AN INSTRUMENTAL ANALYSIS OF THE PRODUCTION OF ENGLISH MONOPHTHONGS BY MALAY SPEAKERS

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ABSTRACT

The aim of this research is to examine the production of English monophthongs produced by the 10 selected ESL primary school pupils and four female teachers in relation to vowel quality and vowel length based on an instrumental analysis of the vowels. The rationale for examining these pronunciation features of young Malay speakers and their teachers was to discover how pupils at an early learning stage produce English vowels, and to look at the extent to which this relates to their teachers' production of English vowels. The first two research questions focus on the description of the vowels based on their acoustic properties. The third question examines whether the teacher and pupil participants produce English vowels similarly. The forth research question looked at how closely the vowels produced by the participants resemble those in Malay, the first language of the participants. Based on the Formant Frequency Model, the first (F1) and second formants frequencies (F2) were measured. In order to investigate length contrast between typical vowel pairs, vowel duration was measured and compared. The findings suggest that the participants (both teachers and pupils) did not discriminate between vowel pairs where vowel quality is concerned, and in fact, the results show that their vowels occupy the same vowel space seen in previous studies on Malaysian English. However, unlike the pupils, the teachers produced length contrast between short and long vowels. No significant differences were found between comparable English and Malay vowels for the teachers and pupils suggesting they were being produced similarly in both these languages.

ABSTRAK

Kajian ini bertujuan untuk mengkaji sebutan vokal monoftong bahasa Inggeris dari aspek kualiti dan kepanjangan vokal oleh 10 orang murid perempuan (Bahasa Inggeris sebagai Bahasa Kedua) dan 4 orang guru wanita yang terpilih melalui analisis instrumental vokal-vokal tersebut. Rasional mengkaji ciri-ciri sebutan monoftong vokal bahasa Inggeris oleh penutur muda bahasa Malaysia muda serta guru mereka adalah untuk menyingkap bagaimana murid-murid di tahap awal pembelajaran menghasilkan vokal bahasa Inggeris serta melihat sejauh mana ia berkaitrapat dengan sebutan para guru. Dua soalan kajian yang pertama bertumpu deskripsi vokal tersebut berdasarkan ciri-ciri akustik mereka. Soalan kajian yang ketiga bertujuan mengkaji samada guru dan murid menyebut vokal bahasa Inggeris dengan cara yang sama. Soalan kajian keempat pula melihat sejauh mana vokal bahasa Inggeris yang disebut oleh murid dan guru mempunyai persamaan dengan vokal bahasa Malaysia, iaitu bahasa pertama mereka. Berdasarkan Model Frekuensi Forman, forman pertama (F1) dan forman kedua (F2) diukur. Untuk menyiasat perbezaan pemanjangan dalam pasangan vokal, tempoh bagi vokal diukur dan dibandingkan. Dapatan kajian mendapati guru dan murid tidak membezakan pasangan vokal dari segi kualiti vokal, dan didapati bahawa ruang vokal yang terhasil untuk kedua-dua guru dan murid adalah bersamaan seperti hasil dapatan dengan kajian-kajian lepas untuk bahasa Inggeris variasi Malaysia. Walaubagaimanapun, tidak seperti murid, guru-guru telah membezakan kepanjangan vokal. Tiada perbezaan signifikan didapati dalam perbandingan vokal bahasa Inggeris dan bahasa Malaysia oleh guru dan murid yang menunjukkan bahawa guru dan murid menghasilkan vocal untuk kedua-dua bahasa ini dengan cara yang sama.

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TABLE OF CONTENTS

Abstract iiiv
Abstrak v
Acknowledgements iii
Table of Contents v
List of Figures viii
List of Tables xi
List of Symbols and Abbreviations xii
List of Appendices xiii
CHAPTER 1:INTRODUCTION 1
1.1 Background of the study 1
1.2 Malaysian English (MalE) 3
1.3 Statement of problem 4
1.4 Aims of the research 5
1.5 Research questions 6
1.6 The organization of the dissertation 7
CHAPTER 2: LITERATURE REVIEW 8
2.1 Production of vowels 8
2.1.1 Vowel quality distinction 10
2.1.2. Vowel length discrimination 11
2.2 Standard British English (SBE) monophthongs 12
2.3 Native English varieties 15
2.4 The overview of Malaysian English (MalE) 15
2.4.1 Emergence of Malaysian English: Phase 1 and 2 16
2.4.2 The Implementation of Malaysia's National Language Policy 18
2.4.3 Previous studies on Malaysian English sounds 20
2.5 Previous Studies on neighbouring countries on varieties of English 22
2.6 Standard Malay (SM) monophthongs 23
2.6.1 Previous studies on Standard Malay(SM) sounds 25
2.7 Schneider's Dynamic Model 27
2.8 Gut's The Norm Orientation Hypothesis 28
2.9 The teaching of pronunciation 29
2.10 The Formant Frequency Model 31
2.11 Summary 32
CHAPTER 3: METHODOLOGY 34
3.1 Introduction 34
3.2 Participants 34
3.2.1 Pupil participants 34
3.2.2 Teacher participants 35
3.3 Consent 37
3.4 Instruments 37
3.4.1 The word list 37
3.5 Recording procedures 39
3.6 Data analysis 39
3.7 Type of test 42
3.8 Conclusion 43
CHAPTER 4: FINDINGS AND DISCUSSION 44
4.1 Introduction 44
4.2 English vowels 44
4.2.1 Vowel contrast between /ɪ/ and /iː/ 49
4.2.2 Vowel contrast between /e/ and /æ/ 52

4.2.3 Vowel contrast between /ʌ/ and /ɑː/ 55
4.2.4 Vowel contrast between /ʊ/ and /uː/ 58
4.2.5 Vowel contrast between /ɒ/ and /ɔː/ 60
4.2.6 A comparison between teachers' and pupils' MalE 64
4.3 A comparison with Malay vowels 64
4.3.1 Vowel contrast between /i/ for Malay (M) and /ɪ/ for English (MalE) 67
4.3.2 Vowel contrast between /i/ for Malay (M) and /iː/ for English (MalE) 67
4.3.3 Vowel contrast between /e/ for Malay (M) and /e/ (MalE) 68
4.3.4 Vowel contrast between /e/ for Malay (M) and /æ/ for English (MalE) 69
4.3.5 Vowel contrast between /a/ for Malay (M) and for /ʌ/ English (MalE) 69
4.3.6 Vowel contrast between /a/ for Malay (M) and /ɑː/ for English (MalE) 70
4.3.7 Vowel contrast between /o/ for Malay (M) /ɒ/ for English (MaE) 70
4.3.8 Vowel contrast between /o/ for Malay (M) and /ɔː/ for English (MalE) 71
4.3.9 Vowel contrast between /u/ for Malay (M) and /ʊ/ for English (MalE) 72
4.3.10 Vowel contrast between /u/ for Malay (M) and /uː/ for English (MalE) 72
4.3.11 Vowel contrast between /ə/ for Malay (M) and /ɜː/ for English (MalE) 73
4.4 Discussion 73
4.5 Conclusion 75
CHAPTER 5: CONCLUSION…… 77
5.1 Introduction 77
5.2 Summary of Research questions 77
5.2.1 Research question 1: What are the characteristics of English monophthongs produced by Malay primary school pupils and their teachers? 77
5.2.2 Research question 2: To what extent are the vowels contrasted in terms of vowel quality and vowel length in typical vowel pairs? 78
5.2.3 Research question 3: To what extent are the pupils' productions similar to that of the teachers'? 79
5.2.4 Research question 4: How do these vowels compare to the Standard Malay vowels produced by the same participants? 79
5.3 Significance of the study 80
5.4 Limitation of the study 81
5.5 Recommendation for future studies 81
5.6 Concluding remarks 81
References 82
Appendices 91

LIST OF FIGURES

Figure		Page
Figure 2.1	The vowel chart of primary and cardinal vowels	9
Figure 2.2	SBE vowels in a vowel quadrilateral chart	12
Figure 2.3	Bahasa Malaysia (BM) vowels quadrilateral chart	14
Figure 2.3	Vowel plots from female BBC broadcasters taken from Deterding (1997, 51)	14
Figure 2.4	Gill's diagrammatic explanation on the changing numbers of ME1 and ME2 scenario	18
Figure 2.5	Vowel plot of MalE vowels for Malay by Pillai et al (2010, 168)	21
Figure 2.6	Standard Malay (SM) vowels diagram from Nik Safiah's et al.(2008, 295)	24
Figure 2.7	BM vowel plots (Mardian Shah Omar, 2005; Shaharina and Shahidi, 2012)	26
Figure 2.8	Vowel plot of Malay vowels by Yusnul'ain (2014, 64)	26
Figure 3.1	Screenshot of waveform and spectrogram and annotation	40
Figure 3.2	The transcription and annotation process for data analysis	42
Figure 4.1	Formant plot for English vowels produced by teachers and pupils	47
Figure 4.2	Scatter plot of /ɪ/ in *bit* and /iː/ in *beat* for teachers and pupils	50
Figure 4.3	Length distinction between /ɪ/ and /iː/ (teachers)	51
Figure 4.4	Length distinction between /ɪ/ and /iː/ (pupils)	52
Figure 4.5	Scatter plot of /e/ and /æ/ for teachers and pupils	53
Figure 4.6	Length distinctions between /e/ and /æ/ (teachers)	53
Figure 4.7	Length distinctions between /e/ and /æ/ (pupils)	53
Figure 4.8	Scatter plot of /ʌ/ and /ɑː/ for teachers and pupils	56
Figure 4.9	Length distinction between /ʌ/ and /ɑː/ (teachers)	57
Figure 4.10	Length distinction between /ʌ/ and /ɑː/ (pupils)	57
Figure 4.11	Scatter plot of /ʊ/ and /uː/ for teachers and pupils	58
Figure 4.12	Length distinction between /ʊ/ and /uː/ (teachers)	59
Figure 4.13	Length distinction between /ʊ/ and /uː/ (pupils)	60
Figure 4.14	Scatter plot of /ɒ/ and /ɔː/ for teachers and pupils	60
Figure 4.15	Length distinction between /ɒ/ and /ɔː/ (teachers)	62
Figure 4.16	Length distinction between /ɒ/ and /ɔː/ (pupils)	62
Figure 4.17	Comparison of teachers' and pupils' production of MalE vowels	64
Figure 4.18	Formant Plot for Malay vowels produced by teachers and pupils	66
Figure 4.19	Scatter plot /ɪ/ (for (MalE) and /i/ for Malay (M) by teachers and pupils	67
Figure 4.20	Scatter plot /iː/ (for (MalE) and /i/ for Malay (M) by teachers and pupils	67
Figure 4.21	Scatter plot /e/ (MalE) and /e/ for Malay (M) a by teachers (left) and pupils (right)	68
Figure 4.22	Scatter plot /æ/ for (MalE) and /e/ for Malay (M) by teachers (left) and pupils (right)	69
Figure 4.23	Scatter plot /ʌ/ (MalE) and /a/ for Malay (M) by teachers and pupils	69
Figure 4.24	Scatter plot /ɑː/ (MalE) and /a/ for Malay (M) by teachers and pupils	70
Figure 4.25	Scatter plot /ɒ/ for (MaIE) and /o/ for Malay (M) by	

	teachers and pupils	70
Figure 4.26	Scatter plot /ɔː/ for (MaIE) and /o/ for Malay (M) by teachers and pupils	71
Figure 4.27	Scatter plot /ʊ/ for (MalE) and /u/ for Malay (M) by teachers and pupils	72
Figure 4.28	Scatter plot /uː/ for (MalE) and /u/ for Malay (M) by teachers and pupils	72
Figure 4.29	Scatter plot /ɜː/ for (MalE) and /ə/ for Malay (M) by teachers and pupils	74

LIST OF TABLES

Table		Page
Table 2.1	Average values of F1 and F2 from female BBC broadcaster with comparison from Deterding (1997, 1990) taken from Deterding (1997, 53)	14
Table 3.1	Demographic background of the teacher participants	36
Table 3.2	The word list used for English	38
Table 3.3	The word list used for Malay	39
Table 4.1	Average values for F1 and F2 and Euclidean Distance of English monophthongs produced by teachers	45
Table 4.2	Average values for F1 and F2 and Euclidean Distance of English monophthongs produced by pupils	46
Table 4.3	Average durations between long and short vowel pairs of English (MalE) produced by teachers (in milliseconds)	48
Table 4.4	Average durations between long and short vowel pairs of English (MalE) produced by pupils (in milliseconds)	48
Table 4.5	Comparison of average duration of/ ɪ/ and /iː/ produced by teachers (in msec)	51
Table 4.6	Comparison of average duration of /ɪ/ and /iː/ produced by pupils (in msec)	51
Table 4.7	Comparison of average duration of /e/ and /æ/ produced by teachers (in msec)	54
Table 4.8	Comparison of average duration of /e/ and /æ/ produced by pupils (in msec)	54
Table 4.9	Comparison of average duration of /ʌ/ and /ɑː/ produced by teachers (in msec)	55
Table 4.10	Comparison of average duration of /ʌ/ and /ɑː/ produced by pupils (in msec)	56
Table 4.11	Comparison of average duration of /ʊ/ and /uː/ produced by teachers (in msec)	59
Table 4.12	Comparison of average duration of /ʊ/ and /uː/ produced by pupils (in msec)	59
Table 4.13	Comparison of average duration of /ɒ/ and /ɔː/ produced by teachers (in msec)	61
Table 4.14	Comparison of average duration of /ɒ/ and /ɔː/ produced by pupils (in msec)	61
Table 4.15	Average values for F1 and F2 and Euclidean Distance of Malay vowels produced by teachers	65
Table 4.16	Average values for F1 and F2 and Euclidean Distance of Malay vowels produced by pupils	65

LIST OF SYMBOLS AND ABBREVIATIONS

AmE	:	American English
BM	:	Bahasa Malaysia
BrE	:	British English
CS	:	Curriculum Specifications
CV	:	Consonant-Vowel
CVC	:	Consonant-Vowel-Consonant
EFL	:	English as A Foreign Language
ESL	:	English as A Second Language
F1	:	First Formant
F2	:	Second Formant
IDG	:	'Indigenous'
KSSR	:	Kurikulum Standard Sekolah Rendah (Curriculum Standards for Primary School)
L1	:	First Language
L2	:	Second language
LPC	:	Linear Predictive Coding
M	:	Mean
MalE	:	Malaysian English
ME	:	Malaysian English
ME1	:	Malaysian English 1
ME2	:	Malaysian English 2
RP	:	Received Pronunciation
SBE	:	Standard British English
SBOA	:	School Based Oral Assessments

SD	:	Standard Deviation
SGE	:	Singapore English
SK	:	Primary School
SM	:	Standard Bahasa Malaysia
SME	:	Singapore-Malayan English
STL	:	'The settlers'
TESL	:	Teaching English as A Second Language
NigEng	:	Nigerian English

LIST OF APPENDICES

Appendix		Page
Appendix A:	Parents' consent form	91
Appendix B:	Teachers' consent form	92
Appendix C:	Consent letter from the Ministry of Education	93
Appendix D:	English and Malay wordlists for teachers	94
Appendix E:	Flashcards on English and Malay words	95

CHAPTER 1: INTRODUCTION

This chapter presents the background of the study, statement of problem, aims and research questions. An overview of Malaysian English is presented followed by a brief explanation about the research gaps. At the end of this chapter, the organization of the dissertation is presented.

1.1 Background of the study

The Curriculum Specifications for English (CS) which is designed for Malaysian National Primary School (SK) aims to provide a strong foundation in English language to all primary school pupils. Hence, based on the CS, it is documented that by the end of the sixth year of primary education, pupils are expected to be able to use English with correct pronunciation, stress, rhythm and also intonation with reference to Standard British English (SBE) (Pusat Perkembangan Kurikulum, KPM, 2010). Throughout their six years of primary education, they are expected to master these elements of pronunciation. When SBE was selected as the pedagogic model, based on statements reported in the local newspaper, the then Deputy Prime Minister who was also the Minister of Education justified this decision by saying that this was, "so that our students will know how to pronounce English words as spoken by native speakers" (Satiman Jamin,2010, n.p.).

The reference to a native variety of English as a pronunciation model has been questioned by many including Graddol (2006, 127):

> One of the more anachronistic ideas about the teaching of English is that learners should adopt a native speaker English. But as English becomes more widely used as a global language, it will become expected that speakers will signal their nationality, and other aspects of their identity, through English. Lack of a native-speaker accent will not be seen, therefore, as a sign of poor competence.

Similarly, Trudgill (1991) posits that it is a questionable decision to have a choice of a variety of English in teaching and learning English as it is not applicable in the global reality. This is because in terms of pronunciation, Standard English is spoken in a variety of accents. Moreover, the recent trends of teaching English focus more on intelligibility, as well as, to expose students to different English accents rather than imitating a native model. Thus, to rationale to establish one particular accent as a standard variety of English, and as a pedagogic choice is debatable. Apart from that, it seems rather out-of-date to assume that learners should adopt a native speaker English accent. In addition, Pillai, Zuraidah, Tang and Knowles (2010, 160) also point out that "in the context of global English, there is no longer in reality, any established standard for spoken English".

Due to the fact that Malaysia was once a former British colony, it is expected then for Malaysians to have adopted a British model of pronunciation. Moreover, the decision made by the Education Ministry to use Standard British English as a model in the teaching of English language in government schools indicated the assumption that having 'good' English pronunciation is important in day-to-day communication. Hence, the decision aims to produce Malaysians who can speak English with good pronunciation of SBE (Zuraidah, 2016).

According to Melchers and Shaw (2003), the decision to use SBE as a model in teaching pronunciation is mostly based on the idea that it is widely acceptable amongst second language learners or users. However, Pillai (2011;2017) points out that by focusing on SBE rather than an endonormative model, Malaysia is actually going in the opposite direction from the current trends in the teaching of pronouncing of English. This is because, as mentioned earlier, most current teaching approaches lean towards to the exposure to different English accents, and a focus on intelligibility rather than imitating native models.

In relation to that, Pillai, (2008) and Rajadurai, (2006) highlight another issue that arises in relation to pronunciation, that is, that the teaching of pronunciation in the classroom is generally ignored or side-lined in favour of other elements of the syllabus. This is due in part to the lack of confidence among teachers to deal with native models of pronunciation. Pillai (2008) postulates that part of the reason for the use of an exonormative norm as a teaching model is the lack of systematic research on Malaysian English pronunciation, particularly in the classroom setting.

In terms of research, most of the studies on Malaysian English (MalE) pronunciation has been conducted on tertiary level participants. This study, therefore, aims to fill this gap by examining one aspect of English pronunciation by a group of Malaysian pupils and their teachers, that of English monophthongs. The rationale for this is to look at a group of young learners in terms of how closely they resemble the vowels described in previous studies on MalE pronunciation and also to compare their pronunciation with that of their English teachers who are their main source of English input.

1.2 Malaysian English (MalE)

Since English is used in informal contexts, the influence of local languages such as Malay, Chinese and Tamil, as well as other Malay and Chinese dialects, can be expected especially in the colloquial variety of English. Furthermore, according to Baskaran (2005, 19-20) MalE actually exists in a "continuum" with three main lectal varieties: acrolectal (the standard variety), mesolectal (colloquial) and basilectal (broken) varieties. The acrolectal form is the level that is used and targeted at language instruction which according to Wong (1983, 125-149) is "not native in that it allows for some indigenized phonological and lexical features, but is near-native in so far as synthetic features still hold". MalE is most observable in the mesolectal variety which is used as an informal communicative variety. On the other hand, the basilectal variety is

considered as the lowest form of the variety which is used by people who acquire the language informally. Morais (2000) and Pillai (2008) however posit that, a speaker of an English variety such as MalE can shift into any of the three lects depending on what type of lects they have in their repertoire.

