AN ANALYSIS OF MALAYSIAN ENGLISH MONOPHTHONGS BY KELANTAN DIALECT SPEAKERS

NUR IZYAN IZZATI BINTI NAZILAN

FACULTY OF LANGUAGES AND LINGUISTICS
UNIVERSITY OF MALAYA
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NUR IZYAN IZZATI BINTI NAZILAN

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AN ANALYSIS OF MALAYSIAN ENGLISH MONOPHTHONGS BY KELANTAN DIALECT SPEAKERS

ABSTRACT

This research provides an acoustic analysis of the English monophthongs produced by the Kelantanese dialect speakers; 5 female participants from a secondary school in Tumpat, Kelantan. The speakers were asked to produce 8 monophthongs [ɛ, u, o, ɔ, ə, i, e, a] of Kelantan Dialect and 12 monophthongs [i, ɪ, ɛ, æ, a, ə, u, ʊ, ɔ, ʌ, ɒ, ɑ] of English language. Words list, sentences and a short text in both Kelantan Dialect and English language were used in data collection. This paper aims to analyze the acoustic patterns of Kelantan Dialect and Malaysian English's vowels as produced by the Kelantanese participants. In addition, this paper also focuses to understand the vowel contrasts in terms of vowel quality and vowel length of Kelantan Dialect and Malaysian English monophthongs pronunciation. The finding of the study shows there are similarities and differences in the vowel quality of the English monophthongs produced by the Kelantanese speakers and other speakers of Malaysian English. However, the acoustic analysis done on the vowels produced by the participants did not show any influence of the dialect. Besides that, it is clear that English language used among Kelantan Dialect speakers are still in the early third phase; nativization of Schneider's Dynamic Model (2007).

Keywords: Kelantan Dialect, English monophthongs, dialect, language influence.

ANALISIS MENGENAI MONOFTONG MALAYSIAN ENGLISH OLEH PENUTUR DIALEK KELANTAN

ABSTRAK

Kajian ini memberikan analisis akustik mengenai sebutan monoftong bahasa Inggeris oleh penutur dialek Kelantan; 5 pelajar dari sebuah sekolah menengah di Tumpat, Kelantan. Mereka diminta untuk menghasilkan 8 monoftong [ɛ, u, o, ɔ, ə, i, e, a] dialek Kelantan dan 12 monoftong [i, ɪ, ɛ, æ, a, ə, u, ʊ, ɔ, ʌ, ɒ, ɑ] bahasa Inggeris. Kesemua peserta perlu menyebut senarai perkataan-perkataan, ayat-ayat dan petikan pendek yang terpilih di dalam dialek Kelantan dan bahasa Inggeris. Kajian ini bermatlamat untuk menganalisa pola akustik vokal dialek Kelantan dan bahasa Inggeris yang ditutur oleh penutur dialek Kelantan. Tambahan pula, kertas kerja ini mengkhususkan untuk memahami perbezaan vokal dari segi kualiti vokal dan tempoh vokal dialek Kelantan dan bahasa Inggeris. Dapatan kajian menunjukkan bahawa terdapat kesamaan dan perbezaan kualiti vokal yang diujarkan oleh penutur lain di Malaysia dan penutur dialek Kelantan. Dapatan analisis akustik juga tidak menunjukkan pengaruh dialek dalam sebutan bunyi vokal monoftong yang dihasilkan oleh pelajar. Selain itu, ianya jelas bahawa bahasa Inggeris yang digunakan dalam kalangan penutur dialek Kelantan masih lagi berada di peringkat awal fasa ketiga: nativisasi oleh Model Dinamik (Schneider, 2007).

Kata kunci: Dialek Kelantan, monoftong bahasa Inggeris, dialek, pengaruh bahasa.

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KD	:	Kelantan Dialect
MalE	:	Malaysian English
KBSR	:	Kurikulum Baru Sekolah Rendah
KBSM	:	Kurikulum Baru Sekolah Menengah
PPSMI	:	Pengajaran dan Pembelajaran Sains dan Matematik dalam Bahasa Inggeris
SPM	:	Sijil Penilaian Menengah
L1	:	First language
L2	:	Second language
EFL	:	English as a Foreign Language
TESL	:	Teaching of English as Second Language
F1	:	First formant frequency
F2	:	Second formant frequency
RP	:	Received Pronunciation

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CHAPTER 1: INTRODUCTION

English language is widely used in various countries around the world with its sole purpose as a medium of global communication. Malaysia is among the country which acknowledge English language as a second language for education and other formal setting. Looking back to six decades ago, Malaysia has been introduced to English language since the colonial era of British invasion. Since the early 19th century until the announcement of the independence day of Malaysia, English language was used as the official language for trading interaction, government's administration affairs, education system and many more (Tharmalingam, 2012).

For almost a decade, English language is continuously known as Malaysia's official language before the Independence Day in 1957. English language was used as a medium for primary and secondary school as well as in business transaction during the British invasion (Ramiza & Albion, 2013). During that period of time, Chinese people among the wealthiest community were able to attend schools with English language based education system while only selected Malay learners which are among the high societal rank had the benefit to attend one. However, the Indian community were unable to join such school due to the economic differences during that time. Due to the unfair educational opportunity among races in Malaya at that time, Razak Report 1956 aimed to establish a national education system and Malay as a medium of instruction for both primary and secondary schools.

English language became the second language and continuously used in administration settings despite of Malay language was announced as the official language after the Independence Day in 1957. According to Ramiza and Albion (2013), Malaysian government had changed the remaining English medium schools to national schools and imposed Malay language as the medium of instruction instead of English language. The

education system had gone through many changes throughout the six decades such as *Kurikulum Baru Sekolah Rendah* (KBSR), *Kurikulum Baru Sekolah Menengah* (KBSM), and *Pengajaran dan Pembelajaran Sains dan Matematik dalam Bahasa Inggeris* (PPSMI) which aimed to establish English language proficiency among school learners.

The language transformation policy introduced by the government had also intended to assist students with benefits in gaining various tertiary education's achievement and secure future employment. However, it was an unsuccessful effort by the government in changing Science and Mathematics subjects from *Bahasa Malaysia* to English. The change in language had negative effect as students were unable to understand the basic words of English language and consequently making them incapable to learn or understand the difficult subjects taught in English leading towards low scores in exams. Both teachers and students in the rural areas were terribly affected because their lingua franca is mainly *Bahasa Malaysia* and they considered English language as a foreign language instead of second language contrasting to those in the urban areas.

Now, Bahasa Malaysia is recognize as the national language after the Independence Day in 1957 as stated in Article 152: National Language (Federal Constitution, 2010). English language is known as the second language alongside various ethnicity languages and dialects available in Malaysia. Based on rankings provided by a company called EF English Proficiency Index (EF EPI) in 2018, Malaysia is ranked as the third most proficient country in English language among Asian countries and number 22 out of 88 countries involved in this ranking around the world. This record by EF EPI indicates that Malaysians are bilingual of both Bahasa Malaysia and English language in their daily interaction as well as other language such as Chinese, Indian and so forth. However, EF EPI rankings are deem as not reliable because of the EF Standard English language tests were distributed to those in the urban area and with internet access. Since this language

test is unreachable to most population in Malaysia, it is unfair to acknowledge most Malaysians are bilingual.

The education system in Malaysia practices 11 years of basic education to all students where they will go through 6 years of primary school, 3 years of lower secondary school and 2 years of upper secondary school (Nurul, Hazlina, Yoke-May, & Zariyawati, 2011). Students were already exposed to the English language as a subject to excel since preschool until secondary school as well as at the university level. English language is also a compulsory subject to be taken in *Ujian Pencapaian Sekolah Rendah* (UPSR), *Pentaksiran Tingkatan Tiga* (PT3), *Sijil Pelajaran Malaysia* (SPM) and *Sijil Tinggi Persekolahan Malaysia* (STPM). For primary school students, they have to learn for at least one hour to one and half hours per session for four to five classes weekly. Meanwhile, secondary school students have to learn English language subject for at least one hour and twenty minutes per session for three times weekly. Students are actually exposed to English language for almost every day and week during their school sessions. Teachers are mostly focusing on teaching grammar, writing and reading but rarely teaching the students on speaking or pronunciation lessons.

Hazita (2016) discussed that almost 50% of the students were English language illiterate after they had finished their primary schools. Hazita (2016) also stated that JobStreet.com had recorded 56% graduate unemployed due to poor English language proficiency. The percentage indicates that students were unable to apply English language in their daily interaction even after eleven years learning English language during the primary and secondary schools. Although most universities are using both Malay and English in the teaching and learning, students prefer to choose Malay language as it is easier and this has resulted in declining rate of their English proficiency.

Malaysian government had made various changes in the education policy as to improve the quality of English language performance among students but the enforcement was a failure. The government aims to prepare students for tertiary education especially in science and technology, and it is also to prepare English fluent workforce for the future. The changes had benefitted the urban communities but not for those students in the rural areas in Malaysia. The social medium of instruction among the rural communities is *Bahasa Malaysia* or their own dialects and English language remained as a foreign language for these communities.

Hazita (2006) stated the rural students in Malaysia are facing the various technological innovation challenges where most classroom were powered with technologies resources in the urban areas but not in the rural areas, unavailability of internet connection. Her research also indicates that Indians are the most multilingual including English language, followed by Chinese and Malays as the lowest among those in the selected rural areas in Malaysia. Most of the time, *Bahasa Malaysia* is the main medium of communication at home as well as primary media in Malaysia. Therefore, it is difficult for those rural students to be exposed to English language except only in school.

Despite Malaysia's English proficiency index is highly ranked within Asia and English language taught to students throughout the eleven years of studies, students are struggling to perform well in English language subject especially those from the rural areas in Malaysia. In 2015, it was recorded that only 0.04% of improvement for *Sijil Pelajaran Malaysia* (SPM)'s English subject for the state of Kelantan. Besides, English language subject was not listed among the subjects that percentages are outperforming at the national level for SPM 2015 (Jabatan Pendidikan Kelantan, 2015). Results obtained from SPM 2016 shows that the average grade of Kelantan state is 5.09% which increased by 0.06% than 5.03% as recorded in result of SPM 2015 (Jabatan Pendidikan Kelantan,

2017). This statistic is a representation of the declination in SPM's English language performance by Kelantan's students.

English language performance among students in Malaysia has always been a worrying matter and Malaysian government had announced the plan to make English subject as a compulsory pass for SPM starting the year of 2016 (Haikal, 2016). Luckily enough that the new policy was postponed as teachers, students and school authorities were not well prepared to undergo the compulsory pass of English subject. It is well known that Malaysia is facing a serious shortage of English school teachers. According to Tan (2018), there are more than 500 vacancies for English teacher in Kelantan state and the teachers who are teaching English language now are not proficient enough. Those unqualified teachers were required to teach English and bring confusion or misunderstanding among the students. As a result, students cannot improve their English proficiency level.

1.1 Contextual Information: Kelantan Darul Naim

Kelantan Darul Naim has ten different districts and is located in the north east of Peninsular Malaysia. The state of Kelantan is near to the border of Narathiwat, Thailand and facing the South China Sea, north-east of Kelantan. The capital city of Kelantan is Kota Bharu. Other districts are Tumpat, Tanah Merah, Kuala Krai, Bachok, Pasir Mas, Pasir Puteh, Jeli, Gua Musang, and Machang. The area of Kelantan Darul Naim is around 15,105km2 with a population of 1,760,000 people as of year 2015 (Department of Statistics Malaysia, 2016). Among the ethnic groups found in Kelantan are Malay, Siamese, Chinese, Indian, and Orang Asli. Currently, there are more than 418 primary schools and 174 secondary schools as well as other private schools, Islamic religious schools, Chinese vernacular schools, technical schools, *Maktab Rendah Sains MARA* (MRSM) and *Sekolah Berasrama Penuh* (SBP) are located in all 10 districts of Kelantan.

The main language spoken is Kelantanese Malay dialect alongside the standard Malay. Kelantanese Malay dialect is also known as Kelantan-Pattani Malay language, Kelantan Dialect or *Bahasa Kelantan* in Standard Malay. This research will refer to Kelantanese Malay dialect as Kelantan Dialect (KD). It is highly known that Kelantan Dialect is quite difficult to understand than the Standard Malay. There are various linguistic differences in term of phonological sounds, writing system and vocabulary. Phonologically, Kelantanese dialect consists of 35 phonemes; 8 main vowels, 7 nasalized vowels and 20 consonants (Mahmood, 2006). For example, the vowel differences between Standard Malay and Kelantan Dialect can be seen in the table below:

Table 1.1: Vowels in Standard Malay and Kelantan Dialect (Mahmood, 2006)

Standard Malay	Kelantan Dialect
/i/, /e/, /a/, /u/, /o/, /ə/	/i/,/e/,/u/,/o/,/ɛ/,/ʌ/,/ɔ/,/ə/

1.2 Problem Statements

Kelantanese used unique style of language that is difficult to understand for most Malays and the dialect has affected the way of teaching and learning of English language in Kelantan. The medium of instruction of English classroom is conducted mostly in Kelantan Dialect as both teachers and students are comfortable using the dialect instead of the national language, *Bahasa Malaysia*. Besides Standard Malay, Kelantan Dialect was another choice of language used in their daily communication among students and their teachers. Therefore, it will become difficult for these students to correctly learn English as the phonological differences between Kelantan Dialect and English can lead to confusion and mispronunciation of English words.

Minderjeet (2015) once reported that many schools in Kelantan particularly in Tanah Merah received unqualified English teachers to teach English language subjects at those schools. Some of them have problems in pronouncing English correctly hence, students were taught wrongly and this has caused them to mispronounce English words too. It is a worrying matter as this can lead to miscommunication between speakers and listeners especially when the students are to further studies at a higher level or in their future employment opportunities where the medium of communication is English language.

Kelantan Dialect is the everyday language spoken between the Kelantanese in Kelantan. Zuraidah (2003) described Kelantan Dialect as different from standard *Bahasa Malaysia* with its own pronunciation, syntax and vocabulary system. At school, they mostly used different linguistic rules than the standard language accepted at most school or communities outside Kelantan. This is due to linguistic divergence which considered difficult to understand by the non-Kelantanese. Consequently, the linguistic distance has slowed down the Kelantanese students to properly communicate in Standard Malay as well as other languages, which in this case is the English language. Again, Zuraidah

(2003) emphasized that this situation might occur to those who have been living in Kelantan since birth and received their formal education only in Kelantan.

Other than the language problem occurring among the Kelantanese students, there are less research done on the influence or effect of Kelantan Dialect in other language learning process. There have been many research done on Kelantan Dialect in terms of its language system, accent, code-switching, language choice and many more. However, few research were done in the past focusing on instrumental analysis in phonetics especially on consonants and vowels; monophthongs and diphthongs. Maria (2002) had done research on the phonological features of Kelantanese students' pronunciation of English consonants and she recommended more research should be done on Kelantanese' English vowels and consonants as to provide solutions to problems in learning English in Kelantan. Therefore, this research might able to recognize the root problem in English pronunciation among Kelantanese students, providing both teacher and students with better vowel understanding, and produce helpful vowel charts for future reference.

1.3 Research Purpose

This research is done to understand the Malaysian English vowel analysis produced by the native Kelantanese secondary school students in Kelantan. This research aims to analyze the vowels pronunciation produced by the students through acoustic analysis and later identify the vowel distribution on the vowel charts of different categories. This is done to understand the vowel patterns produced by the Kelantanese students. This research also aims to analyze the quality of the English monophthongs produced by the students in Kelantan. Other than that, this research also aims to improve the classroom teaching and learning conditions in terms of pronunciation and oral skills among the teachers and students in Kelantan.

1.4 Research Objectives

1. To analyze the acoustic properties of Kelantan Dialect and English monophthongs as produced by the Kelantanese speakers.

2. To understand the similarities and differences between Kelantan Dialect and Malaysian English in terms of vowel quality and length as produced by the Kelantanese speakers.

1.5 Research Questions

1. What are the acoustic properties of Kelantan Dialect and English monophthongs as produced by the Kelantanese speakers?

2. To what extent does the Kelantan Dialect and Malaysian English contrast in terms of vowel quality and vowel length as produced by the Kelantanese speakers?

1.6 Significance of the Research

With limited research done on the influence of Kelantan Dialect on acoustic properties of English monophthongs, this research will attempt to further understand the Malaysian English's vowel quality produced by the Kelantanese students. The vowel charts between Kelantan Dialect and Malaysian English will allow better perception on either both language did influence each other or not. This research will definitely be able to help other researcher to gather more information regarding Kelantan Dialect and English vowels especially on vowel charts and more.

With extra information from this research paper, teachers and students can recognize which English vowel sounds that pose problems among students in Kelantan. Teachers are also able to understand the reasons behind the English words' mispronunciation and overcome this problem with thorough explanation on English vowels and so forth although they have less knowledge in English language. This research might also introduce a familiar and better teaching-learning method of English language at secondary school level: read-aloud practice.

1.7 Scope and Limitation of the Study

The most obvious limitation highlighted in this research paper would be its database. Only one secondary school in Kelantan and 5 female participants were selected for data collection purpose as well as time constraint to include more participants in contributing data for this research. Since this research were done during school hours, the classroom teacher only allow certain time limit for both voice recording and interview session. Secondly, this research will be focusing on the measurement of vowel monophthongs only and diphthongs are not included. Hence, this research will only produce result based on vowel monophthongs analysis of the Kelantan Dialect and Malaysian English vowel properties produced by the Kelantanese secondary school students.

CHAPTER 2: LITERATURE REVIEW

2.1 Definition: Dialect

Holmes (2008) had stated that dialects can be defined as linguistic varieties which are prominent by their distinct vocabulary, grammar pattern and pronunciation pattern as well as the speech that are spoken by people from different social, as well as regional or groups that are different in these ways. It is the variety of linguistic patterns which has its own pronunciation, vocabulary and grammatical system as well as can be understood by a certain group of people, society or ethnicities.

According to Cambridge Dictionary (2018), dialect is a form of a language that people speak in a particular part of a country, containing some different words and grammar. That particular part of a country can be further explain by their geographical barriers. Even though two states are near to each other, they might have a different set of dialects with different linguistics system. Dialect is also a language variation where characteristics reflect the identity of the language users (Solano-Flores, 2006). Dialect projects its own social structure such as origin, social class as well as gender and it provides mutual intelligibility within the same linguistic group.

2.2 Dialects in Malaysia

Malaysia is a multilingual country represented by various races and religions group which *Bahasa Malaysia* is spoken as the national language and English as the second language for various populations. There are Malays, Chinese, Indians and other ethnic groups with their own language system. Based on the Malay Phonology statistic provided by Wikipedia (2018), there are 137 living languages spoken in Malaysia with 41 of the languages can be found in Peninsular Malaysia. Iban, Dusun, and Kadazan language are among the largest native languages spoken in Sabah and Sarawak, East Malaysia. There are three languages used for schooling; Malay, Mandarin, and Tamil.

Malays in Malaysia speak *Bahasa Malaysia* and Abdul Hamid et al. (1986) reported that there are varieties of regional dialects spoken in Malaysia. For instance, the regional dialects are Kelantan Dialect, Terengganu dialect, Pahang dialect, Kedah dialect, Perak dialect, Perlis dialect, Negeri Sembilan dialect, Melaka dialect, Johor dialect and so forth. Table 2.1 below shows examples of different sentences of Perak, Kedah, Negeri Sembilan, and Terengganu dialects.

Table 2.1: Examples of Perak, Kedah, Negeri Sembilan and Terengganu dialect

Perak Dialect: "*Teman maghoh beno dengan mike ni*!" English : "I am so angry with you!"
Kedah Dialect: "*Setiap pagi Hashim kayuh gherek ke tempat gheja*." English : Hashim will ride a bicycle to his work place every morning.
Negeri Sembilan Dialect: "*Dogheh la sikit, kito dah lambek ni!*" English : Please be faster, we are late now!
Terengganu Dialect: "*Nok gi mane tu oh?"* English : Where are you going?

2.3 Standard Malay Language

Standard Malay language, *Bahasa Melayu,* or *Bahasa Malaysia* is the official language spoken by the communities in Malaysia since 1968. It is the standard language for education, administrative, legal, and various official matters. Standard Malay is originated from a Malay dialect spoken in the southern state of Johor and the Indonesian province of Riau (Suhaila, 2016). There are approximately 26 consonant phonemes and its vowel system has 6 monophthongs and 3 diphthongs. Abdullah Hassan (2005) listed that there are 6 standard vowel phonemes in *Bahasa Malaysia*: [i, e, a, u, o, ə]. Vowel sounds in Standard Malay are separated into three; front vowel, middle vowel, and back vowel. The vowels placement in Standard Malay is shown in Table 2.2 below:

Table 2.2: Monophthongs in Standard Malay

	Front	Central	Back
close	[i]		[u]
mid	[e]	[ə]	[o]
open		[a]	

(Wikipedia, 2018)

2.4 Kelantan Dialect

Kelantan Dialect is a regional dialect mainly spoken by people in Kelantan, located at the north-east of Peninsular Malaysia. Phonemically, Kelantan Dialect has 35 phonemes which are 8 vowel phonemes, 7 nasalized vowel phonemes and 20 consonant phonemes (Mahmood, 2006). The 8 vowel phonemes are [i, e, ɛ, a, u, o, ɔ, ə] and the 7 nasalized phoneme are [ĩ, ɛ̃, ã, u, ũ, õ, ɔ̃]. For consonants, there are 6 places of articulation; plosives [p, b, t, d, k, g, ʔ], nasals [m, n, ɲ, ŋ], fricatives [s, z], affricates [tʃ, dʒ], approximants [j, w] and lateral [l] (Hamzah, 2013). Table 2.3 below is the vowel phoneme chart as introduced by Nik Safiah (1965, 1966), Ajid (1985) and Abdul Hamid (2006):

Table 2.3: Monophthongs in Kelantan Dialect

	Front	Central	Back
close	[i]		[u]
mid	[e] [ɛ]	[ə]	[o] [ɔ]
open	[a]		

(Abdul Hamid, 2006)

Kelantan Dialect offers different sets of vocabulary where it can be quite difficult for outsiders to understand the language. For example, one word in Kelantan Dialect can be translated into 2 different meanings in Standard Malay. Table 2.4 and 2.5 below will provide various examples on Kelantan Dialect's vocabulary and sentences translated into Standard Malay and English language.

Table 2.4: Vocabulary in Kelantan Dialect

Kelantan Dialect	Standard Malay	English Translation
pehe	*faham*	understand
beghehi	*suka*	like
manih leting	*sangat manis*	too sweet
katok	*pukul*	hit
	katak	frog
mari	*mari*	come
	almari	cupboard

Table 2.5: Sentences in Kelantan Dialect

KD: *"Saing ambo ni berehi minung air teh o ais lima."* SM: *"Kawan saya ni suka minum air teh o ais limau."* ME: My friend loves to drink Iced Lemon Tea.
KD: *"Sapo yo tepon kamera hok comey, bawok tubik ah."* SM: *"Siapa ada telefon kamera yang lawa/elok, bawak keluarlah."* ME: Whoever has a good telephone with camera, let it out.
KD: *"Aku tok kene denge kaler baju ni!"* SM: *"Aku tak berkenan dengan warna baju ni!"* ME: I don't like the colour of this shirt!

2.5 Studies on Regional Dialects

The diversity in regional dialects in Malaysia offers different phonological system than the standard language and further complicates the L2 learning. According to Solano-Flores (2006), a dialect is a language variety produced by a certain social, ethnic or regional group and the language itself is a unique representation of the group. Collins (1989) had listed the regional dialects available in Malaysia such as Pulau Pinang, Kedah, Perak, Selangor, Perlis, Negeri Sembilan, Johor, Melaka, Terengganu, Kelantan, Pahang, Sarawak, and Sabah as the author Safiah et al. (1986) named in Dewan Bahasa dan Pustaka.

In the sociolinguistic scene, dialect variation based on its geographical areas is organized under dialect continuum, which is the bigger and closer the area, the greater their mutual understanding. The east coast states of peninsula Malaysia; Kelantan and Terengganu offer a similar continuum and dialect understanding although they have different dialect systems. For Kelantan and Terengganu, they have different Malay dialect phonological systems but they share the same historical and cultural ideas contained in their dialect (Suhaila, 2016). Their dialect is their medium of daily communication and hardly have any second language except for educational purposes. Furthermore, it is well known that the higher the linguistic distance between places, the lower the mutual intelligibility shared by these communities to the outsiders. Outside communities will find it difficult to understand the Kelantan Dialect spoken by the Kelantan communities. On the other hand, the Kelantan communities will have difficulties to learn other languages or in other word; English as a foreign language for them.

There were numerous research on Kelantan Dialect conducted in the past. Many of the research were focusing on its accent and identity (Rosniah et al., 2011), Kelantan Dialect's code-switching in a multilingual context (Zuraidah, 2003), the usage of

Kelantan Dialect in cyberspace (Azrizan et al., 2017), and so forth. In the area of phonetics and phonology, Ajid Che Kob (1985) had come up with the earliest research on Kelantan Dialect used in Pasir Mas, Kelantan. He found 20 consonants and 8 vowels of Kelantan Dialect which were different based on zones or villages in Pasir Mas. Abdul Hamid (1994) had compared Kelantan Dialect with Standard Malay in terms of their phonology, morphology, syntax and lexical system.

Only few research were available regarding Kelantan Dialect's consonants and vowels, especially on its instrumental analysis. The focus of the research was on the pronunciation of English consonants by the Kelantanese students (Maria, 2002), on the Kelantan Malay dialect consonants inventory (Adi, 2005), on the variant of Kelantanese dialect (Riduan et al., 2017), and many more. Suhaila (2016) had done research on the possible influence of the regional Malay dialect on Malaysian English monophthongs although no direct influence appear in her research. Most of these research were continuously providing more data on the variant phonological system of Kelantan Dialect. However, it is still obvious that the research gap is emerging for future research as instrumental analysis research based on the Kelantan Dialect is limited.

2.6 English Language Status in Malaysia

The position of English in language learning setting has always been a controversial issue in Malaysia. With bilingualism and multilingualism teaching and learning system in Malaysia, languages used at school depend on its school type. *Bahasa Malaysia* is the standard language for national school, Tamil and Mandarin for vernacular school, and English is used for education purposes. Nevertheless, some households in Malaysia practices English as their second language in everyday interaction and not only at school. Only in recent years, the Malaysia government is highly looking forward to the English language as one of the country's future development and knowledge. Lowenberg (1991) stated that the English language in Malaysia is progressing and successfully adapt to the political, socio-cultural, and economic setting of improving Malaysia.

