Findings present elements to across-language research, which attempts to trap the contributions of research done in area of the pronunciation problems of English vowels.

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Appendix

Experiment material including English vowels short, long and diphthongs read by Saudi students of English

No	Colunm1	Column 2	Column 3
1	ask	mature	habit
2	bell	Benefit	earth
3	fill	ink	William
4	pot	cot	lot
5	book	could	good
6	hut	Bulk	cut
7	up	Visitor	Final
8	bar	hard	chart
9	beet	city	eat
10	fool	you	do
11	bought	short	taught
12	bird	heard	word
13	rate	pay	eight
14	wise	surprise	isle
15	cow	Allow	plough
16	boy	exploit	foil
17	note	boat	lonely
18	there	care	dare
19	here	ear	fear
20	sure	poor	