1.3 Statement of problem

Based on the Standard Curriculum for Primary School (KSSR) which has been implemented in the primary school classrooms, English phonics would be taught by the teacher in their teaching and learning of English sessions. Phonics will be taught to Level One pupils (Year 1 to Year 3) with reference to Standard British English (SBE) as a model of pronunciation. The decision to use SBE as the standard variety is to have a standardized variety in the classrooms for all government schools. Apart from that, SBE is used to ensure that the students would have spoken English which is similar to a native speaker, and they would understand native speakers whenever they interact with them. In addition, the objective of teaching phonics to the pupils is to help them to be able to read English words correctly and independently. For Year 1 and 2 pupils, approximately two periods of 60 minutes out of ten English language periods per week is allocated for teaching phonics.

In terms of research, studies on MalE pronunciation show that MalE speakers tend to have lack of distinction in its vowels especially the typical vowel pairs of /ɪ/-/iː/, /e/-/æ/ and /ʌ/-/ɑː/. Previous studies on MalE also indicate that MalE speakers do not distinguish vowel length in their pronunciation (Baskaran, Platt and Weber; Wan Asylnn, 2005; Zuraidah, 2000). According to Zuraidah (2000), MalE speakers tend to conflate long vowel to short vowels. Similar findings were reported by Tan and Low (2010). However, Pillai et al (2010) in her research found that fluent speakers maintained the vowel length contrast.

Such contradictory findings make it necessary to examine how English monopthongs are produced by teachers, who are supposed to be teaching based on SBE, and pupils in primary schools who are at the beginning stages of learning English in schools. As learning of English formally starts in the primary school level, this study can provide a glimpse into what is happening at the classroom level in relation to the teaching and learning of English.

Bohn and Fledge (1992) and Gut (2010) state that in learning second or third language; a non-native teacher would have influenced the students especially in their pronunciation. This is because, an ESL (English as a Second Language) or EFL (English as a Foreign Language) teacher is their role model in learning the languages, thus they would definitely influence the pronunciation of the students. In addition, there may be influence from the first language of the pupils. For example, in Standard Malay, there is no vowel contrast.

As mentioned in the background of the study, studies on teaching English pronunciation in the classroom have shown that it always get side-lined especially among the Level One primary school pupils as well as secondary school students. Pillai, (2008) in her research, found that teachers do not have a clear picture of how to teach pronunciation to their pupils. Thus, they opt to ignore it and tend to focus more on the teaching of exam-oriented skills to their students.

1.4 Aims of the research

The aim of this research is to perform an instrumental analysis of the English monophthong vowels produced by ten selected ESL primary school pupils and their teachers in relation to vowel quality and vowel length. Based on previous studies on MaIE, the vowels of the teachers are expected to be produced differently from SBE in terms of quality, and also show a lack of vowel contrast both in terms of vowel quality

and length. Secondly, the same patterns are likely to be observed in the vowels produced by the pupils. Furthermore, previous research suggests that the teaching and learning of pronunciation is a neglected component in the classroom. By default, pupils who depend on classroom input to learn English are most likely to 'pick up' pronunciation features from their teachers even if such features are not formally taught in class.

In relation to these points, this study aims to examine vowel quality and vowel contrast in the speech of the teachers and her pupils. The rationale for examining these pronunciation features of young Malay speakers is to discover how pupils at an early stage of learning English produce English vowels, and the extent to which this relates to their teachers' production of vowels.

1.5 Research questions

1) What are the characteristics of English monophthongs produced by Malay primary school pupils and their teachers?
2) To what extent are the vowels contrasted in terms of vowel quality and vowel length in typical vowel pairs?
3) To what extent are the pupils' productions similar to that of the teachers'?
4) How do these vowels compare to Standard Malay vowels produced by the participants?

The first two research questions focus on the description of the vowels based on their acoustic properties. The third and fourth are aimed at examining how closely the vowels produced by the participants resemble those in Malay, the first language of the participants. Besides, it also aimed at examining how closely the vowels produced by the teachers and the pupils resemble each other.

1.6 The organization of the dissertation

This study consists of five chapters. The first chapter provides an introduction to the study. In Chapter two, a review of earlier works in instrumental analysis of Malaysian English in Malaysia and other countries will be discussed. The method used in the study will be elaborated in Chapter 3. The respondents, the instruments used and the data collection process are also described in this chapter. The findings are presented in Chapter 4. Then, the findings are discussed and deliberated in Chapter 5, which also summarizes and concludes the study.

CHAPTER 2: LITERATURE REVIEW

In this chapter, the characteristics of monophthong vowels of English as well as Standard Malay will be discussed. This chapter will also discuss Malaysian English as well as previous studies related to the current study. In addition, the Formant Frequency Model which is the analytical model used for this study will also be explained. Finally, this chapter will look at the teaching of pronunciation of English.

2.1 The production of vowels

Schunk (2002) defines vowel as an unaspirated sound which is produced from the vocal tract without any disruptions. Similarly, Roach (1983) refers vowels as sounds that are produced with no obstruction to the flow of air which passes from the larynx to the lips. For instance, for SBE vowels, vowel /ʌ/ is produced with unaspirated sounds as the mouth is wide open with no obstruction of air flow from the vocal tract to the lips. Meanwhile, Grimson (1994) refers to vowels as vocalic sounds that are produced using a vocoid eggresive airstream with no closure or narrowing. However, vocoids are not exclusively for vowels sound, as the sounds of consonants /j/, /w/ /r/ are phonetically produced similarly to the vowels

In addition, according to Clark and Yallop (1992), a vocoid is produced through the changes of the size and shape of the vocal tract, the shape and the position of the tongue and the shape as well as protrusion of the lips. These three important criteria of vocoids are used as parameters in determining and describing vowel quality and quantity (see 2.1.1 and 2.9). They are also related to the measurements of formants which are First Formant (F1) and Second Formant (F2).

Other than that, vowels are also described using a chart and using primary and cardinal vowels as reference points. Figure 2.1 shows the vowel chart of primary and cardinal vowels. It is used to describe the positions of each vowel in a particular

language. According to Roach (1983), for a better understanding of the chart, one should understand that the chart embodies the articulatory space of the vowels which are represented through the metrical axis and horizontal axis. The metrical axis represents the height of the tongue (open, half-open, half close and close) while the horizontal axis signifies the fronting of the tongue (front, central and back). It gives a visualization of the position of the tongue in producing the vowels.

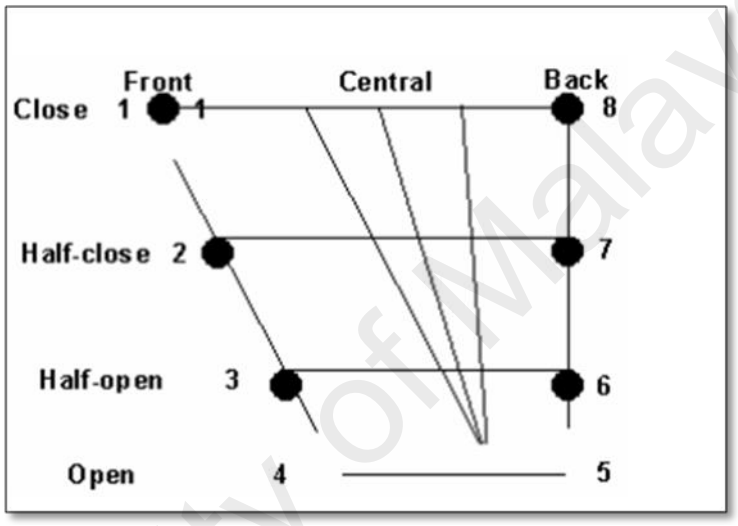


Figure 2.1: The vowel chart of primary and cardinal vowels from Roach (1983, 23)

Apart from that, Graddol and Swan (1989) explain that one of the factors that influence vowel production which is the factor of gender. Acoustically, there are inter-gender acoustic differences which due to the differences of vocal tracts between males and females. This is because, for males, the reshaping of their larynx during puberty contributes to the resonance of their frequencies as their vocal tract would be longer and bigger compared to the females. Thus, adult males would have lower frequencies for their formants and wider bandwidth which in the spectrogram compared to females. Due to this factor, this study only selected only female teachers and pupils to avoid discrepancies of its findings which related to gender differences.

2.1.1 Vowel quality distinction

Libermen and Prince (1977) define vowel quality as the acoustic property which is responsible for prominence distinction at the lowest level of the prosodic prominence hierarchy in English. According to Lei and Jun (2007), vowels are characterized based on three features which are:

1) Vowel height
2) The degree of the backness
3) The degree of lip rounding

Based on these features, the quality of a vowel can be described and categorized instrumentally. This aspect of measuring will be further explained in the section on the Formant Frequency Model in 2.9

Vowel quality is closely related to intelligibility of a spoken language especially to non-native speakers. Thus, it is vital for English users to at least understand and distinguish the non-native varieties as well for the purpose of intelligibility. English, for example, is a lingua franca which is used by millions of speakers all over the world. The emerging numbers of non-native speakers has contributed to the emergence of non-native varieties. Jenkins (1998) claims that English do not exclusively belong to its native speakers. As non-native varieties are influenced by their local and regional dialects, the intelligibility of each variety is mainly among its speakers and users.In her investigation of communication between English speakers who are from different backgrounds, she found that there are parts of English phonology which are crucial for intelligible pronunciation especially in the international communication in order to have effective communication between the widely different backgrounds of English speakers. She introduced the Lingua Franca Core which provides important pronunciation features that should be adapted by speakers. These features include the preservation of initial consonant clusters, vowel length distinctions mainly before voiced and unvoiced

consonants, the placement of nuclear stress and the mid-central NURSE vowel. Jenkins (1998) states that based on research on intelligibility amongst students from variety of international backgrounds, it is important for all students and users of English to understand and practice the features mentioned above to maintain the intelligibility between English users.

2.1.2. Vowel length discrimination

According to Wan Aslynn (2005), the length between vowels plays an important role in determining the meaning of a word and distinguishing the different set of vowels. Thus, vowel length affects intelligibility. McMahon (2002) states that long vowels are more 'tense' such as in vowel /iː/ in word *seat* and /uː/ in *cooed* whereas short vowels such as vowel /ɪ/ in the word *pit* is produced in a more 'lax' manner. This is due to the fact that there is no great muscular tense involved in the production of short vowels. Based on these two situations, each long and short vowel has distinctive length and quality.

However, Grimson (1994) states that the length between vowels is not a distinctive feature of a vowel as length is dependent upon context as there are situations which influence the shortening of long vowels for instance, pre-fortis clipping. Ladefoged (2001) explains that in English, pre-fortis clipping occurs in cases of vowels which are placed in a syllable closed to a voiceless consonant which results to a shorter length. Grimson (1989) further explains that vowel duration in pre-fortis clipping varies on the manner of the production. This is because vowels are longer if they are placed before fricative consonants compared to stops. The same pattern occurs if the vowels are located before voiced consonants rather than voiceless consonants. For instance, the vowel /iː/ in the word *beat* is shorter than the word *bead* as the consonant /t/ in *beat* is a voiceless consonant while the consonant /d/ in *bead* is a voiced consonant.

2.2 Standard British English (SBE) monophthongs

As discussed in 1.1, SBE is the pronunciation model for Malaysian students, and thus, it is fair to discuss on SBE in terms of its vowel inventory, vowel quality and vowel length distinctions. In fact, comparison between SBE and MalE is vital to see the practicality of SBE as a reference model of English on MalE.

Figure 2.2 shows the placement of SBE vowels in a vowel quadrilateral chart which is taken from Ashby (1989). Ladefoged (2001) proposes that there are twelve monophthong vowels in Standard British English (SBE) as shown in Figure 2.2. Unlike Standard Malay, SBE contrasts in terms of quality and length compared to standard Malay.

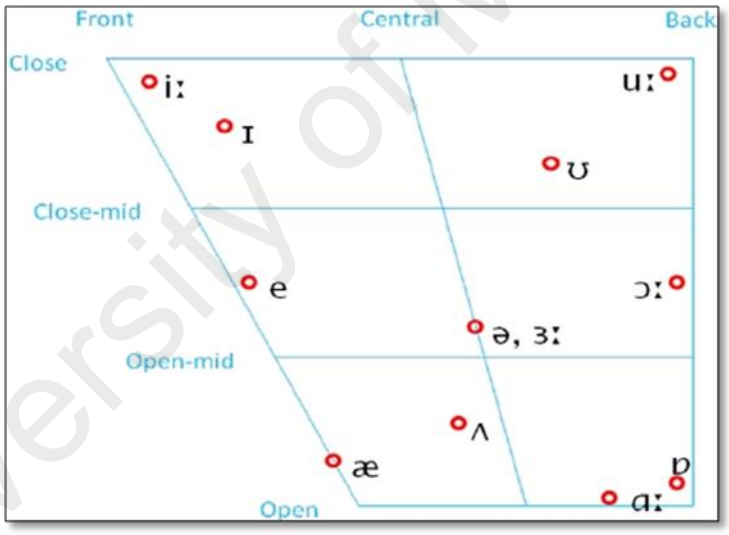


Figure 2.2: SBE vowels in a vowel quadrilateral chart from Ashby (1989, 84)

Apart from that, in SBE there are typical vowel pairs contrasts in terms of quality as indicated by the different placements in the vowel chart of the following vowels:

/ɪ/ - /iː/

/e/-/æ/

/ʌ/-/ɑː/

/ʊ/-/uː/

/ɒ/-/ɔː/

The length diacritics (ː) also indicate that one of the vowels in the pairs is produced longer than the others although, as discussed earlier, this is relative to the phonetic environment in which the vowel is, and the speaking rate, among others. In most cases, vowels with diacritics are categorised as long vowels, whereas the ones without are categorized as short vowels. For example, in SBE the typical vowel pair /ɪ/ and /iː/as in the words *bid* and *bead,* the vowel /iː/ in the word *bead* is meant to be pronounced longer than the short vowel /ɪ/ n the word *bid.*

Deterding (1997) in his study investigating the formants of monophthong Standard Southern British English (SSB) vowels measured the formants (F1 and F2) of each vowel based on connected speech from five males and five females BBC broadcasters. The description of SSB vowels in his findings are frequently used as a reference to compare between a native varieties and non-native varieties (e.g Pillai et al (2010) and Tan and Low (2010).

Figure 2.3 shows the vowel space of SSB vowels produced by female broadcasters and meanwhile Table 2.4 shows comparison of average values of F1 and F2 produced by female broadcasters based on connected speech vowels and citation vowels. These vowels show that there is vowel contrast in terms of quality for the typical vowel pairs.

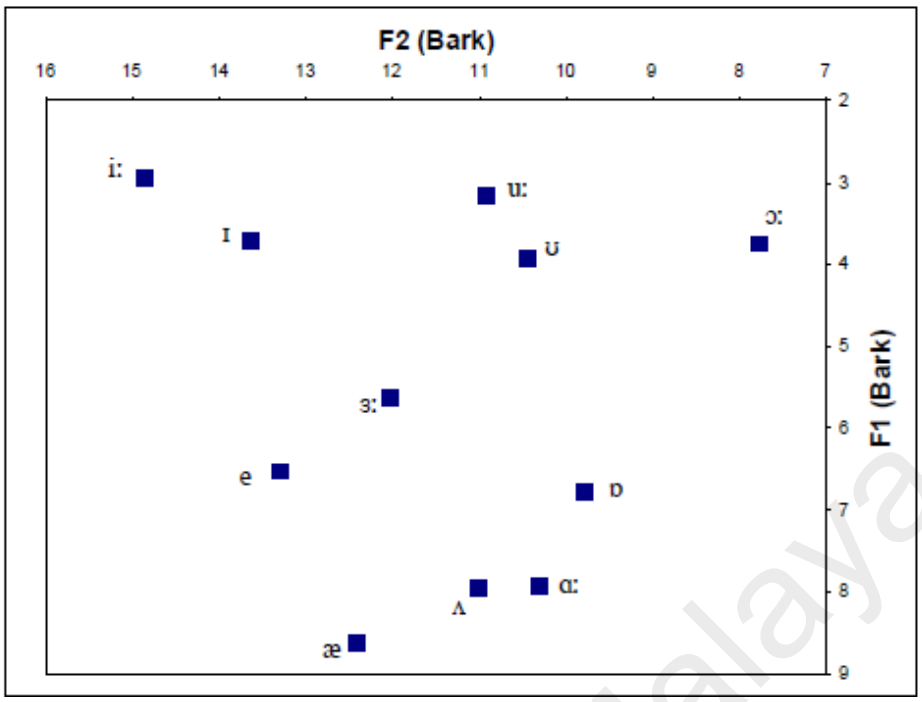


Figure 2.3: Vowel plots from female BBC broadcasters taken from Deterding (1997, 51)

Table 2.1: Average values of F1 and F2 from female BBC broadcaster from Deterding (1997, 53)

	connected			citation		
	F_1	F_2	distance	F_1	F_2	distance
i:	2.95	14.87	4.26	3.10	15.03	4.44
ɪ	3.70	13.64	2.82	4.14	13.98	3.03
e	6.53	13.30	2.06	5.95	13.96	2.81
æ	8.62	12.41	3.22	8.58	12.26	3.39
ʌ	7.94	11.01	2.45	7.24	10.84	1.91
ɑ:	7.92	10.32	2.65	6.99	9.60	2.29
ɒ	6.78	9.78	2.11	5.60	8.47	2.75
ɔ:	3.75	7.77	4.14	4.13	7.13	4.26
ʊ	3.94	10.44	1.92	3.97	9.72	2.04
u:	3.18	10.91	2.43	3.29	10.72	2.13
ɜ:	5.63	12.02	(0.53)	5.99	11.60	(0.74)
ave	5.54	11.50	2.81	5.36	11.21	2.90

2.3 Native English Varieties

According to Wan Aslynn (2005), even amongst the native varieties of English, the same vowels might be pronounced differently from one variety to another based on the height of the tongue and the retraction of the tongue. For example, Turner (1966) states that vowel /ɪ/ is produced with more fronting and sound diphthongised in Broad Australia accent. Meanwhile, for educated Australian English, it is often lowered and centralized to approach /ə/. Furthermore, /ə/ is also identified as stressed /ə/ in Australian English. For example, a speaker of Australian English will pronounce the word *intended* as ['əntendəd], as the initial syllable is realized more like a schwa instead of /ɪ/.

On the other hand, in New Zealand English, /ɪ/ is produced low and more neutral whereby the word *pan* might be heard as *pen* and *peek* as *peck* to the outsiders. In addition, speakers of New Zealand English have a different allophone for short /ɪ/ according to their class and status. This is because the lower working class tend to produce it as a schwa whereas other social groups will produce it as /ʊ/ (Wells, 1982).

Tottie (2016) points out that the most significant difference between American English (AmE) and Standard British English (SBE) is the pronunciation of post-vocalic /r/ as AmE has higher tendency to pronounce the post-vocalic /r/ which makes American English a rhotic variety. Words like *father, part, cart* and *tart* are always pronounced with an audible /r/ or with a strong retroflex –r colouring of the vowel. However, according to Yallop (1999), SBE is a non-rhotic variety of English, hence, words like *spa/spar* and *fought/fort* are likely to be pronounced similarly.

2.4 Overview of Malaysian English (MalE)

Malaysian English (MalE) has its roots from Standard British English (SBE) because of the presence of the British in Malaya from the year 1786 until Malaya claimed its

independence on 1957. Before independence, English was used in administration and English medium schools were also set up. Following independence, the Malay language was declared as the national and official language, and slowly began replacing English in these contexts including as a medium of instruction.