Despite teaching Science and Mathematics in English brings negative results and opposition from various parties, the policy is helping Malaysia towards a developed nation and preparing multilingual society to advance among other leading countries. English language is constantly accepted as a global language although its existence in secondary level of Malaysia's education is continuously changing through time. According to Iber (2016), only 45 minutes of English learning classroom time was allocated per day and 157 hours per year during the 210 days of the school year in Malaysia. The whole 45 minutes could be lesser if the English learning classroom time includes various distraction from both teachers and students. Thus, they only have lower English exposure at school where the school might be the only place for English as a medium of interaction, especially for the rural school areas in Malaysia.

An article by Hussaini in New Straits Time (2016) indicates that unemployment percentages were increasing throughout the years as most fresh graduates or interviewees have poor command of the English language. English language is taught as a preparation

for the students to perform well at a tertiary level or working forces. However, the lack of English language exposure at school will not help the students to improve their English skills. Malaysia education blueprint 2013 – 2025 stated that teachers in urban and suburban areas were to undergo English training course for 4 hours within 44 weeks during the first wave of strengthening the current education system, around 2015. Meanwhile, rural areas' English teachers will have to attend the intensive English training course whenever they do not meet the standard. An article by Yesuiah in The Star (2016) reported that almost 15,000 teachers are not proficient enough to teach English. The lack of English proficiency among teachers will eventually affect the students.

2.7 Teaching and Learning of English

Learning L2 is challenging considering the second language's phonological characteristics are different from the first or native language. The L1 characteristics can be incorporated into the knowledge system of L2 during the development of the speaker's second language learning (Ellis, 1994). Many research papers tried to investigate further the idea of language transfer phenomenon that is unconsciously taking place in second language acquisition. For example, Chinese vowels and English vowels shows similar pattern among Chinese EFL students (Chen & Wang, 2011), there are no differences in short and long vowels among Malaysian English speakers (Azirah & Tan, 2010), and there were a difference vowel pair durations between Malaysian English and Received Pronunciation (Pillai, Zuraidah, Knowles, & Tang, 2010).

It is impossible to say that there is no language interference when learning the L2 especially when the learners perceive L2 as a foreign language. An article by Ali and Elham (2015) review the idea of L1 and L2 interference. Both authors agreed that the L1 will interfere with L2 language learning. It is said that the L1 and L2 can either be similar or different in regards to the language's structure, learner's previous knowledge, learner's proficiency and also consonant clusters of both languages. Similarities will cause fewer errors in learning L2 but differences will bring problems to L2 learners. Phonology, vocabulary, and grammar are among the errors made from L1 habits in L2 learning (Beardsmore, as cited in Ali et al., 1982).

Maria (2002) had previously discussed that there was L1 influence in the acoustic pattern of English consonants produced by the Kelantanese TESL students in her research. The strong Kelantan Dialectal features could have assimilated to those features in L2 and lead to the wrong usage of the phonological system or pronunciation pattern. Besides, Shahidi & Rahim (2010) had proven that Kelantanese Malay dialect does

influence the standard Malay pronunciation pattern which has lesser acoustic distinction. These existence of Kelantan Dialect research offers various new questions that can be answered through advanced research concentrating on consonants and vowels; monophthongs and diphthongs. Although this present study only contributes precious data on Kelantan Dialect's monophthong analysis and vowel contrast, it is hoped to provide better understanding and lead to more analysis in comparison to Malaysian English and other languages.

2.8 Formant Frequency Model

The formant frequency model was used to analyze the vowel properties of Kelantan Dialect and Malaysian English in this present study. Formants are different frequencies of components produced through sound signals or speech. As suggested by Watt and Tillotson (2001), formant frequency model can separate each vowel qualities into frequencies (in Hertz format) of the lowest formant; F1 and F2 frequencies. Vowel quality production involved tongue movement based on its height (also known as lip rounding), front and back. F1 frequency denotes vowel height and F2 frequency is for vowel fronting. Meanwhile, vowel length is measured in milliseconds. Later, the result introduced in formant plots will be able to provide an almost representation of each vowel qualities (Watt & Tillotson, 2001). The F1 and F2 frequencies were measured through waveform and spectrogram analysis using PRAAT software (version 6.0.04).

2.9 Schneider's Dynamic Model

English language is a widely used language for various countries around the world and there are three different users namely English as a native language, English as a second language and English as a foreign language. English has eventually evolved throughout the years and Schneider (2007) proposed a Dynamic Model to understand the developmental process and formation of its system and elements of the English language. The Dynamic Model of five progress or characteristics can be seen in Figure 2.1 below.

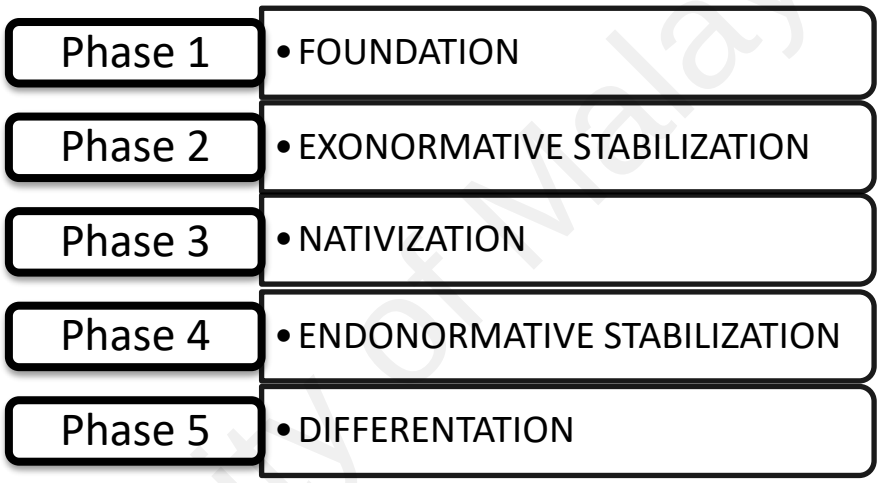

Figure 2.1: Schneider's Dynamic Model (2007)

Schneider's Dynamic Model offers 5 different phases of new Englishes and can be defined through 4 types of parameters; extra-linguistic factors, sociolinguistics, identity construction, and structural effect. The first phase is the foundation where the settlers spread out English through a colonial expansion in a non-English speaking country. The settlers and indigenous separates themselves from each other, enable contact within their limitation and established changes as the difference in linguistic system is too complex. This lead to koineization, pidginization, and toponymic borrowing since the beginning.

The second phase is exonormative stabilization. This phase involves English language communication establishment from the settlers for administration, legal or education

system. The settlers imported the standard and norms of English into a variety of English such as Standard English for Singapore, Malaysia and Brunei (Lim, 2014). During this phase, linguistic transfer was mixed up with the local language, grammatical or phonological changes happened, and name coinage affected by the linguistic changes. These changes shifted the indigenous or its population to shift towards a new language or second language, English.

Third is the nativization phase, an important phase as it oversees overall linguistic transformation for both settlers and indigenous groups. New identity emerged and slowly reducing the complex gap between the two groups. The increase of bilingual and multilingual speakers had created numbers of grammatical features as well as other linguistic patterns such as verbs and code-switching. Countries such as Malaysia, Hong Kong or the Philippines encounters language distinctions in phonology, morphology, and syntax.

The fourth phase is the endonormative stabilization where the population groups increasingly accepted and adopted the English language in their daily interactions. This new identity is now known to be important and become permanent within the group. Schneider (2007) labeled this identity as "English in X" such as "English in Malaysia" which later progressed into "Malaysian English". The acceptance of the new English allows its usage in both formal and informal settings; governmental, education or even as the daily medium of communication.

Last but not least, differentiation is the final phase of Schneider's Dynamic Model. This phase involves the emergence of new national language varieties and free from any political, cultural or linguistic elements. The new English variety is established free from the power and other external sources, and it is self-define to represent its social and cultural identity. Besides, the new English offers internal linguistic markers for its group

and might coexist with different indigenous languages available in the country. For example, English can become the second language variety in Singapore or the first ethnic dialects in South Africa. The variation or changes can lead to histories, policies, linguistics, and other social developments such as Malaysia; educational language policy changes over time.

Malaysia is now considered in the third phase: nativization (Kirkpatrick, as cited in Lim, 2007). Schneider's Dynamic Model offers enough guidance in understanding the status of Malaysian English among the Kelantan Dialect users. Chapter 5: Discussion will offer more explanation regarding this by examining the vowel contrast between Kelantan Dialect and Malaysian English. It is hoped that the status of Malaysian English perceived by Kelantan Dialect users can be acquired through Schneider's Dynamic Model.

2.10 World Englishes

World Englishes can best be defined as the varieties of English spoken or developed through the native countries of the United Kingdom or the United States of America and spread to other countries. These varieties of English language spoken all over the world is commonly called as World Englishes by Kachru (1985). Kachru's model of World Englishes contains 3 circles of English. Figure 2.2 is the model of Kachru's Three Circles of English:

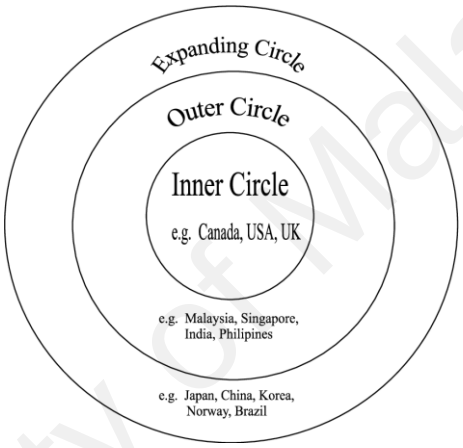

Figure 2.2: Kachru's Three Circles of English (1985)

The first circle is called Inner Circle which refers to English language (spoken and written) of its historical and sociolinguistics origins, and it is also where English language starts to spread out across the world. Normally, the English native speakers come from the United Kingdom, America, Australia, New Zealand, Ireland, and so forth. The second circle is the Outer Circle which English language spread out because of the former conquest by the United Kingdom or America in Asia and Africa. English is known as the second language in India, Bangladesh, Malaysia, Philippines, and many more. However, Singapore may drift into the inner circle since English is the common first language used every day. Last but not least is the Expanding Circle. This circle includes countries that use English language as a global language with no governmental or historical function

such as Japan, Indonesia, South Korea, China, Russia, and so forth. English language functions as limited purposes for these countries.

According to Kilickaya (2009), Kachru's Three Circle of English focusing on the Outer Circle is in contrast to Selinker's Interlanguage theory (1972). Selinker believes that interlanguage occurs between the L1 and L2 and leading towards error production if too much interference occurs in second language learning. Fossilization happens when the learners make continuous error productions. Later in 1992, Selinker added that fossilization could happen to the context of World Englishes especially the Outer Circle. Kachru refuted that English taught in Outer Circle countries uses common standards in the use of English under the various sociolinguistic contexts while Widdowson (1994) added that most English users in Outer Circle learn English through educational context while following the English language teaching and learning standards.

2.11 Malaysian English Language

Malaysian English (MalE) is a standard form of English generally used in Malaysia. Azirah and Tan (2010) discussed that there is no distinction between long and short vowels among MalE speakers. Because of the difference in vowel contrast, most vowel pairs were realized as single vowels: /i/ and / ɪ/ become [i], /uː/ and /ʊ/ become [u], /æ/ and /e/ become [e], /ɔː/ and /ɒ/ become [o], /ɑː/ and /ʌ/ become [a], and /ə/ and /ɛ/ become [ə]. Pillai, et al. (2010) discussed that the vowel contrast in MalE differs slightly to the classical notion of English phonemic contrast. Other claims that this happened because of the L1 interference and different level of proficiency.

According to a research done by Zaidan (2014), MalE have been able to reflect their own cultural identity and at the same time, Malaysians became smarter to use English following the standard RP's pronunciation. However, the vowel placement is still greatly differed to RP such as vowel [e] becomes a mid-low front vowel and short vowel [ɪ] is similar to long vowel [i]. The vowel length is shorter than those vowels in RP and the vowel placement in MalE will affect the users' way of pronunciation.

Many research papers are focusing on comparing MalE with different languages other than RP. It is known that MalE offers unique pronunciation features that reflected the users as Malaysian or among Malay, Chinese and Indian ethnicities in Malaysia (Phoon, et al, 2013). Although MalE offers similar vowel inventory to RP's, Phoon and Maclagan (2009) stated that the vowel realization is different where diphthongs are simplified such as diphthong [eɪ] in the word 'face' becomes either [eɪ] or just [e]. Besides that, the vowel duration is produced shorter similar to other MalE vowel contrasts discovery (Azirah & Tan, 2010; Pillai, et al., 2010).

Phng (2017) discovered that all of the Malay group participants were able to differentiate all 12 vowels tested in the research but the vowel placement had been shifted. The vowel [u:] has become lower and diphthong [eɪ] becomes a fronted diphthong in the vowel space. This research found few results similar to the research of Pillai, et al. (2010) where again there is no contrast between vowel [i] and [ɪ], and identical vowel placement of the vowel space in Pillai's MalE vowel chart. Besides, the L1 may influence the movement changes in the vowel space.

Zuraidah (1997) also stated that Malay language has smaller vowel structure and no vowel length differences among its vowels. This eventually leads Malay speakers to have similar vowel length and duration, and exchange the unavailable RP's vowels with the Standard Malay vowels. Zuraidah (1997) found that these vowel pairs are realized as a single vowel such as [i:] and [ɪ] become [i], and [u:] and [ʊ] become [u].

CHAPTER 3: RESEARCH METHODOLOGY

Chapter 3 will describe all the research methodologies used in this study. This chapter will clearly explain the selection of participants suitable with certain specific aspects needed to conduct this research. Besides, this chapter will also determine the advantages and disadvantages of selecting the participants or the types of sampling tools to gather the participants in providing valid results for this research. Last but not least, this chapter explains the methods for data collection as well as the method to analyze all the data gathered in this research. Basic ethical conducts or concerns for both research and participants are also discussed in this chapter.

3.1 Background of Selected Participants

Only one secondary school in Kelantan was selected for data collection which is Sekolah Menengah Kebangsaan Kampong Laut, Tumpat. This secondary school is located 16 km from the city center of Kota Bharu. SMK Kampong Laut was selected because it was easier to visit for data collection among the other schools in the rural area of Kelantan. All participants were from the Malay ethnic group speaking of Kelantan Dialect, born in Kelantan, raised, and currently residing in Kelantan.

To understand the monophthongs pronunciation between Kelantan Dialect and Malaysian English, 5 female of Form 2 students were selected through a purposive sampling and records provided by the school administration. Only Form 2 female students were selected for this research as their maturity of English language proficiency and English learning experiences at school were still low during the time this research's data collection was done. The selection of participants with low maturity in English language

is important because the participants already had a basic understanding on the English language of secondary school level from experience during Form 1.

The participants' English language proficiency level was stated as lower-intermediate to an intermediate level according to their English teacher. Moreover, they were not involved in any important examinations as advised by the Ministry of Education in not using any students that are involved with major examinations at school for research purposes. Therefore, only Form 2 female students were selected since Form 1 was still new with secondary level of English language and Form 3 until Form 5 were involved with major examinations.

All details on the 5 selected participants from SMK Kampong Laut, Tumpat were recorded in Table 3.1 below:

Table 3.1: Details on Participants of SMK Kampong Laut, Tumpat

Participants' Code	Gender	Age	Form	Place of Origin	English language background	Home language
S1	Female	14	2	Kampung Laut 1	School	Kelantan Dialect
S2	Female	14	2	Kampung Palekbang	School	Kelantan Dialect
S3	Female	14	2	Kampung Laut 2	School	Kelantan Dialect
S4	Female	14	2	Kampung Laut 1	School	Kelantan Dialect
S5	Female	14	2	Kampung Kok Keli 2	School	Kelantan Dialect

3.2 Data Collection Method: Recordings and Interview Session

Data collection of this research took 2 days from the 20th until 21st February 2017 which involved 5 female students of SMK Kampong Laut, Tumpat in Kelantan. The data collection session was done with the help of school administration officers and the participants' English subject teacher. The school officer suggested the media room which was located on the second floor of the school's administration block. Recording and interview sessions were done in a quiet media room at the school compound by using a REMAX voice recorder (RP 1 model). The recording sessions involved only built-in microphone from the recorder throughout the whole sessions and all sound files were saved under WAV format in a laptop.

Consent forms with all research details were handed out on Monday, 20th February 2019 to the selected participants as they were still underage and were given to their parents' permission after school before starting the research's recording and interview session. Every detail of the research including its objectives, aims, and research methods were included with the consent forms for parents' better understanding. Both signature of parents and students were needed to proceed with the research's data collection. All parents and students had provided consent to this research and returned all the consent forms on the next day. The data collection was done on Tuesday, 21st February 2017 at the school's media room. All participants' details, consent forms, list of data and interview recordings are attached at the appendix of this research.

All selected students were gathered at the media room by their English teacher who granted approval during their English period lesson. Before starting the data collection, they were asked to fill in their information in a provided form with name, age, place of origin, English language background, home language, and their signature. Later, they were called one by one for recording and interview sessions at the back of the room with

no noise disturbance and both session took 15 to 20 minutes per participant. To collect the sound data from the participants, the recorder was held by hand within 5 to 10 inches from the participants' mouth. Hence, clearer and precise sound can be collected for data collection.

During the recording session, each participant was provided with one Malay words list, one Malay sentences list, one English words list, and one English short text. For each word list, sentence list and short text, every participants need to read it out aloud and repeat the list for 3 times for the collection of most natural data. First, they were given the Malay words and sentences list where they repeated the list in Standard Malay and Kelantan Dialect. Standard Malay data were collected as to have prior understanding of the words' original pronunciation in Standard Malay and only later the participants had to pronounce the word in Kelantan Dialect. Secondly, they were given the English words and sentences list where they had to pronounce for 3 times. Last but not least, they were told to read an English short text for 3 times as to compare the results between words, sentences and short text. The Malay and English words, Malay sentences along with English short text were listed in Table 3.2, 3.3 and 3.4.

3.3 Instruments for Data Collection

Table 3.2: Malay, Kelantan Dialect and English words' list

Malay Words	Kelantan Dialect Words	English Words
makan	*makɛ* [ɛ]	beat [i]
ukur	*ukur* [u]	bit [ɪ]
subuh	*suboh* [o]	met [ɛ]
emak	*mɔk* [ɔ]	mat [æ]
penuh	*pənuh* [ə]	card [a]
ikan	*ikan* [i]	girl [ə]
esok	*esok* [e]	boot [u]
kawan	*kawan* [a]	book [ʊ]
		cup [ʌ]
		got [ɒ]
		car [ɑ]

Table 3.3: Malay sentences' list

1. Saya suka **ma<u>kan</u>** ayam goreng
2. Ayah saya seorang juru **<u>u</u>kur** tanah
3. Nenek telah pergi ke pasar di waktu **su<u>buh</u>**
4. Saya sayang **e<u>mak</u>** saya
5. Tong itu **<u>pe</u>nuh** dengan air
6. Kucing saya gemar memakan **<u>i</u>kan**
7. Saya perlu menghantar kerja rumah pada **<u>e</u>sok** hari
8. Saya mempunyai ramai **<u>ka</u>wan** di sekolah

Table 3.4: English short text

English Text
On a rainy day in May, a **girl** was going to buy a loaf of bread, a birthday **card**, a note**book**, a **mat** and a small **cup** at a shop. While on her way back home, she accidently **met** with a boy who was wearing a pair of red **boots** and **got** **beat**en by a group of strangers. **Bit** by bit, she gathered her strength and shouted for help. After they ran away, she helped the boy and **brought** him to the clinic by **car**.

The vowels targeted in this research were the 8 vowels [ɛ, u, o, ɔ, ə, i, e, a] for Kelantan Dialect and 12 vowels [i, ɪ, ɛ, æ, a, ə, u, ʊ, ɔ, ʌ, ɒ, ɑ] for Malaysian English language. Only vowel [ɔ] for word 'brought' were included under the English short text for additional data analysis. The data materials were designed using words list, sentences and short text as it will be easier for the participants to read and pronounce. After they finished the recording session, a semi-structured interview of 6 simple questions was done to acquire more information and opinions of the participants' performance and struggle in the learning English language. Each participant took approximately 5 to 10 minutes to answer the interview questions. By the end of the data collection session, each participants were given a shopping voucher as a token of appreciation for taking part in this research. Later, all of the recorded data were transferred from the recorder into a computer using a USB cable for easier data analysis.

3.4 Data Analysis Method

In order to understand the vowel quality and vowel length produced by female participants, PRAAT software (version 6.0.04) was used to analyze the F1 and F2 frequencies. All recordings were recorded in sound files of WAV format. All sound files were added to PRAAT software for both vowel formant frequencies and vowel length measurements with reference to waveform and spectrogram as shown in figure 3.1 below.

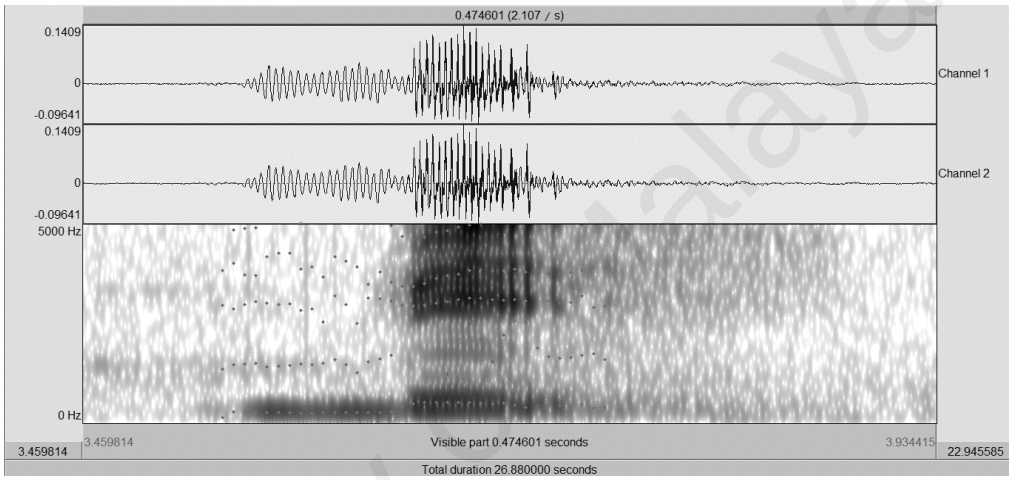

Figure 3.1: Screenshot of waveform and spectrogram from the word *bit*

Firstly, the recorded sound was transferred into PRAAT software and each word was identified for each participants' analysis. Only the first two formants and the duration of the vowels were measured as suggested by Pillai et al. (2010). By using the formants tracker function in PRAAT software, both first and second formants were measured. However, the formants can be measured manually whenever it is necessary by moving the vertical time cursor to the targeted vowel and select the vowel from its beginning to the end of the vowel. Both formants and duration of the targeted vowel can be achieved by the vertical time cursor movement on the spectrogram.

Formant frequency model was used where F1 frequency denotes vowel height, F2 frequency is for vowel fronting and vowel length is measured in milliseconds. The Kelantan Dialect sound recordings of 8 vowel monophthongs [ɛ, u, o, ɔ, ə, i, e, a] contained in the words and sentences listed were analyzed by using the most natural sound recordings. In this research, the first recorded sounds of every data categories were used. For English language sound recordings, 12 vowels of [i, ɪ, ɛ, æ, a, ə, ʊ, o, ɔ, ʌ, ɒ, ɑ] from words, sentences, and short text list were analyzed using the same PRAAT software.

The F1 and F2 average of each vowel was formatted into F1 and F2 (Bark) scale. A formula by Traunmüller (1990) was used to convert a formant frequency in Hertz (Hz) format into Bark scale to remodel the dimension of the auditory system. The Bark scale formula is shown below:

$$\text{Bark} = 13\arctan(0.00076f) + 3.5\arctan((f/7500)^2)$$

All frequencies in Hz and Bark scale, as well as duration in milliseconds, were recorded into its list of tables and scatter plots following the categories of KD's word, KD's sentence, KD's English words, KD's English sentences, and KD's English short text. All vowel measurements were presented into scatter plots as to present vowel distribution produced from each language. From then on, it is easily visible to understand the vowel contrast between Kelantan Dialect and English language.

Further comparison between KD's English vowel chart and MalE's vowel chart (Pillai et al., 2010) was done to understand the vowel contrast in terms of its quality and duration. The semi-structured interview acquired from the participants will be transcribed and analyzed for chapter 4; findings.

CHAPTER 4: DATA FINDINGS

During the data collection sessions, 5 female participants had been selected carefully according to the specific aspects required to gather the data for this research. Data were gathered from 5 participants selected from Sekolah Menengah Kebangsaan Kampong Laut, Tumpat. The participants were provided with lists of Malay words, Malay sentences, English words, and English short text during the recording session. They were asked to read aloud Malay words and sentences in Kelantan Dialect for three times which the words are *makan*, *ukur*, *subuh*, *emak*, *penuh*, *ikan*, *esok*, and *kawan*. Next, they were asked to read aloud English words which are beat, bit, met, mat, card, girl, boot, book, cup, got, and car as well as a short English text as listed in table 4.1 below.

Table 4.1: English short text

On a rainy day in May, a **girl** was going to buy a loaf of bread, a birthday **card**, a note**book**, a **mat** and a small **cup** at a shop. While on her way back home, she accidently **met** with a boy who was wearing a pair of red **boot**s and **got** **beat**en by a group of strangers. **Bit** by bit, she gathered her strength and shouted for help. After they ran away, she helped the boy and **brought** him to the clinic by **car**.

Throughout Chapter 4, all raw data and mean values data collected from the participants were compiled under different sections. Scatter plots were used to further describe the position of KD and KD's English vowels representation of all the participants throughout this chapter. Vowel chart of Malaysian English vowels (Pillai et al., 2010) was included in Chapter 4 as to provide a comparison between KD and MalE, and to proceed with various discussions in Chapter 5.

4.1 Data on KD's Words

All of the tables below (Table 4.2 until 4.9) indicate the F1, F2, F1, and F2 (Bark) frequencies, as well as duration in milliseconds (msec), were gathered from the selected subjects during the KD words list's recording session. They were told to read aloud three times to gather the most natural data. Meanwhile, Figure 4.1 until 4.8 below will further explain the vowel distributions produced by the five subjects involved in this research. These vowel plots are done based on F1 and F2 distribution on all 8 vowels produced by each subjects thrice during the recording on KD's words.

Table 4.2: KD data on the word [*makɛ*]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɛ]	S1	783	1697	7.02	12.03	129
		788	2143	7.05	13.55	129
		662	2278	6.09	13.93	195
	S2	706	2262	6.43	13.89	188
		655	2193	6.03	13.69	165
		601	1624	5.59	11.73	161
	S3	629	2022	5.82	13.18	224
		678	2387	6.21	14.22	163
		685	2237	6.27	13.82	262
	S4	672	2122	6.17	13.48	225
		668	2303	6.14	14.00	142
		652	2179	6.01	13.65	266
	S5	735	1531	6.66	11.34	292
		590	2154	5.50	13.58	243
		578	1535	5.40	11.35	481
	Average	672.13	2044.47	6.16	13.16	218

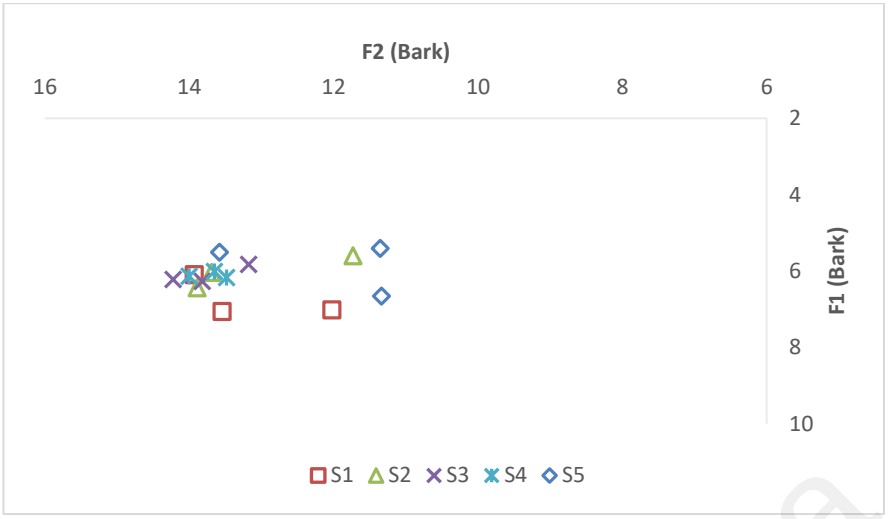

Figure 4.1: Distribution of vowel [ɛ] in KD's word [*makɛ*]

Figure 4.1 above shows the KD's distribution of vowel [ɛ] in [*makɛ*] of the word *makan.* The vowel distribution shown in the plot is separated into two with four vowels placed a bit far left and towards the middle of the vowel space. The first subject (S1) produced three different results where the first two are near to each other with similar duration and produced different vowel placement with a longer time during the third recording. Similar vowel [ɛ] placement occurred to S2 and S5 which produced longer vowel duration. S3 and S4 produced vowel distribution that is within one spot of the vowel space and both subjects produced similar vowel duration at all times. Based on Table 4.2, only S5 produced a longer duration during the third repeat of the recording session. This happened because S5 was too nervous during her session and accidentally pronounced the word longer than the other participants.

Table 4.3: KD data on the word [*ukur*]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[u]	S1	447	1111	4.27	9.19	89
		550	1038	5.17	8.75	73
		572	1226	5.35	9.85	77
	S2	456	1186	4.35	9.62	110
		454	1073	4.33	8.97	99
		478	1196	4.54	9.68	127
	S3	407	972	3.91	8.33	119
		432	1008	4.14	8.56	93
		409	1010	3.93	8.57	111
	S4	389	941	3.75	8.13	110
		424	1074	4.06	8.97	86
		410	1021	3.94	8.64	86
	S5	440	846	4.21	7.47	166
		478	910	4.54	7.92	160
		430	1006	4.12	8.55	162
	Average	451.73	1041.20	4.31	8.75	111

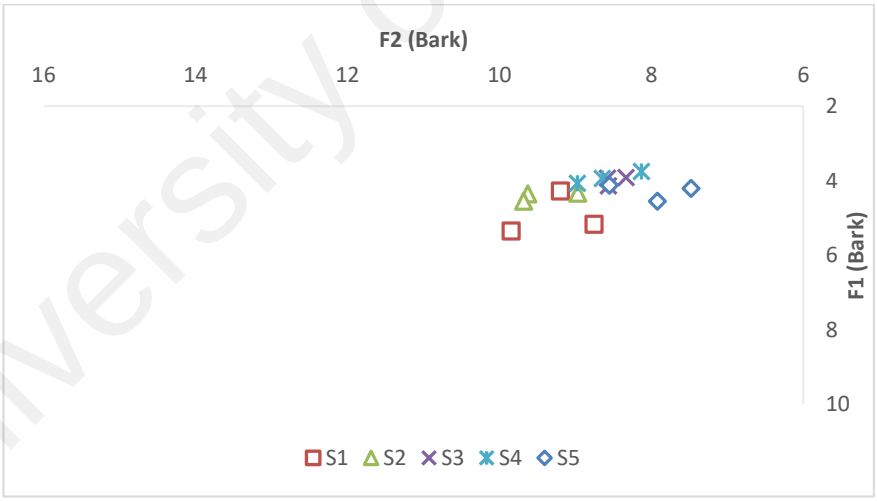

Figure 4.2: Distribution of vowel [u] in KD's word [*ukur*]

Figure 4.2 displays the distribution of vowel [u] in [*ukur*] of KD's word *ukur*. The vowel [u] recorded by the subjects was located in one area which is the top- right corner of the vowel space. They produced vowel [u] as a back and high vowel. Based on Table 4.3, all F1 and F2 frequencies produced by the subjects are near similar within the range

of 7 to 9. S1 produced shorter vowel [u] duration for three times but S2, S3, S4, and S5 produced longer duration for the first time recording. Later, the vowel duration become either shorter or longer during the second and third recording.

Table 4.4: KD data on the word [*suboh*]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[o]	S1	459	1420	4.38	10.83	198
		449	1415	4.29	10.81	176
		395	1265	3.80	10.05	160
	S2	463	1421	4.41	10.84	176
		511	1511	4.83	11.25	133
		442	1401	4.23	10.74	144
	S3	536	1331	5.05	10.40	144
		390	1326	3.76	10.37	184
		562	1304	5.27	10.26	111
	S4	408	1106	3.92	9.16	173
		506	1211	4.79	9.76	166
		506	1127	4.79	9.29	132
	S5	478	1394	4.54	10.71	330
		420	1349	4.03	10.49	246
		467	1331	4.45	10.40	377
	Average	466.13	1327.47	4.43	10.36	190

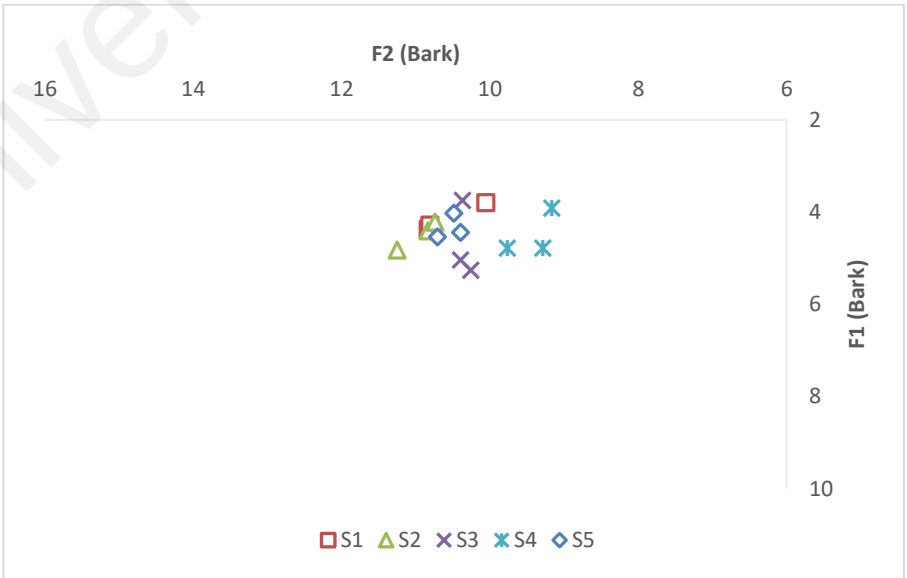

Figure 4.3: Distribution of vowel [o] in KD's word [*suboh*]

Next is the distribution of vowel [o] in KD's word [*suboh*] from the word *subuh* as shown in Figure 4.3. The vowel distribution is located at the top right but near to the center of the vowel space. Vowel [o] produced by the subjects is generally concentrated at the back part of the scatter plot. S1, S2, and S5 presented similar F1 and F2 (Bark) frequencies as well as vowel duration. However, S5 produced longer duration throughout the recording session. S3 produced the highest formant frequencies and S4 produced the lowest frequencies during the first recording. Hence, the vowels produced by S3 and S4 are not close to each other.

Table 4.5: KD data on the word [*mɔk*]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɔ]	S1	721	1319	6.55	10.33	178
		749	1408	6.76	10.77	157
		581	1326	5.43	10.37	182
	S2	767	1317	6.90	10.32	126
		756	1766	6.82	12.29	125
		877	1531	7.69	11.34	146
	S3	556	1076	5.22	8.98	125
		565	1047	5.29	8.81	157
		691	1272	6.32	10.09	147
	S4	686	1048	6.28	8.81	164
		635	1132	5.87	9.32	140
		776	1256	6.97	10.01	147
	S5	575	1211	5.38	9.76	470
		470	1280	4.47	10.13	459
		568	1288	5.32	10.18	645
	Average	664.87	1285.13	6.08	10.10	225

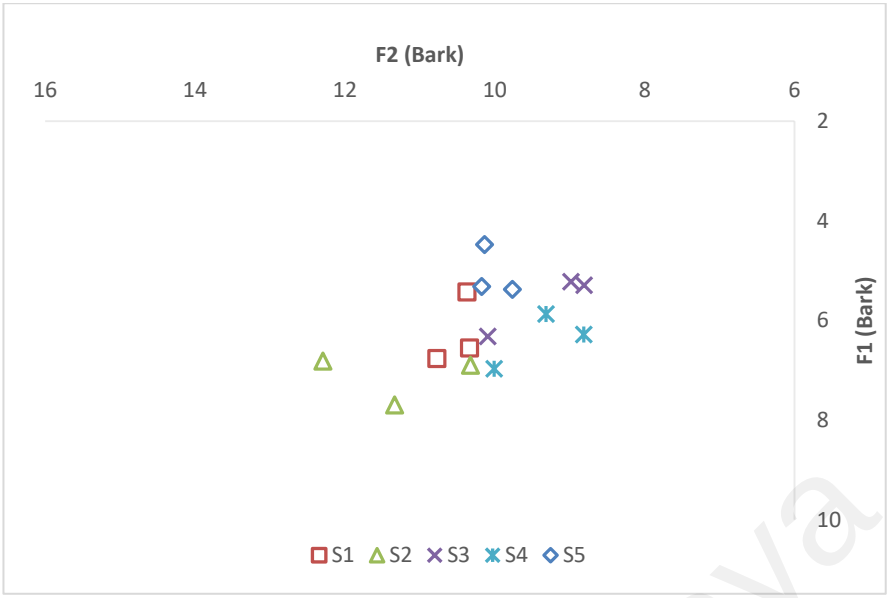

Figure 4.4: Distribution of vowel [ɔ] in KD's word [*mɔk*]

The vowel placement in Figure 4.4 shows a scattered vowel distribution of vowel [ɔ] in KD's word [*mɔk*] of *emak* produced by the subjects. All of the vowels produced are located at the back and near-middle of the vowel space. Each of the subjects produced different formant frequencies thrice during the recording except S5, in which the subject produced similar frequencies and located near to each other in the vowel space. The vowel duration for S5 is even longer compared to the other subjects. This happened due to the speaker tried to lengthen the word over excitement to finish the word recording session.

Table 4.6: KD data on the word [*pənuh*]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ə]	S1	811	1887	7.22	12.73	55
		544	2181	5.12	13.66	38
		591	2098	5.51	13.41	31
	S2	672	1818	6.17	12.48	82
		536	1577	5.05	11.54	67
		526	1853	4.96	12.61	75
	S3	552	1899	5.18	12.77	57
		525	1873	4.95	12.68	61
		498	1965	4.72	12.99	74
	S4	528	2043	4.98	13.24	53
		494	1765	4.68	12.29	36
		474	1642	4.51	11.81	24
	S5	522	2066	4.93	13.31	98
		551	2021	5.17	13.17	81
		496	1949	4.70	12.94	87
	Average	554.67	1909.13	5.19	12.77	61

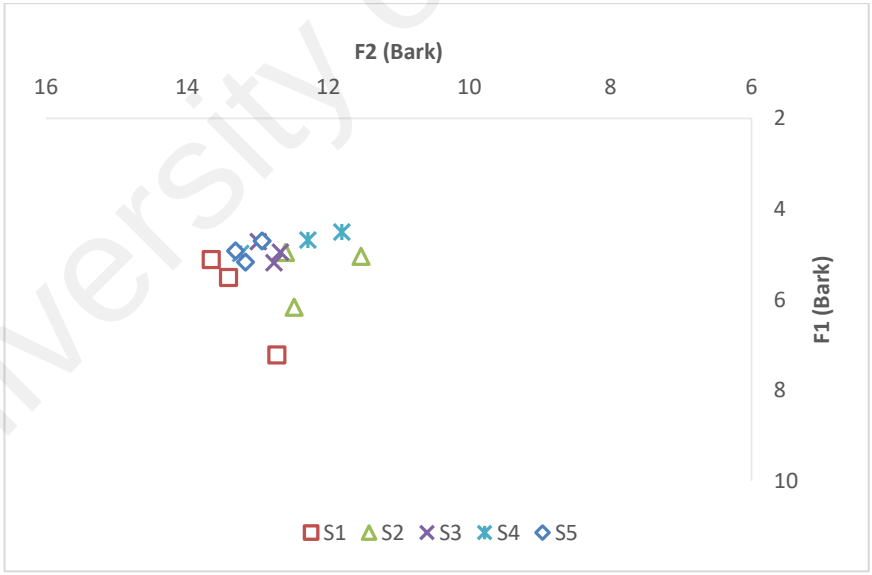

Figure 4.5: Distribution of vowel [ə] in KD's word [*pənuh*]

Figure 4.5 exhibits the distribution of vowel [ə] in [*pənuh*] of *penuh* during the recording of KD's word session. Vowel [ə] is fixated at the center and close-middle of the vowel space. S1 and S2 produced different and higher frequencies forming separated

vowel plotting. S3, S4, and S5 created similar frequencies. Therefore, the plotting is within one area. Each subject produced different vowel duration with a longer duration produced by both S2 and S5.

Table 4.7: KD data on the word [*ikan*]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[i]	S1	366	2236	3.54	13.82	82
		560	2083	5.25	13.37	70
		499	2003	4.73	13.11	131
	S2	343	1611	3.32	11.68	115
		320	2474	3.11	14.45	92
		387	2414	3.73	14.29	92
	S3	392	2538	3.77	14.60	84
		373	1745	3.60	12.21	75
		391	2558	3.77	14.65	89
	S4	337	1320	3.27	10.34	84
		379	1990	3.66	13.07	71
		400	2225	3.85	13.79	83
	S5	414	2826	3.97	15.25	152
		391	2227	3.77	13.79	156
		460	1571	4.39	11.51	161
	Average	400.80	2121.40	3.85	13.33	102

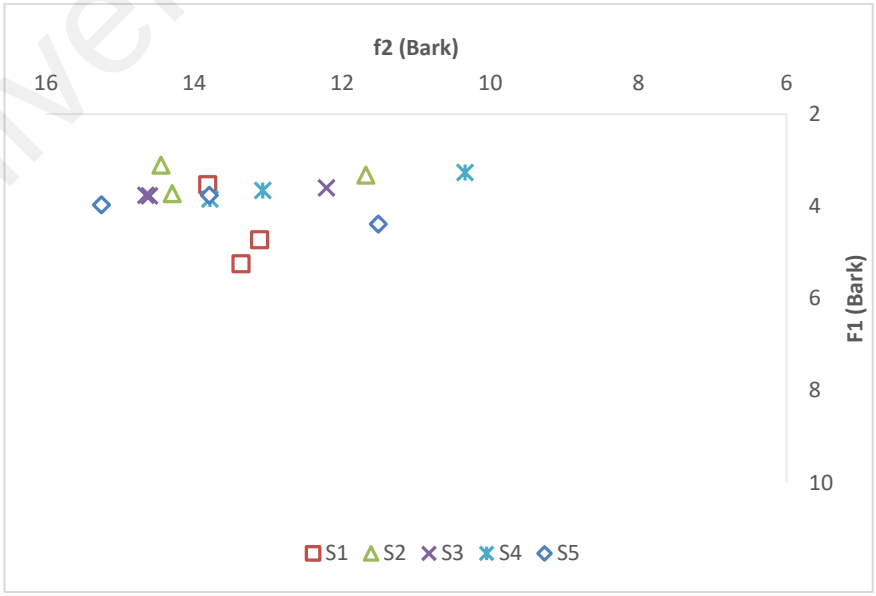

Figure 4.6: Distribution of vowel [i] in KD's word [*ikan*]

Figure 4.6 shows a wider spread of vowel [i] distributed on the scatter plot resulted from KD's word [*ikan*] of *ikan* recording session. Each subject created different formant frequencies from each other showing a widely distributed vowel plotting. Most of the vowel [i] produced is located at the top and front to the central location of the vowel space. Different range of vowel duration was produced by the subjects where only S5 produced the longest duration during KD's word *ikan* recording.

Table 4.8: KD data on the word [*esok*]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[e]	S1	680	1467	6.23	11.05	80
		740	1455	6.69	10.99	70
		715	1498	6.50	11.19	97
	S2	545	1753	5.12	12.24	123
		565	1938	5.29	12.90	102
		552	2068	5.18	13.32	101
	S3	542	2231	5.10	13.80	126
		550	2193	5.17	13.69	138
		517	2188	4.88	13.68	151
	S4	609	2228	5.66	13.79	115
		558	2094	5.23	13.40	94
		634	2033	5.86	13.21	108
	S5	585	1740	5.46	12.19	175
		602	1420	5.60	10.83	155
		563	1874	5.28	12.68	161
	Average	597.13	1878.67	5.55	12.60	120

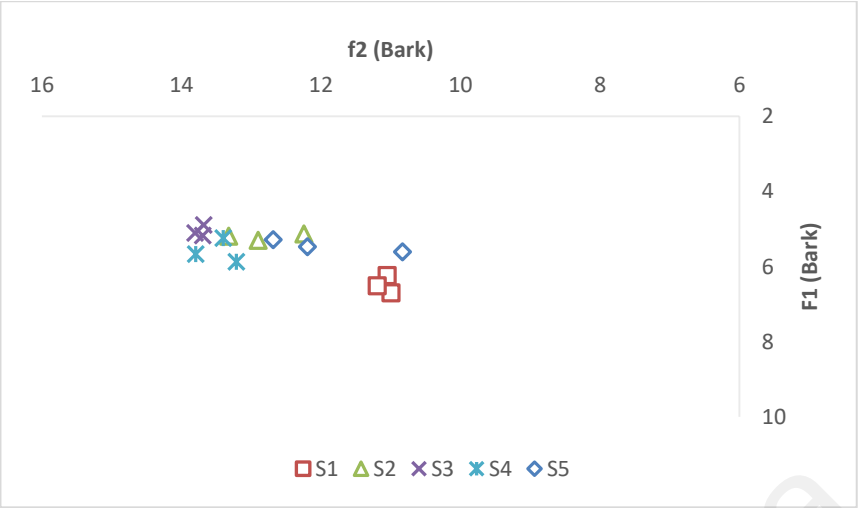

Figure 4.7: Distribution of vowel [e] in KD's word [*esok*]

In Figure 4.7 above, the vowel [e] produced by the subjects in the recording of KD's word [*esok*] of *esok* shows front and close to the middle vowel. Only S1 produced vowel [e] which is near to the middle of the vowel space although the vowel is located very near to each other. Meanwhile, S2, S3, S4, and S5 produced vowel [e] within one area and S5 shows a slightly far in one parallel line. S1 also produced the shortest vowel duration while others are longer for the first recording.

Table 4.9: KD data on the word [*kawan*]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[a]	S1	898	1686	7.84	11.98	80
		873	1689	7.66	11.99	65
		836	1718	7.40	12.11	35
	S2	754	1877	6.80	12.69	95
		760	1876	6.85	12.69	98
		653	1805	6.02	12.43	64
	S3	770	1731	6.92	12.16	76
		654	1445	6.02	10.95	73
		669	1794	6.14	12.39	52
	S4	919	1716	7.98	12.10	102
		705	1416	6.43	10.81	75
		774	1611	6.95	11.68	59
	S5	890	1625	7.78	11.74	120
		743	1844	6.72	12.58	90
		827	1737	7.34	12.18	74
	Average	781.67	1704.67	6.99	12.03	77

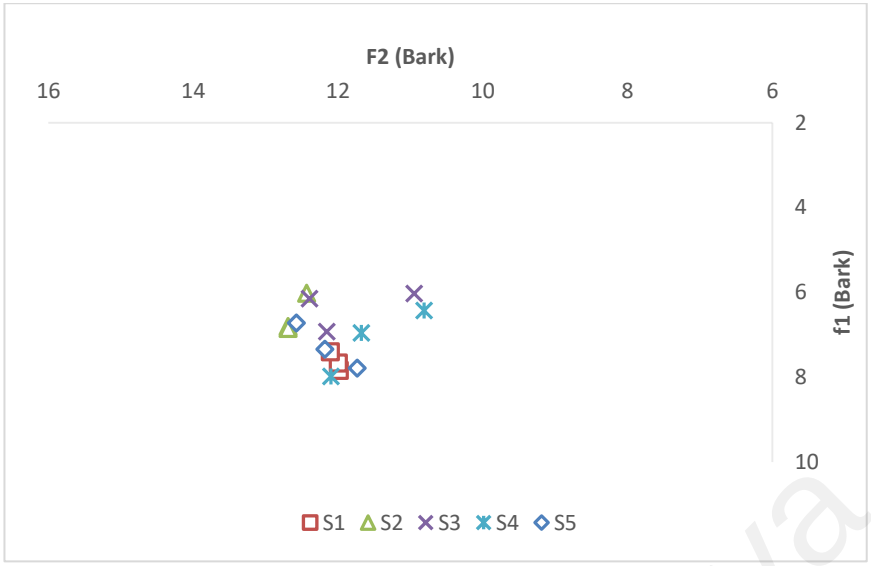

Figure 4.8: Distribution of vowel [a] in KD's word [*kawan*]

Lastly, Figure 4.8 displays the distribution of vowel [a] in KD's word [*kawan*] recording session. All subjects managed to produce the vowel in one area of the vowel space; near-frontal and central area. Although few subjects (S3 and S4) offers slightly separated vowel [a] distribution but it is still located within one spot of the scatter plot. Each subject produced similar vowel duration but only S5 produced the highest among them all.

4.2 Data on KD's Sentences

Table 4.10 until 4.17 displays the F1, F2, F1, and F2 (Bark) frequencies along with vowel duration produced by all five subjects in KD's sentences recording. Three time of recording session for each subject were done for each data. Later, analysis and description on Figure 4.9 until 4.18 will be explained further to understand the vowel placement produced by each of the subjects. The scatter plots are created based on the F1 and F2 (Bark) frequencies gathered during the recording session.

Table 4.10: KD data on the sentence of "*Saya suka makan* [*makɛ*] *ayam goreng*"

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɛ]	S1	746	1675	6.74	11.94	154
		756	2031	6.82	13.20	140
		732	2034	6.63	13.21	150
	S2	635	1885	5.87	12.72	235
		701	2034	6.39	13.21	173
		560	1683	5.25	11.97	137
	S3	602	2306	5.60	14.01	194
		678	2323	6.21	14.06	152
		632	2323	5.85	14.06	134
	S4	785	2183	7.03	13.67	104
		692	2277	6.32	13.93	96
		749	2290	6.76	13.97	115
	S5	611	2565	5.68	14.67	165
		632	1889	5.85	12.73	179
		562	1263	5.27	10.04	143
	Average	671.53	2050.73	6.15	13.16	151

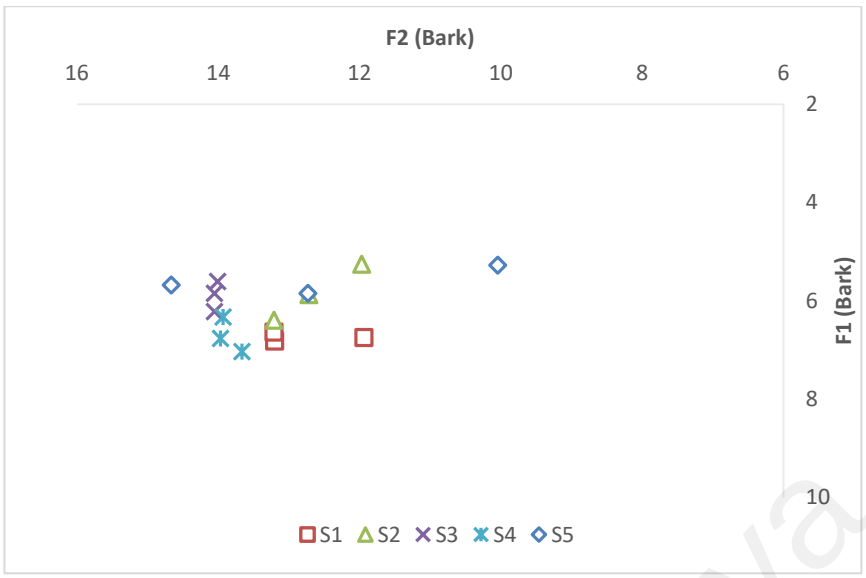

Figure 4.9: Distribution of vowel [ɛ] in KD's sentence of "*Saya suka makan* [*makɛ*] *ayam goreng*"

Figure 4.9 displays the vowel distribution of vowel [ɛ] in the sentence of "*Saya suka makan* [*makɛ*] *ayam goreng*" in KD's sentence recording session. All of the subjects produced vowel [ɛ] plotting in a widely distributed pattern. Although separated vowel plotting, the vowel [ɛ] is mostly located at the front and towards the near-middle of the vowel space. S1, S2, and S5 produced a much more of a scattered plotting while S3 and S4 generated vowel distribution within one area. All subjects produced longer vowel duration.