English that has evolved since the British presence is referred to as MalE and it was often categorised with Singapore English in earlier studies such as by Tongue (1974, 1979) and Platt and Weber (1980). Pillai (2008, 159) describe it as an umbrella term to embrace all varieties of English in Malaysia. MalE is in fact a complex language which is used by Malaysians of different walks of life, ethnic groups, professions and social-economic and geographic backgrounds with different levels of proficiency. In order to have a better understanding on MalE, the historical background, related models and previous work on MalE are discussed in the following sections.

2.4.1 Emergence of Malaysian English: Phase 1 and 2

English was introduced to the Malay Peninsula by the British in the 18th century (Platt and Weber, 1980). Asmah (1994) suggests that the presence of English began from two processes which were imperialism and voluntary acceptance. As for education, missionary schools played a great role in introducing English Language and its expenditure. Penang Free School for example, was established in 1819 by the missionaries adapted English as a medium in teaching and learning process. Due to the increasing reputation and prestige gained by English, the needs of learning English as a symbol of prestige contributes to the establishment of English-medium schools. Asmah (2000) claims that elite schools like Malay College of Kuala Kangsar were established using English medium to serve the needs of the indigenous ruling class and the royal and noble families to nurture their children with English competencies. It is due to the opportunities to serve as civil servants and top administrators during the British rulings.

Apart from that, English was also the official language as it was used prominently in the British Administration. Thus, for those who were English speakers would be considered as prestigious group of people.

In the 1950s, as English became a language of prestige and power, it also served as inter-racial link (Lowenberg, 1986).This was due the use of English amongst the elites of different kinds of backgrounds which were the Malay, Chinese and Indian elite social group. In fact, Asmah (1994) notes that, during this period there was an emergence of a new variety of English spoken by a small group of people with significant social and political stature who could speak English better that their mother tongues. This group is called as the people of "Malaysian English 1 (ME 1)" by Platt and Weber (1980). The ME1 speakers had SBE or RP pronunciation which was the acrolectal variety with the biggest size of speakers of English speakers.

Later, in the 1960's and 1970's as the number of English speakers grew rapidly, the situation had changed. The numbers of English speakers grew bigger as more people attended English-medium schools. English was no longer exclusive to the ruling and elites group as everybody has the opportunity to learn English. Due to that, between 1980s and 1990s, the population of the English speakers expanded, and these were mostly mesolectal and basilectal speakers of English which Platt and Weber (1980) refer to as ME2 speakers. This phenomenon might be due to the change in the medium of instruction and national policy which treated English as only one of the subjects taught in schools. Figure 2.4 shows a diagram which proposed by Gill (2002) in

visualizing the changing scenario of the changing number of speakers in ME1 and ME2

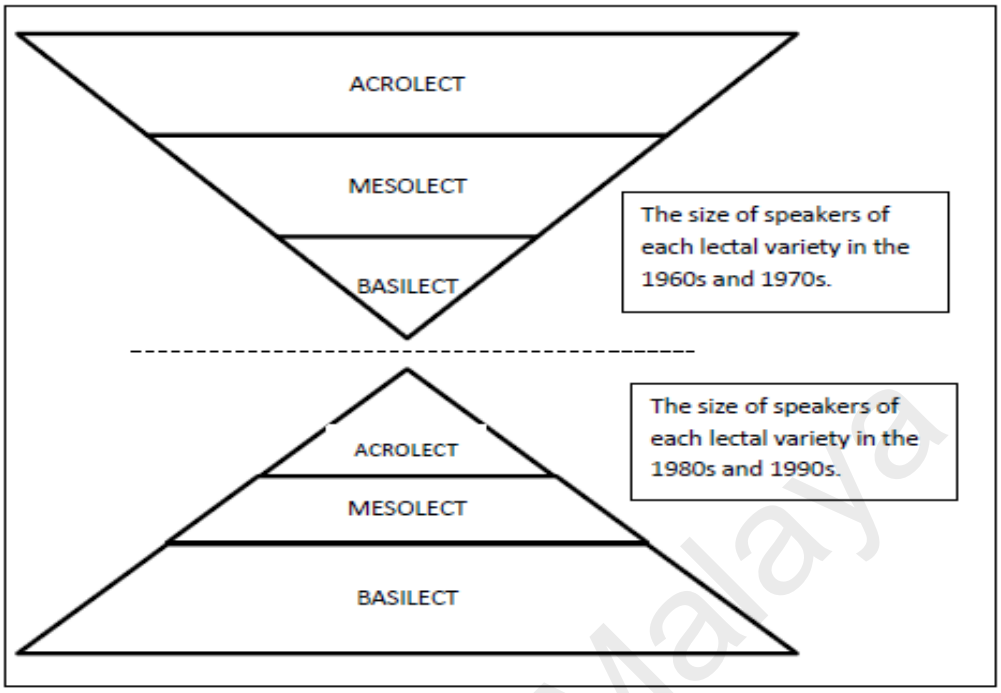


Figure 2.4: Gill's diagrammatic explanation on the changing numbers of ME1 and ME2 scenario from Gill (2002, 52)

2.4.2 The implementation of Malaysia's National Language Policy

Schneider (2007) claims in his dynamic model that the national language policy of a particular country plays a great role in its English language status. Hence, it is relevant to look into this matter in order to obtain comprehensive understanding about MalE. Asmah (2000) states that after Malaya claimed its independence, English language was used as a co-official language along with Malay language. After the transitional period (in 1967), the status of English language was removed due to the implementation of the National Language Act of 1976. This Act accorded the Malay language the status as the sole official language, and Gill (2002, 25) claims it "disestablished English as the joint official language".

Gill (2002) supports this move made by the government as unavoidable and logical as having two co-official languages would have limited the full development of Bahasa

Malaysia. This relates to another new policy which was in the education sector whereby all English-medium schools went through a transition to become Malay medium schools as Bahasa Malaysia became the national language.

To scrutinize the effect of the implementation of national language policy within the ASEAN region, it is inevitable to compare between Malaysia and Singapore. As both countries which are geographically located near to each other share a similar historical background, is interesting to observe that both countries have different development and phase in terms of their English varieties. In a comparison between MalE and Singapore English SgE, Platt and Weber (1980), explain that when Singapore became a republic in 1965, it adopted a national policy in government administration and education which acknowledge English as one of its official languages. This situation has led to English in Malaysia and Singapore being viewed as separate varieties. Schneider (2007) claims that based on his Dynamic Model, SgE is categorised as being in the endornomative stabilization phase while MalE is in the nativisation phase. The nativisation phase refers to the use of the language in the adoption of local social and cultural setting with changes of pronunciation, vocabulary and grammar whereby resulting in a district variety of a language. Meanwhile, the endornomative stabilization is a phase which Schneider (2007) categorizes as one where the speakers would demonstrate more linguistic homogeneity in their language as some stabilization has occurred. In relation to that, Tan and Low (2010) who conducted a study comparing the production of vowels between MalE and SgE speakers discovered that MalE vowels occupied a more compact vowel space compared to SgE. SgE speakers distinguished vowel pairs greater than MalE speakers.

2.4.3 Previous studies on Malaysian English sounds

Studies on acrolectal MalE, or the variety spoken by more fluent speakers are relatively scarce with most studies focusing on learner varieties or less fluent speakers of MalE. Moreover, there are not much published research on young learners of English in Malaysia. In terms of pronunciation, MalE is generally described as a variety that does not distinguish vowel contrast (Baskaran 2004). For example, Baskaran (2004) and Rajadurai (2006) in their studies found that there are only six short vowels monopthongs in MalE instead of seven of BrE. These six vowels are a high front vowel /ɪ/ a mid-front vowel /ɜː/ that represents both /e/ and /æ/, an open mid-back unrounded vowel /ʌ/, a mid-central vowel /ə/, an open mid-back rounded vowel /ɔː/ and a high back vowel /ʊ/.

An instrumental analysis which was conducted by Wan Aslynn (2005) found that MalE speakers did not discriminate long and short vowels and vowel pairs of /ɪ/ - /iː/ had smaller range compared to/ʊ/-/uː/.On the contrary, Pillai, Zuraidah, Knowles and Tang (2010) found that although there is lack of vowel quality contrast, there was evidence of vowel length contrast, especially in vowel pairs /ɪ/ - /iː/, /e/-/æ/ and /ʌ/-/ɑː/. All typical vowel paired were distinguished in terms of duration except for/ɒ/-/ɔː/. Apart from that, the vowel space of MalE is also found to be more compact than the SgE.

Figure 2.5 shows vowel plot of MalE vowels produced by Malay which indicates MalE has a smaller vowel space where the vowel pairs are less distinguished compared to vowel plot of SgE vowels by Deterding (1997, 51). In spite of that, the ED for Malay (ED = 2.91) almost the same as that of SgE (ED = 2.90).

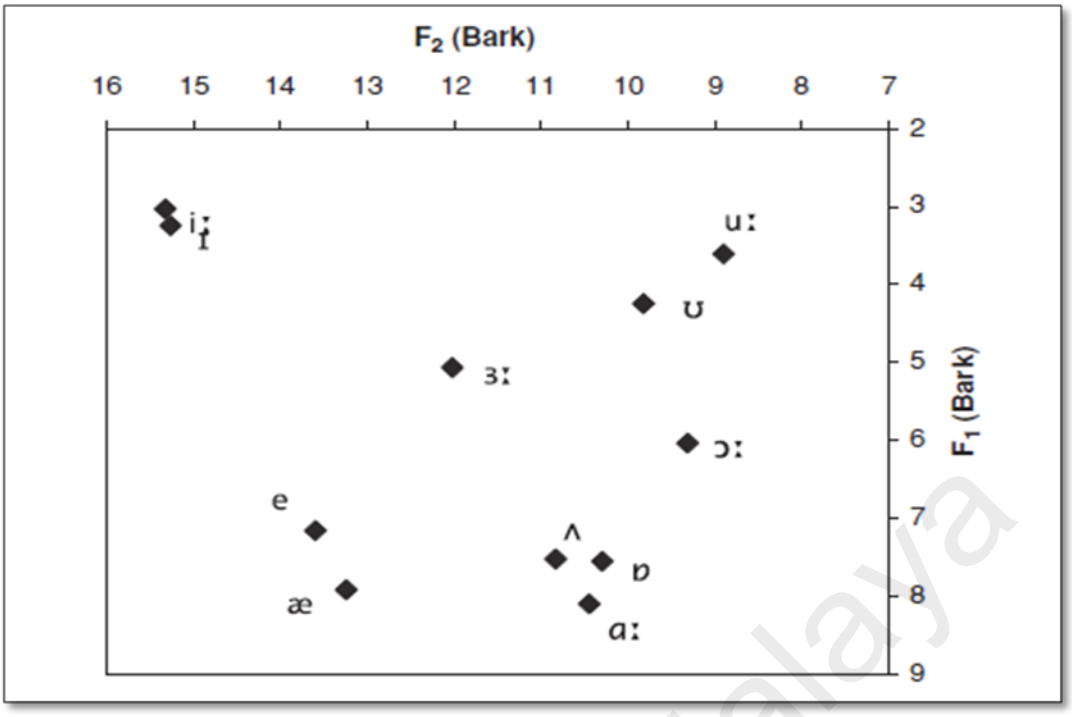


Figure 2.5: Vowel plot of MalE vowels for Malay by Pillai et al (2010, 168)

On the other hand, Zuraidah (2000), who studied the pronunciation of Malay among undergraduates from a university in Malaysia, she states that pair wise length oppositions are virtually conflated into one phoneme. This resulted in some homophones in minimal pairs such as *beat-bit*, *caught-cot* and *cut-cart.* She suggests that Malay speakers tend to collapse certain sounds with the existing sounds in the Malay phonological inventory. This is supported by Dahaman (1994) who states that the long vowel is not available in the Malay inventory, and hence, Malay speakers will assimilate most similar vowels of L2 into L2.

In another study which focused on Malay speakers, Tan and Low (2012) also found that Malay speakers using MalE tend to conflate long and short vowel pairs compared to the Singapore English (SGE) speakers. They suggest that based on the Dynamic Model proposed by Schneider (2007), the results of their study complement the notion postulated by Schneider which states that Singapore has moved to Phase 4

(endonormative stabilization) compared to Malaysian which is still in Phase 3 (nativization).

In addition, in a study of comparing the relationship of third language (L3), German, to the students L1 (Malay) and L2(English) by Yusnul'Ain (2014)found that non-native speakers of German tended to produce L3 vowels by conflating them to the ones equivalent to L1 and L2 based on the similarities of their acoustic properties. L1 is observed to have the greatest influence in producing L3 vowels compared to L2. In term of MalE, she found that the English vowels were produced similarly to Pillai et al. (2010).

Studies on the emerging pattern of rhoticity in MalE have also conducted by few researchers. Although Baskaran (2004) notes that MalE is known as non-rhotic however, the emergence of the post-vocalic –r has shown up in few studies, such as Jayalapan (2016) and Pillai (2013). Jayalapan (2016) investigated rhoticity in MalE amongst three groups (young and old age) of Malaysian Tamil speakers based on a read word list and informal interviews. The finding showed that rhoticity in MalE is evident for the youngest age group. She suggests that it might be due to the influence of medias especially American media.

2.5 Previous studies on neighbouring countries on varieties of English

Studies on vowels in other English varieties are also been conducted in the neighbouring countries such as in Singapore, Brunei and Thailand. Different patterns are to be found in researches in each variety.

In Singapore, a study which investigated the Singapore English (SGE) monopthong vowels in comparison to Standard British English (SBE) monophthong vowels by Deterding (2003) found that SgE speakers do not distinguish vowels distinction among vowels. Hence, there is no contrast found in between minimal paired vowel words such

as *hid* and *heed*. Similarly, another study conducted by Suzanna and Brown (2000) who investigated on paired vowels of /e/ and /æ/, also found that SGE speakers do not distinguish between the two vowels whether in terms of quality or quantity.

Furthermore, Deterding (2003) also found that the vowel pairs /ɪ/ - /iː/,/e/-/æ/ and /ɒ/-/ɔː/ in SgE were closer together compared to SBE. The same pattern was found by Deterding, Wong and Kirkpatrik (2008) in Hong Kong English.

Meanwhile, for Brunei English, Salbrina (2006) also found that the vowel quality was not distinguished in minimal pairs. The study found that /ʊ/and /uː/ of Brunei English were more frontal than in SBE. On the contrary, Thai English speakers tend to have contrast in vowels of /e/ and /æ/ compared to other Southeast Asian English varieties. A study on acoustic analysis of Thai English (ThaiEng) by Pillai and Salaemae (2012) found that the existence of L1 transference in terms of vowel length and quality in English vowels. Thai English speakers tend to contrast vowel length rather than quality due to a possible transference from Thai monopthongs which are contrasted in length not in quality. Based on the findings of previous studies, it can be concluded that MalE and its neighbouring countries on their English varieties generally do not distinguish vowel pairs in term of quality.

2.6 Standard Malay (SM) vowel monophthongs

In order to find out whether the first language of the respondents which is Standard Malay (SM) influence the English vowel production of Malay speakers, it is vital to briefly review Standard Malay (SM) vowels.

Asmah (1993) states that there are six monophthong vowels in SM: /i/, /e/, /ə/, /a/, /u/ and /o/. Based on impressionistic studies by Abdullah (2005), Asmah (1988) and Maris (1980), the vowels of SM are divided into three categories which are the front vowels

(/i/, /e/ and /a/), midvowel (/ə/) and back vowels (/u/ and /o/). SM, the vowels do not contrast phonemically (Teoh, 2003). SM vowels of are illustrated in Figure 2.6

	Front	Central	Back
High	I		u
Mid	E	ə	o
Low	A		

Figure 2.6: Standard Malay (SM) vowels diagram from Nik Safiah et al.(2008, 295)

Teoh (1994) state that the basic structure of SM belongs to Type III in which its beginning syllables are mostly formed based on the combination of consonant and followed by a vowel (CV) or consonant-vowel-consonant (CVC). Meanwhile, for syllables which begin with vowels, they are mostly glottalised vowels (Noraini and Kamaruzaman, 2008; Tan and Ranaivo-Malançon, 2009) In addition, Asmah (1980), also claims that all six SM vowels can be positioned in the beginning, middle and the end of a word. For vowel /a/, if it is positioned in the beginning of a word, it is frequently a glottal stop. For example, the words *atas*, *apa, ada, ambil*. Besides that, for words with double vowels such as /aa/ and /oa/ such as in the words like *saat* and *doa*a glottal stop is likely to occur between the vowels (Tan & Ranaivo-Malançon, 2009).

On the other hand, according to Yousif and Zuraidah(2000), the vowel /a/positioned at the end of a word, such as in *suka, kaca, baca*; the vowel /a/ maybe replaced with the vowel /ə/, which are pronounced as /sukə/, /kacə/ and /bacə/. This situation would be applicable to most of the words ending with the vowel /a/ except for loan words such as *baba* and *lawa*.

Furthermore, Asmah (1988) also posits that deletion of /r/ would also occur in Bahasa Malaysia if the consonant /r/ is positioned at the end of a word. For instance,

words like *leher* which is pronounced as /*lehe*/ with the deletion of /r/. In addition, if a vowel /i/ or /u/ is located before the consonant /r/, hence the vowels will be replaced with vowels /e/ and / o /. For example, the word *bibir* will be pronounced as /bibe/ and word *bubur* will be pronounced as /bubo/. In fact, in Malay, both /e/ and /a/ are not applicable in an open syllable word unless there is deletion of /r/ (Noraini Seman and Kamaruzamman Jusof, 2008).

2.6.1 Previous studies on Standard Malay(SM) sounds

According to Yusnul'ain (2014), studies on SM are rather limited compared to other languages such as English. Older studies tended to be impressionistic in nature but the emergence of new researchers like AdiYasran (2011), Was Aslynn (2005), Shaharina and Shahidi (2012) and Yusnul'ain (2014) used acoustic analysis to describe Malay sounds.

Based on recent studies, Yusnul'ain (2014) put forward a comparison of three vowel plots based on studies by Mardian (2005) and Shaharina and Shahidi (2012) who studied SM vowels and consonants using acoustic analysis. These latter two studies found that the positions of the certain vowels were slightly different from the ones described by previous researchers. Mardian (2005) finds that the position of /e/ and /ə/ are a little lower and closer to /a/ whereas Shaharina and Shahidi (2012) claim that vowels /e/ and /ə/ are located mid-high and mid similar to the descriptions from the previous researchers.

On the other hand, for vowel /o/, both studies show dispersed distribution in the vowel plot as Mardian (2005) found that /o/ is located way back followed by Shaharina and Shahidi (2012) who found that their male Malay speakers produced /o/ which is located at the back but not as far as Shahidi's (2005), and the female Malay speakers produced /o/ that is located in the mid and nearer to vowel /ə/. Figure 2.4 shows the

comparison of vowel plots from Mardian's (2005) study and the one by Shaharina and Shahidi (2012).