Table 4.11: KD data on the sentence of "*Ayah saya seorang juru ukur* [ukur] *tanah*"

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[u]	S1	506	1227	4.79	9.85	109
		756	2031	6.82	13.20	116
		454	1308	4.33	10.28	117
	S2	414	1146	3.97	9.40	116
		444	1243	4.24	9.94	88
		427	1034	4.09	8.73	72
	S3	402	1018	3.87	8.63	96
		392	1035	3.77	8.73	68
		415	1099	3.98	9.12	100
	S4	546	1302	5.13	10.25	66
		436	1144	4.17	9.39	74
		432	1161	4.14	9.48	64
	S5	464	1185	4.42	9.62	105
		493	1223	4.68	9.83	100
		513	969	4.85	8.31	120
	Average	472.93	1208.33	4.48	9.65	94

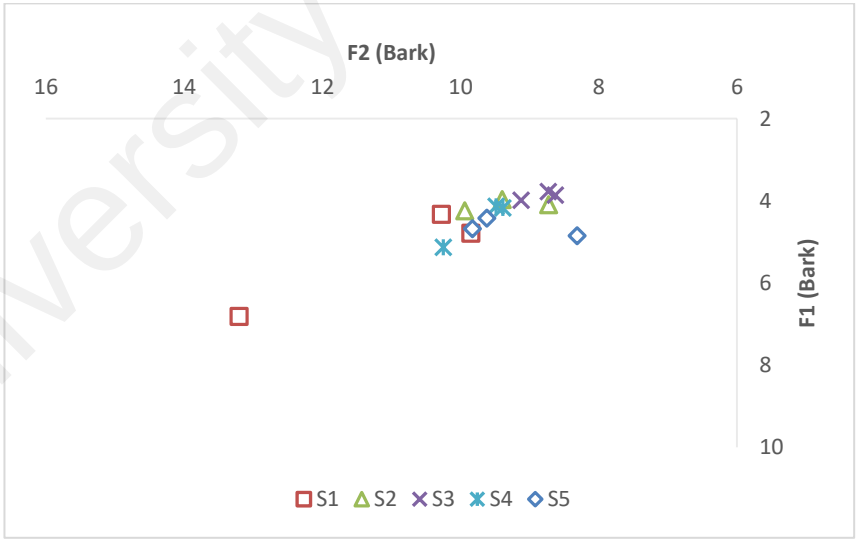

Figure 4.10: Distribution of vowel [u] in KD's sentence of "*Ayah saya seorang juru ukur* [ukur] *tanah*"

Next is the vowel distribution of vowel [u] in the KD's sentence of "*Ayah saya seorang juru ukur* [ukur] *tanah*" as shown in Figure 4.10. Vowel [u] is mostly located at the top back and close to the middle area of the vowel space. All subjects produced similar formant frequencies resulting in vowel distributed within one area except one vowel produced by S1 are located to the middle section. Besides, most subjects generated longer vowel duration in the first recording except S4 with the lowest duration; 66 milliseconds.

Table 4.12: KD data on the sentence of "*Nenek telah pergi ke pasar di waktu subuh* [*suboh*]"

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[o]	S1	415	1128	3.98	9.29	166
		756	2031	6.82	13.20	170
		470	1261	4.47	10.03	177
	S2	366	1266	3.54	10.06	188
		398	1339	3.83	10.44	210
		448	1437	4.28	10.91	224
	S3	415	1099	3.98	9.12	243
		354	1455	3.42	10.99	189
		380	1339	3.66	10.44	203
	S4	419	1211	4.02	9.76	194
		414	1197	3.97	9.69	186
		387	1233	3.73	9.88	165
	S5	436	1103	4.17	9.15	226
		402	1116	3.87	9.22	225
		386	1421	3.72	10.84	170
	Average	429.73	1309.07	4.10	10.20	196

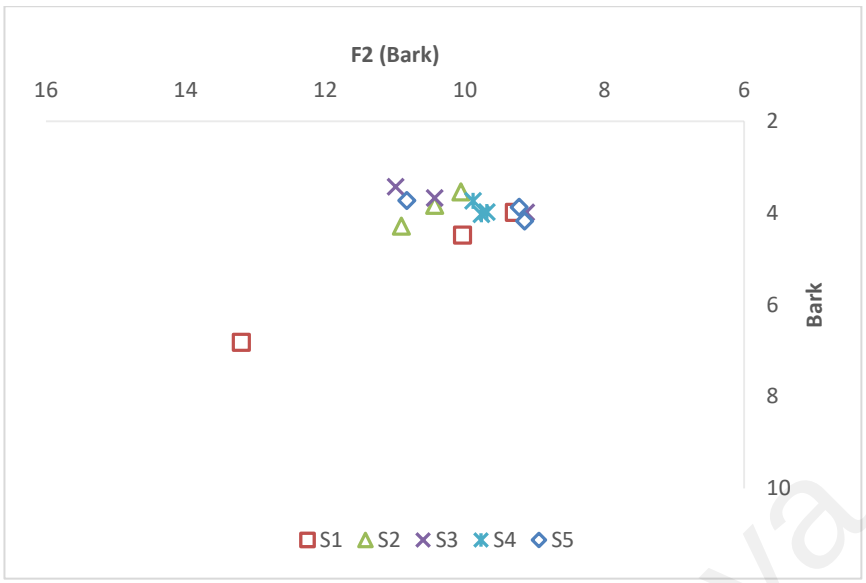

Figure 4.11: Distribution of vowel [o] in KD's sentence of "*Nenek telah pergi ke pasar di waktu subuh* [*suboh*]"

In Figure 4.11 above, the distribution of vowel [o] in KD's sentence of "*Nenek telah pergi ke pasar di waktu subuh* [*suboh*]" is concentrated at the top and near-middle of the scatter plot. Vowel [o] distribution is almost similar to in Figure 4.10 except the vowel [o] is more frontal. Only S1 produced one vowel far away from the others as its formant frequency is too high during the second recording session. All subjects produced longer vowel duration which is more than 150 milliseconds.

Table 4.13: KD data on the sentence of "*Saya sayang emak* [*mɔk*] *saya*"

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɔ]	S1	673	1359	6.17	10.54	120
		554	1463	5.20	11.03	164
		624	1481	5.78	11.11	149
	S2	483	1360	4.59	10.54	296
		484	1465	4.60	11.04	305
		508	1440	4.81	10.93	266
	S3	486	1102	4.61	9.14	190
		537	1364	5.06	10.56	157
		504	1197	4.77	9.69	118
	S4	513	1213	4.85	9.77	165
		566	1287	5.30	10.17	153
		453	1318	4.32	10.33	128
	S5	405	1001	3.89	8.52	365
		440	1028	4.21	8.69	239
		496	1291	4.70	10.19	179
	Average	515.07	1291.27	4.86	10.15	200

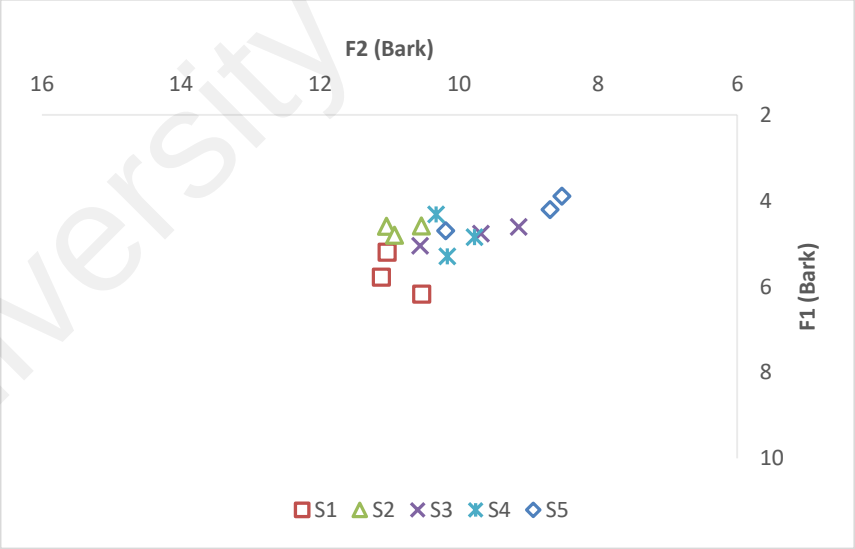

Figure 4.12: Distribution of vowel [ɔ] in KD's sentence of "*Saya sayang emak* [*mɔk*] *saya*"

Figure 4.12 shows a wider dispersion but still within one spot for vowel [ɔ] plot in KD's sentence of "*Saya sayang emak* [*mɔk*] *saya*". Most of the subject generated a top

back but near to the middle of the vowel space. S1, S2, and S4 produced vowel that is within one area but S3 and S5 produced vowel that is within a straight line because of lower formant frequencies within the three times of recording session.

Table 4.14: KD data on the sentence of "*Tong itu penuh* [*pənuh*] *dengan air*"

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ə]	S1	493	1699	4.68	12.03	41
		562	1701	5.27	12.04	45
		532	1795	5.01	12.40	48
	S2	549	1882	5.16	12.71	92
		529	1886	4.99	12.72	89
		515	1996	4.87	13.09	96
	S3	506	1882	4.79	12.71	82
		474	1887	4.51	12.73	67
		499	1876	4.73	12.69	59
	S4	463	1872	4.41	12.67	37
		443	1844	4.23	12.58	27
		505	1872	4.78	12.67	45
	S5	559	1840	5.24	12.56	48
		545	1911	5.12	12.81	51
		572	1968	5.35	13.00	44
	Average	516.40	1860.73	4.88	12.63	58

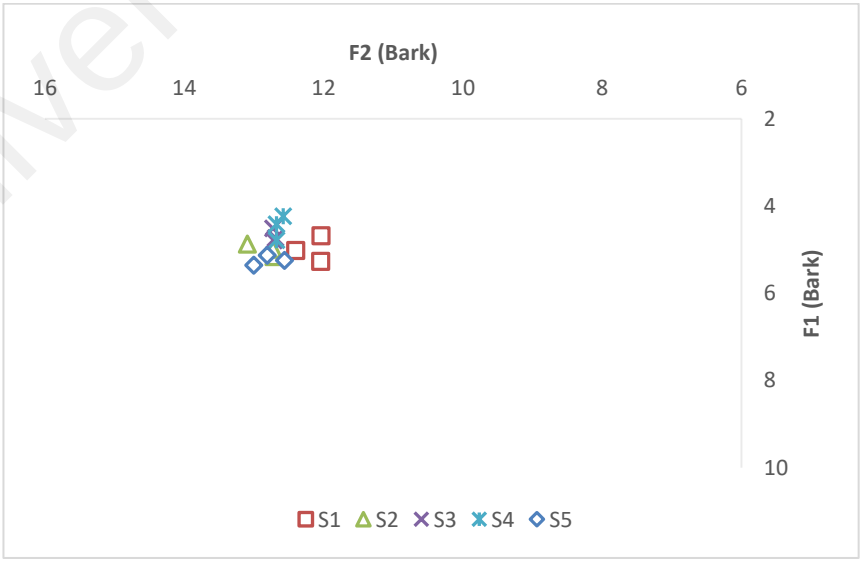

Figure 4.13: Distribution of vowel [ə] in KD's sentence of "*Tong itu penuh* [*pənuh*] *dengan air*"

Figure 4.13 offers a greater concentration of vowel [ə] distributed in the center of the plots during the recording session of KD's sentence of "*Tong itu penuh* [*pənuh*] *dengan air*". All of the subjects produced vowel [ə] as a top and middle vowel. The subjects generated similar formant frequencies as well as vowel duration excluding S2, which resulted in a longer vowel duration for all three sessions of recording.

Table 4.15: KD data on the sentence of "*Kucing saya gemar memakan ikan* [*ikan*]"

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[i]	S1	450	2962	4.30	15.53	71
		414	1653	3.97	11.85	102
		391	2186	3.77	13.67	62
	S2	359	2131	3.47	13.51	74
		414	2274	3.97	13.92	141
		402	2313	3.87	14.03	117
	S3	387	2260	3.73	13.88	113
		394	2509	3.79	14.53	84
		398	2439	3.83	14.36	75
	S4	404	2240	3.88	13.83	91
		423	2487	4.06	14.48	66
		399	2243	3.84	13.84	74
	S5	416	2204	3.99	13.73	92
		433	2958	4.15	15.52	59
		470	1897	4.47	12.76	100
	Average	410.27	2317.07	3.94	13.96	88

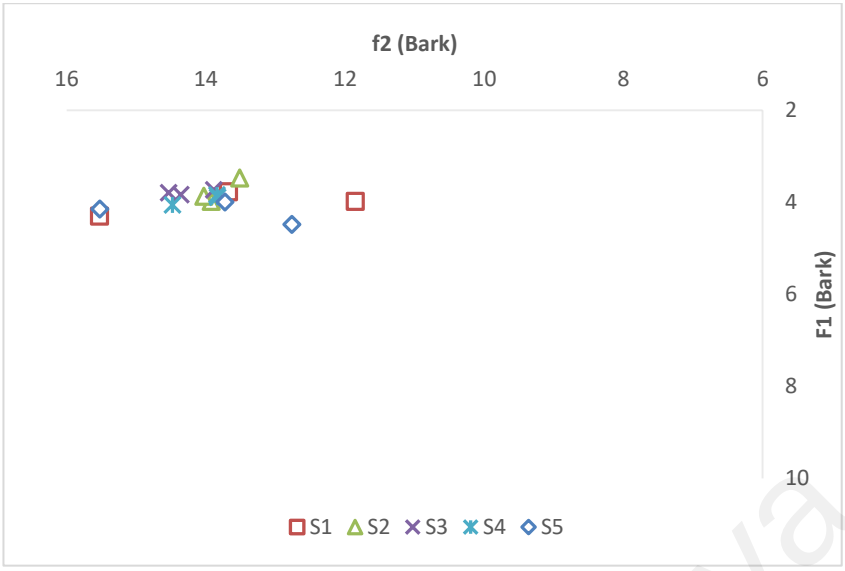

Figure 4.14: Distribution of vowel [i] in KD's sentence of "*Kucing saya gemar memakan ikan* [*ikan*]"

The vowel distribution of vowel [i] as shown in Figure 4.14 displays a wider distribution from one end to another in the front-high area of vowel space. S1 and S5 generated a wider pattern of vowel plotting but not for S2, S3 and S4. The vowel distribution of these three subjects are within one area and located near to each other. S1 and S5 produced higher formant frequencies in all three recordings and therefore, the vowel is plotted into one parallel line.

Table 4.16: KD data on the sentence of "*Saya perlu menghantar kerja rumah pada esok* [*esok*] *hari*"

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[e]	S1	579	2427	5.41	14.33	95
		737	2247	6.67	13.85	175
		581	1780	5.43	12.34	112
	S2	513	2196	4.85	13.70	93
		507	2101	4.80	13.42	87
		555	2272	5.21	13.92	137
	S3	533	2148	5.02	13.56	103
		450	2031	4.30	13.20	42
		450	2031	4.30	13.20	82
	S4	566	2164	5.30	13.61	91
		478	1860	4.54	12.63	95
		546	2149	5.13	13.57	86
	S5	489	2037	4.64	13.22	79
		476	2041	4.53	13.24	71
		515	2524	4.87	14.57	72
	Average	531.67	2133.87	5.00	13.49	95

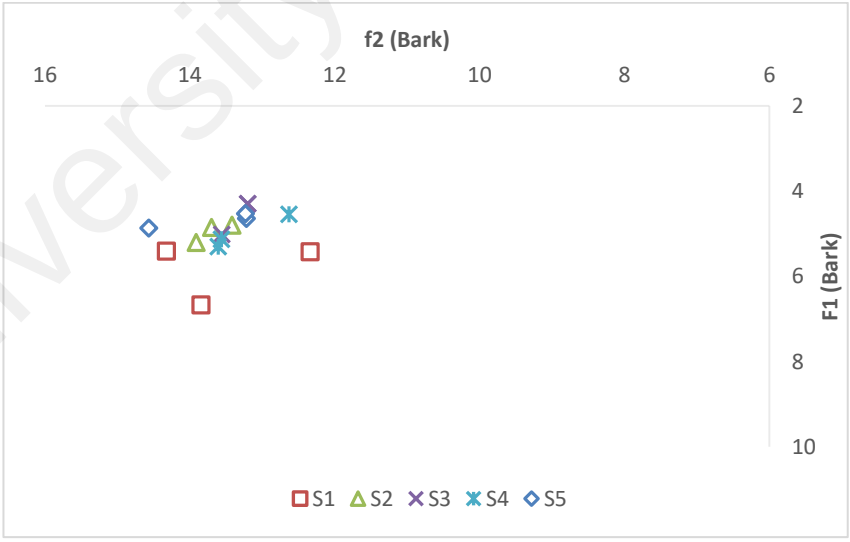

Figure 4.15: Distribution of vowel [e] in KD's sentence of "*Saya perlu menghantar kerja rumah pada esok* [*esok*] *hari*"

Figure 4.15 demonstrates the distribution of vowel [e] in "*Saya perlu menghantar kerja rumah pada esok* [*esok*] *hari*" of KD's sentence data. The vowel [e] is mainly concentrated within the top front and near-middle of the vowel space. All subjects generated similar formant frequencies resulting in vowel plotted near to each other. However, S1 generated higher frequencies during all session and the vowel is distributed separately in the vowel space.

Table 4.17: KD data on the sentence of "*Saya mempunyai ramai kawan* [*kawan*] *di sekolah*"

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
	S1	895	1712	7.82	12.08	106
		908	1417	7.90	10.82	114
		834	1610	7.39	11.67	55
	S2	689	1716	6.30	12.10	84
		645	1789	5.95	12.38	67
		696	1660	6.36	11.88	79
	S3	642	1778	5.93	12.34	54
		587	1664	5.48	11.90	108
		618	1841	5.73	12.56	99
	S4	880	1606	7.71	11.66	51
		771	1640	6.93	11.80	65
		810	1689	7.21	11.99	63
	S5	822	1563	7.30	11.48	75
		713	1352	6.49	10.50	96
		688	1391	6.29	10.69	75
	Average	746.53	1628.53	6.72	11.72	79

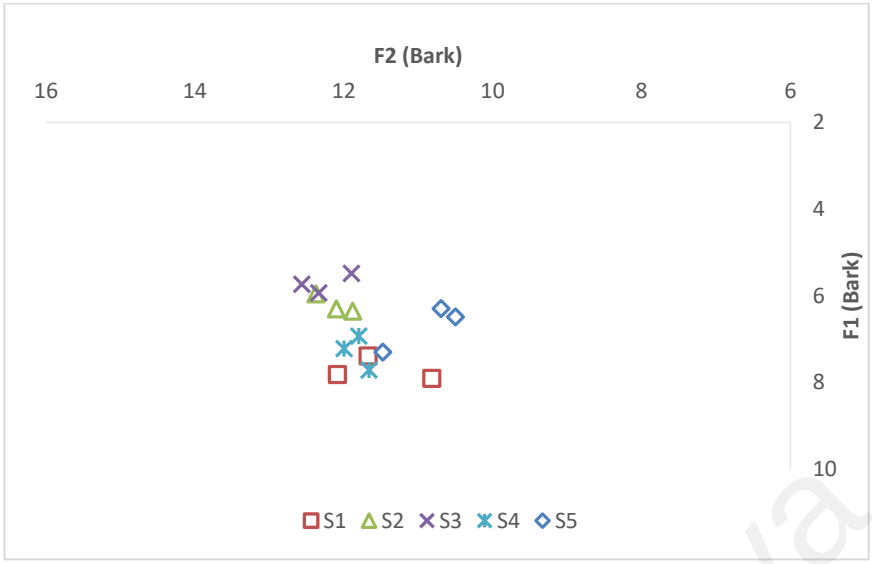

Figure 4.16: Distribution of vowel [a] in KD's sentence of "*Saya mempunyai ramai kawan* [*kawan*] *di sekolah*"

The vowel [a] distribution in KD's sentence of "*Saya mempunyai ramai kawan [kawan] di sekolah*" is generally located within one area as shown in Figure 4.16. The vowel [a] is an open and near-central vowel in the vowel space above. The vowel is distributed within one spot due to similar formant frequencies generated by these subjects. In terms of vowel duration, all subjects generated a longer duration on vowel [a] pronunciation in KD's sentence recording session. Only S4 produced a lower duration for vowel [a] in KD's sentence of "*Saya mempunyai ramai kawan [kawan] di sekolah*".

4.3 Data on KD's English words

In this section, Table 4.18 until 4.28 displays the data on F1, F2, F1 and F2 (Bark) frequencies along with the vowel duration gathered in all three repeated KD's English words recording sessions. Besides, Figure 4.17 until 4.27 show the distribution of 11 vowels in words (beat, bit, met, mat, card, girl, book, boot, cup, got and car) produced by 5 subjects in KD's English word test. Then, it will be further described as to explain the vowel distribution of vowels produced by each subjects.

Table 4.18: KD's English data on the word 'beat' [bit]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[i]	S1	365	1975	3.53	13.02	223
		343	1443	3.32	10.94	249
		360	1638	3.48	11.79	271
	S2	382	2443	3.68	14.37	211
		384	2339	3.70	14.10	285
		355	2259	3.43	13.88	297
	S3	476	1642	4.53	11.81	371
		370	2309	3.57	14.02	344
		380	2052	3.66	13.27	341
	S4	348	2039	3.37	13.23	311
		301	1968	2.93	13.00	245
		389	1950	3.75	12.94	236
	S5	441	2080	4.22	13.36	396
		392	2076	3.77	13.34	353
		385	1857	3.71	12.62	323
	Average	378.07	2004.67	3.64	13.05	297

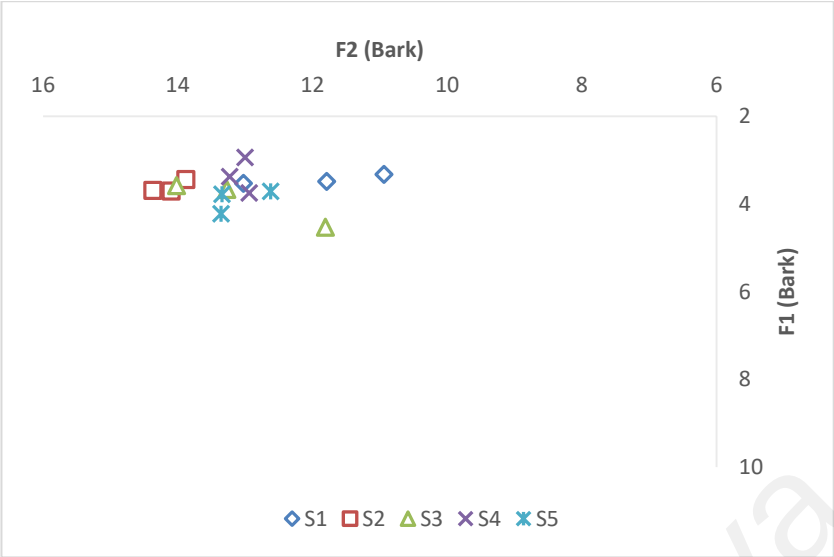

Figure 4.17: Distribution of vowel [i] in KD's English word 'beat'

Figure 4.17 at the above presents a widely spread pattern for the distribution of vowel [i] in KD's English word 'beat'. All of the five subjects generated vowel [i] as a top-front or high and close vowel. S1 and S3 generated a separate vowel plotting but S2, S4, and S5 produced vowel [i] within one spot of the vowel space. Most of the subjects generated longer vowel duration turning vowel [i] into a long vowel in KD's English word 'beat'.

Table 4.19: KD's English data on the word 'bit' [bɪt]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɪ]	S1	370	1760	3.57	12.27	217
		366	1602	3.54	11.64	231
		383	1704	3.69	12.05	224
	S2	603	1665	5.61	11.90	295
		549	1543	5.16	11.39	277
		547	1479	5.14	11.11	274
	S3	341	1653	3.30	11.85	271
		382	1812	3.68	12.46	366
		382	2019	3.68	13.17	279
	S4	664	1818	6.10	12.48	280
		315	2066	3.06	13.31	219
		326	1886	3.16	12.72	234
	S5	356	1816	3.44	12.47	581
		384	1862	3.70	12.64	289
		388	1720	3.74	12.12	254
	Average	423.73	1760.33	4.04	12.24	286

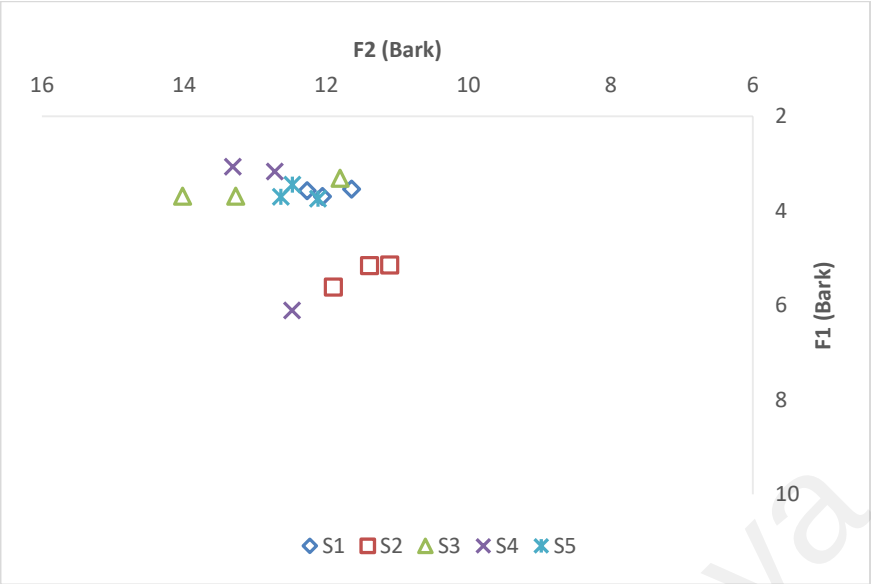

Figure 4.18: Distribution of vowel [ɪ] in KD's English word 'bit'

The vowel [ɪ] distribution in Figure 4.18 is generally separated into two areas of the vowel space. The data gathered from KD's English word 'bit' indicated that the vowel is distributed at the top and near-front area. Almost all subjects produced vowel [ɪ] in one designated area but only S2 produced much lower vowel distribution following its lower F1 frequencies. Similar to the vowel [i] duration in Figure 4.18, all subjects produced a longer duration for a long vowel [ɪ]. In Table 4.19, S5 had produced a longer duration of 581 milliseconds while recording the word [bɪt]. This might have happened because S5 was confused between short vowel in 'beat' [bit] and long vowel in 'bit' [bɪt]. Hence, S5 took longer to pronounce 'bit' during the first recording session.

Table 4.20: KD's English data on the word 'met' [mɛt]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɛ]	S1	544	1699	5.12	12.03	209
		489	1189	4.64	9.64	256
		571	1394	5.34	10.71	250
	S2	557	1923	5.23	12.85	294
		522	1700	4.93	12.04	242
		548	1504	5.15	11.22	220
	S3	455	2298	4.34	13.99	216
		415	1751	3.98	12.23	288
		419	1954	4.02	12.95	232
	S4	498	1610	4.72	11.67	299
		558	1774	5.23	12.32	232
		498	1610	4.72	11.67	217
	S5	556	1769	5.22	12.30	318
		576	1586	5.39	11.57	281
		553	1689	5.19	11.99	331
	Average	517.27	1696.67	4.88	11.95	259

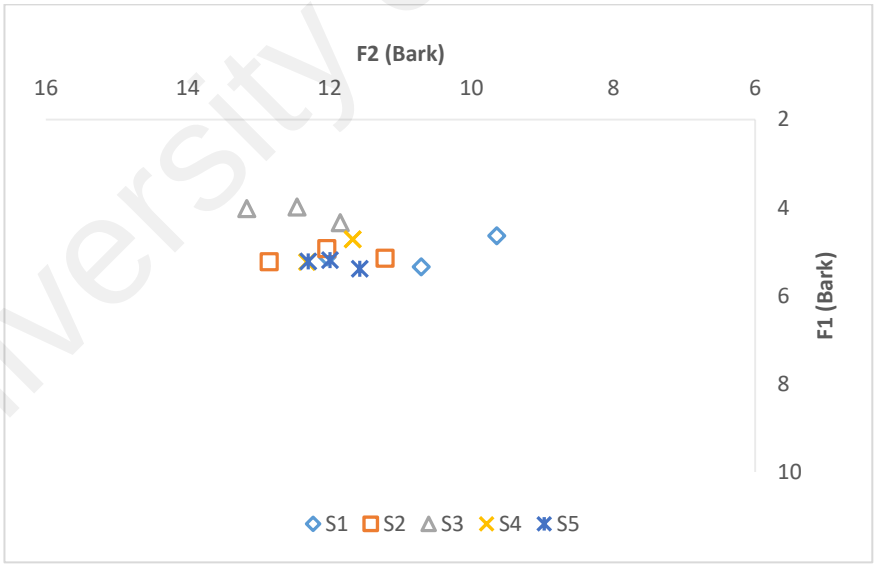

Figure 4.19: Distribution of vowel [ɛ] in KD's English word 'met'

Next, in Figure 4.19 representing the distribution of vowel [ɛ] in KD's English word 'met'. The vowel is widely spread in the vowel space at the near-top and central as produced by these subjects. All subjects generated different formant frequencies in three

recording session resulting in a separated pattern of vowel plotting. The vowel [ɛ] duration is generated longer within 200 to 320 milliseconds and an average of 259 milliseconds for all subjects.

Table 4.21: KD's English data on the word 'mat' [mæt]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[æ]	S1	529	1770	4.99	12.31	197
		502	1316	4.75	10.32	273
		518	1220	4.89	9.81	281
	S2	548	1766	5.15	12.29	246
		523	1626	4.94	11.74	259
		543	1575	5.11	11.53	254
	S3	509	1763	4.82	12.28	317
		529	1885	4.99	12.72	285
		562	1866	5.27	12.65	269
	S4	561	1872	5.26	12.67	251
		519	1742	4.90	12.20	229
		564	1830	5.28	12.53	214
	S5	540	1621	5.08	11.72	511
		517	1418	4.88	10.82	365
		527	1751	4.97	12.23	462
	Average	532.73	1668.07	5.02	11.85	294

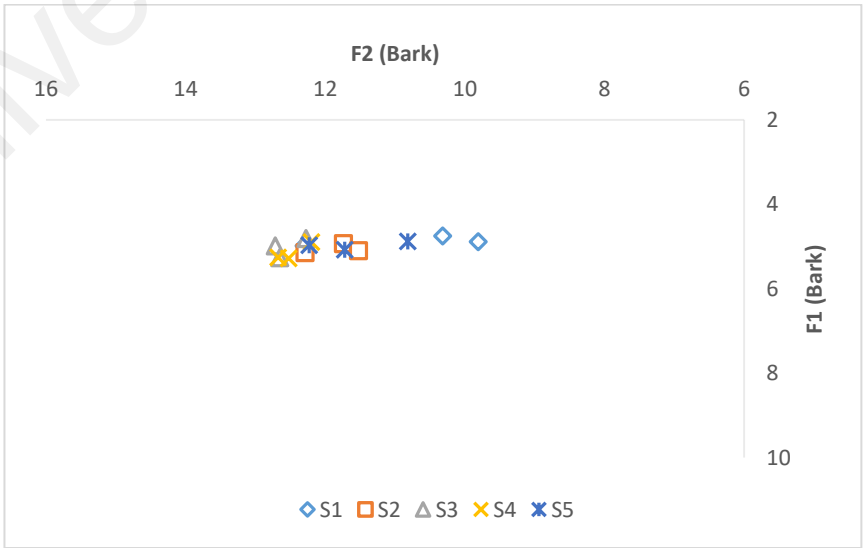

Figure 4.20: Distribution of vowel [æ] in KD's English word 'mat'

Figure 4.20 above shows a widely spread pattern of vowel distribution [æ] in the word 'mat' of KD's English word data. Vowel [æ] produced by the subjects is plotted as front and close to the middle area of the vowel space. Most of the subjects produced similar F1 (Bark) frequencies. Hence, the vowel plotting is located within one parallel line of the scatter plot. The vowel duration is recorded longer with S5 as the longest; 511 milliseconds.

Table 4.22: KD's English data on the word 'card' [ka:d]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[a]	S1	917	1696	7.97	12.02	241
		1002	1686	8.52	11.98	196
		927	1776	8.03	12.33	212
	S2	796	1873	7.11	12.68	230
		726	1790	6.59	12.38	225
		780	1886	6.99	12.72	210
	S3	744	1884	6.73	12.72	257
		682	1777	6.25	12.33	247
		723	1792	6.56	12.39	237
	S4	890	1522	7.78	11.30	242
		915	1537	7.95	11.36	214
		899	1572	7.84	11.51	194
	S5	1020	1628	8.64	11.75	195
		891	1766	7.79	12.29	164
		854	1627	7.53	11.74	265
	Average	851.07	1720.80	7.48	12.10	222

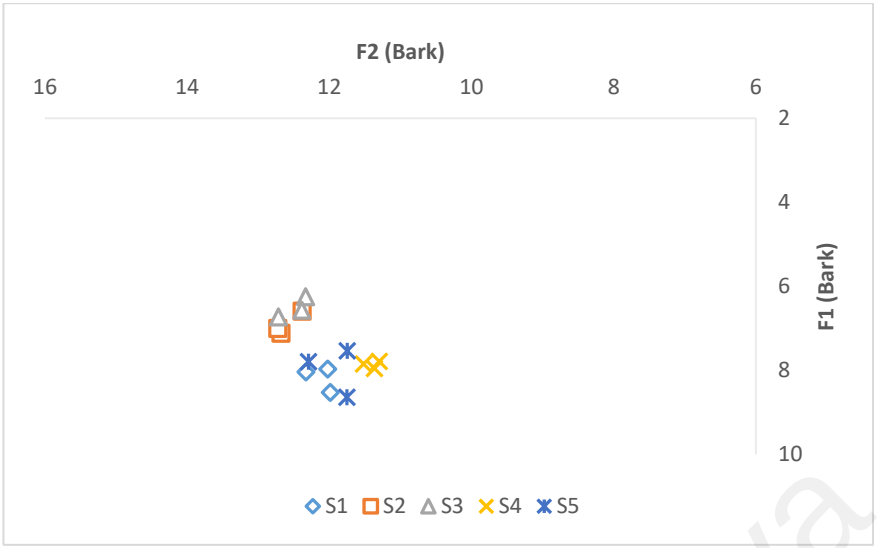

Figure 4.21: Distribution of vowel [a] in KD's English word 'card'

Meanwhile, Figure 4.21 displays the vowel [a] distribution gathered from KD's English word test 'card' recording session. All vowel plotting for vowel [a] is generally located within one area of the vowel space; lower and near-frontal area. The subjects produced similar data of F1 and F2 (Bark) formant frequencies resulting in a concentrated vowel distribution. Vowel [a] duration is within 190 to 250 milliseconds and the average duration is 222 milliseconds.

Table 4.23: KD's English data on the word 'girl' [gəl]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ə]	S1	634	1804	5.86	12.43	277
		530	1724	5.00	12.13	330
		609	1756	5.66	12.25	316
	S2	505	1643	4.78	11.81	414
		415	1541	3.98	11.38	507
		553	1865	5.19	12.65	355
	S3	469	1891	4.47	12.74	381
		458	1847	4.37	12.59	435
		493	1866	4.68	12.65	348
	S4	556	1480	5.22	11.11	490
		556	1480	5.22	11.11	518
		601	1384	5.59	10.66	259
	S5	490	1590	4.65	11.59	582
		448	1764	4.28	12.28	512
		495	1986	4.69	13.06	563
	Average	520.80	1708.07	4.91	12.03	419

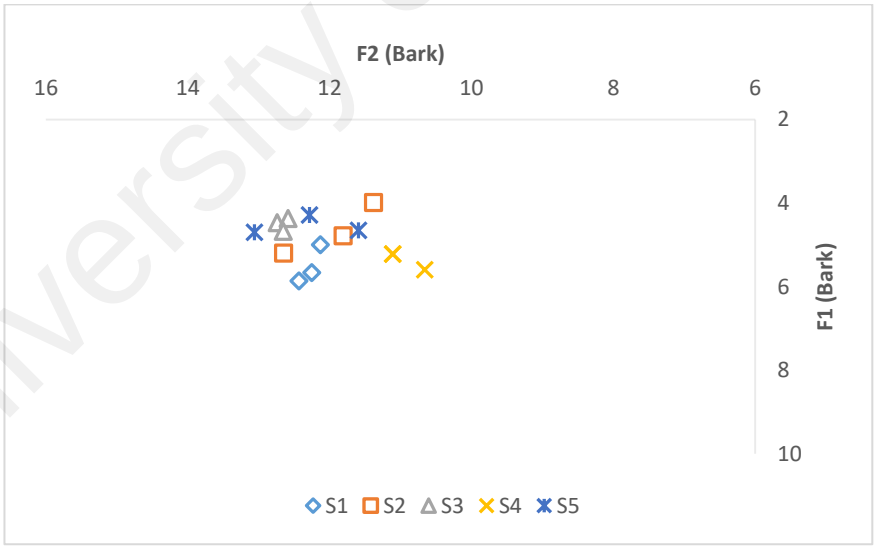

Figure 4.22: Distribution of vowel [ə] in KD's English word 'girl'

Next is the distribution of vowel [ə] in KD's English word 'girl'. Figure 4.22 shows that the vowel produced by all five subjects is concentrated in one area of the vowel space; top-central. The F1 (Bark) frequencies is higher for S1 and S4 resulting in lower vowels.

The other subjects produced vowel that is lower in F1 (Bark) frequencies. Therefore, the vowel plotting for S2, S3, and S5 are much higher. The vowel length for all subjects is longer except S1 offers the lowest vowel length at 277 milliseconds.

Table 4.24: KD's English data on the word 'boot' [bu:t]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[u]	S1	480	1499	4.56	11.20	268
		428	1273	4.10	10.10	304
		466	1316	4.44	10.32	286
	S2	390	1400	3.76	10.74	355
		402	1406	3.87	10.76	339
		414	1488	3.97	11.15	298
	S3	423	1438	4.06	10.92	309
		383	1515	3.69	11.27	378
		400	1493	3.85	11.17	252
	S4	322	1305	3.13	10.26	346
		348	1249	3.37	9.97	311
		383	1494	3.69	11.17	229
	S5	364	1194	3.52	9.67	435
		371	1156	3.58	9.45	359
		398	1339	3.83	10.44	406
	Average	398.13	1371.00	3.83	10.57	325

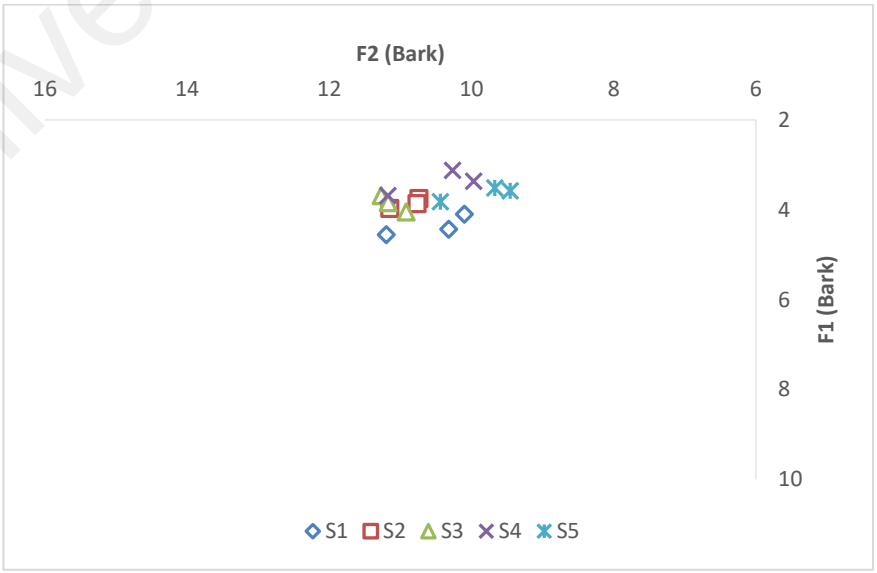

Figure 4.23: Distribution of vowel [u] in KD's English word 'boot'

Figure 4.23 presents the vowel [u] distribution in KD's English word 'boot'. Most of the vowel [u] generated by the subjects are located at the top and near-back of the vowel space. The vowel is located within one spot and close to each other. The average F1 and F2 (Bark) frequencies is 3.83 and 10.57 while the average vowel duration is 325 milliseconds.

Table 4.25: KD's English data on the word 'book' [bʊk]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ʊ]	S1	521	1234	4.92	9.89	331
		434	1169	4.15	9.53	263
		518	1247	4.89	9.96	370
	S2	382	1272	3.68	10.09	252
		408	1234	3.92	9.89	227
		403	1306	3.87	10.27	237
	S3	400	1359	3.85	10.54	305
		382	1197	3.68	9.69	282
		501	1343	4.75	10.46	298
	S4	404	1219	3.88	9.81	470
		440	1226	4.21	9.85	409
		471	1156	4.48	9.45	403
	S5	336	1123	3.26	9.26	325
		390	1234	3.76	9.89	323
		408	1171	3.92	9.54	327
	Average	426.53	1232.67	4.08	9.87	321

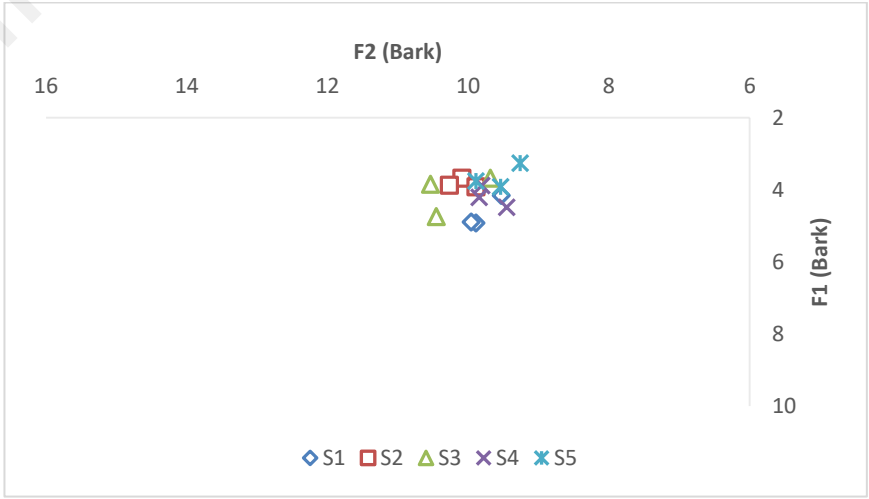

Figure 4.24: Distribution of vowel [ʊ] in KD's English word 'book'

Figure 4.24 displays vowel [ʊ] located within one spot of the vowel plot in KD's English word 'book'. The vowel is located at the top back of the vowel space. Similar to vowel [u] in Figure 4.23, vowel [ʊ] is close to each other as the average F1 and F2 (Bark) frequencies are 4.08 and 9.87. The vowel duration by all subjects is mostly longer with S4 as the highest, 470 milliseconds.

Table 4.26: KD's English data on the word 'cup' [kʌp]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ʌ]	S1	888	1695	7.77	12.02	134
		828	1548	7.34	11.41	141
		904	1546	7.88	11.40	136
	S2	787	1798	7.05	12.41	194
		777	1660	6.97	11.88	168
		712	1675	6.48	11.94	172
	S3	768	1709	6.91	12.07	172
		706	1630	6.43	11.76	191
		742	1731	6.71	12.16	170
	S4	850	1559	7.50	11.46	177
		836	1466	7.40	11.05	152
		874	1523	7.67	11.30	173
	S5	910	1731	7.92	12.16	141
		821	1532	7.29	11.34	133
		817	1560	7.27	11.46	185
	Average	814.67	1624.20	7.24	11.72	163

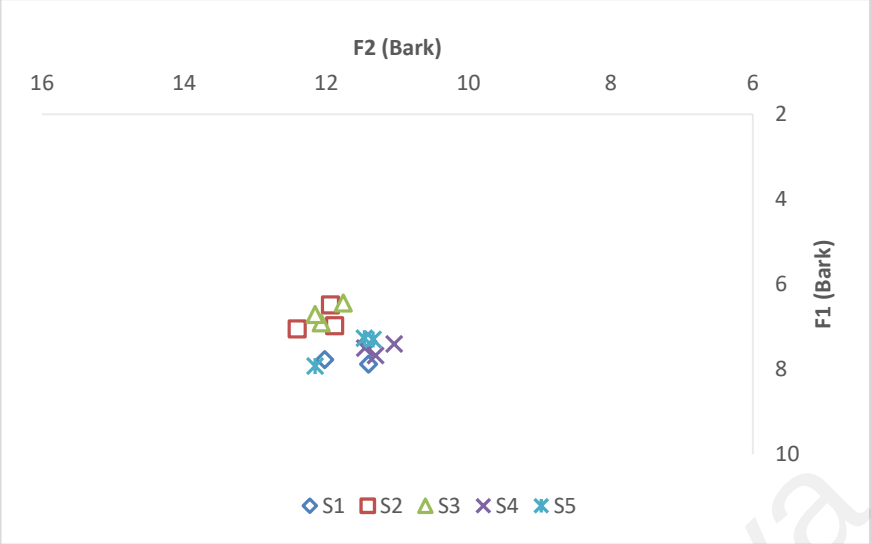

Figure 4.25: Distribution of vowel [ʌ] in KD's English word 'cup'

In Figure 4.25, the vowel [ʌ] in the word 'cup' of KD's English word data is concentrated within one spot of the vowel space. All of the subjects produced similar frequencies resulting in closer vowel plotting. Vowel [ʌ] is concentrated within the lower and near-central of the vowel chart above. The average of vowel duration is at 163 milliseconds.

Table 4.27: KD's English data on the word 'got' [gɒt]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɒ]	S1	524	1582	4.94	11.56	228
		527	1586	4.97	11.57	275
		585	1546	5.46	11.40	168
	S2	475	1720	4.52	12.12	299
		519	1518	4.90	11.28	305
		491	1560	4.66	11.46	235
	S3	497	1518	4.71	11.28	324
		487	1509	4.62	11.24	305
		507	1716	4.80	12.10	247
	S4	667	1385	6.13	10.66	279
		594	1309	5.54	10.28	264
		594	1309	5.54	10.28	258
	S5	529	1367	4.99	10.58	382
		532	1581	5.01	11.55	288
		551	1477	5.17	11.10	383
	Average	538.60	1512.20	5.06	11.23	283

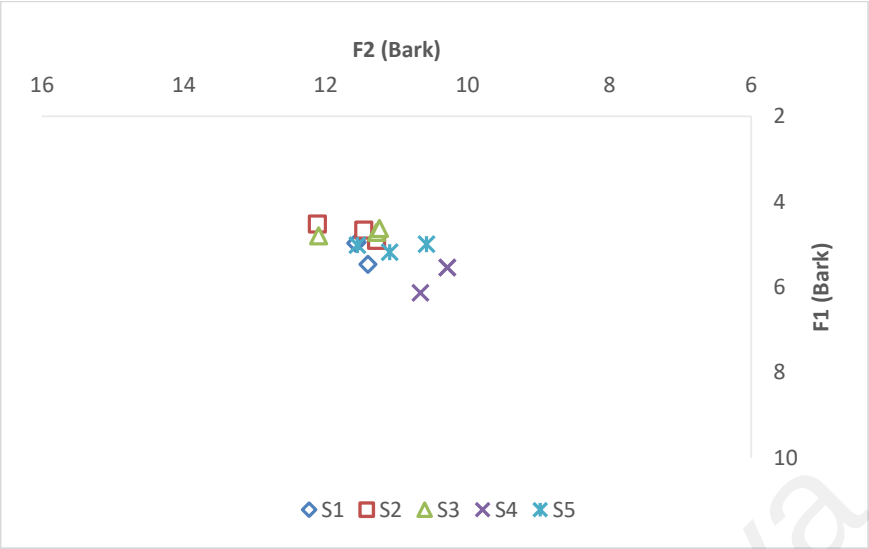

Figure 4.26: Distribution of vowel [ɒ] in KD's English word 'got'

Figure 4.26 above displays the distribution of vowel [ɒ] in KD's English word 'got'. The vowel is mainly located within one area of the vowel space which is at the top and central area. All five subjects produced vowel [ɒ] as a higher vowel instead of a lower vowel. Only S4 produced 6.13 frequency resulting in a much lower vowel in the first round of recording sessions. The average vowel length is at 283 milliseconds.

Table 4.28: KD's English data on the word 'car' [kɑˈ]

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɑ]	S1	916	1612	7.96	11.68	334
		871	1666	7.65	11.90	289
		801	1687	7.15	11.99	315
	S2	652	1727	6.01	12.14	333
		627	1707	5.81	12.06	311
		638	1670	5.90	11.92	295
	S3	628	1810	5.81	12.45	306
		590	1695	5.50	12.02	313
		667	1654	6.13	11.85	214
	S4	715	1289	6.50	10.18	411
		692	1325	6.32	10.37	365
		712	1357	6.48	10.53	277
	S5	834	1541	7.39	11.38	352
		847	1400	7.48	10.74	345
		864	1621	7.60	11.72	252
	Average	736.93	1584.07	6.65	11.53	314

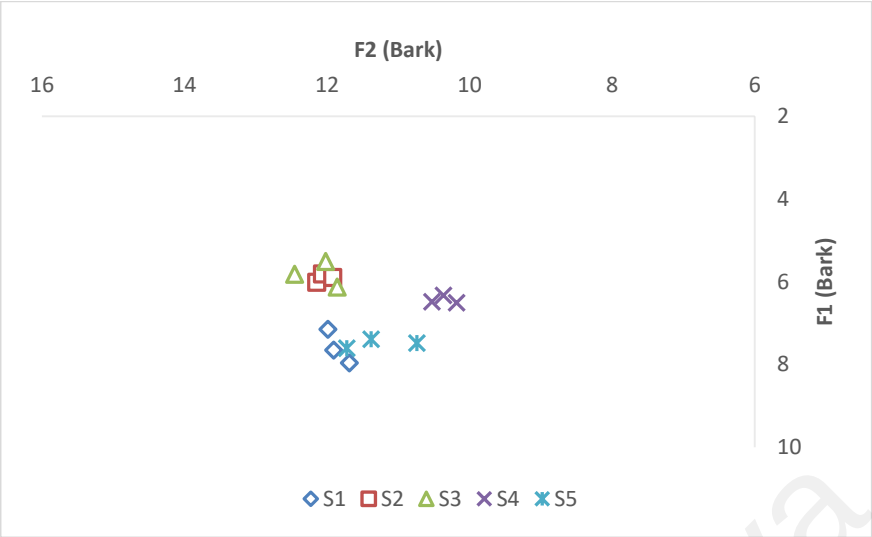

Figure 4.27: Distribution of vowel [ɑ] in KD's English word 'car'

Last but not least, Figure 4.27 above exhibits the vowel [ɑ] plotting gathered from KD's English word 'car' data. The vowel [ɑ] is widely spread around one spot which is at the mid-central of the vowel space. S1 and S5 produced similar frequencies but it is located lower than the other vowel. S2 and S3 offer higher vowel [ɑ] distribution while S4 produced vowel [ɑ] at a different spot. The average vowel length is 314 milliseconds.

4.4 Data on KD's English short text

All of the tables listed below (Table 4.29 until 4.40) explain the F1, F2, F1, F2 (Bark) frequencies and duration (msec) which were acquired during the English short text's recording session. Every participant was asked to read aloud and repeated the English short text twice. Figure 4.28 until 4.39 will be described one by one as to explain the vowel distribution of each vowel involved in KD's English short text recording.

Table 4.29: KD's English data on 'beat' [bit] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[i]	S1	401	1434	3.86	10.90	348
		426	1603	4.08	11.65	242
	S2	400	2007	3.85	13.13	167
		374	2018	3.61	13.16	225
	S3	371	1960	3.58	12.97	275
		362	1891	3.50	12.74	271
	S4	410	2437	3.94	14.35	78
		466	2360	4.44	14.15	70
	S5	332	2056	3.22	13.28	108
		348	1813	3.37	12.46	101
	Average	389.00	1957.90	3.74	12.88	189

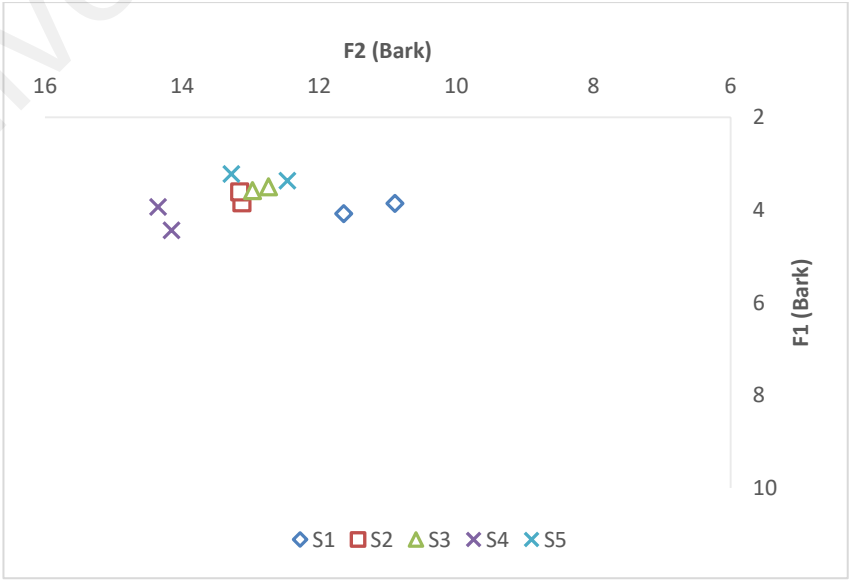

Figure 4.28: Distribution of vowel [i] in 'beat' for KD's English short text

Firstly, Figure 4.28 shows the vowel distribution on vowel [i] in 'beat' for KD's English short text. The vowel distribution is widely spread in the vowel space and it is mostly located at the top front area of the scatter plot. Only S1 generated vowel [i] as toward the center because of its lower F2 (Bark) frequencies while S2, S3, S4, and S5 produced vowel [i] as a front vowel. The shortest vowel length is 78 milliseconds which is produced by S4 turning vowel [i] as a short vowel.