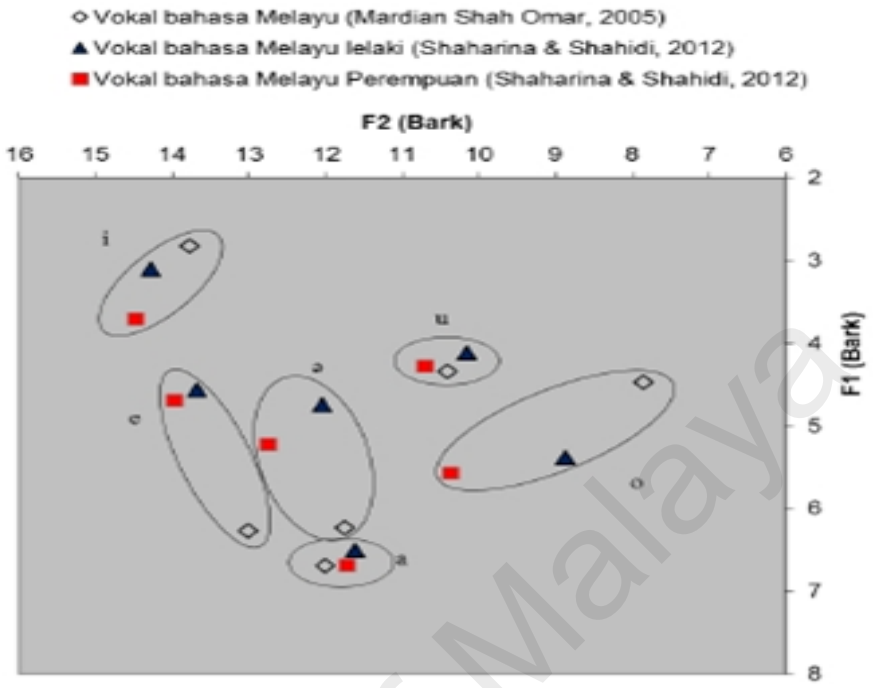


Figure 2.7: SM vowel plots (Mardian Shah Omar, 2005; Shaharina and Shahidi, 2012 from Yusnul'ain (2014,

24)

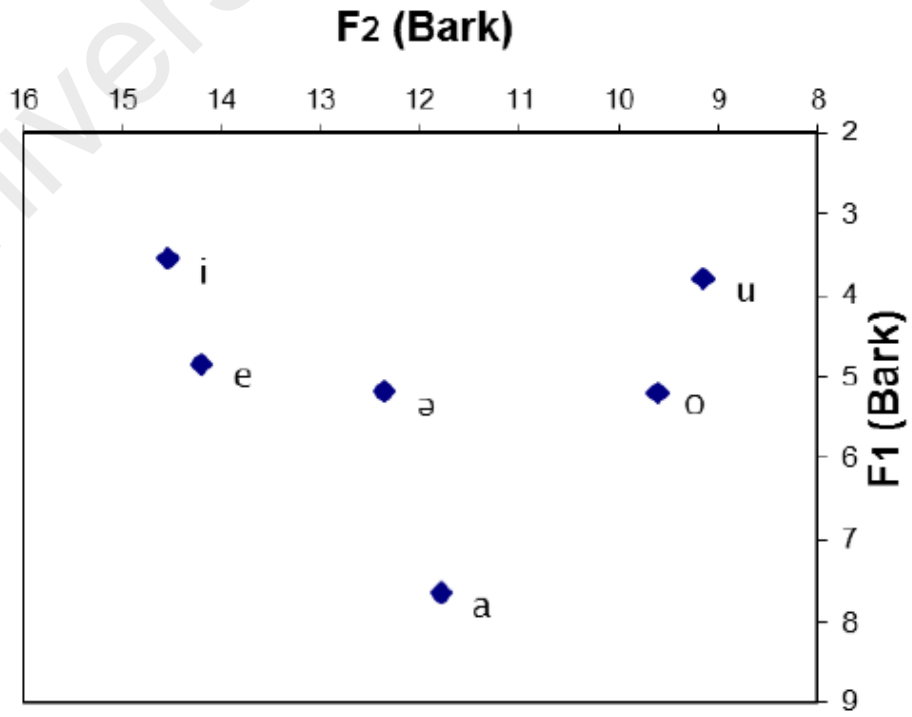


Figure 2.8: Vowel plot of BM vowels by Yusnul'ain (2014, 64)

On the other hand, based on her ED for Malay vowels, she found that the average distance for Malay vowels from the centroid is ED = 2.65. For the purpose of this study, as a reference for Malay vowels her findings will be compared to the findings of this research in term of vowel plot and ED result.

2.7 Schneider's Dynamic Model

Schneider (2007) proposes five phases of the evolution of New Englishes which are foundation, exornormative stabilization (example Fiji), nativisation (e.g. Hong Kong), endonormative stabilisation (e.g. Singapore) and differentiation (e.g. Australia and New Zealand). He describes the sociolinguistic processes as referring to the two participants groups which are recognized as the settles' or the colonisers' (STL) and the indigenous (IDG). Besides that, the Dynamic Model is also based on four holistic parameters which are extralinguistic (socio-political) background, identity construction, sociolinguistic conditions and typical linguistic consequences (structural changes on the levels of lexis, pronunciation and grammar). These four parameters are used to identify and categorize the development of an English variety and its stage. Apart from that, this model is considered as a unified framework in tracking the development of the varieties of English in any country. Hence, in order to claim the status of English of a non-native country, this model accommodates appropriate and holistic parameters as guidance.

An earlier model Kachru (1991), which is the Model of Concentric Circles, categorized the world into Inner Circle (English native countries), Outer Circle (ESL countries) and Expanding Circle (EFL countries). Due to the expanding numbers of English and changes of English status of an English variety, this model is not efficient to 21st century situation as it is considered as outdated by Schneider (2011) due to the difficulties placing the English varieties into Kachru's (1991) classifications.

As mentioned before, Schneider (2007) identifies Malaysia and the Philippines as the two countries have progressed into the nativisation phase (phase 3) based on his model. This statement is supported by David (2000) as it shows innovation among Malaysian youths in creating slang vocabulary. Besides, Malakar (2004) and Chalaya (2007) in their work also found the presence of lexical borrowings from local languages whereby these bear markings of linguistic developments found in varieties in the third phase of development.

Even though Malaysia has reached its nativisation phase, the implementation of the national language policy which is Bahasa Malaysia, it has restricted the use of English language and Schneider (2007, 57) claims that the cycle of Malaysian English has become 'fossilized' as its developmental cycle has stopped or has been disturbed.

2.8 Gut's Norm Orientation Hypothesis

Gut (2007) in her study comparing SGE and Nigerian English (NigEng) found that both varieties show "different phonological process pattern" (Gut 2007, 354) to Standard English varieties. Besides, both non-native varieties portray divergence patterns in their final consonant clusters from standard English.

Based on these discoveries and other findings on other emergent English varieties, she proposed the Norm Orientation Hypothesis. According to Gut (2007) the 'nativisation' of New Englishes can be tracked by observing for at least these two situations. The first one is when the native English speakers who stay in a country for good. This will most likely influence the phonological structures the new English variety in the country through dialect mixing of the native speakers, but not the L1 of the indigenous group such as in the current cases of New Zealand and Canada. The other situation is when a non-native variety has shifted to an endonormative orientation due the spread of systematic and standardized phonological divergences from the native

varieties. In the case of SgE, which is on the endonormative orientation phase, there is stabilization in its phonological structures based on studies done on SgE. Thus, this hypothesis claims that "the spread of L1 structures in a new variety of English is crucially influenced by the specific sociolinguistic setting" (Gut, 2007, 346).

2.8 The teaching of pronunciation

Harmer (2007, 248) points out to the lack of attention paid to the teaching of pronunciation:

> Almost all English teachers get students to study grammar and vocabulary, practice functional dialogues take part in productive skill activities and try to become competent in listening and reading. Yet, some of the same teachers make little attempt to teach pronunciation in any overt way and only give attention to it in passing.

This is similar to Jayalapan and Pillai (2005) who claim that teachers tend to ignore or make little attempt to teach pronunciation compared to the other aspects of such as grammar and vocabulary. Harmer (2007) also states that this phenomenon occurs possibly because of the teachers' lack of confidence in dealing with sound and intonation. Furthermore, this common situation also happens to EFL teachers as English is not their L1, and they tend to be more careful in teaching the language they are teaching so that they do not make mistakes.

However, Baker (2011) states that studies on pronunciation in Canada and the USA suggest that five among six instructors are strongly influenced by the teaching of pronunciation in their teaching and learning activities as they prioritize prosodic features according to what they had learned during their graduate education program. Foote (2011) also found that Canadian teachers teach both segmental and suprasegmental features using pronunciation textbooks and a variety of techniques and materials that are effective in improving their students; pronunciation.

Ever since the implementation of the *Standard Curriculum for Primary School* (KSSR) in 2011, as two over twelve periods of English subject are allocated for the teaching of English pronunciation. However, this paradigm shift has yet to show its effectiveness as Jayalapan and Pillai (2011, p 64) in their study of the state of teaching and learning English pronunciation in Malaysia found that English teachers tended to allocate time to activities which improve and enhance students' grade in English examination. As pronunciation is not tested in the exam, hence tends to be put aside, Jayalapan and Pillai (2011). Apart from that, in the same study, they also found an interesting result which is Malaysian teachers as well as most students would prefer to use Malaysian English compared to the native variety as a model in their classroom as MalE is an important marker of their L1 identity.

Apart from that, Snow (1987) postulates that children who are exposed to second language (L2) earlier would be able to learn and acquire it better as they would do it effortlessly, quickly and able to sound like native speakers as compared to the adult learners of L2. So, in theory, it can be assumed that young learners would be able to pronounce L2 words better than adults. In this research, the vowels contrast of the pupils and the teachers would be dwelt into in order to find the similarities of differences in both groups. Besides that, the influence of teachers' pronunciations on the pupils would be looked into to find patterns in teacher-pupils influence in learning of L2 pronunciation. In addition, Littlewood (1984) postulates that first language would interfere with the second or third language as the structures of L1 will interfere with the new language being learnt.

According to the Speech Learning Theory (SLM), it is to be expected that L1 would interfere in L2 as the learner of L2 would compensate the vowel inventory of L1 to L2 vowel inventory. Fledge (1995) states that SLM depends on the level of similarities of perceived vowels between L1 and L2. Hence, this would create a space for L2 learners

to create a new category for a particular phoneme the way in which they would perceive and assimilate or merge it with the existing phonemes of L1. Therefore, they would produce a less native-like pronunciation of L2 vowels. The findings of this research would serve the objective of filling up the gap of L1 interference of L1 to L2 among teachers and pupils in producing English monophthongs.

2.9 The Formant Frequency Model

In order to analyse the data in investigating the characteristic of vowel quality and length, Formant Frequency Model is adapted. This model is by far the most effective in examining the relationship among vowels.

Based on explanations on the production of vowels in 2.1, it confirms to the Ladefoged's (2010) proposition of the three main parameters of measuring vowel quality which are tongue height, tongue advancement/retraction and lip rounding. On the other hand, Fant (1960) posits that vowels are also characterized by their formants. Kent & Read (2002, 24) define formant as "a peek in the acoustic spectrum. In this usage, a formant is an acoustic feature that may or may not be evidence of a vocal tract resonance"

Hayward (2000) and Watt and Tillotson (2001) explain that the formant frequency changes according to vocal tract and size and, therefore, as a result, any changes produced by tongue movement and lip shape have an effect on the formant frequency. In a spectrogram, the formants are visible as broad and dark bands extending across the duration of a vowel. Due to this explanation, in most acoustic studies, this analysis is adopted as the first two formants of a vowel (F1 and F2) are deemed to be important for the perception of vowels (e.g. Fleming & Johnson, 2007; Ladefoged, 2001). However, there are some studies which take into account the third one (F3) as well (e.g. Watson & Harrington, 1999).

The F1 and F2 values correlate closely with the tongue position (Lagefoged, 2001). Fry (1996), states that by comparing formant values, the relationship among vowels can be examined. This is because the first formant (F1) and second format (F2) which appear on the spectrogram represent the distinction of high-low and front-back of a vowel. In terms of feature (1) mentioned above, F1 reflects height of the vowel as in the high-low distinction. Thus, if the F1 value is lower, the vowel becomes higher. Meanwhile, the degree of retraction and lip rounding of the vowels or the front-back distinction is reflected by F2. Thus, a close front vowel like /iː/ will have a low F1 frequency and a high F2 frequency, while an open back vowel like /ɑː/ is likely to have a higher F1 frequency and a low F2 frequency. The maximum separation between F1 and F2 occurs with the highest vowels and in between the smallest and the lowest ones. As for back vowel, F2 is much lower and closer to F1 compared to the front ones.

To visualize the positions of the vowels, Wong and Kirkpatrick (2008) propose that by measuring the first two formants and converting them to an auditory Bark scale as well as plotting the values on a chart, the estimation of their open/close and front/back quality can be determined. In the Bark scale, the first formant is plotted on the y-axis and the second formant on the x-axis. In relation to this, the vowel chart is plotted either as F1 against (F2-F1) or a simple F1 vs F2 plot. Hayward (2000, 147) also states that a simple plot of F1 and F2 "may have deeper significance" because it "reveals a universal perceptual vowel space". To describe and categorize the vowels as well as to find their distinction, the average formant values of F1 and F2 are transferred into Bark a scale which is introduced by Zwicker and Terhardt (1980) to plot the vowel chart.

2.10 Summary

In this chapter, the production of vowels and descriptions of vowel quality and length were discussed prior to give clear picture of vowels. It was then followed by the

explanation of SBE in terms of vowel inventories, description and related previous studies. The descriptions of MalE vowels, as well as those on neighbouring varieties.SM vowels were also discussed. At the end of the chapter, Scheneider's Dynamic Models and Gut's Norm Orientation Hypothesis is were explained followed by a description of the Formant Frequency Model.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This study aims to investigate the production of vowel monophthongs by ten Malay primary school pupils based on the vowel contrast in length and quality. It also examines the vowel production of four Malay teachers who are currently teaching English at the same school to investigate to what extent teachers' pronunciation of English vowels are similar to pupils'. This chapter explains the methods used in this study.

3.2 Participants

The participants of the study were ten female primary school ESL learners and four primary school ESL teachers.

3.2.1 Pupil participants

Ten Year 5 pupils of Malay ethnicity in a primary school in Gombak were selected using purposeful sampling. This would develop a detailed understanding of the phenomenon for the researcher (Creswell, 2012, 206). The participants had to meet the following criteria:

1) Grew up and currently residing in the Klang Valley area,
2) Malay ethnicity
3) Females
4) Speak Malay as their L1
5) Obtained a Grade A in their English language subject in the Final Year Examination in the previous year and also in the School Based Oral Assessments (SBOA)

The reason for criteria (1) and (2) is to ensure that participants use a variety of Malay which is the closest to the Malay. Only females were selected to keep the gender variable constant to avoid any influences of gender as males and females have different tract since the males would have wider vocal tracts than the latter which would affect the resonance frequencies of the vowels (see 2.1). In addition, criterion (5)was used to ensure that the pupils were approximately at the same level of English proficiency which enables them to pronounce the English words without any difficulties. Apart from that, the purpose of collecting both Malay and English data was to enable a comparison of the Bahasa Malaysia vowels with the English ones produced by the participants.

Furthermore, the participants are all of the same ethnicity, and thus they would have the same L1 in order to maintain the consistency of the data. The participants were selected using purposeful sampling as the participants were selected closely according to the criteria outlined for this study. Consents from the pupils' parents were obtained at the initial stage of the study. The school administrators also gave their full cooperation during the course of this research.

3.2.2 Teacher participants

For this research, four English female teachers were selected based on the following criteria:

1) Currently residing in the Klang Valley area
2) Malay female ESL primary school teacher
3) Speak Malay as their L1
4) Possess at least a bachelor's degree in TESL and/or other equivalent qualifications

For criteria (1) to (3), the reason is similar to the reason used for the pupil participants. Meanwhile, criterion (4), it is to ensure they are proficient users of English. Table 3 shows the demographic background of the teacher participants. As can be seen in Table 3.1, the four teachers are in their 50s, and they are experienced English teachers who have been teaching for almost 30 years. Moreover, all four of them have a degree in TESL, and have been teaching in the current school for almost 20 years. Hence, they can be considered as proficient users of English. Moreover, as experienced and qualified English teachers, it can be assumed that they are aware of the English sound inventory. All four are Malays and do not use any dialectal language at home.

Table 3.1: Demographic background of the teacher participants

Teacher participants	Ethnicity	Age	Place of residence	Education Background	Language used at home	Status of English
T1	Malay	50	Batu Caves	Teacher's Training College (Diploma)/B.Ed. TESL (OUM,Malaysia)	Bahasa Malaysia	L2
T2	Malay	51	Gombak	Teacher's Training College (Diploma) /B.Ed. TESL (OUM,Malaysia)	Bahasa Malaysia	L2
T3	Malay	50	Gombak Setia	B.Ed TESL (Sheffield, UK)	Bahasa Malaysia	L2
T4	Malay	52	Batu Caves	Teacher's Training College (Diploma)/ B.EdTESL(IIUM, Malaysia)	Bahasa Malaysia	L2

3.3 Consent

Firstly, permission from the Ministry of Education Malaysia (see Appendix A) was obtained prior to conducting the research as it involved the usage of school's premises and participation of the teachers and pupils. After obtaining the consent from the ministry, the permission from the headmistress of the school was obtained. Since the female pupils are under aged, consent from their parents was also obtained. Thus, to obtain their consents, consent letters for parents' consent (see Appendix B) were distributed after pupil participants were selected. Similarly, individual's consent letters (see Appendix C) were also distributed to the four teacher participants. For the teacher participants, their consent to use the data collected from them were obtained before data collection took place. Later, after gaining consent from them, data collection process took place.All of the recordings were conducted outside school hours to avoid any interruptions and disturbance in the teaching and learning process of the participants.

3.4 Instruments

3.4.1 The word list

The participants were asked to read a word list, and this was recorded using an audio recorder (see 3.5). The words used to elicit the target vowels of English are similar to Ladefoged (2001). The word list for Malay was entirely adapted from the research of Yunisrina (2013) which is also in reference to the word inventory of *Kamus Dewan*(2005). The English word list consisted of the target words embedded with voiceless /t/ and voiced /d/ stop consonants where C is a stop consonant for the Malay words. Furthermore, the use of /CVCV/ or in two-syllable words for Malay words is also to ensure identification of the target vowel, as well as, to minimize the effects of co-articulatory effects of the neighbouring sounds on the vowel.

The words were also placed in a carrier frame, *Please say WORD again*, for English and *Sebut WORD semula* for Malay. For the pupil participants, each word was presented in an individual flashcard which was embedded with the carrier frame (see Appendix D) whereas for the teacher participants, the words were presented in a single A4 sized paper with the same carrier frame (see Appendix E). The rationale for this practice was to obtain a naturalistic production of each word by the participants. Apart from that, the carrier frame was also an attempt to keep the speaking rate more constant. Ladefoged (1993) presumes that if the words *say* and *again* are used in about the same occasion, then we can assume that the speaker is reading at a constant rate. The words used in this study are presented in Table 3.2 and 3.3.

Table 3.2: The word list used for English

English vowel	**Word**
iː	b**ea**t
ɪ	b**i**t
e	b**e**t
æ	b**a**t
ʌ	c**u**t
ɑː	c**a**rt
ɒ	p**o**t
ɔː	p**o**rt
ʊ	c**ou**ld
uː	c**oo**ed
ɜː	b**i**rd

Table 3.3: The word list used for Malay

Vowel	**Word**
i	p**i**ta (‘tape’)
e	p**e**tak (‘box’)
ə	p**e**ta (‘map’)
a	p**a**ti (‘essence’)
u	k**u**tu (‘flea’)
o	k**o**ta (’city’)

3.5 Recording procedures

Before recording, both teacher and pupil participants were given five to ten minutes to read through the word list/flashcards on their own. The rationale is to minimize their anxiety and warm up their voice. The recordings were sampled at 44.1 kHz at a 16-bit rate. They were asked to read the word list in natural manner during the recordings. The recordings were carried out using a Marantz PMD661 Professional State Recorder and an Audio Technical ATM73, a cardioid condenser head-worn microphone. For the pupil participants, they read each word embedded with a carrier frame in an individual flashcard both for English and Malay word lists once. Then, this was followed with a short break before the second recording of the second and third reading of the same word list again with the same word order. Meanwhile, for the teacher participants, they read the word lists of English and Malay with the carrier frame placed in a single A4 sized paper with a short break for each interval of the three recordings.