Table 4.30: KD's English data on 'bit' [bɪt] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɪ]	S1	366	1915	3.54	12.82	194
		378	1785	3.65	12.36	184
	S2	431	2517	4.13	14.55	132
		399	1958	3.84	12.97	266
	S3	372	1890	3.59	12.74	202
		365	1980	3.53	13.04	176
	S4	322	2031	3.13	13.20	273
		390	1996	3.76	13.09	220
	S5	341	1795	3.30	12.40	377
		385	2247	3.71	13.85	143
	Average	374.90	2011.40	3.62	13.10	217

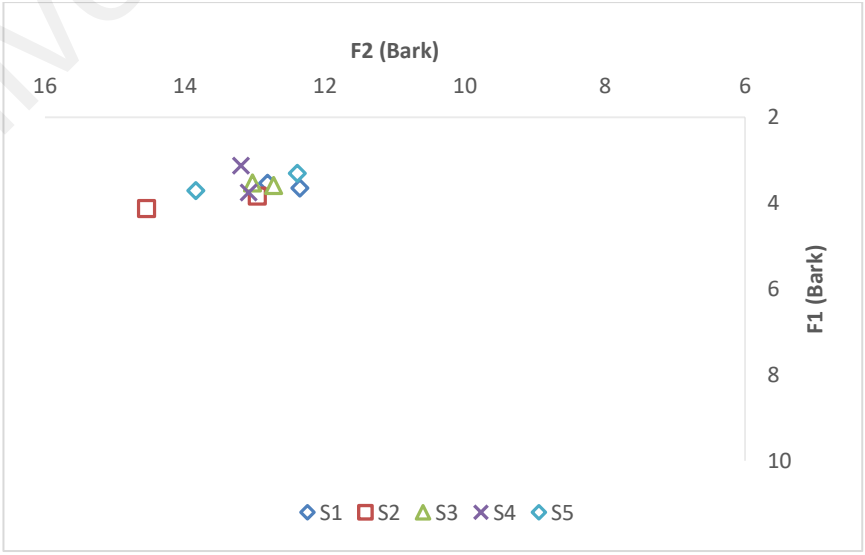

Figure 4.29: Distribution of vowel [ɪ] in 'bit' for KD's English short text

The vowel distribution of vowel [ɪ] in 'bit' for KD's English short text is shown in Figure 4.29. Most of the vowel is distributed at the top-front of the vowel space. S1, S3, and S4 produced similar frequencies and the vowel is located within just one spot. S2 and S5 generated higher F2 (Bark) frequencies making the vowel more frontal. The average vowel duration is 217 milliseconds.

Table 4.31: KD's English data on 'met' [mɛt] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɛ]	S1	431	1705	4.13	12.06	212
		419	1692	4.02	12.01	190
	S2	492	1723	4.67	12.13	239
		499	1822	4.73	12.50	262
	S3	449	2001	4.29	13.11	151
		447	1590	4.27	11.59	206
	S4	513	1843	4.85	12.57	402
		468	1742	4.46	12.20	283
	S5	577	1551	5.39	11.42	204
		528	2204	4.98	13.73	211
	Average	482.30	1787.30	4.58	12.33	236

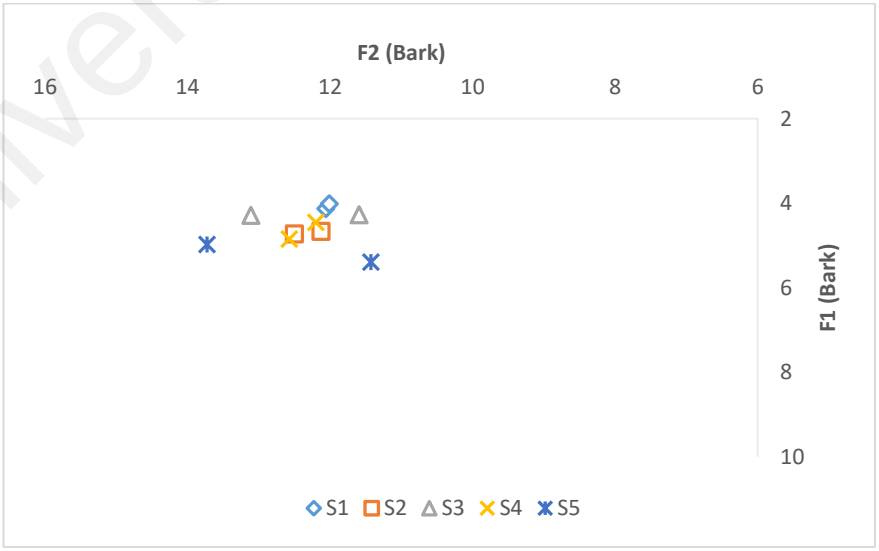

Figure 4.30: Distribution of vowel [ɛ] in 'met' for KD's English short text

Figure 4.30 above shows a distribution of vowel [ɛ] in 'met' where the vowel pronounced by the subjects is distributed within one spot of the vowel plot. Although the vowel plotting is in one area, S3 and S5 produced different frequencies between both recordings and the vowel [ɛ] is separated far from each vowel. Only S4 produced the longest vowel duration which is at 402 milliseconds during its first recording session.

Table 4.32: KD's English data on 'mat' [mæt] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[æ]	S1	494	1603	4.68	11.65	300
		495	1551	4.69	11.42	315
	S2	448	1574	4.28	11.52	302
		448	2104	4.28	13.43	371
	S3	506	1773	4.79	12.32	261
		513	1779	4.85	12.34	216
	S4	602	1832	5.60	12.53	303
		561	1884	5.26	12.72	305
	S5	580	1828	5.42	12.52	325
		674	1963	6.18	12.98	201
	Average	532.10	1789.10	5.00	12.34	290

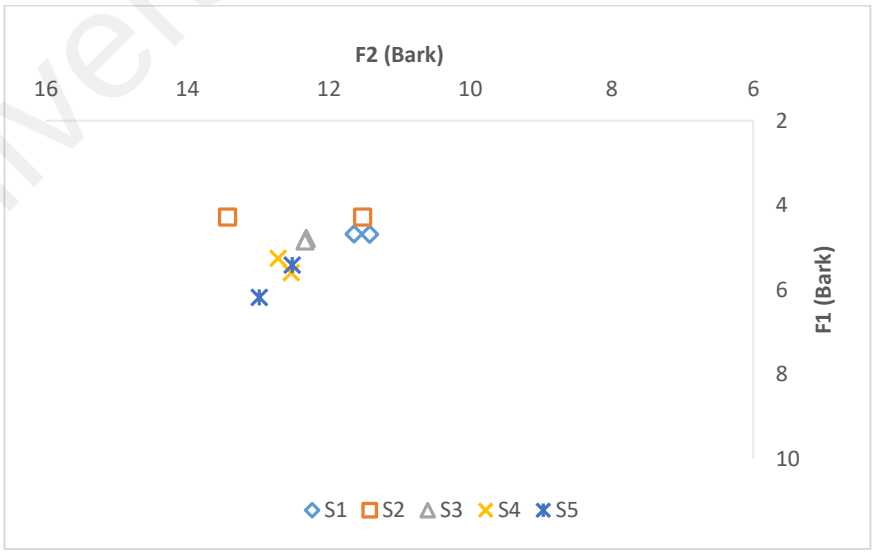

Figure 4.31: Distribution of vowel [æ] in 'mat' for KD's English short text

Next in Figure 4.31 describes vowel distribution of [æ] in 'mat' where vowels are located in front and near-middle spot of the vowel space. S1, S3, and S4 produced vowel [æ] next to each other following similar F1 and F2 (Bark) frequencies. S2 and S5 produced separated vowel plotting where S2 produced a higher vowel and S5 produced a much lower vowel. The vowel length range is within 260 to 320 milliseconds.

Table 4.33: KD's English data on 'card' [ka:d] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[a]	S1	981	1653	8.39	11.85	196
		926	1590	8.03	11.59	199
	S2	784	2095	7.02	13.40	190
		750	2102	6.77	13.42	199
	S3	728	1901	6.60	12.77	187
		690	1940	6.31	12.91	168
	S4	900	1613	7.85	11.69	290
		851	1658	7.51	11.87	228
	S5	834	1848	7.39	12.59	229
		385	2247	3.71	13.85	291
	Average	782.90	1864.70	6.96	12.59	218

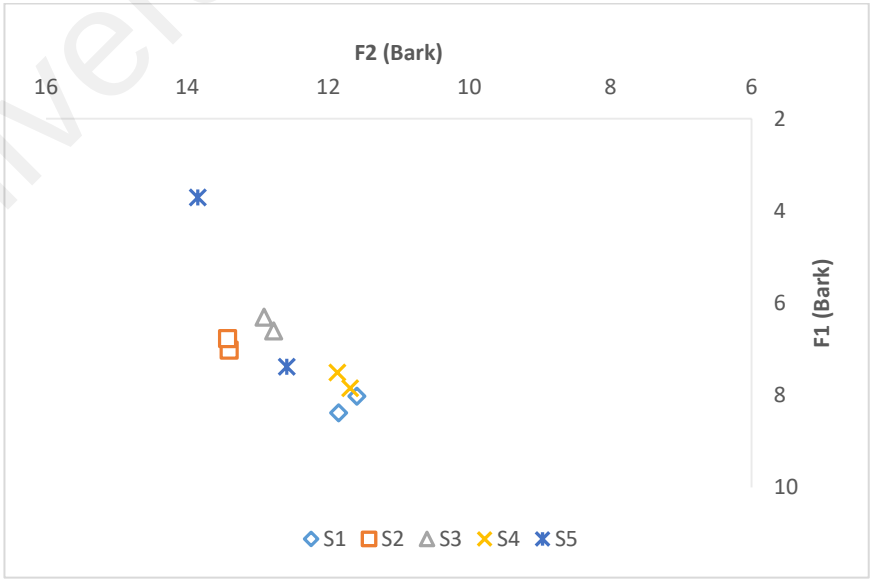

Figure 4.32: Distribution of vowel [a] in 'card' for KD's English short text

Next is the distribution of vowel [a] in 'card' for KD's English short text as shown in Figure 4.32 above. The vowel [a] distribution is distributed within one area except S5 generated a higher vowel during its second recording session. Vowel [a] is plotted within near-front and near-central area of the vowel space. The average duration is 218 milliseconds for all five subjects.

Table 4.34: KD's English data on 'girl' [gəl] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ə]	S1	771	1590	6.93	11.59	230
		710	1643	6.46	11.81	235
	S2	505	1621	4.78	11.72	318
		502	1612	4.75	11.68	348
	S3	539	1368	5.07	10.58	264
		482	1982	4.58	13.05	207
	S4	705	1446	6.43	10.95	266
		667	1361	6.13	10.55	250
	S5	593	1704	5.53	12.05	181
		582	1864	5.44	12.65	305
	Average	605.60	1619.10	5.61	11.66	260

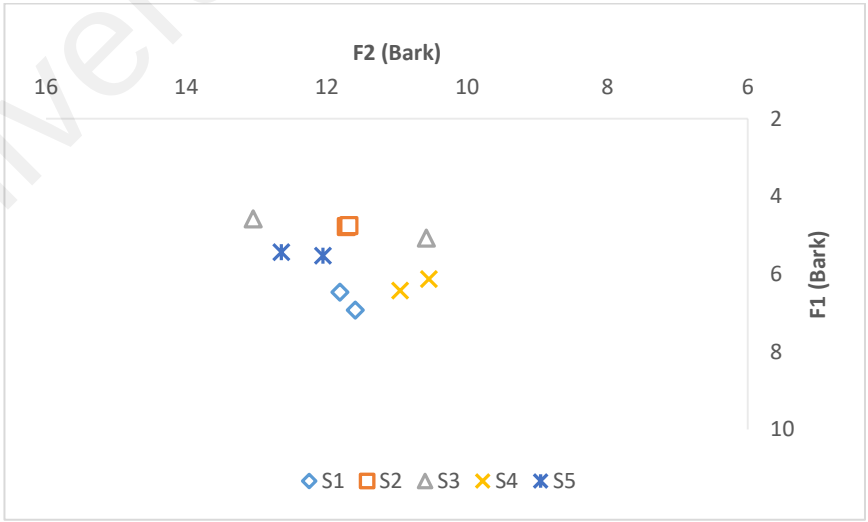

Figure 4.33: Distribution of vowel [ə] in 'girl' for KD's English short text

Figure 4.33 above displays the distribution of vowel [ə] in the word 'girl' for KD's English short text data. The vowels are widely distributed throughout the whole vowel space and each vowel produced by the subjects are located at different spots after two recording session. Only S2 produced identical F1 (Bark) frequencies and located next to each other. Besides that, S2 produced the highest vowel length between all five subjects.

Table 4.35: KD's English data on 'boot' [bu:t] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[u]	S1	614	1405	5.70	10.76	115
		532	1246	5.01	9.95	89
	S2	414	1329	3.97	10.39	239
		403	1218	3.87	9.80	258
	S3	391	1433	3.77	10.89	202
		411	1430	3.95	10.88	224
	S4	400	1101	3.85	9.13	208
		465	1225	4.43	9.84	175
	S5	395	1325	3.80	10.37	290
		418	1261	4.01	10.03	268
	Average	444.30	1297.30	4.24	10.20	207

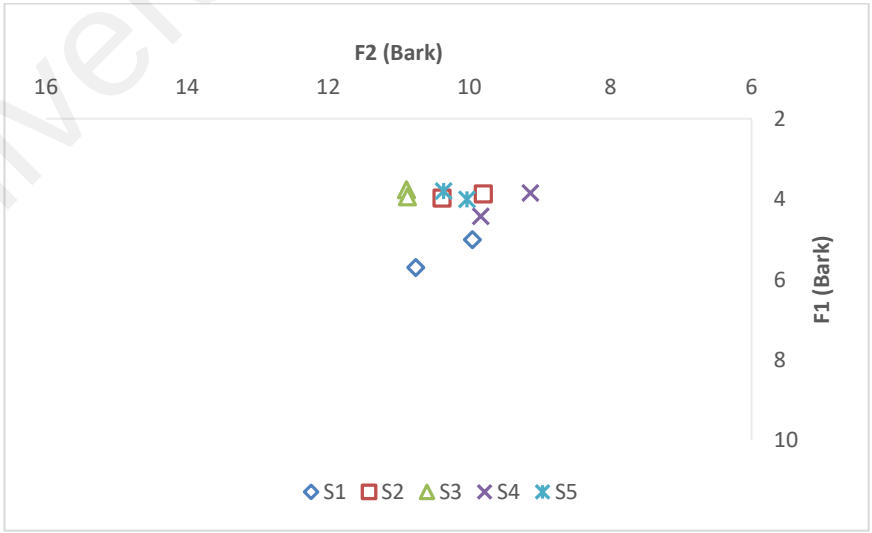

Figure 4.34: Distribution of vowel [u] in 'boot' for KD's English short text

The vowel [u] distribution in Figure 4.34 shows a concentrated vowel plotting for the word 'boot' for KD's English short text. Vowel [u] produced by the subjects are located mainly at the top and back of its vowel space. S1 produced a slightly lower vowel because the F1 (Bark) frequencies are generated lower than the others. The average vowel duration is 207 milliseconds and the lowest duration is produced by S1; 115 and 89 milliseconds for both recording sessions.

Table 4.36: KD's English data on 'book' [bʊk] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ʊ]	S1	624	1124	5.78	9.27	106
		436	1289	4.17	10.18	246
	S2	412	1428	3.96	10.87	251
		402	1361	3.87	10.55	295
	S3	348	1403	3.37	10.75	297
		394	1397	3.79	10.72	275
	S4	438	1260	4.19	10.03	257
		390	1183	3.76	9.61	274
	S5	458	1328	4.37	10.38	316
		490	1458	4.65	11.01	234
	Average	439.20	1323.10	4.19	10.34	255

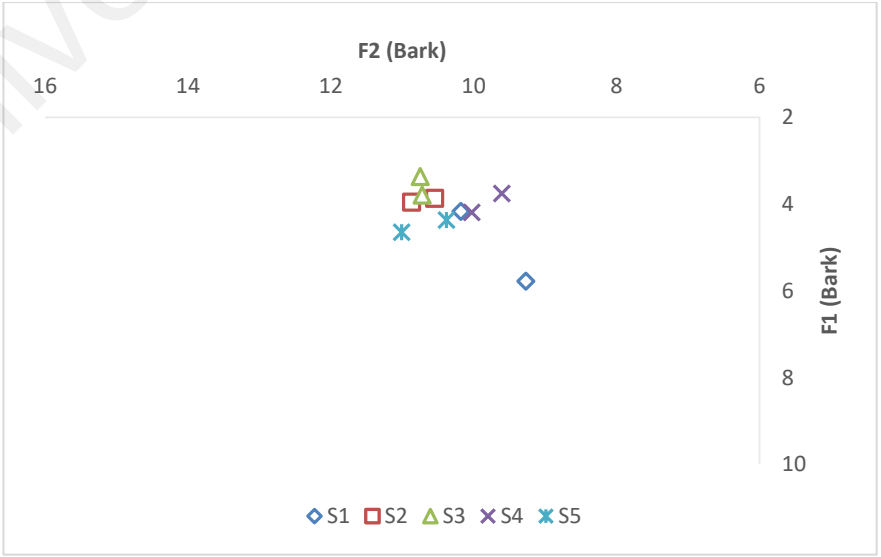

Figure 4.35: Distribution of vowel [ʊ] in 'book' for KD's English short text

Figure 4.35 above describes the vowel [ʊ] placement in the word 'book' for KD's English short text. All of the subjects generated similar F1 and F2 (Bark) frequencies except for S1 where the vowel is slightly lower due to higher F1 (Bark) frequency. Besides, S1 produced the lowest vowel duration recorded during KD's English short text recording session.

Table 4.37: KD's English data on 'cup' [kʌp] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ʌ]	S1	1038	1690	8.75	12.00	158
		941	1633	8.13	11.77	136
	S2	770	1790	6.92	12.38	121
		751	1852	6.78	12.60	131
	S3	800	1669	7.14	11.92	153
		680	1882	6.23	12.71	128
	S4	863	1542	7.59	11.39	152
		816	1614	7.26	11.69	154
	S5	946	1749	8.16	12.23	153
		868	1710	7.63	12.08	177
	Average	847.30	1713.10	7.46	12.08	146

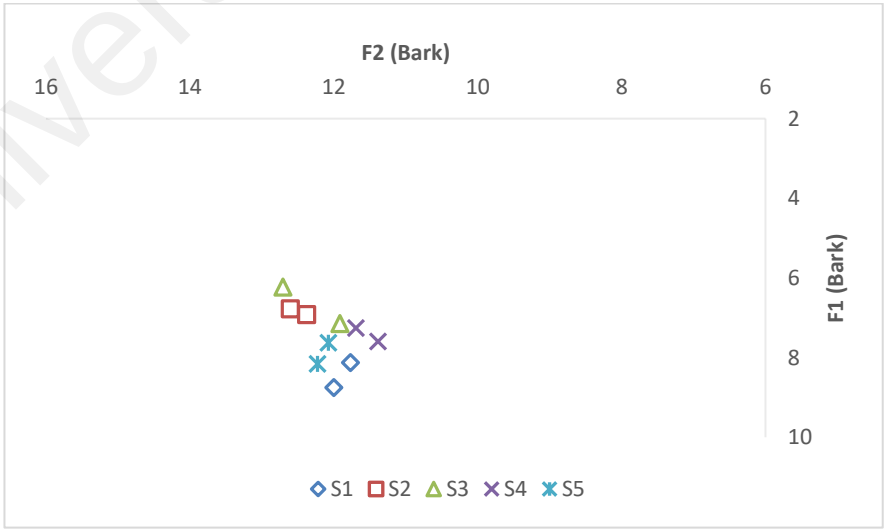

Figure 4.36: Distribution of vowel [ʌ] in 'cup' for KD's English short text

Next is the distribution of vowel [ʌ] in 'cup' for KD's English short text as displayed in Figure 4.36. The vowel is mainly distributed within one spot of the vowel space; middle and near-back area. The average of F1 and F2 (Bark) frequencies is 7.46 and 12.08 while the average vowel length is 146 milliseconds.

Table 4.38: KD's English data on 'got' [gɒt] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɒ]	S1	759	1506	6.84	11.23	116
		778	1625	6.98	11.74	131
	S2	599	1837	5.58	12.55	123
		497	1634	4.71	11.77	169
	S3	520	1590	4.91	11.59	159
		623	1468	5.77	11.05	162
	S4	708	1696	6.45	12.02	127
		714	1539	6.50	11.37	89
	S5	628	1698	5.81	12.03	131
		568	1757	5.32	12.26	85
	Average	639.40	1635.00	5.89	11.76	129

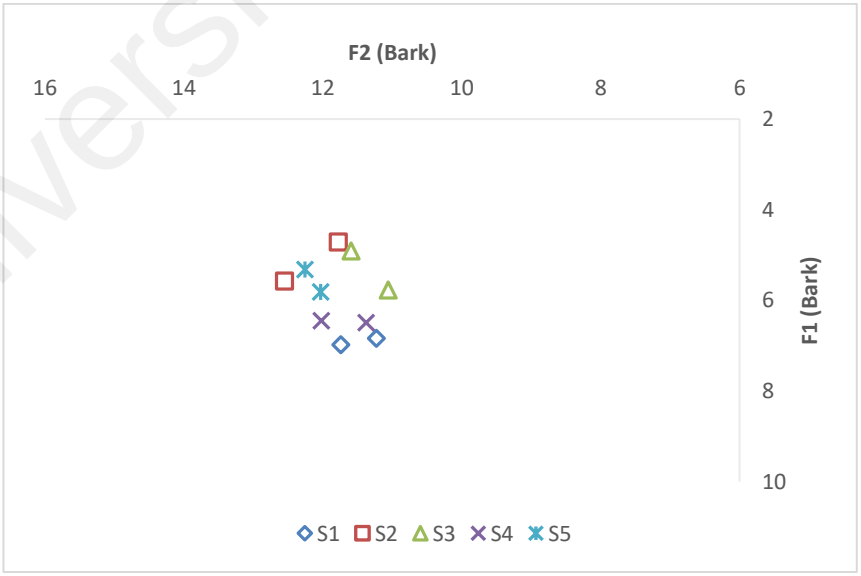

Figure 4.37: Distribution of vowel [ɒ] in 'got' for KD's English short text

Figure 4.37 shows the distribution of vowel [ɒ] in 'got' for KD's English short text. The vowel is mainly concentrated within one spot which is in the middle section of the vowel space. Each vowel distribution is located near to each other for every subject. All subjects produced the average of 5.89 and 11.76 for its F1 and F2 (Bark) frequencies as well as the average of vowel duration is 129 milliseconds.

Table 4.39: KD's English data on 'car' [kɑˈ] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɑ]	S1	941	1583	8.13	11.56	225
		876	1580	7.68	11.55	231
	S2	650	1692	5.99	12.01	245
		703	1772	6.41	12.31	231
	S3	705	1512	6.43	11.25	172
		703	1521	6.41	11.29	137
	S4	820	1330	7.29	10.39	321
		812	1336	7.23	10.42	299
	S5	675	1397	6.19	10.72	302
		385	2247	3.71	13.85	291
	Average	727.00	1597.00	6.55	11.54	245

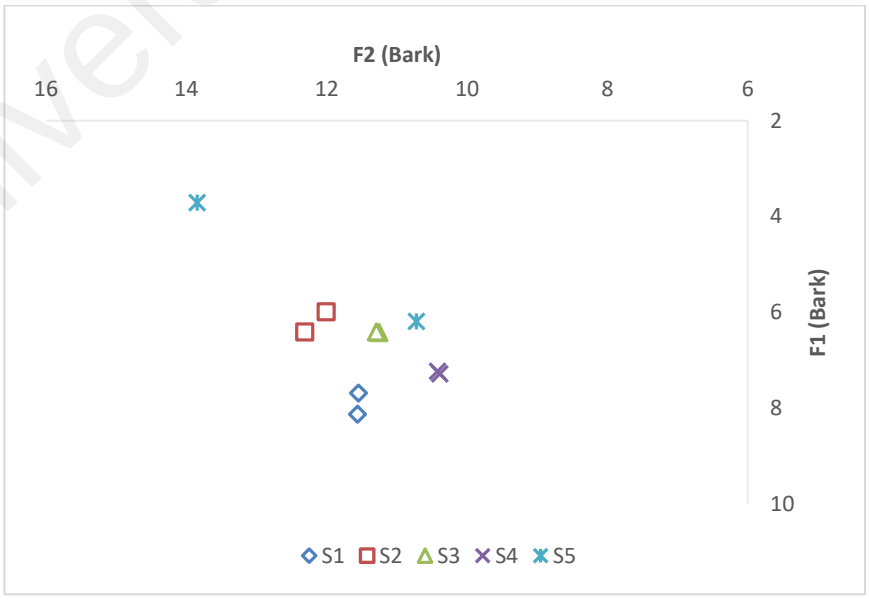

Figure 4.38: Distribution of vowel [ɑ] in 'car' for KD's English short text

The distribution of vowel [ɑ] in 'car' for KD's English short text data is displayed in Figure 4.38. The vowel [ɑ] is mainly plotted within one area of near-open and near-middle vowel space area. However, only S5 produced higher F2 (Bark) frequency resulting in a top-front vowel during the second recording session. The average vowel length for vowel [ɑ] is 245 milliseconds.

Table 4.40: KD's English data on 'brought' [brɔ:t] in English short text

Vowel	Subject	F1	F2	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɔ]	S1	780	1535	6.99	11.35	102
		754	1478	6.80	11.10	136
	S2	569	1560	5.33	11.46	154
		545	1639	5.12	11.79	267
	S3	583	1534	5.44	11.35	150
		506	1488	4.79	11.15	159
	S4	707	1344	6.44	10.46	168
		683	1443	6.25	10.94	191
	S5	751	1531	6.78	11.34	200
		734	1569	6.65	11.50	242
	Average	661.20	1512.10	6.06	11.24	177

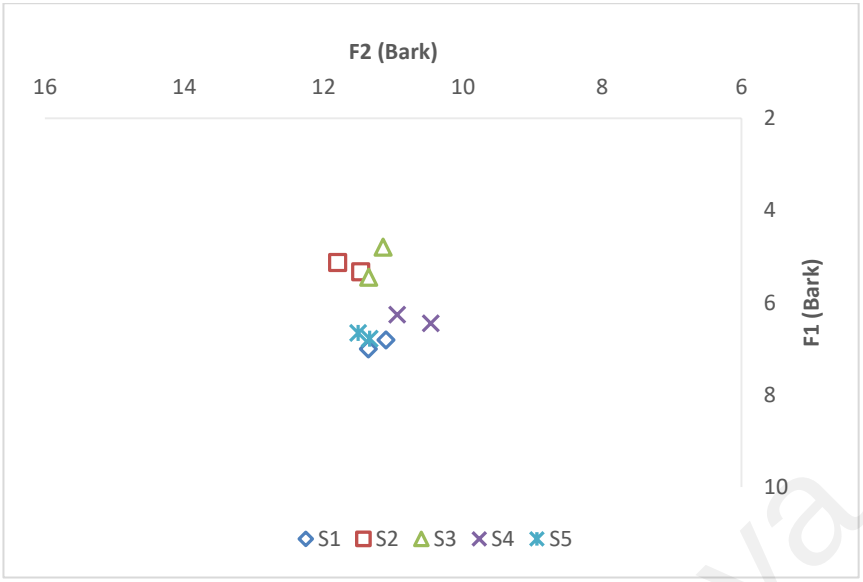

Figure 4.39: Distribution of vowel [ɔ] in 'brought' for KD's English short text

Last but not least, Figure 4.39 displays the vowel [ɔ] distribution for the word 'brought' in KD's English short text. Most of the vowel is distributed within the middle section of the vowel space area. All subjects produced similar frequencies of F1 and F2 (Bark) where the vowel is located near to each other. The average vowel duration is 177 milliseconds.