3.6 Data analysis

The number of tokens collected from the English word list from ten pupil participants were 330 (11 words x 3 recordings x 10 pupils) and 132 (11 words x 3 recordings x 4 teachers) from four teacher participants which accumulated to the total of

462 from the three recordings. Meanwhile, for the Bahasa Malaysia word list, 180 tokens were collected from the pupil participants (6 words x 3 recordings x 10 pupils) and 72 tokens were obtained from the teacher participants (6 words x 3 recordings x 4 teachers) with a total of 252.

Then, the tokens were transcribed and annotated using PRAAT Version 5.1.32 (Boersma and Weenink, 2016), a software program used to analyse speech sounds. In the analysis, the target vowels were isolated and measured. Firstly, the target vowels were isolated and the distractors as well as other unrelated words were disregarded by running the *wav.file* into PRAAT and creating Tier 1 and Tier 2. Tier 1 consisted of the orthographic transcription of the vowel and Tier 2 was created to transcribe the vowels with phonetic symbols. The visual inspections of the waveforms and spectrograms were used in the segmentation of the target vowels coupled with auditory examination of the data as shown in Figure 3.1.

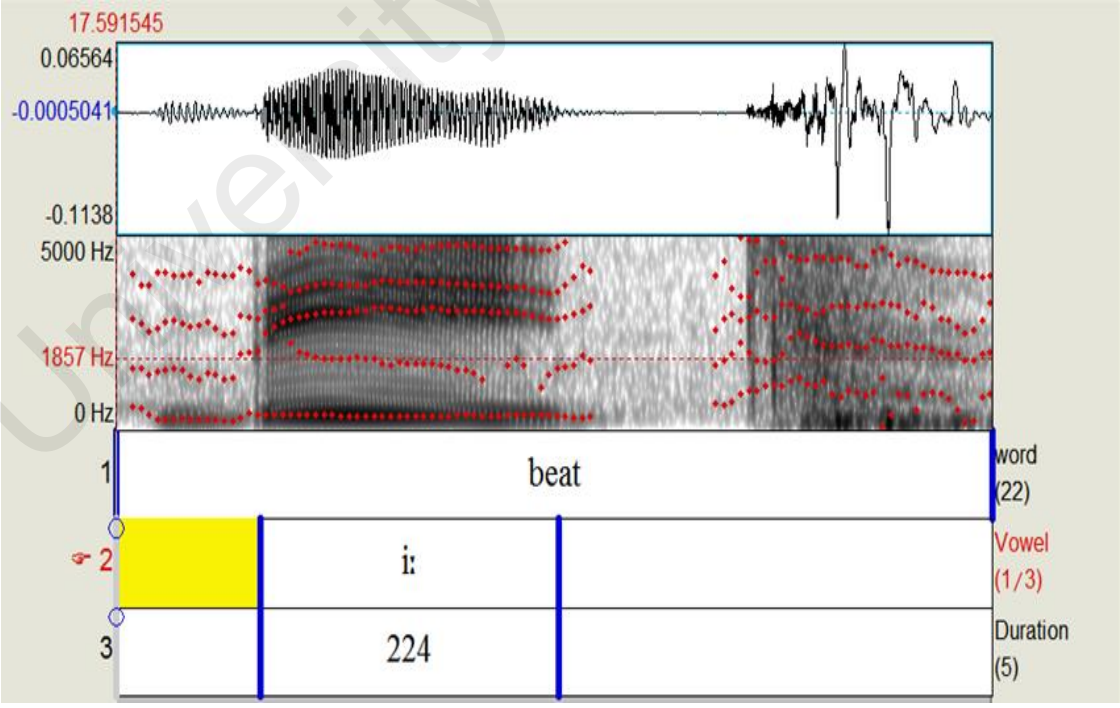
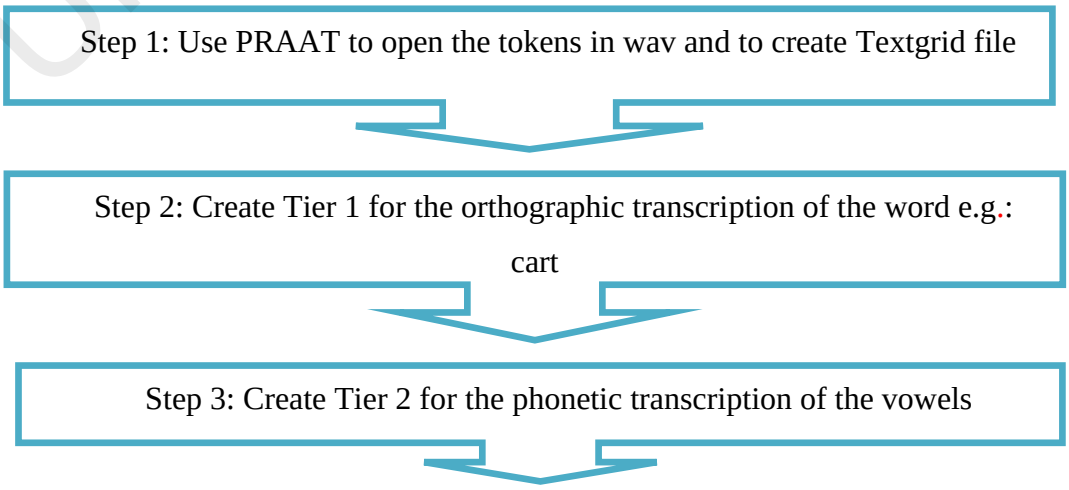


Figure 3.1: Screenshot of waveform and spectrogram and annotation of the vowel / iː / in the word *beat*

Based on the Formant Frequency Model, the measurements of the midpoint of each vowel were taken to get the measurement of the F1 and F2. The F1 and F2 were used to determine and measure the first (F1) and second (F2) formant. The edited target vowels were measured by running a formant script in PRAAT. They were measured automatically based on the linear predictive coding (LPC) in PRAAT. The measurements of the midpoint of each vowel were taken as it is the most stable phase (Smiths and Hout (2004), Ladefoged (2003) and Watt and Tillotson (2001). Besides that, to measure the duration of each target vowel, the measurements were taken from onset (left edge) to the offset (right edge) of the vowel as seen in Tier 3 (Fig. 3.1). This was done manually Next, the measurements of F1 and F2 and the duration of each vowel were transferred to an Excel file. Then, the average of each vowel was transferred into the Bark scale in order to plot the data into F1-F2 vowel charts. The average of F1 and F2 measurements for each vowel for each group was generated using the following formula (Zwicker and Terhardt, 1980, 1524):

$$Z = 13 \arctan (0.00076F) + 3.5 \arctan (F/7500)^2$$

Vowel charts and scatter plots were generated for each vowel pair. Independent t-tests were carried out to compare the F1 and F2 as well as the duration of the vowel pairs. The flow chart of transcription and annotation process is as shown in Figure 3.2.



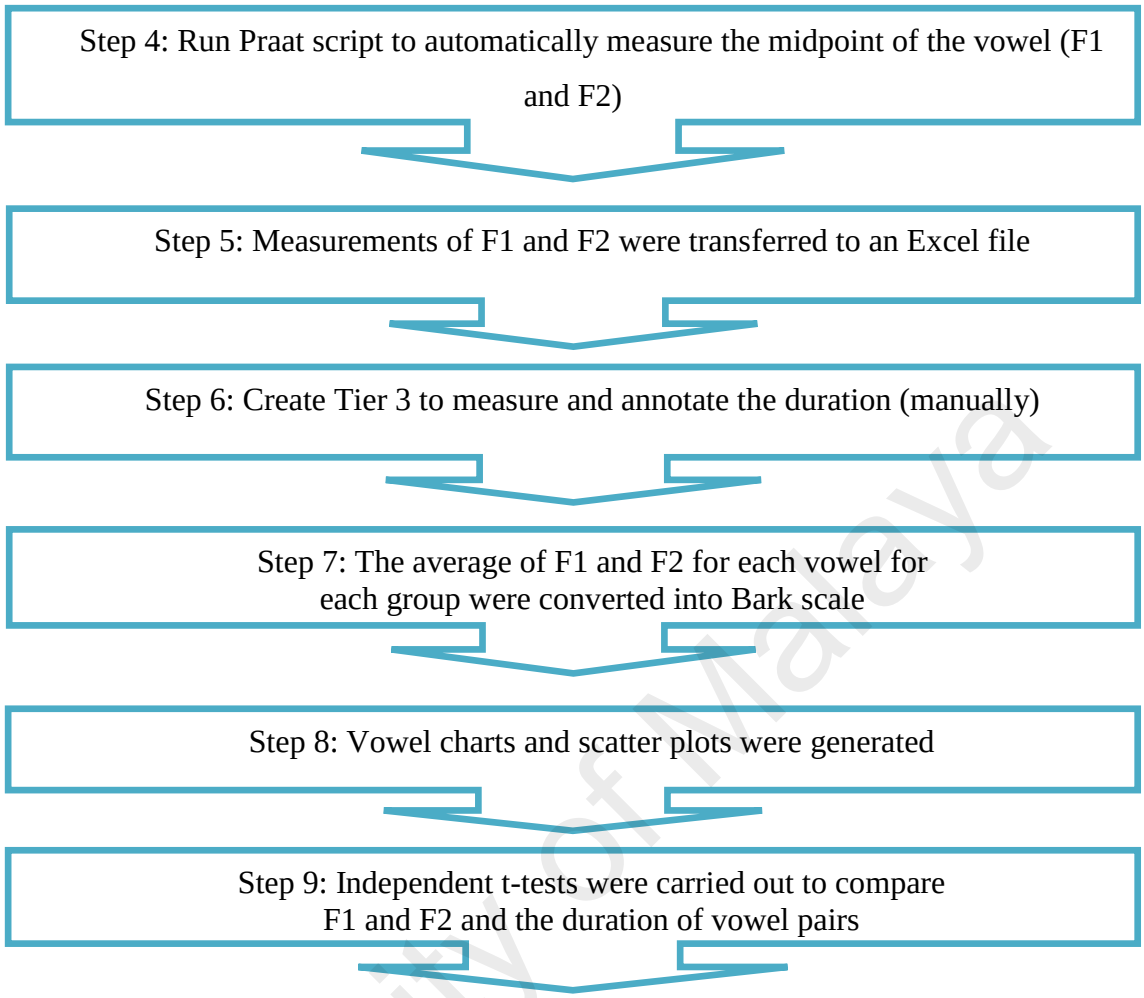


Figure 3.2: The transcription and annotation process for data analysis

3.7 Type of test

Overall, the statistical test carried out was:

1) One way independent samples T-Test

The objective to adopt this statistical test in the research is to determine whether or not there is any significant difference between the means of three or more sets of data collected of the same group of samples in a particular research (Harrington 2010, Bohn & Fledge, 1992). In this research, this test was conducted to determine any significant difference between English long and short vowels to the Bahasa Malaysia ones produced by the pupils.

3.8 Conclusion

In this chapter, the methodology used to examine English and Bahasa Malaysia vowels monophthongs produced by female teachers and pupils was explained. The data collected both from female teachers and pupils for English and Bahasa Malaysia monophthongs were used to determine the possible influences on English vowels produced by female pupils. The English and Bahasa Malaysia vowels were collected from fourteen participants, and the targeted words were repeated thrice for the two sets of word list as it was assumed to be sufficient for data comparison purposes.

Apart from that, to measure the target vowels, its formant values at its steady state of production were extracted. The findings of the English and Bahasa Malaysia vowels monophthongs produced by the female teachers and pupils are presented and discussed in the following chapter.

CHAPTER 4: FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the findings on the production of English vowels monophthong and Malay by the speakers in this study. Vowel charts were generated based on formant measurements to examine vowel quality. Vowel length contrasts of typical vowel pairs were also examined. Besides, comparisons to SBE with reference to Deterding's (1997, 57) and to previous research of MalE which is Pillai et al (2010, 159) were made for the purpose of investigating the influence of SBE in MalE vowels and differences of current findings to the previous one. Furthermore, findings comparing the English and Malay vowels produced by them in the relation to the influence of L1 to L2 are also presented in the chapter.

4.2 English vowels

Tables 4.1 and 4.2 below show the average F1 and F2 values, standard deviations (SD) and Euclidean Distances (ED) of the English vowels produced by teachers and pupils. Based on these tables, the mean (M) and standard deviation (SD) F1 and F2 values indicate that teachers had a smaller range value compared to the pupils. For the Euclidean Distance (ED) in comparison to Deterding (1997, 57) of (ED = 2.90) for SBE in citation, the average distance from the centroid of MalE vowels produced by the teachers (ED = 2.03) are less peripheral than SBE. Meanwhile, the ED for the pupils (ED = 1.53) indicates that the average distance of MalE vowels produced by them is more central than SBE

Besides that, in comparison to Pillai et al (2010, 159), based on the ED values, the MalE vowels produced in Pillai et al (2010) (ED = 2.91), are more peripheral to SBE compared to the ED for teachers and pupils in this study.

Table 4.1: Average values for F1 and F2 and Euclidean Distance of English monophthong vowels produced by teachers.

Target vowels	Teachers						
	F1(Hz)	SDF1(Hz)	F2(Hz)	SDF1(Bark)	F1 (Bark)	F2(Bark)	Euclidean Distance
iː	382	151.90	1919	65.23	3.68	12.83	2.92
ɪ	400	69.60	2163	68.18	3.84	13.61	3.27
e	807	85.30	1798	109.85	7.19	12.41	1.46
æ	839	67.36	1730	140.16	7.42	12.15	1.48
ʌ	942	167.25	1657	132.64	8.13	11.86	2.01
ɑː	977	138.32	1363	139.12	8.36	10.55	2.30
ɒ	806	74.40	1193	97.73	7.18	9.66	1.94
ɔː	858	158.26	1172	82.56	7.56	9.55	2.25
ʊ	467	65.54	1389	151.3	4.44	10.68	1.87
uː	459	76.21	1229	194.86	4.37	9.86	2.34
ɜ	643	83.83	1579	93.43	5.94	11.55	0.33
Ave	689		1562.91		6.19	11.34	2.18

* ɜː= central vowel

Table 4.2: Average values for F1 and F2 and Euclidean Distance of English monophthong vowels produced by pupils

Target vowels	Pupils						
	F1(Hz)	SDF1(Hz)	F2(Hz)	SDF2 (Hz)	F1(Bark)	F2(Bark)	Euclidean Distance
iː	436	393.88	1789	699.96	4.17	12.38	2.65
ɪ	466	704.82	1717	701.59	4.4	12.10	2.27
e	792	253.75	1445	381.91	7.08	10.95	0.79
æ	765	244.01	1364	366.10	6.89	10.56	0.63
ʌ	916	275.56	1569	339.07	7.96	11.50	1.79
ɑː	915	123.46	1466	156.62	7.95	11.04	1.66
ɒ	829	120	1213	113	7.35	9.77	1.47
ɔː	798	117.25	1258	135.64	7.13	10.02	1.14
ʊ	587	407.74	1118	205.16	5.48	9.24	1.78
uː	581	188.37	1194	254.13	5.43	9.67	1.44
ɜː	590	242.83	1612	195.61	5.50	11.68	1.19
Ave	689		1431		6.31	10.81	1.56

* sː= central vowel

Figure 4.1shows the vowel plot for English produced by teachers and pupils. The typical paired vowels are relatively closer to each other. The vowels pairs /ɪ/ and /iː/ in *beat* and *bit,* /e/ - /æ/ in *bet* and *bat,* /ɒ/-/ɔː/ in *pot* and *port* as well as /ʊ/ - /uː/, in *could* and *cooed* produced by the pupils and teachers, are placed closer to each other in the vowel chart except for the vowel pair of /ʌ/ - /ɑː/ in *cut* and *cart.* Comparing to the vowel plot of MalE from Pillai et al (2010, 159) it is evident that teachers produced /ɔː/, more centrally and lower and the vowel /ʌ/ more frontal which resulted in the vowel pairs of /ʌ/ - /ɑː/ being distinguished compared to the ones in Pillai, Zuraidah Mohd Don, Tang and Knowles (2010). Similarly, the pupils did not distinguish vowel pairs as

they are placed relatively closer to each other in the vowel chart. The back vowels are also placed more centrally. These occurrences resulted the vowel space to more compact compared to those of the teachers' and in Pillai et al..

On the other hand, for the comparison to SBE from Deterding (1997, 57) it is obviously that MalE vowels produced by teachers and pupils are more compact. This finding is similar to the previous studies which comparing between SBE and MalE. Apart from that both teachers and pupils produced with back vowels to be more central.

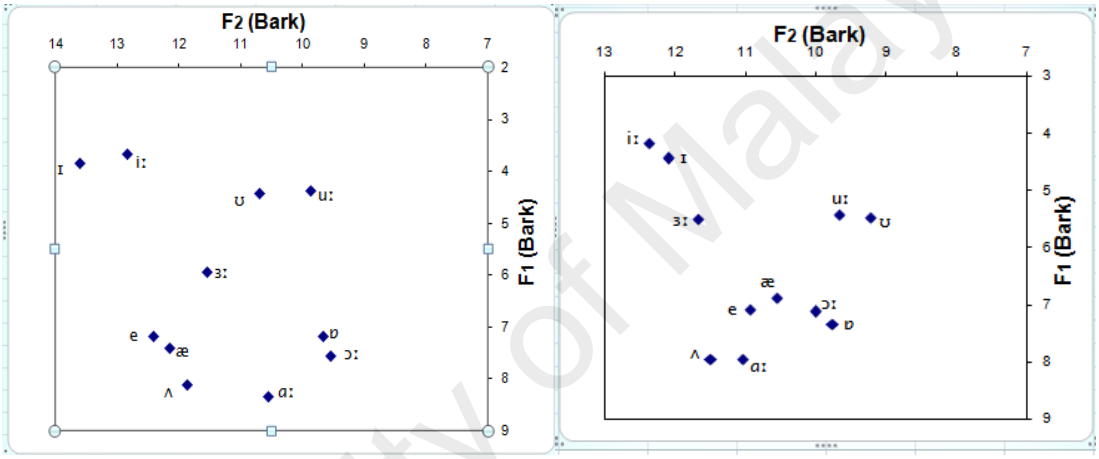


Figure 4.1: Formant plot for English vowels produced by teachers (left) and pupils (right)

Apart from that, in describing the characteristics of English vowels produced by the participants, the vowel length discrimination between the long and short vowels too should be investigated especially between the typical paired vowels. For this purpose, the average duration of the vowels produced by the teachers and pupils were examined and compared to see whether both participants contrast the vowel pairs for length. Table 4.3 and 4.4 show that the long vowels have longer durations compared to the shorter pairs.

Table 4.3: Average durations between long and short vowel pairs of English (MalE) produced by teachers (in milliseconds)

Vowels	MalE duration (msec)	Ratio between vowels pairs
i: (***beat***)	143	.27
ɪ (***bit***)	39	
e (***bet***)	41	.68
æ (***bat***)	60	
ʌ (***cut***)	40	.32
ɑ:(***cart***)	124	
ɒ(***pot***)	120	.90
ɔ:(***port***)	132	
ʊ(***could***)	76	.55
u: (***cooed***)	137	

Table 4.4: Average durations between long and short vowel pairs of English (MalE) produced by pupils (in milliseconds)

Vowels	MalE duration (msec)	Ratio between vowels pairs
i: (***beat***)	51	.98
ɪ (***bit***)	50	
e (***bet***)	53	.98
æ (***bat***)	60	
ʌ (***cut***)	54	.67
ɑ:(***cart***)	40	
ɒ(***pot***)	60	.40
ɔ:(***port***)	57	
ʊ(***could***)	143	.90
u: (***cooed***)	57	

Based on Tables 4.3 and 4.4, the teachers appear to have distinguished length contrast more than the pupils. Based on the ratio of duration for English (MalE) vowel pairs, it is significant to note that teachers distinguished the vowel pairs in *bit* – *beat* and *cut* – *cart* with ratios of .27 and .32. However, based on t-tests, there were significant

differences in length between the vowel pairs of /ɪ/ - /iː/ $t(22) = 5.27$, $p < .001$), /ʌ/ - /ɑː/ ($t(22)=5.44$, $p < .001$) and /ɒ/ - /ɔː/ ($t(22) = 5.15$, $p < .001$) for teachers. However, for the pupils, there was a significant difference in the vowel pair of /ɒ/ - /ɔː/. These findings conform to previous research suggest that more fluent speakers (e.g. Pillai et al., 2010) tend to distinguish vowel length more than not so fluent ones.

T-test results showed a significant difference in the production of long vowel /ɔː/ between the teachers and pupils ($t(22) = 6.54$, $p < .001$;$t(58) = 6.98$, $p < .001$). Although both teachers and pupils contrast the vowel length, there is still a difference between teachers' and pupils' length production as the teachers' /ɔː/ vowel length is significantly longer than the pupils. This situation is noticeable in other vowels which contain the consonant *r* in the word frame which are 'cart' and 'bird'. This situation might be due to the influence of rhoticity in the pronunciation of the word *port* by the pupils due to the position of consonant *r*after the vowel /ɔː/ which resulted to lengthening of the vowel /ɔː/ due to the retroflex - r sound. This phenomenon will be further explained in the discussion (see 4. 3).

4.2.1 Vowel contrast between /ɪ/ and /iː/

To have a clear view of the quality and length of the English vowels produced by both female teachers and pupils, the vowels were examined more carefully as shown in following figures and tables. The scatter plot for paired vowels /ɪ/ and /iː/ in Figure 4.2 indicates that the pupils tend to conflate the word *beat* into *bit*. The vowels are generally concentrated in a part vowel space as there is hardly any separation between these two vowels compared to the teachers whereby the two vowels seem to be separated.

To see if both teachers and pupils contrast the vowel pairs, independent samples t-tests were carried out, where the average F1 value of both /ɪ/ and /iː/, followed by their average F2 value. The results showed no significant differences between the teachers

and teachers (N=4) and pupils (N=10) for F1(*t*(22) = 0.36, *p*= .056,*t*(58) = 1.74, *p*=.023) and F2 (*t*(22) = 1.05, *p*= .003, *t*(58) = 0.4, *p*=.0010). These results showed that both teachers and pupils produced both vowels similarly without any significant differences between them.

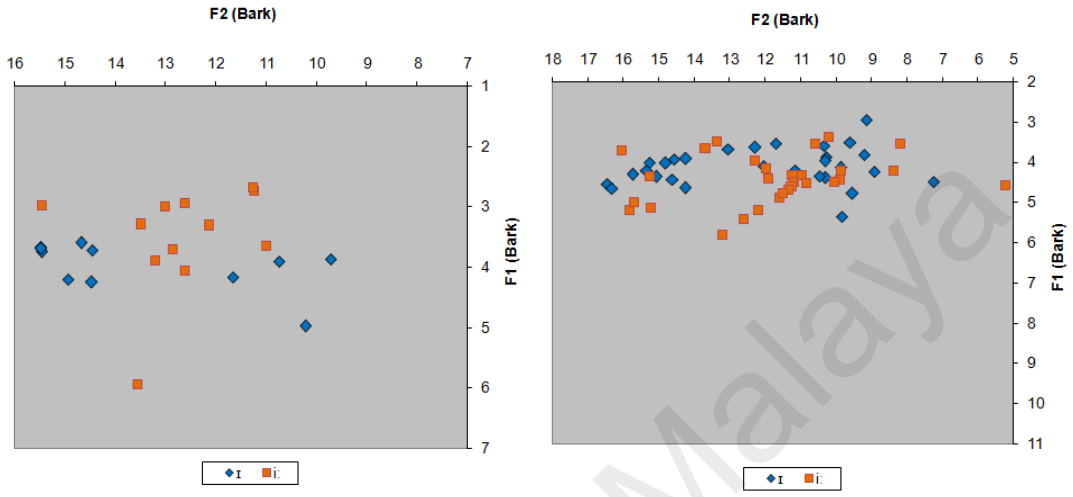


Figure 4.2: Scatter plot of /ɪ/ in *bit* and /iː/ in *beat* for teachers (left) and pupils (right)

In terms of vowel length, the differences in the average duration between vowel pair of /ɪ/ and /iː/ between teachers and pupils are evident. From Table 4.5, it can be seen that teachers distinguish between /ɪ/ and /iː/with the average length of /ɪ/ being 39 m/sand 143 m/s for /iː/, resulting in a short/long difference of 104 msecs and ratio of .27. Meanwhile, for pupils, Table 4.6 shows that they tend to have shorter length discrimination and smaller difference value as the average length of /ɪ/ is50m/s and 51 msecs for/iː/ resulting in a short/long difference of only 1 msec difference and a ratio of 0.98. In addition, independent samples t-tests showed that there was a significant difference in term of vowel length for vowel pair of /ɪ/ and /iː/for the teachers (*t*(22) = 5.27, *p*< .001,but not for the pupils(*t*(58) = 1.68, *p*= .002).

Figure 4.3 and 4.4show the line graphs of the average duration of /ɪ/ and /iː/ for teachers and pupils. Figure 4.3 shows that, the vowel /ɪ/ produced by teachers is more consistent than /iː/

Table 4.5: Comparison of average duration of /ɪ/ and /iː/produced by teachers (in msec)

Teacher participants	T1	T2	T3	T4	Average
/ɪ/	31	55	36	32	39
/iː/	132	255	97	87	143
Difference	101	200	61	55	104

Table 4.6: Comparison of average duration of /ɪ/ and /iː/ produced by pupils (in msec)

Pupil participants	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Average
/ɪ/	54	83	25	36	109	35	28	33	36	70	50
/ iː /	57	49	27	49	60	37	38	44	67	86	51
Difference	3	-34	2	13	-49	2	10	10	31	16	1

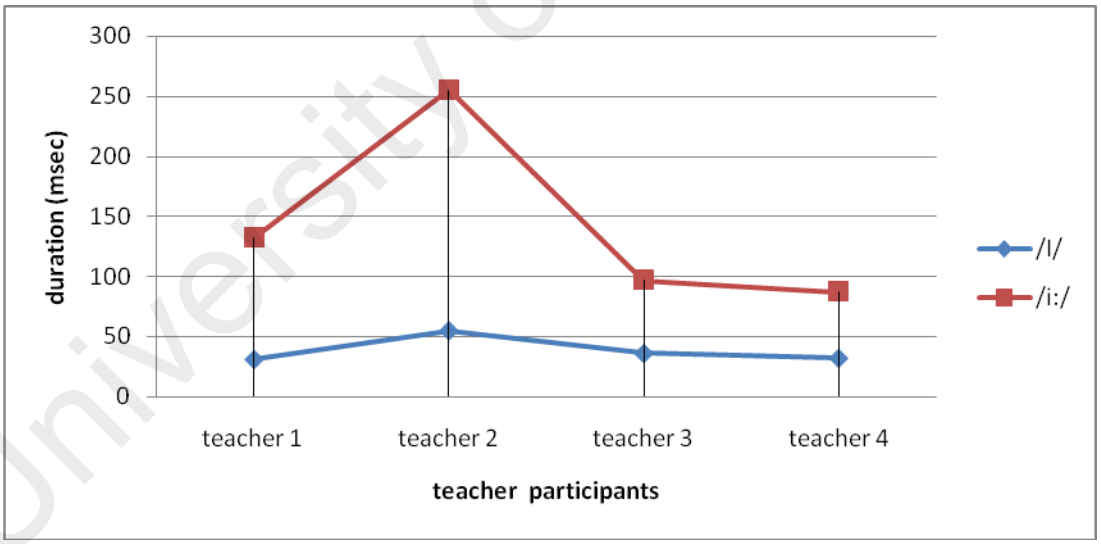


Figure 4.3: Length distinction between /ɪ/ and /iː/(teachers)

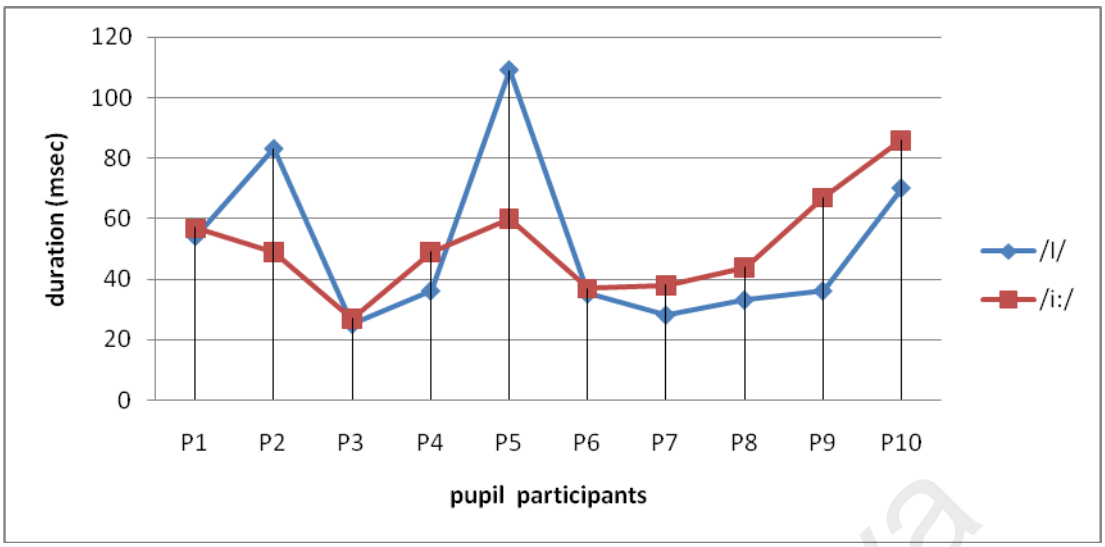


Figure 4.4: Length distinction between /ɪ/ and /iː/(pupils)

4.2.2 Vowel contrast between /e/ and /æ/

Meanwhile, for the paired vowels /e/ in *bet* and /æ/ in *bat*, the scatter plots of the teachers and pupils show that both vowels are produced in the central of the vowel space. The pupils appear to have produced the vowel pair of /e/ and /æ/more centrally compared to SBE and the teachers in this study. There is an obvious lack of contrast between the vowels as is a considerable overlapping between the two vowels as can be seen in Figure 4.5.

Based on independent samples t-tests, there were no significant difference between the teachers (N = 4) and pupils (N = 10) for the F1 ($t(22) = 1.02$, $p = .0003$, $t(58) = 0.66$, $p = .0034$) and F2 (($t(22) = 1.05$, $p = .0019$, $t\ (58) = 0.4$, $p = .0043$)both vowels. It signifies that in terms of vowel quality, both teachers and pupils produced both vowels similarly by conflating /e/ and /æ/.

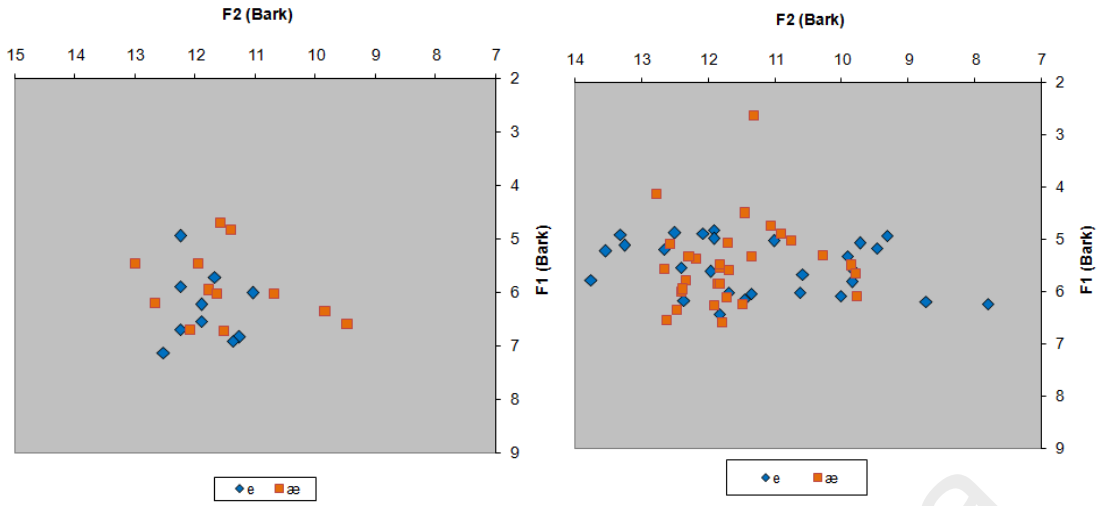


Figure 4.5: Scatter plot of /e/ and /æ/ for teachers (left) and pupils (right)

In relation to vowel length, Tables 4.7 and 4.8 show that teachers and pupils have smaller values for the vowel length for these vowels compared to the vowel pair /ɪ/ and /iː/. For teachers, the average length for /e/ is 41 m/s and 60 m/s for /æ/with a short/long difference of 19msecs and a ratio of .68. Meanwhile, for pupils the difference value between /e/ and /æ/is only 1msec with a ratio of .98 which is similar to their ratio for the vowel pair /ɪ/ and /iː/. No significant difference for the vowel pair in term of vowel length was found for both teachers ($t(22) = 1.54$, p=.0005) and pupils ($t(58) = 0.18$, p= .004).

On the other hand, the line graphs in 4.6 and 4.7 also indicate similar findings as both teachers and pupils do not distinguish the paired vowels of /e/ and /æ/ as the average duration of both vowels are consistently lower and close to each other with minimal values of differences. However, in case of consistencies of the vowels produced by teachers and pupils, it is apparent that both line graphs show more consistent distributions of vowel length compared to vowel pair /ɪ/ and /iː/.

Table 4.7: Comparison of average duration of /e/ and /æ/produced by teachers (in msec)

Teacher participants	T1	T2	T3	T4	Average
/e/	43	48	36	38	41
/æ/	64	39	38	50	60
Difference	21	-9	2	12	19

Table 4.8: Comparison of average duration of /e/ and /æ/produced by pupils (in msec)

Pupil participants	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Average
/e/	52	57	48	55	54	39	43	55	53	76	53
/æ/	56	62	39	49	70	39	39	55	45	82	54
Difference	4	5	-9	-6	16	0	-4	0	-6	6	1

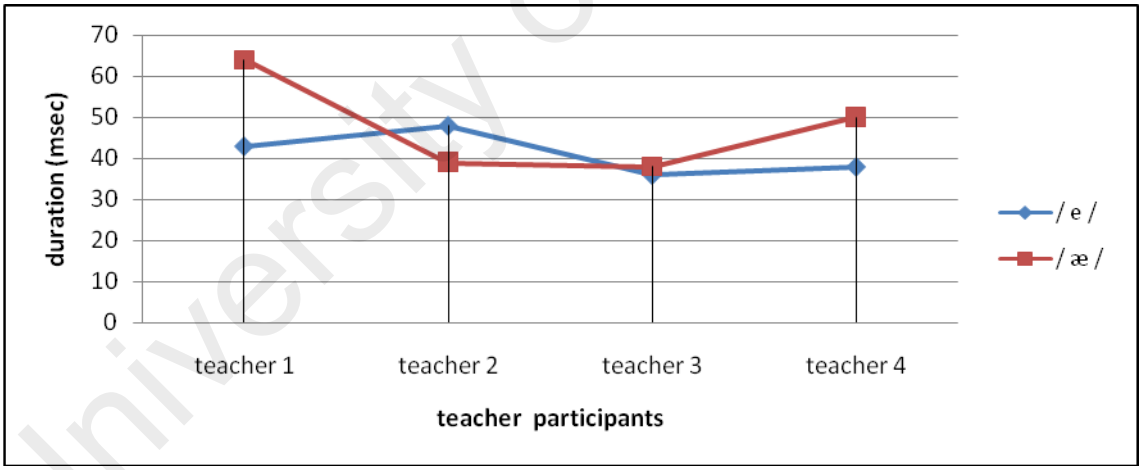


Figure 4.6: Length distinctions between /e/ and /æ/(teachers)

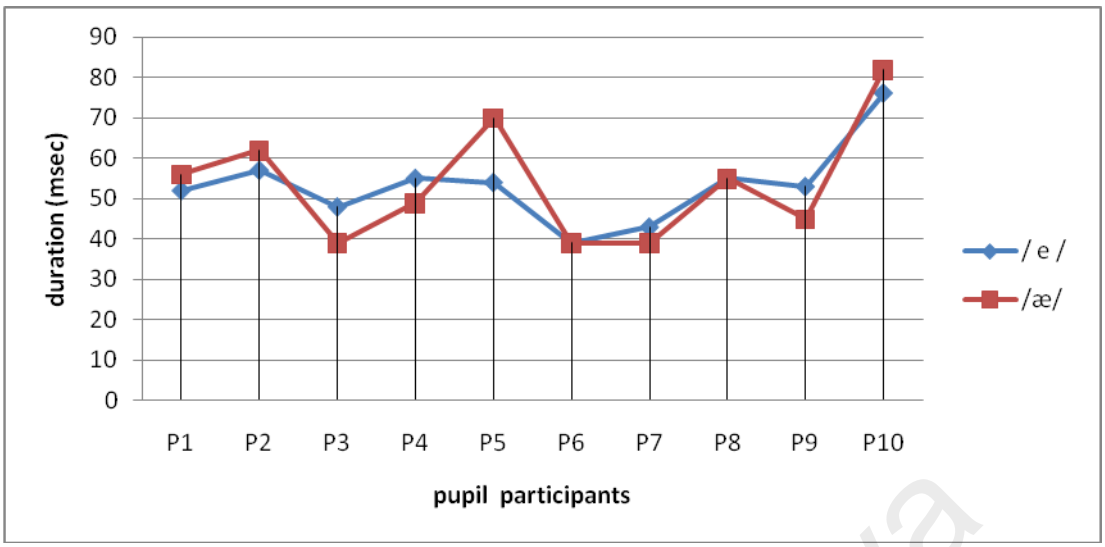


Figure 4.7: Length distinction between /e/ and /æ/ (pupils)

4.2.3 Vowel contrast between /ʌ/ and /ɑː/

For the paired vowels /ʌ/ in *cut* and /ɑː/ in *cart*, the scatter plots of the teachers and pupils in Figure 4.8 show that there is overlap between the two vowels which signify that there is a lack of contrast difference between the vowels by both participants. In comparison to SBE, it is interesting to find that both teachers and pupils (especially the teachers) produced /ʌ/ as in a more fronted position than SBE, and also in comparison to previous studies of MalE (e.g. Pillai et al., 2010).