4.5 Mean Values of KD's Words

First of all, this sub-chapter starts with the representation of mean values of KD's vowel monophthongs as produced by the participants. The table of mean values of each category included the type of monophthongs, F1 and F2 frequencies (formatted in hertz), as well as F1 and F2 frequencies (formatted in Bark format). Data compiled were the results of Kelantan Dialect's pronunciation during the Kelantanese students' recording session. There were 8 vowels [ɛ, u, o, ɔ, ə, i, e, a] analyzed for KD's word analysis.

Table 4.41: Mean values of KD's words

Vowel	F1 (Hz)	F2 (Hz)	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɛ]	705	1927	6.42	12.78	211.6
[u]	428	1011	4.10	8.55	118.8
[o]	469	1334	4.46	10.39	204.2
[ɔ]	661	1194	6.06	9.64	212.6
[ə]	617	1943	5.70	12.91	69.0
[i]	370	2106	3.57	13.14	103.4
[e]	592	1884	5.51	12.62	123.8
[a]	846	1727	7.46	12.13	94.6

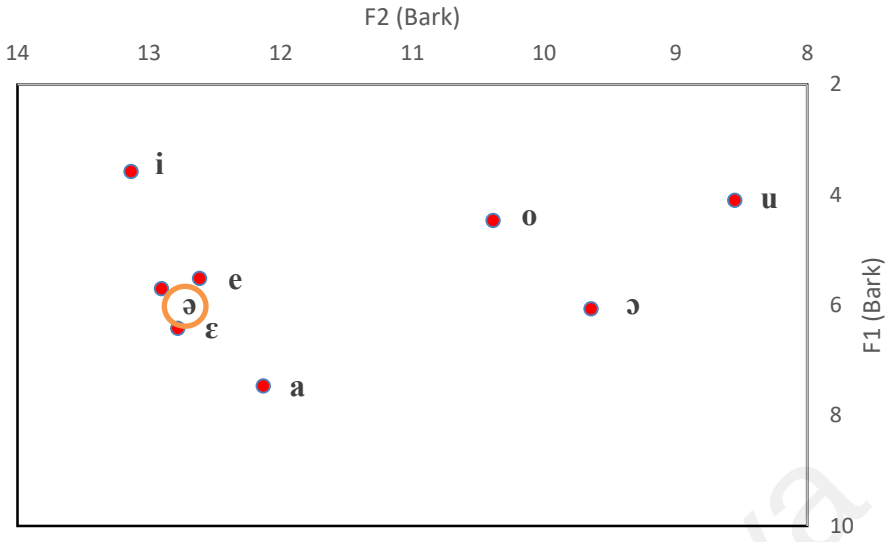

Figure 4.40: Vowel chart of KD's words

Figure 4.40 above presents the scatter plot on KD's vowel charts of the word and sentence analysis as produced by the participants using the mean values of F1 and F2 (Bark) in Table 4.41. For the vowel chart of KD's word analysis in Figure 4.40, the vowel realization of [i, e, ɛ, a, u] does not differ much from the vowel chart provided by Abdul Hamid (2006). It is clearer that vowel [ɛ] is in the middle of the vowel chart which was more frontal than vowel [e].

Vowel [ə] is located at the front instead of at the mid-center of the chart as circled in Figure 4.40. Besides that, the vowel [ə] is more frontal than in sentence analysis (Figure 4.41). It is not clear on how vowel [ə] is frontal even though the participants pronounced *penuh* correctly. Vowel [o] is more frontal and is located in the middle section of the KD word's vowel chart. Similar to vowel [o], vowel [ɔ] is a bit frontal located at the mid-center of the vowel chart which is different from Abdul Hamid (2006) KD vowel chart. Figure 4.40 represents an almost similar vowel chart to Abdul Hamid's KD vowel chart except for few monophthongs; [ə, o, ɔ].

4.6 Mean Values of KD's Sentences

Table 4.42 below displayed the mean values of KD's sentences data produced by all five participants. The table included F1 and F2 frequencies, F1 and F2 (Bark) frequencies as well as vowel length. The vowels presented in Table 4.41 are [ɛ, u, o, ɔ, ə, i, e, a] for KD's sentence data analysis. Meanwhile, Figure 4.41 shows the vowel plotting according to the mean values recorded from KD's sentence data.

Table 4.42: Mean values of KD's sentences

Vowel	F1 (Hz)	F2 (Hz)	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɛ]	676	2123	6.18	13.40	170.4
[u]	466	1176	4.44	9.55	98.4
[o]	410	1161	3.94	9.48	203.4
[ɔ]	512	1207	4.82	9.70	227.2
[ə]	514	1835	4.86	12.54	60.0
[i]	403	2359	3.87	14.10	88.2
[e]	536	2037	5.04	13.68	92.2
[a]	786	1675	7.01	11.93	74.0

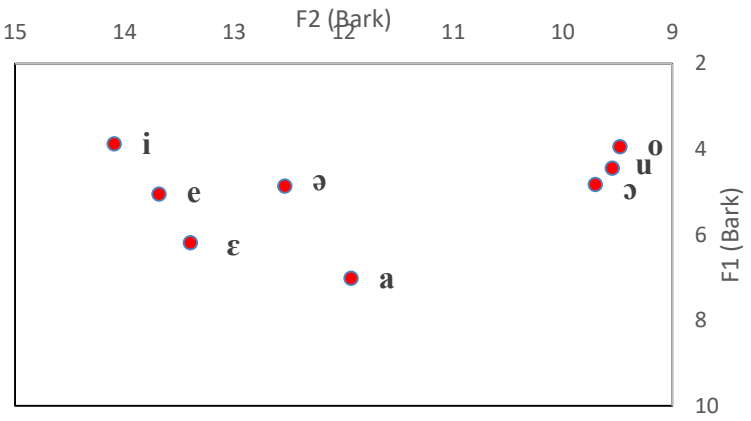

Figure 4.41: Vowel chart of KD's sentence

The scatter plot shown in Figure 4.41 is the vowel chart of KD's sentence analysis. The vowel placement of [i, e, ɛ, ə] of KD's sentence analysis is similar to the vowel chart introduced by Abdul Hamid (2006). Different than Figure 4.40, the vowel [ə] is located at the mid-center of the vowel chart. This could have happened because of the less consciousness for these participants when pronouncing the word and less stressing the word unlike in KD words' vowel chart. Vowel [ə] in Figure 4.40 and 4.41 are located differently might due to the participants' slight pronunciation variations of 'penuh' in word and sentence list. Since the meaning does not change throughout the recording session, vowel [ə] can still be considered as the same phoneme instead of two different phones.

Vowel [a] is retracted to the center of the vowel chart differs to Abdul Hamid (2006) frontal and open [a] vowel. The KD's sentence analysis displays vowels [o, u, ɔ] which are closer to each other turning the vowels into closed-back vowels. Vowel [u] is located lower than the vowel [o]. Meanwhile, vowel [ɔ] is located higher at the close-middle of the vowel chart instead of mid-back vowel as in Abdul Hamid's KD vowel chart. The results presented in both Figure 4.40 and 4.41 provide similar representations of vowel patterns as in Nik Safiah (1965, 1966), Ajid (1985) and Abdul Hamid (2006) with only a few monophthongs differences.

4.7 Mean Values of KD's English Words

Next is the representation of mean values of KD's English words produced by the five participants. Table 4.43 presented the mean values of each vowel monophthongs, F1 and F2 frequencies (formatted in hertz), and F1 and F2 frequencies (formatted in Bark format). There were 11 monophthongs [i, ɪ, ɛ, æ, a, ə, u, ʊ, ʌ, ɒ, ɑ] for English's words listed in Table 4.42 and Figure 4.42.

Table 4.43: Mean values of KD's English word

Vowel	F1 (Hz)	F2 (Hz)	F1 (Bark)	F2 (Bark)	Duration (msec)
[i]	402	2036	3.86	13.16	302.4
[ɪ]	467	1742	4.41	12.19	328.8
[ɛ]	522	1860	4.92	12.57	267.2
[æ]	537	1758	5.06	12.25	304.4
[a]	873	1721	7.64	12.09	233.0
[ə]	531	1682	4.99	11.94	428.8
[u]	396	1367	3.80	10.56	342.6
[ʊ]	409	1241	3.92	9.92	336.6
[ʌ]	841	1698	7.43	12.02	163.6
[ɒ]	538	1514	5.06	11.24	302.4
[ɑ]	749	1596	6.73	11.57	347.2

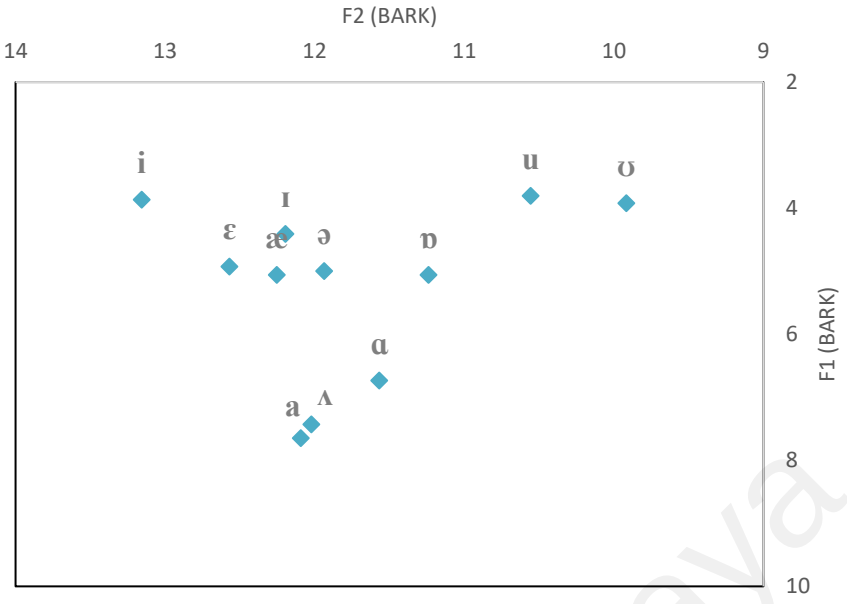

Figure 4.42: Vowel chart of KD's English word

The scatter plots on KD English's vowel chart of the word and short text analysis presented the F1 and F2 (Bark) in Figure 4.42. In KD English's word analysis vowel chart above, the vowel [i] and [ɪ] are significantly distant than each other indicating different vowel length and lower jaw position for vowel [ɪ] when they pronounced the word *bit*. Vowel [ɛ] and [æ] are located higher at the mid-section of the vowel chart turning both vowels as close-middle vowels when it was supposed to be open vowels.

Both vowels [ə] and [a] are located as mid-center and open-center vowels of KD's English word vowel chart. The vowel placement of [ɒ] is at the mid-center and [ɒ] is a bit frontal towards the center where both vowels were open-back vowels. Meanwhile, vowel [u] becomes near-to-central and frontal vowel while vowel [ʊ] is retracted to the top-back behind vowel [u]. Vowel [ʌ] is placed at the near-middle frontal instead of the open-mid back vowel of the vowel chart.

4.8 Mean Values of KD's English Short Text

Table 4.44 shows the mean values of the English language's monophthongs produced by the participants. The table of mean values included the type of monophthongs, F1 and F2 frequencies, F1 and F2 frequencies (formatted in Bark format) as well as its vowel duration. There were 12 monophthongs [i, ɪ, ɛ, æ, a, ə, u, ʊ, ɔ, ʌ, ɒ, ɑ] plotted in Figure 4.43 for KD's English short text data.

Table 4.44: Mean values of KD's English short text

Vowel	F1 (Hz)	F2 (Hz)	F1 (Bark)	F2 (Bark)	Duration (msec)
[i]	383	1979	3.69	12.93	195.2
[ɪ]	366	2030	3.54	13.14	235.6
[ɛ]	492	1765	4.66	12.26	241.6
[æ]	526	1722	4.95	12.11	298.2
[a]	845	1822	7.45	12.46	218.4
[ə]	623	1546	5.75	11.38	251.8
[u]	443	1319	4.22	10.31	210.8
[ɔ]	456	1309	4.33	10.26	245.4
[ʊ]	678	1501	6.20	11.19	154.8
[ʌ]	883	1688	7.71	11.98	147.4
[ɒ]	643	1665	5.92	11.88	131.2
[ɑ]	758	1503	6.80	11.19	253.0

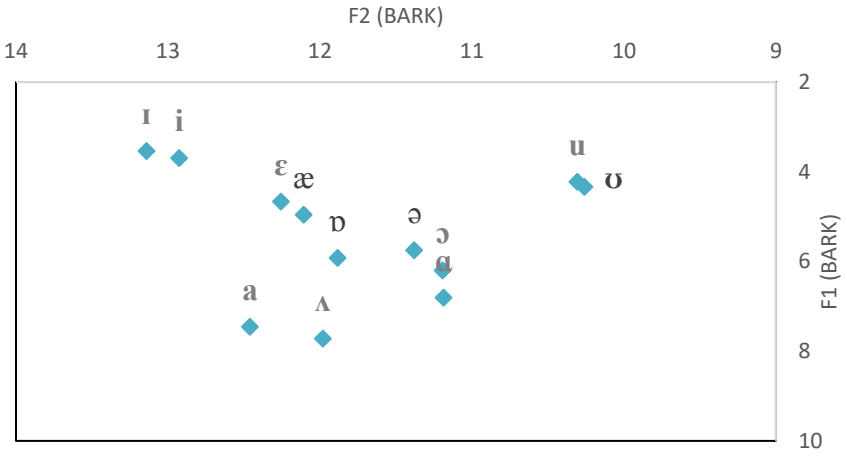

Figure 4.43: Vowel chart of KD‘s English short text

In Figure 4.43 above, the vowel chart of KD’s English short text analysis demonstrates that vowel [i] and [ɪ] are slightly closer than each other compared to the KD’s English word chart. Both vowels [i] and [ɪ] are located near to each other with the short vowel [ɪ] located at the front of [i]. This could have happened when the participants either could not differentiate between long vowel [i] and short vowel [ɪ] or they got confused between those monophthongs in short text.

Vowels [ɛ] and [æ] are placed as close-mid central vowels instead of the supposed open-frontal monophthongs. Vowel [ʊ] is placed at the back and closer to vowel [u] indicating no vowel differences between these two vowels in KD’s English short text vowel chart. Meanwhile, vowel [ə] is located at the center but a bit retracted and vowel [ɑ] is a bit frontal towards the mid-center of the vowel chart. Vowel [ɔ] is positioned near to the center of the vowel chart instead of back vowel. Vowel placement for [ɒ] is located more mid-central and frontal but vowel [ʌ] becomes an open and frontal vowel opposite to its supposed back vowel. Only vowel [a] is positioned as an open central vowel similar to RP’s vowel chart (International Phonetic Alphabet, 2017).

4.9 MalE's Vowel Chart

To identify the vowel differences, both KD's English word and short text analysis will be compared to the vowel chart of Malaysian English vowels (Pillai et al., 2010) as shown in Figure 4.44 below. Vowel [i] and [ɪ] shows a clearer vowel contrast unlike in Figure 4.42 and 4.43. The vowel placement indicates that the Kelantanese participants might not able to distinguish the short and long vowel between vowel [i] and [ɪ] in contrast to Pillai's MalE vowel chart. Vowel placement of [æ] in Malaysian English's vowel chart is slightly lower and similar to the classic Received Pronunciation (RP)'s vowel chart but it is different in KD's English vowel chart as it is located high mid-center. Vowel [u] and [ʊ] of MalE is similar to those in RP's vowel chart but these vowels show no contrast in both word and sentence analysis of KD's English vowel charts. However, vowel [ɑ] is positioned almost similar between KD's English and MalE vowel chart as the vowel is retracted to the front center of the chart.

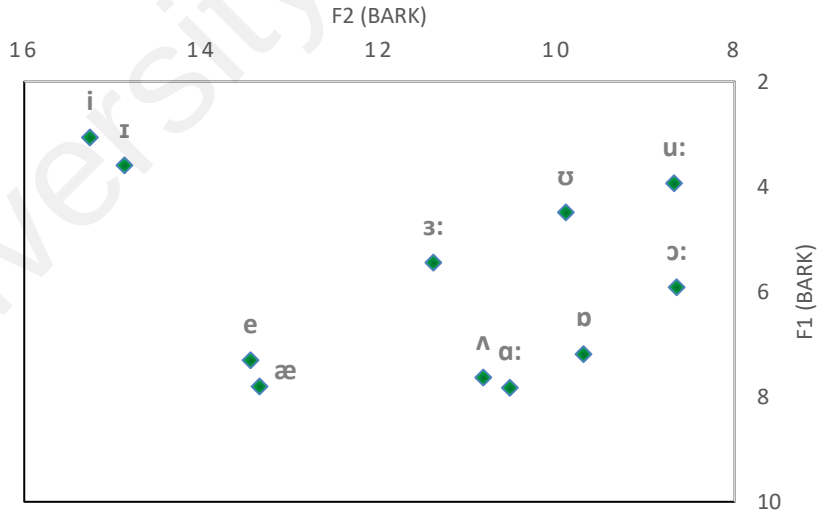

Figure 4.44: Malaysian English vowel chart (Pillai et al., 2010)

Vowel [ɔ] is located at the open-mid back in Pillai's MalE vowel chart unlike in KD's English short text vowel chart. The vowel [ɔ] is positioned as a center vowel when produced by the Kelantanese students. Finally, vowel [ʌ] is located at the near-back of MalE's vowel chart but the vowel is positioned near-front in KD's English word analysis and a center vowel in KD's English short text analysis.

The results demonstrate that both KD's English and MalE's vowel charts differ in terms of its vowel quality and length. Pillai et al. (2010) stated that MalE's vowels are contradicted to RP's vowel chart where many variations occurred because of the phonetic similarity. The MalE's participants did produced vowel length contrast even though the qualities are dissimilar to their L1 vowel charts. It can be applied that KD's English is different from MalE's vowel chart as the Kelantanese participants might not pronounce the English vowels accordingly as they were creating new vowel qualities despite knowing that the vowel or sound is similar to their L1; Kelantanese dialect. Further analysis on the similarities or differences between KD's English and MalE's vowel charts will be discussed in Chapter 5: discussion.

CHAPTER 5: DISCUSSION

This chapter discusses the vowel contrast between Kelantan Dialect and Malaysian English focusing on its vowel quality and vowel length as produced by the Kelantanese secondary students. A comparison between KD's English and MalE's vowel chart will be examined throughout this chapter to reach a better understanding of their vowel qualities' similarities or differences. This research will comprehensively evaluate the vowel variation of KD's vowel chart before proceeding to KD's English and MalE's vowel chart and provide a conclusion for this study.

5.1 Comparison on KD's Word and KD's English Word Chart

First of all, the vowels produced by 5 female participants whose first language is Kelantan Dialect and their second language is Bahasa Malaysia will be analyzed. Hence, English language is known as a foreign language for them. Based on results displayed in Chapter 4, Table 5.1 and 5.2 show the mean values of KD's word and KD's English word analysis. These mean values of KD's word and KD's English word analysis are compared to understand the similarities or differences produced by the participants.

Table 5.1: Mean values of KD's word

Vowel	F1 (Hz)	F2 (Hz)	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɛ]	705	1927	6.42	12.78	211.6
[u]	428	1011	4.10	8.55	118.8
[o]	469	1334	4.46	10.39	204.2
[ɔ]	661	1194	6.06	9.64	212.6
[ə]	617	1943	5.70	12.91	69.0
[i]	370	2106	3.57	13.14	103.4
[e]	592	1884	5.51	12.62	123.8
[a]	846	1727	7.46	12.13	94.6
Average	586	1640.75	5.41	11.52	142.25

Table 5.2: Mean values of KD's English word

Vowel	F1 (Hz)	F2 (Hz)	F1 (Bark)	F2 (Bark)	Duration (msec)
[i]	402	2036	3.86	13.16	302.4
[ɪ]	467	1742	4.41	12.19	328.8
[ɛ]	522	1860	4.92	12.57	267.2
[æ]	537	1758	5.06	12.25	304.4
[a]	873	1721	7.64	12.09	233.0
[ə]	531	1682	4.99	11.94	428.8
[u]	396	1367	3.80	10.56	342.6
[ʊ]	409	1241	3.92	9.92	336.6
[ʌ]	841	1698	7.43	12.02	163.6
[ɒ]	538	1514	5.06	11.24	302.4
[ɑ]	749	1596	6.73	11.57	347.2
Average	569.55	1655.91	5.26	11.77	305.18

The 8 vowel monophthongs in KD's vowel chart (Figure 5.1 below) displays few similarities with KD's English word vowel chart. Vowel [i] in both charts shows a similar close-front vowel position where there is no vowel contrast between long vowel [i] and short vowel [ɪ] in Kelantan Dialect. In terms of duration, there are no differences between short vowel [ɪ] and long vowel [i] as shown in Table 5.2 due to the slight difference of 20 milliseconds recorded. These participants might unintentionally pronounced the long and short vowel similarly as presented in Figure 5.2. Similar to vowel [i], the participants produced similar vowel [a] position due to the words /kawɛ/ in Kelantan Dialect and /ka:d/ in English have similar phonetic qualities.

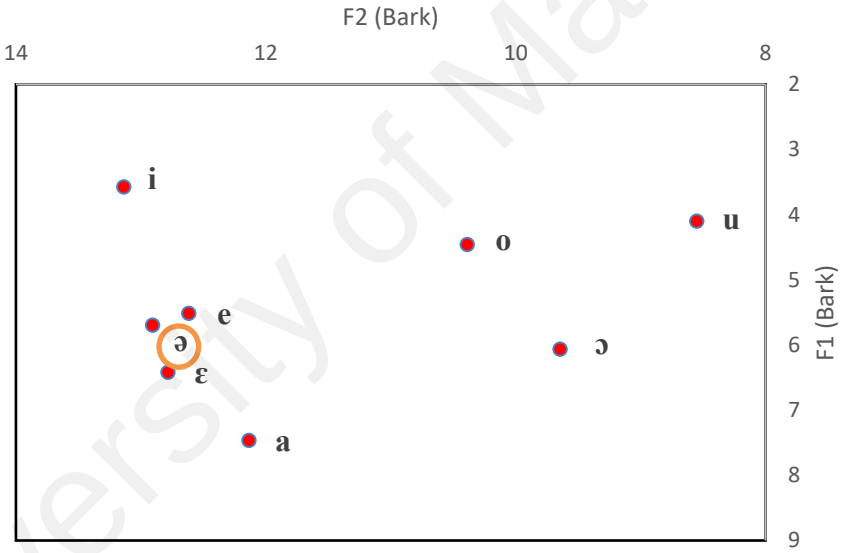

Figure 5.1: Vowel chart of KD's word

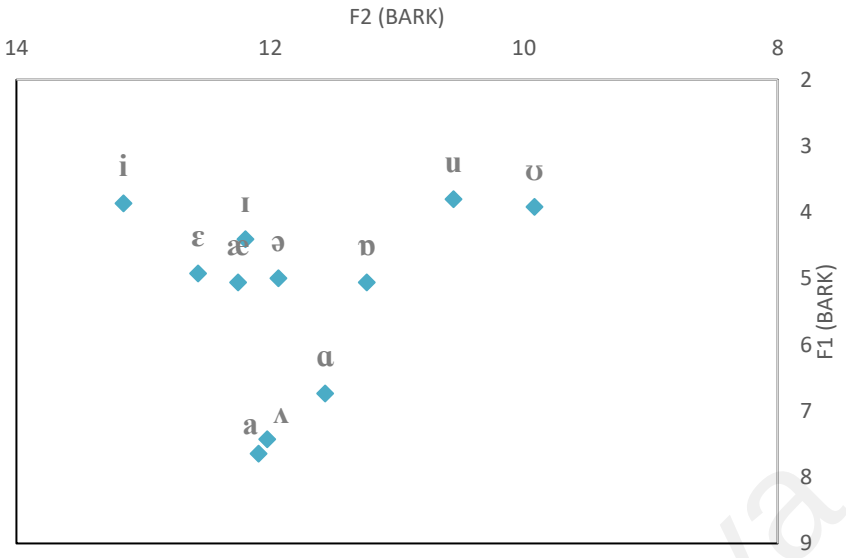

Figure 5.2: Vowel chart of KD's English word

In terms of vowel differences shown in Figure 5.1 and 5.2, schwa [ə] in KD's word produced as a front vowel but it is a near-central vowel in KD's English word chart similar to Malaysian English vowel chart (Pillai et al., 2010) and Received Pronunciation vowel chart (Musk, 2010). Repeated analysis was done on vowel schwa [ə] in KD's word and the results produced were still similar; vowel schwa [ə] as a front vowel. However, it is a central vowel in KD's sentence vowel chart analysis as of in Figure 5.2. Perhaps, any future research focusing on Kelantan Dialect can re-analyze the vowel schwa [ə]. The vowel [ə] in both KD's word chart and KD's English word chart indicates that the participants unconsciously recognize its vowel quality and able to pronounce /gəl/ accordingly. The vowel length difference shows that the participants took the average of 69 milliseconds to pronounce vowel [ə] in /pənuh/ and 428.8 milliseconds in /gəl/. Less stressing the vowel could have been the other reason it became a front vowel in KD's vowel chart.

Secondly, vowel [u] is a back vowel in KD's word chart but a near-back close vowel in KD's English word chart. Vowel [u] in KD's /ukɔ/ and English's /bu:t/ demonstrate that the participants might not stress the vowel in KD word but stress more on English

word. The vowel duration of [u] in KD's word is 118.8 milliseconds but it was 342.6 milliseconds in English's word. The vowel stressing probably turned the vowel forward although the participants knew that it was a long vowel [u:]. Next is vowel [ɛ] where it is an open-mid front vowel in KD's word chart but a close-mid-front vowel in KD's English word chart. KD's word *makan* [makɛ] and English word 'met' [mɛt] show different vowel length of 211.6 milliseconds for KD and 267.2 milliseconds for the English word. It was perhaps because of the jaw position of these participants were much lower when pronouncing [ɛ] in /makɛ/ and less jaw opening pronouncing /mɛt/ since the vowel is located in between consonants. Hence, it became a close-mid-front vowel in KD's English word chart (Figure 5.2 above).

Last but not least, three vowels could not be compared directly between KD's word chart and KD's English word chart which were vowel [e, ɔ, o]. This is due to a lack of data gathered during the data collection session back in Kelantan. Therefore, no comparison could be done on these [e, ɔ, o] monophthongs.

5.2 Comparison on KD's Sentence and KD's English Short Text Chart

Table 5.3 and 5.4 below exhibit the mean values of KD's sentence analysis and KD's English short text analysis. These tables will be further analyzed to discover the similarities and differences occurred from the participants' recording in KD's sentence and English short text recording session. The formant F1 and F2, as well as duration, is important in understanding the comparison between KD's sentence and KD's English short text result.

Table 5.3: Mean values of KD's sentence

Vowel	F1 (Hz)	F2 (Hz)	F1 (Bark)	F2 (Bark)	Duration (msec)
[ɛ]	676	2123	6.18	13.4	170.4
[u]	466	1176	4.44	9.55	98.4
[o]	410	1161	3.94	9.48	203.4
[ɔ]	512	1207	4.82	9.7	227.2
[ə]	514	1835	4.86	12.54	60.0
[i]	403	2359	3.87	14.1	88.2
[e]	536	2037	5.04	13.68	92.2
[a]	786	1675	7.01	11.93	74.0
Average	537.88	1696.63	5.02	11.8	126.73

Table 5.4: Mean values of KD‘s English short text

Vowel	F1 (Hz)	F2 (Hz)	F1 (Bark)	F2 (Bark)	Duration (msec)
[i]	383	1979	3.69	12.93	195.2
[ɪ]	366	2030	3.54	13.14	235.6
[ɛ]	492	1765	4.66	12.26	241.6
[æ]	526	1722	4.95	12.11	298.2
[a]	845	1822	7.45	12.46	218.4
[ə]	623	1546	5.75	11.38	251.8
[u]	443	1319	4.22	10.31	210.8
[ɔ]	456	1309	4.33	10.26	245.4
[ʊ]	678	1501	6.2	11.19	154.8
[ʌ]	883	1688	7.71	11.98	147.4
[ɒ]	643	1665	5.92	11.88	131.2
[ɑ]	758	1503	6.8	11.19	253.0
Average	591.33	1654.08	5.44	11.76	215.28

There are a few vowel similarities between KD’s sentence and KD’s English short text vowel chart analysis between Figure 5.3 and 5.4. Firstly, vowel [i] shows similar vowel position between these two categories although short vowel [ɪ] is seen located at the front of the long vowel [i] in KD’s English short text vowel chart. This might have happened because they could not recognize between short and long vowels when it is included in

sentences or short text despite there is vowel length differences because of vowel stressing between [i] and [ɪ] in KD's English short text analysis.

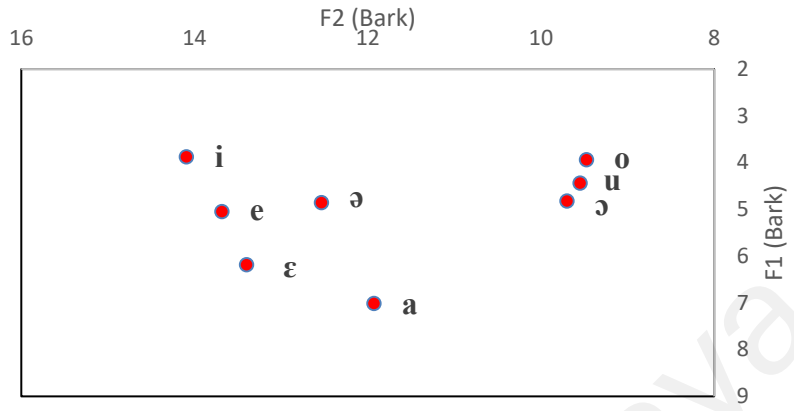

Figure 5.3: Vowel chart of KD's sentence analysis

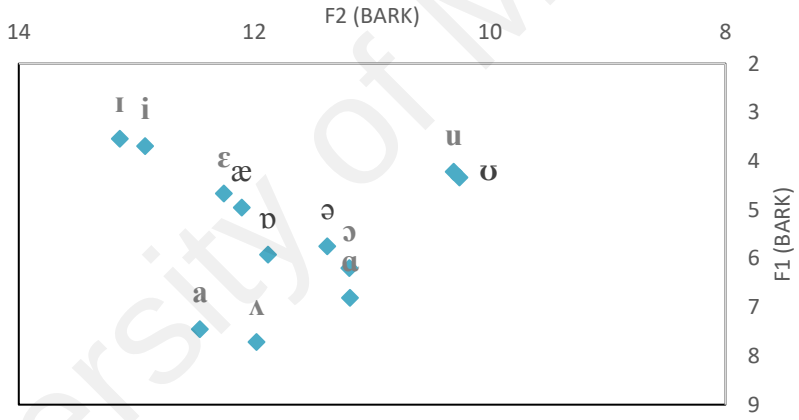

Figure 5.4: Vowel chart of KD's English short text

Similar to KD's word and KD's English word vowel chart, the vowel [ɛ] shows a similar position where it is an open-mid front vowel in KD's sentence vowel chart and it is a close-mid front vowel in KD's English short text vowel chart. Again, the jaw position of the participants might have lower down when pronouncing vowel [ɛ] in /makɛ/ of KD's sentence list as shown in Figure 5.4. The vowel schwa [ə] in KD's sentence and KD's English short text analysis is similar to Pillai's (2010) and Musk's (2010) vowel chart where both are a mid-central vowel. It can easily be interpreted that these participants can

recognize vowel schwa quality in longer sentences or short text as they were less conscious to pronounce this English monophthong.

Vowel [u] in KD's sentence and KD's English short text vowel chart demonstrate similar vowel realization as both charts show vowel [u] as mid-close back vowel. However, it is different from vowel [ɔ] in both vowel charts. Vowel [ɔ] in KD's sentence analysis indicate that it is a close-mid back vowel but it is an open-mid near central vowel in KD's English short text analysis. KD's word /mɔʔ/ demonstrates less jaw opening with a back tongue position and longer vowel duration (212.6 milliseconds). KD's English word in short text /brɔːt/ indicates much lower jaw opening, central tongue position as well as less stressing and short vowel duration (154.8 milliseconds). Therefore, the vowel positions are dissimilar between the two vowel charts in Figure 5.3 and 5.4.

Other than that, vowel [a] shows a different tongue position between KD's sentence and KD's English short text vowel chart analysis. The tongue position was at the central of the oral cavity when they pronounced KD's /kawɛ/ and the tongue was a bit forward when pronounced /kaːd/ in English short text. This situation occurred because the participants recognized vowel [a] as an open front vowel in the English language and vowel stressing could be another reason. The average duration for vowel [a] in /kawɛ/ was 74 milliseconds and they took 218.4 milliseconds to pronounce /kaːd/ in English short text. So far, not much of phonetic similarities can be found between KD's sentence vowel chart and KD's English short text vowel chart.

Above all, both vowels [e] and [o] are not able to be included for similarities or differences analysis as there was not enough data to include these vowels. For that reason, it is hoped that future research can study these vowel monophthongs between Kelantan Dialect, Kelantan Dialect's English and Malaysian English vowel charts analysis.

5.3 Comparison on KD's English and MalE's Vowel Charts

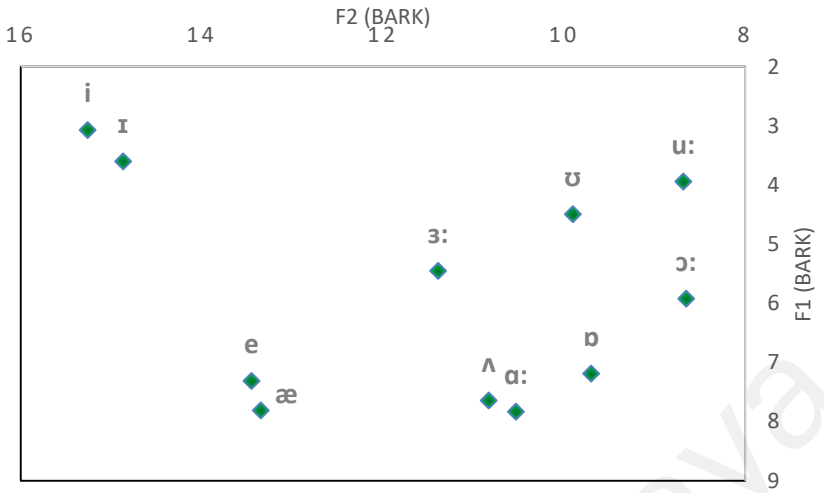

Figure 5.5: Malaysian English vowel chart (Pillai et al., 2010)

A comparison between KD's English vowel chart in Figure 5.2 and MalE's vowel chart in Figure 5.5 is done to understand the similarities or differences between these two languages. The findings implied that none of the vowel positions in KD's English vowel chart are similar to Malaysian English's vowel chart (Pillai et al., 2010) where Pillai's is near similar to Received Pronunciation's vowel chart (Musk, 2010).

Firstly, the Kelantanese participants were unable to differentiate between short vowel [ɪ] and long vowel [i] in Figure 5.2 and only 20 milliseconds differences were recorded between these two vowels in Table 5.2. Confusion might have happened when both vowels change its short and long vowel quality. Secondly, vowel [æ] became a close-mid central vowel in KD's English vowel chart but a near-open central vowel in MalE's vowel chart. These Kelantanese participants appear to have smaller jaw movements when pronouncing vowel [æ] in /mæt/. Third is the vowel [ɔ] where it is an open-mid central vowel in KD's English vowel chart. Pillai's MalE vowel chart displays a back vowel [ɔ] similar to the classical notion of RP's vowel chart. This could have happened because the

Kelantanese participants were not pronouncing 'brought' [brɔ:t] with tongue retracted to the back but they stressed more on the vowel with a longer duration of 245.4 milliseconds.

Since the KD's vowel chart offers vowel variation with KD's English vowel chart, it is best to describe that they were not using their L1 in creating these vowel qualities but they were creating a new category of vowel realization during the data collection session. Therefore, there are no matches shown between KD's English vowel chart with MalE's vowel chart (Pillai et al., 2010). Both KD's English vowel chart and MalE's vowel chart were different to begin with and both groups of participants were less proficient in English language. However, the level of English language maturity is higher for Pillai's participants' group as they were all undergraduate. These Kelantanese participants were among the low-intermediate to intermediate English language learners and they have less opportunities to use English language in their daily interaction.

This dissertation only focuses on vowel contrast between these vowel charts. Therefore, it is impossible to understand the dialectal influence between Kelantan Dialect and the English language. However, the future researcher can further explore the idea of language transfer or dialectal influence on Kelantan Dialect and English language pronunciation. There is no interrelation at all between L1 and target language in this research paper where most evidence show more dissimilarities between KD, KD's English and MalE.

5.4 Participant's Language Background

In order to understand the factors behind the vowel placement produced by these Kelantanese participants, they were asked a few semi-structured interview question related to their native language, English language exposure, additional English learning activities and so forth. To begin with, all 5 female participants involved in this current research speaks Kelantan Dialect as their L1 and English language is only spoken in the school compound. Again, English language is known as a foreign language for them where they were exposed to less than five hours of English language learning weekly unlike those in the urban areas.

When they were asked whether they find any difficulties in learning the English language at school, most of them answered 'some time' or 'a bit'. They might have been shy throughout the whole interview session but they did provide honest answers. They find that exercises in the classroom or writing essay difficult where they sometimes could not understand the words or instructions from their English teacher. Each of these participants stated that they mostly rely on their English teacher or friends whenever they find difficult words and many more.

Less exposure towards English language can be seen when they only read books at school which they were told to read for their English class and if they do read at home, they read the beginner level of English storybooks. Later, they also answered that they watched various movies under activities at school and some watched movies at home with Malay subtitles. All of these Kelantanese secondary school students were not attending any extra classes, programmes, or courses outside school hour. In short, they only learn the required amount of English language at school and it is unusual for them to speak English at home or at other places. Hence, English language is a foreign language for these Kelantanese participants.

The status of Malaysian English among Kelantan Dialect speakers is still under the third phase of Schneider's Dynamic Model (2007); nativization. However, the state of Kelantan or Terengganu is still experiencing the earlier nativization phase unlike the urban area of Kuala Lumpur where the English language is their second language. Under the parameter of identity construction, Kelantanese can accept English language as a medium of communication but only to those in Kelantan's urban areas not the rural areas. Hence, they are still considered new and developing under Schneider's third phase of Dynamic Model with the English language spoken only for school requirements.

Schneider (2007) discussed that the indigenous group is experiencing pressure in acquiring the settler's English language. In Kelantan, they are facing similar problems since they accepted English as a foreign language and have less exposure in English language. Rozana (2015) reported that almost 1191 secondary schools in Kelantan, Terengganu, and Kedah were known with the highest SPM failure rate in English language in 2013. When the government announced that the SPM English language subject is compulsory to pass for all students, those in Kelantan and other nearby state experienced the most pressure (Kok, 2016). The older generation of Kelantan Dialect speakers may not accept English language as it is way too difficult to start from the beginning. However, the younger generation is able to accommodate to English language exposure despite having problems in adapting English in their daily life.

Last but not least, Schneider stated that the indigenous group will show local accent towards the new language as their linguistics effects in phase three: nativization. Following the data collection and findings in this current research, it can be seen that there have been a bit of Kelantan Dialect or accent through the way these participants pronounce certain words during the whole session. As the KD's English vowel chart of both word and short text shown in Figure 5.2, it is obvious that they are producing new

vowel qualities or phonetic differences than those on Pillai's Malaysian English vowel chart (2010) or Musk's Received Pronunciation vowel chart (2010). The phonological changes between Kelantan Dialect and English language can be achieved through a deeper investigation on Kelantan Dialect's English vowel chart in any future research.

CONCLUSION

Throughout this research, the English monophthongs produced by the Kelantan Dialect speakers presented vowel variation with no similarities found between Kelantan Dialect and English language. There may be few similarities in vowel charts of Kelantan Dialect and Kelantan Dialect's English but the differences are more obvious in those monophthongs analysis. However, the dialectal influence might be obvious if more data and participants were involved in this current research since Shahidi and Rahim (2010) stated that Kelantan Dialect can strongly influence the Standard Malay phonetic features. Therefore, Kelantan Dialect might also able to influence the English phonetic system by conducting further research regarding the dialect influence on Malaysian English's monophthongs pronunciation produced by Kelantan Dialect speakers.

More future research on acoustic analysis of Kelantan Dialect and other dialects in Malaysia is required to fully understand each of the vowel placement especially on monophthongs and diphthongs; if available. There are various areas of acoustic analysis on dialects that many have not discover nor investigate yet. With longer time consumption and bigger data, this research paper would provide a better understanding of English monophthongs pronunciation produced by the Kelantan Dialect speakers. This research aims to help students and teachers to understand their pronunciation errors and thus, able to improve their pronunciation skills for future challenges in this medium of global communication.

In conclusion, English language is still undergoing major development and changes for these Kelantanese dialect speakers to adapt as a medium of daily communication in Kelantan. Although it is difficult for them to fully acquire English language but it is enough for them to learn the English language for the younger generation to succeed at school and tertiary level in the future. This research paper pursues more exploration and

explanation on Kelantan Dialect's monophthongs as well as English monophthongs produced by those Kelantan Dialect speakers since this is still at the early stage on the dialect's acoustic analysis. Again, further research should able to discover the theory of language transfer or dialectal influence of any dialects in Malaysia on English language. It is hoped that this research paper is helpful enough for researchers to add or improve the data findings while allowing more people to enjoy learning the English language.

REFERENCES

Abdul Hamid Mahmood. (1994). *Sintaksis Dialek Kelantan*. Kuala Lumpur: Dewan Bahasa dan Pustaka.

Abdul Hamid Mahmood. (2006). *Sintaksis Dialek Kelantan.* Dewan Bahasa dan Pustaka.

Adi Yasran Abdul Aziz. (2005*). Aspek Fonologi Dialek Kelantan: Satu Analisis Teori Optimaliti*. Bangi: Universiti Kebangsaan Malaysia.

Ajid Che Kob. (1985). *Dialek Geografi Pasir Mas*. Monograf 3, Institut Bahasa, Kesusasteraan dan Kebudayaan Melayu. Bangi: Universiti Kebangsaan Malaysia.

Azirah Hashim. & Tan, R. (2012). Malaysian English. *English in Southeast Asia: Features, Policy and Language in Use*, 55-74.

Azrizan Abu Bakar, Karim Harun, Habibu Morsili & Zanariah Mat Isa. (2017). The Use of Kelantan Dialect in Cyberspace. *International Journal of Academic Research in Business and Social Sciences*, 7 (8), 60-66.

Beardsmore, H. B. (1982). *Bilingualism*. Tieto: Avon.

Chen, H. C. & Wang, M. J. (2011). An Acoustic Analysis of Chinese and English Vowels. *Journal CALR Linguistic Journal*, 1, 1 – 19.

Collins, J.T. (1989). "Malay Dialect Research in Malaysia: The Issue of Perspective." *Bijdragen tot de Taal-, Land- en Volkenkunde*, 145 (2-3), 235-64.

Darmil, R. & Albion, P. (2013). English Language in the Malaysian Education System: Its Existence and Implications. *Proceedings from 3rd Malaysian Postgraduate Conference 2013*. NSW: Australia.

Department of Statistics Malaysia, Official Portal. (2016). *Kelantan*. Retrieved from: https://www.statistics.gov.my/index.php?r=column/cone&menu_id=RU84WGQxYkVPeVpodUZtTkpPdnBmZz09

Dialect. (n.d.). In *Cambridge Dictionary Online.* Retrieved from: https://dictionary.cambridge.org/dictionary/english/dialect

EF EPI (2017). *Asia*. Retrieved from https://www.ef.com/epi/regions/asia/malaysia/

Elham Karimi &Ali Derakhshan. (2015). The Interference of First Language and Second Language Acquisition. *Theory and Practice in Language Studies*, 5 (10), 2112-2117.

Ellis, R. (1994). *The Study of Second Language Acquisition*. Oxford: Oxford University Press.

Federal Constitution. (2010). *Federal Constitution Reprint* (PNMB Publication No. Jw516221). Kuala Lumpur: Percetakan Nasional Malaysia Berhad.

FMT Reporters. (2018, May 16). Serious shortage of English teachers, says union. *Free Malaysia Today*. Retrieved from: https://www.freemalaysiatoday.com/category/nation/2018/05/16/serious-shortage-of-english-teachers-says-union/

Haikal Jalil. (2016, March 17). Compulsory pass in English for SPM postponed. *The Sun Daily*. Retrieved from: http://www.thesundaily.my/news/1731435

Hamzah, H. (2013). *The Acoustics and Perception of the Word-Initial Singleton/Geminate Contrast in Kelantan Malay*. (PhD thesis, The University of Melbourne: School of Languages and Linguistics, Faculty of Arts). Retrieved from: https://www.researchgate.net/publication/303332726_The_acoustics_and_perception_of_the_word-initial_singletongeminate_contrast_in_Kelantan_Malay

Hazita Azman. (2016). Implementation and Challenges of English Language Education Reform in Malaysian Primary Schools. *The Southeast Asian Journal of English Language Studies,* 22(3), 65-78.

Holmes, J. (2008). *An Introduction to Sociolinguistics*. United Kingdom: Pearson Education Limited.

Hussaini Abdul Karim. (2016, February 3). Unemployed Because They Can't Speak English. *New Straits Time*. Retrieved from: https://www.nst.com.my/news/2016/02/125529/unemployed-because-they-cant-speak-english

Iber, G. (2016). English Language Learning in the Malaysian School Setting: Where Can We Find 10,000 Hours? A Theoretical Perspective. *Advances in Language and Literary Studies,* 7 (4), 46-50.

International Phonetical Alphabet. (2017). *IPA Chart with Sounds*. Retrieved from: http://www.internationalphoneticalphabet.org/ipa-sounds/ipa-chart-with-sounds/

Jabatan Pendidikan Negeri Kelantan. (2016). *Pengumuman Keputusan Sijil Pelajaran Malaysia Tahun 2015*. Retrieved from: http://jpnkelantan.moe.gov.my/v1/

Jabatan Pendidikan Negeri Kelantan. (2017). *Pengumuman Keputusan Sijil Pelajaran Malaysia Tahun 2017*. Retrieved from: http://jpnkelantan.moe.gov.my/v1/index.php/perkhidmatan-4/keputusan-peperiksaan

Kachru, B. B. (1985). Standards, codification and sociolinguistic realism: the English language in the outer circle. *English in the world: Teaching and Learning the Language and Literatures.* Cambridge: Cambridge University Press.

Kilickaya, F. (2009). World Englishes, English as an International Language and Applied Linguistics. *English Language Teaching*, 2 (3), 35-38.

Kirkpatrick, A. (2007). World Englishes: Implications for International Communication and English Language Teaching. *World Englishes,* 30 (1), 99 -102.

Languages of Malaysia. (n.d.). Retrieved August 20, 2018 from Wikipedia: https://en.wikipedia.org/wiki/Languages_of_Malaysia

Lowenberg, P, H. (1991). Variation in Malaysian English: The pragmatics of Languages in Contact. *English around the World: Sociolinguistic Perspectives,* 364 - 375. Cambridge: Cambridge University Press.

Malay Phonology. (n.d.). Retrieved August 20, 2018 from Wikipedia: https://en.wikipedia.org/wiki/Malay_phonology

Maria Liza. (2002). *A Study on the Phonological Features of Kelantanese Students' Pronunciation of English Consonants*. National University of Malaysia, 1 – 78.

Minderjeet, K. (2015, December 10). Kelantan schoolkids pronouncing cucumber as "Chu Chum Ber". *New Straits Time*. Retrieved from https://www.nst.com.my/news/2015/12/116595/kelantan-schoolkids-pronouncing-cucumber-chu-chum-ber

Ministry of Education. (2018). *Malaysia Education Blueprint 2013-2025*. Retrieved from: https://www.moe.gov.my/images/dasar-kpm/articlefile_file_003108.pdf

Musk, N. (2010). *The Vowels and Consonants of English*. University Linkopings: Department of Culture and Communication.

Nik Safiah Karim, Farid Mohd Onn, Hashim Musa & Abdul Hamid Mahmood. (1986). *Tatabahasa Dewan Jilid I*. Kuala Lumpur: Dewan Bahasa dan Pustaka.

Nik Safiah Karim. (1965) *Loghat Melayu Kelantan: Suatu Cherakinan Kajibunyi Bahasa*. Universiti Malaya.

Nik Safiah Karim. (1986). *Tatabahasa Dewan Jilid 1*. Kuala Lumpur: Dewan Bahasa dan Pustaka.

Phng, Sock Wun. (2017). *Vowel variations among speakers of Malaysian English* (Graduate Theses and Dissertations). Retrieved from: https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=6610&context=etd

Phoon, H. S., Anna Christina Abdullah., & Maclagan, M. (2013). The Consonant Realizations of Malay-, Chinese- and Indian-Influenced Malaysian English. *Australian Journal of Linguistics, 33* (1), 3-30.

Phoon, H. S., & Maclagan, M. A. (2009). Chinese Malaysian English phonology. *Asian Englishes*, 12(1), 20-45.

Pillai, S., Zuraidah Mohd Don, Knowles, G., & Tang, J. (2010). Malaysian English: An Instrumental Analysis of Vowel Contrasts. *World Englishes*, 29(2), 159-172.

Riduan Makhtar, Shahidi A. Hamid & Abd Ganing Laengkang. (2017). Varian Dialek Kelantan: Satu Tinjauan Awal. *Jurnal Sultan Alauddin Sulaiman Shah,* 4 (2), 250-263.

Rosniah Mustaffa, Idris Aman & Jamilah Mustafa. (2011). *Language variation of non-Malays in Kota Bharu, Kelantan: A Study on Accent, Identity and Integration*. Serdang: Univerisiti Putra Malaysia Press.

Samuel Yesuiah. (2016, March 26). Be Fair To English Language Teachers. *The Star.* Retrieved from: https://www.thestar.com.my/opinion/letters/2016/03/26/be-fair-to-english-language-teachers/

Schneider, E.W. (2007). *Postcolonial English: Varieties around the World*. Cambridge: Cambridge University Press.

Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics*, 10, 209-231.

Selvarajah Tharmalingam. (2012). *Language policy changes in Malaysia: Progressive or Regressive?*. Paper presented in: International Conference on Linguistics, Literature, and Culture 2012 (ICLLIC 2012), 7 - 9 November 2012, Park Royal Hotel Penang.

Shahidi A.H. & Rahim Aman. (2010). *Pengaruh Dialek Dalam Pertuturan Bahasa Melayu Standard: Pencerakinan Bunyi Berasaskan Spektrogram*. Universiti Kebangsaan Malaysia: Pusat Pengajian Bahasa, Kesusasteraan dan Kebudayaan Melayu Fakulti Sains Sosial dan Kemanusiaan.

Solano-Flores, G. (2006). Language, Dialect, and Register: Sociolinguistics and the Estimation of Measurement Error in the Testing of English Language Learners. *Teachers College Record, 108,* 2354 – 2379.

Suhaila Sulong. (2016). Malaysian English Monophthongs by Regional Malay Dialect Speakers: Convergence or Divergence?. *Asiatic*, 10, 25 – 49.

Traunmüller, H. (1990). Analytical Expressions for the Tonotopic Sensory Scale. *The Journal of the Acoustical Society of America,* 88:97.

Watt, D. & Tillotson, J. (2001). Vowel Fronting in Bradford English. *English World-Wide*, 22 (2), 269-302.

Widdowson, H. G. (1994). The Ownership of English. *TESOL Quaterly,* 28 (2), 377-389.

Zaidan Ali Jassem. (2014). English and Malaysian English Vowels: Theoretical and Applied Perspectives. *Journal of ELT and Poetry, 2* (1), 5-11.

Zuraidah Mohd Don. (2003). Language-Dialect Code-Switching: Kelantanese in a Multilingual Context. *Multilingua*, 22, 21-40.

Zuraidah Mohd. Don. (1997). Malay + English = A Malay Variety of English vowels and accent. *English is an Asian Language: The Malaysian Context*. Kuala Lumpur: Persatuan Bahasa Moden Malaysia and The Macquarie Library Pty Ltd.