Furthermore, independent t-tests showed no significant differences between this vowel pair for both teachers and pupils:F1 ($t(22) = 1.02$, p, .0003, $t(58) = 0.66$, p=.0034) and F2 ($t(22) = 1.05$,p=.0019, $t(58) = 0.4$, p=.0043)/ʌ/ and /ɑː/. These results confirm that

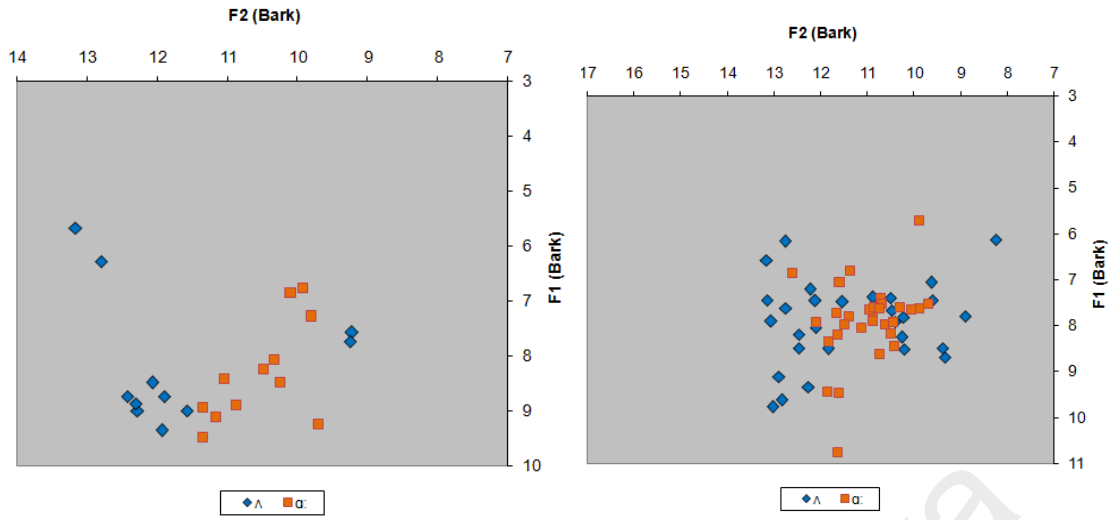


Figure 4.8: Scatter plot of /ʌ/ and /ɑː/ for teachers (left) and pupils (right)

From Table 4.9 and 4.10, it can be seen that teachers distinguished vowel length for the pair/ʌ/ and /ɑː/. In terms of short/long difference of the average length, teachers produced an average length of 40 msecs for /ʌ/ and 124 msecs for /ɑː/ with a short/long difference of 84 msecs and a ratio of .32. The pupils, on the other hand, had a short/ long difference of 20 msecs for /ʌ/ and /ɑː/ with a ratio of .67.There were significant differences in the average length for this vowel pair ($t(22) = 5.44$, $p < .001$) as well as for the pupils ($t(58) = 5.73$, $p < .001$). Furthermore, by comparing the pupils' and teachers' line graphs in Figure 4.9and 4.10 it is clearly seen that teachers and pupils had inconsistencies in the distributions for both vowels.

Table 4.9: Comparison of average duration of /ʌ/ and /ɑː/ produced by teachers (in msec)

Teacher participants	T1	T2	T3	T4	Average
/ʌ/	38	53	26	44	40
/ɑː/	122	179	74	120	124
Difference	84	126	48	76	84

Table 4.10: Comparison of average duration of /ʌ/ and /ɑː/ produced by pupils (in msec)

Pupil participants	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Average
/ʌ/	42	41	23	34	41	42	33	41	37	69	40
/ɑː/	68	57	43	63	68	56	44	73	63	68	60
Difference	26	16	20	29	27	14	11	32	26	1	20

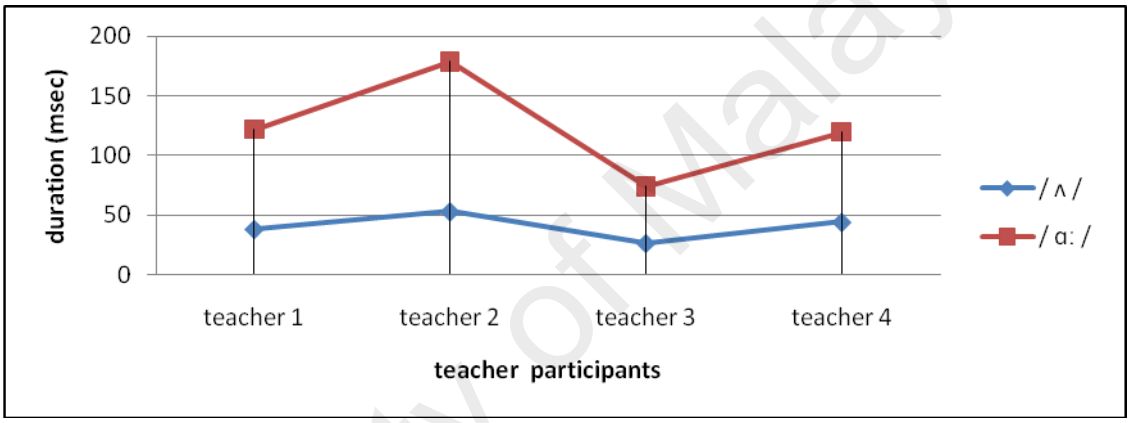


Figure 4.9: Length distinction between /ʌ/ and /ɑː/(teachers)

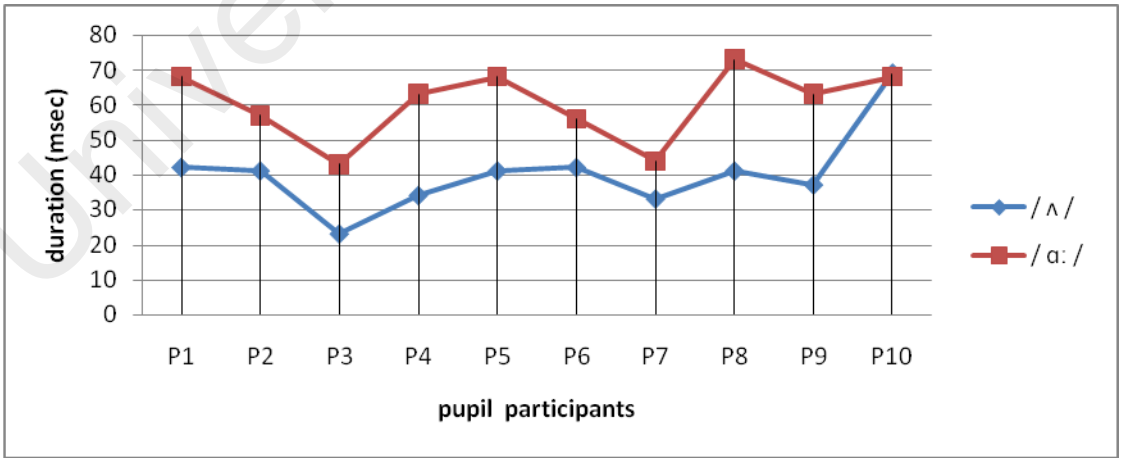


Figure 4.10: Length distinction between /ʌ/ and /ɑː/(pupils)

4.2.4 Vowel contrast between /ʊ/ and /uː/

In Figure 4.11, the scatter plots of /ʊ/ for *could* and /uː/ in *cooed* show that there is also overlap between the two vowels which signify that there is a lack of quality contrast in between the production of both vowels by both participants. In comparison to SBE, it appears that both teachers and pupils produced the vowel pair of /ʊ/ and /uː/ more centrally as well as lower compared to SBE. Similarly, the same pattern was observed in comparison to the MalE vowel chart from Pillai et al. (2010) where /ʊ/ and /uː/ were produced more peripherally compared to SBE. In addition, no significant differences were found for both teachers (F1:$t(22)=0.28$, $p= .056$, F2: $t(22)=1.23$, $p=.005$) and pupils($t(58) = 0.13$, $p=.006$,F2: $t(58) = 1.28$, $p=.008$). Thus, this shows that they conflate the two vowels.

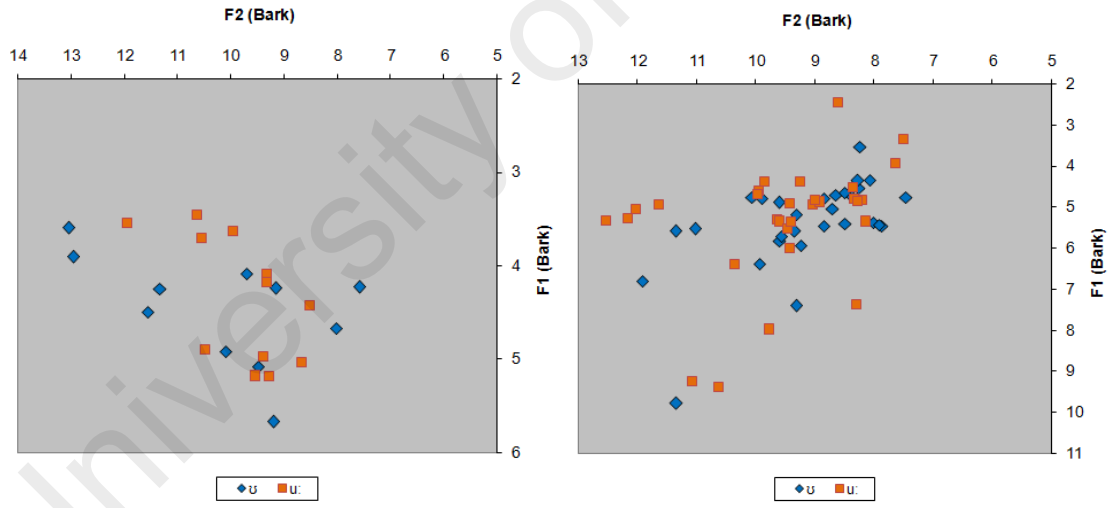


Figure 4.11: Scatter plot of /ʊ/ and /uː/ for teachers (left) and pupils (right)

Meanwhile, in terms of vowel length, Table 4.11 and 4.12, they indicate the same conclusion as the other typical vowel pairs where teachers distinguished vowel length for /ʊ/ and /uː/ more than the pupils. In fact, no significant difference was found in term of vowel length of /ʊ/ and /uː/ ($t(22) = 3.45$, $p=.02$,$t(58) = 1.17$, $p=.42$). Besides, the average length produced by the teachers for /ʊ/ is 76 msecs and /uː/is 137 msecs with a

difference of 62 m/s and a ratio of .55. On the other hand, for the pupils, there was only 6msecs of difference between the average lengths of the vowels with a ratio of .90. Based on the line graphs in Figure 4.12 and 4.13, both participants show inconsistent distribution of average duration for /ʊ/ and /uː/.

Table 4.11: Comparison of average duration of /ʊ/ and /uː/ produced by teachers (in msec)

Teacher participants	T1	T2	T3	T4	Average
/ʊ/	62	98	40	102	76
/uː/	193	182	75	98	137
Difference	131	84	35	-4	62

Table 4.12: Comparison of average duration of /ʊ/ and /uː/ produced by pupils (in msec)

Pupil participants	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Average
/ ʊ/	77	58	36	54	63	46	32	77	64	61	57
/ uː/	74	33	43	52	54	50	89	80	76	84	63
Difference	-3	-25	7	-2	-9	4	57	-3	12	23	6

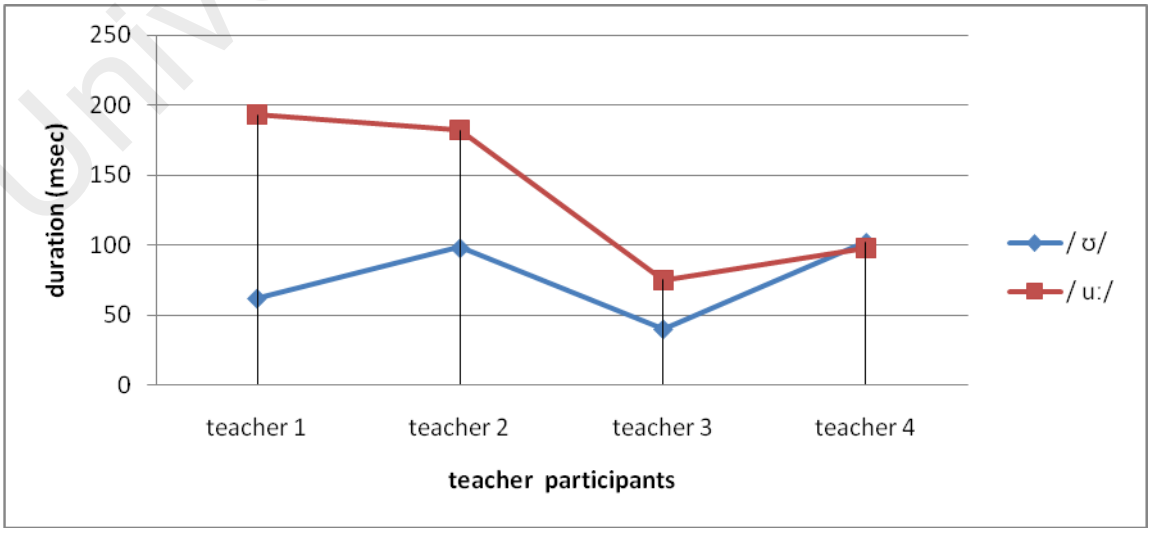


Figure 4.12: Length distinction between /ʊ/ and /uː/ (teachers)

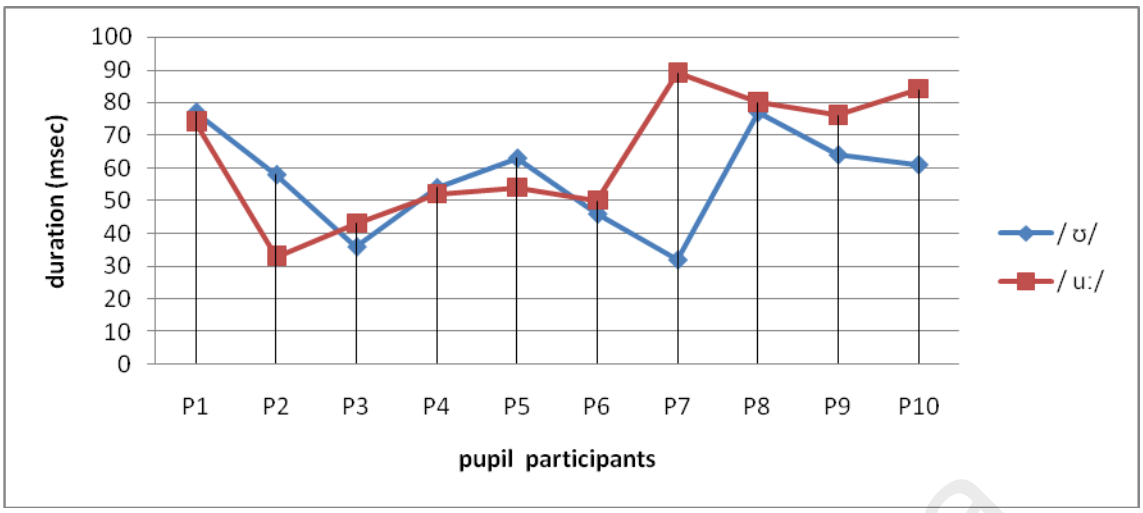


Figure 4.13: Length distinction between /ʊ/ and /uː/ (pupils)

4.2.5 Vowel contrast between /ɒ/ and /ɔː/

Figure 4.14 shows that even though the teachers show a slight contrast for both vowels there is considerable between /ɔː/ in *port* with /ɒ/ in *pot* for both teachers and pupils. Based on independent samples t-tests, there were no significant difference detected for the F1 and F2 of both teachers (F1: $t(22) = 1.04$, $p = .042$,F2: $t(22) = .44$, $p = .023$) and pupils (F1:$t(58) = 1.04$, $p = .0098$, F2:$t(58) = 1.56$, $p = .43$).This proves that both teachers and pupils produced both vowels similarly. On the other hand, in comparison to SBE by Deterding (1997) and MalE (Pillai et al., 2010), teachers and pupils produced /ɒ/ and /ɔː/in a more central and lower position.

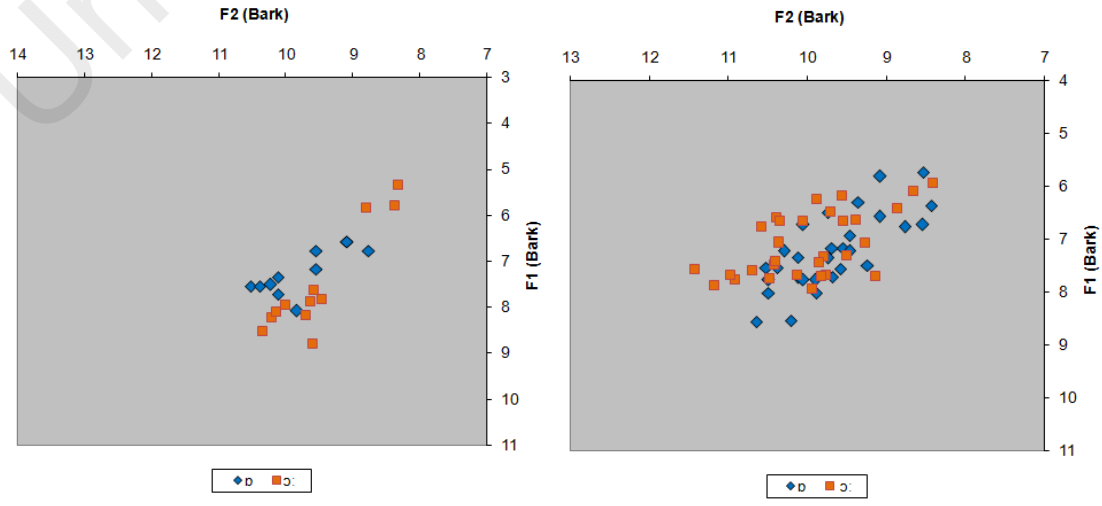


Figure 4.14: Scatter plot of /ɒ/ and /ɔː/ for teachers (left) and pupils (right)

Table 4.13 and 4.14 show the average durations between the vowel pairs /ɒ/ and /ɔː/. Based on the two tables it can be seen that the pupils obtain higher difference values for the long and short vowels compared to the teachers. The average duration for /ɒ/ produced by teachers is 120 msecs and132 msecs for /ɔː/. Meanwhile, for pupils they produced an average of 57msecsfor /ɒ/ and 143msecs for /ɔː/. The ratios between long and short vowel are 0.90 for teachers and 0.40 for pupils. The t-test results showed that there were significant differences between the average vowel length for both teachers ($t(22) = 5.15$, $p < .001$) and pupils ($t(58) = 21.97$, $p < .001$).

On the other hand, based on the line graphs in Figures 4.15 and 4.16, it is evident to note that both participants had more consistent distributions for /ɒ/ and /ɔː/.In fact, these line graphs showed the most consistent distribution compared to the other vowel in this study.

Table 4.13: Comparison of average duration /ɒ/ and /ɔː/ produced by teachers (in msec)

Teacher participants	T1	T2	T3	T4	Average
/ɒ/	123	153	88	115	120
/ɔː/	127	140	102	159	132
Difference	4	-13	14	44	12

Table 4.14: Comparison of average duration /ɒ/ and /ɔː/ produced by pupils (in msec)

Pupil participants	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Average
/ɒ/	79	59	39	54	63	73	61	71	73	66	57
/ɔː/	135	133	140	142	149	150	130	157	140	148	143
Difference	56	74	101	88	86	77	69	86	67	82	85

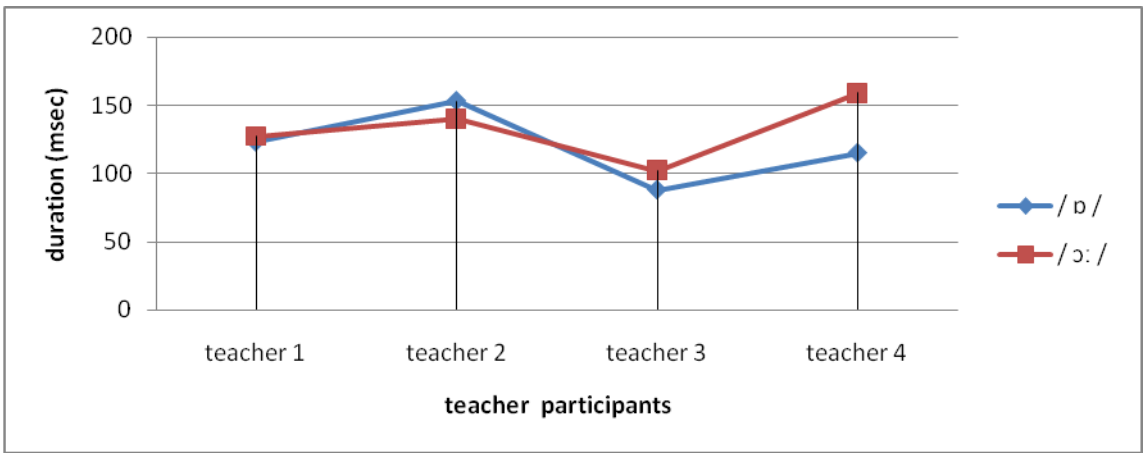


Figure 4.15: Length distinction between /ɒ/ and /ɔː/(teachers)

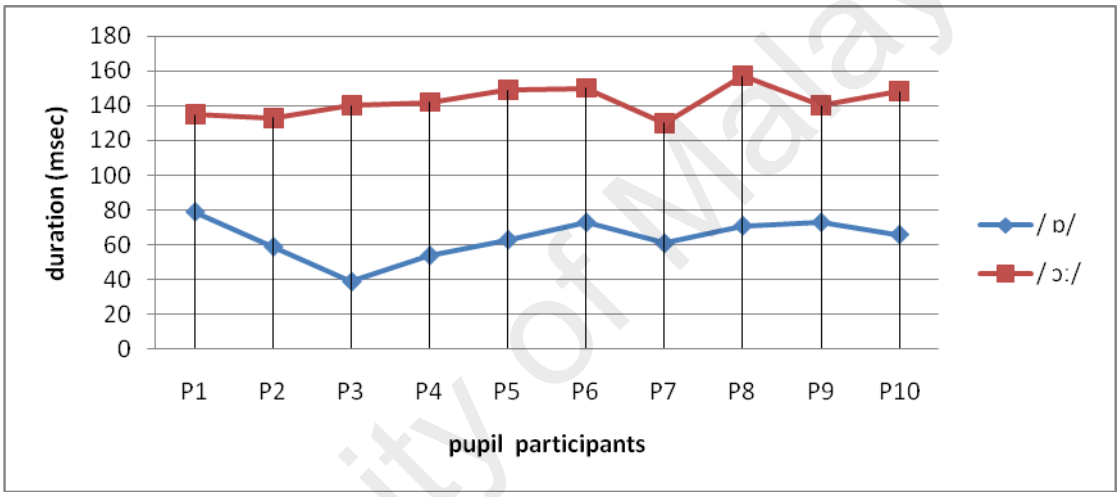


Figure 4.16: Length distinction between /ɒ/ and /ɔː/(pupils)

Figure 4.17 shows that teachers and pupils produced MalE vowels similarly as most of the vowels were overlapped and closed to each other's. Even there are contrasts for some vowels; they are not significantly different based on the t-test results. For the vowel pair /ɪ/ and /iː/ no significant differences were found between the F1 and F2 of the vowels for both teachers and pupils (Teachers F1:$t(22) = 0.36$, $p = .056$,Pupils F1 $t(58) = 1.74$, $p = .023$), Teachers F2:$t(22) = 1.05$, $p = .003$, Pupils F2$t(58) = 0.4$, $p = .002$) as well as for /e/ and /æ/:F1 ($t(22) = 1.02$, $p = .0003$, $t(58) = 0.66$, $p = .0034$) for teachers and pupils F2 (($t(22) = 1.05p = .0019$, t (58) = 0.4, $p = .0043$) for both teachers and pupils. Meanwhile, for vowel pairs /ʌ/ and /ɑː/ t test results for teachers and pupils were F1 ($t(22) = 1.02$, p, .0003, $t(58) = 0.66$, $p = .0034$) and F2 (pupils and teachers) ($t(22) =$

1.05, *p*= .0019, *t*(58) = 0.4, *p*= .0043) and (F1:*t*(22) = 0.28, *p*= .056, F2: *t*(22) = 1.23, *p*= .005) for teachers and pupils and F2 (teachers; *t*(58) = 0.13, *p*= .006,: pupils; *t*(58) = 1.28, *p*= .008) the vowel pair of /ʊ/ and /uː/. Last but not least, t test results for vowel pair /ɒ/ and /ɔː/ which were (F1: *t*(22) = 1.04, *p*= .042, F1:*t*(58) = 1.04, *p*= .0098) for teachers and pupils and (F2: *t*(22) = .44, *p*= .023, F2:*t*(58) = 1.56, *p*= .43) for both teachers and pupils.

On the other hand, for comparison of each MalE vowels the same t test results were found as there were no significant results between each vowels for both teachers and pupils for both F1 and F2 for vowel /ɪ/ F1:*t*(40) = 2.84, *p*= .007, F2 *t*(40) = 1.86, *p*= .035), vowel /iː/ F1:*t*(40) = 1.62, *p*= .005, F2 *t*(40) = 0.6, *p*= .28), vowel /e/ F1:*t*(40) = .42, *p*= .039, F2 *t*(40) = 2.94, *p*= .003) vowel /æ/: F1:*t*(40) = 1.73, *p*= .005, F2 *t*(40) = 3.18, *p*= .002), vowel /ʌ/; F1:*t*(40) = 0.54, *p*= .296 ., F2 *t*(40) = .82, *p*= .208), vowel/ɑː/ F1:*t*(40) = 1.31, *p*= .098 ., F2 *t*(40) = 2.04, *p*= .023, vowel/ʊ/:*t*(40) = 2.64, *p*= .0006 ., F2 *t*(40) = 2.87, *p*= .003, vowel/uː/, *t*(40) = 2.11, *p*= .02 ., F2 *t*(40) = .43, *p*= .334, vowel/ɒ/ *t*(40) = .73, *p*= .234 ., F2 *t*(40) = .51, *p*= .306, vowel/ɔː/ *t*(40) = 1.6, *p*= .058, F2 *t*(40) = 1.93, *p*= .03 and vowel /ɜː/ *t*(40) = 1.72, *p*= .046, F2 *t*(40) = .46, *p*= .324.

For another comparison which is vowel length produced by teachers and pupils, it is found that teacher and pupils have significant difference only in long vowels of /iː/ (*t*(40) = 6.61, *p* < .001),/ɑː/ *t*(40) = 6.35, *p* <.001, /uː/ *t*(40) = 6.44, *p* < .001 and /ɜː/ *t*(40) = 5.89, *p* < .001 but not in other MalE short vowels.

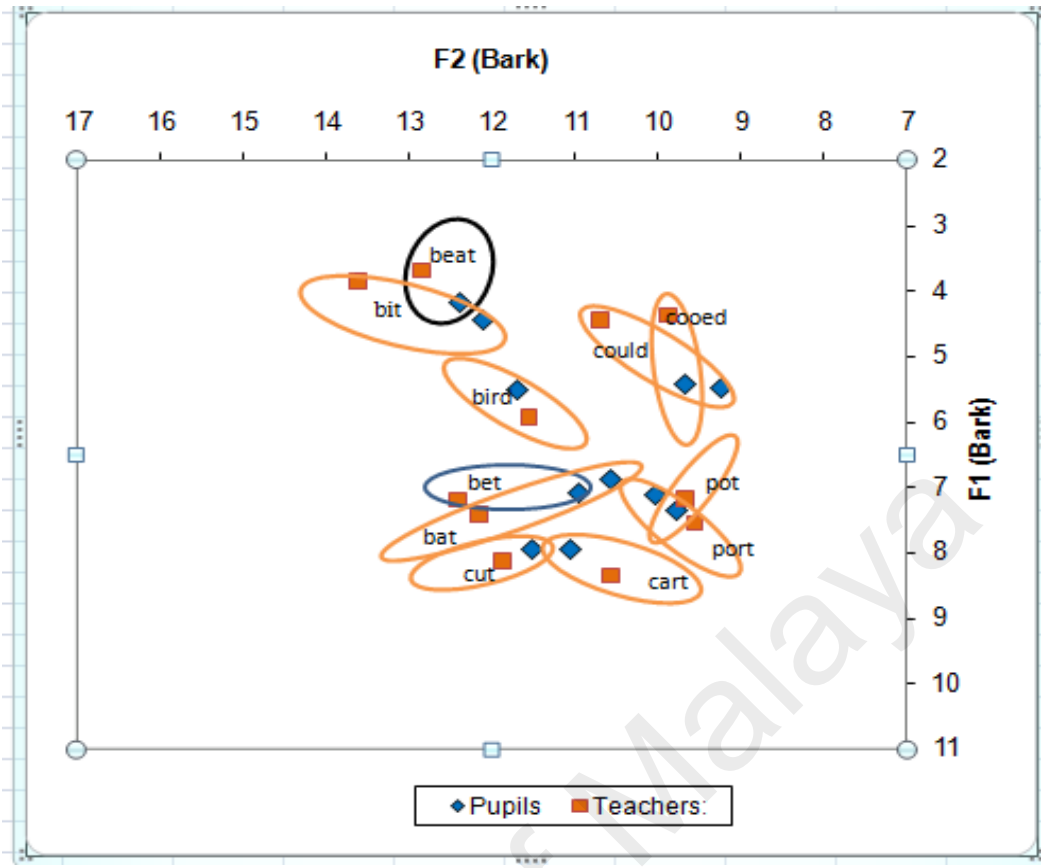


Figure 4.17: Comparison of teachers' and pupils' production of MalE vowels

4.3 A comparison with Malay vowels

Table 4.15 and Table 4.16 show the average of F1 and F2 of the Malay monophthong vowels produced by the teachers and pupils. Based on the charts, the vowels /ə/ and /e/ which are produced in the words *peta* and *petak* by the teachers are more distinguishable compared to the ones produced by the pupils which are placed close to each other in the vowel chart.

Table 4.15: Average values for F1 and F2 and Euclidean Distance of Malay vowels produced by teachers

Target vowels	Teachers						
	F1(Hz)	SDF1	F2(Hz)	SDF2	F1(Bark)	F2(Bark)	Euclidean Distance
i	469	282.09	2027	385.72	4.46	13.19	2.35
e	663	110.60	65.23	11.48	6.10	12.69	1.17
a	915	197.38	1477	212.47	7.95	11.09	1.89
o	659	105.70	1362	77.65	6.06	10.55	0.97
u	535	105.24	1181	106.63	5.04	9.59	2.20
ə*	786	337.57	1683	61.13	7.04	11.97	1.03

- Mid vowel

ED ave = 1.72

Table 4.16: Average values for F1 and F2 and Euclidean Distance of Malay vowels produced by pupils

Target vowels	Pupils						
	F1(Hz)	SDF1	F2(Hz)	SDF2	F1(Bark)	F2(Bark)	Euclidean Distance
i	429	385.72	1864	790.90	4.11	12.68	2.10
e	568	322.72	1696	644.92	5.32	12.02	0.92
a	876	239.44	1415	361.12	7.68	10.81	2.14
o	632	448.87	1250	171.89	5.85	9.97	1.20
u	515	293.67	1221	289.88	4.87	9.82	1.49
ə*	597	127.90	1582	419.18	5.56	11.56	0.42

*mid vowel

ED ave= 1.57

As shown in Figure 4.18, it is significant to note that teachers and pupils produced /ə/ differently as it emerged to be closer to /e/ compared to the one in the teachers 'production. As for the other four vowels, they appeared to be in the same vowel space as in chart by Yusnul'ain (2014) in (Figure 2.3). However, for /ə/ produced by the teachers, their production appears to be lower and more frontal compared to the pupils'

which is higher and closer to /e/. Besides, in comparison to ED for Malay vowels produced by Yusnul'ain (2014) which is 2.65, the average distance for Malay vowels from the centroid produced by teachers (ED = 1.72) and pupils (ED = 1.57) are less peripheral than the ones produced in Yusnul'ain's (2014).

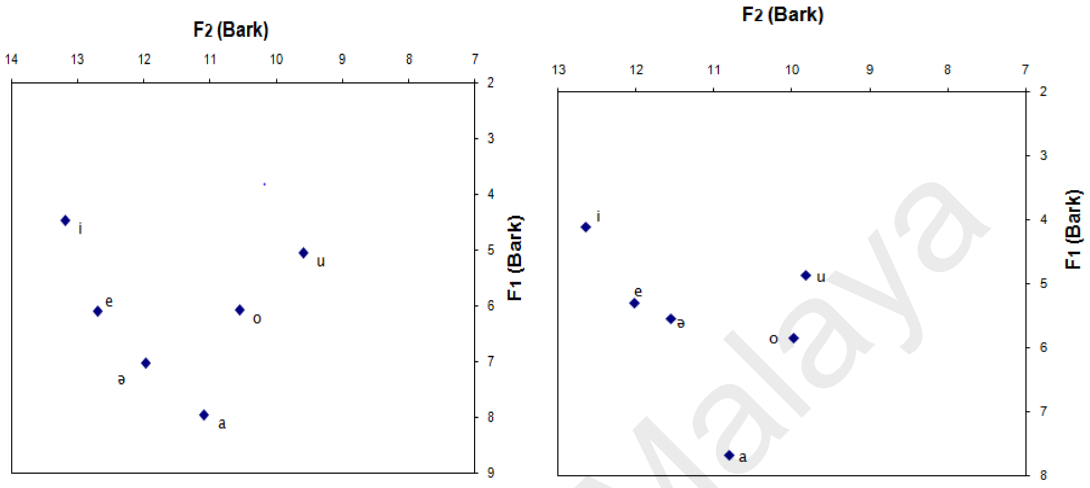


Figure 4.18: Formant Plot for Malay vowels produced by teachers (left) and pupils (right)

4.3.1 Vowel contrast between /i/ for Malay (M) and /ɪ/ for English (MalE)

To investigate whether L1 influences teachers' and pupils' production of English vowels, a comparison of equivalent English and Malay vowels produced by the both participants were examined as follows. In Figure 4.19, it is noticeable to see the teachers' vowels are scattered and there is less overlap compared to the pupils' production. It could signify that teachers contrasted the vowels of /i/ in *pita* for Malay and /ɪ/ in *bit*. However, no significant differences were found for the F1 and F2 for both teachers (F1:$t(22)= 0.86$, $p=.0199$; F2: $t(22)= 0.59$, $p= 0.280$). Thus, it can be assumed that teachers and pupils conflated the vowel /ɪ/ of MalE to /i/ of Malay.

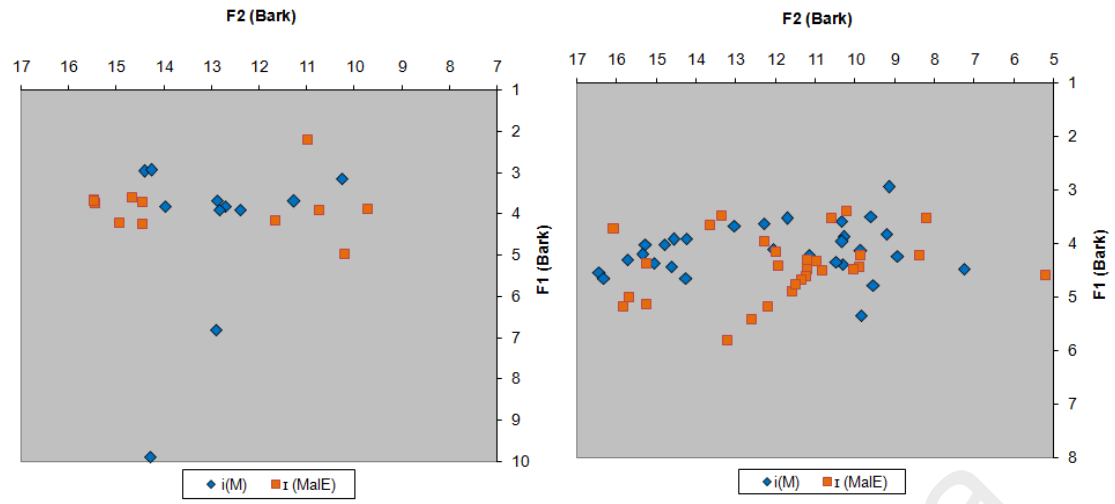


Figure 4.19: Scatter plot /i/ for Malay (M) and /ɪ/ for English (MalE) byteachers (left) and pupils (right)

4.3.2 Vowel contrast between /i/ for Malay (M) and /iː/ for English (MalE)

Meanwhile, for vowel contrast between /i/ for Malay and MalE /iː/, in Figure 4.20 there was considerable overlap as shown in the scatter plots. The t-test results indicate the same findings with no significant differences found between these two vowels for both teachers (F1:$t(22)$= 0.97, p=0.171 ; F2: $t(22)$=0.68, p= 0.251) and pupils (F1: $t(58)$= 0.41, p=0.341 ; F2: $t(58)$= 0.39, p= 0.348). This could be due to the conflation of MalE vowel /iː/ to Malay /i/.

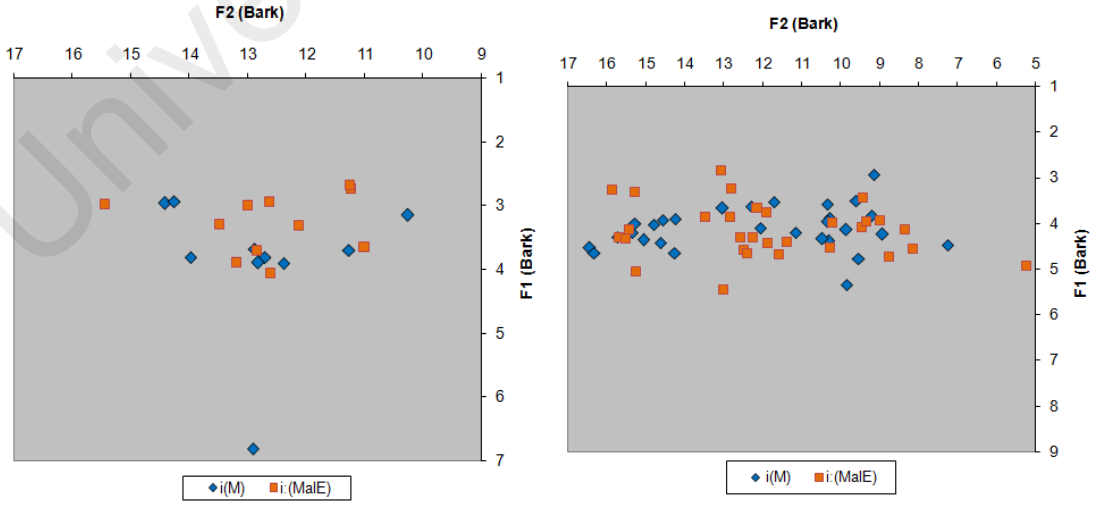


Figure 4.20 Scatter plot /i/ for Malay (M) and /iː/ for English (MaIE) by teachers (left) and pupils (right)

4.3.3 Vowel contrast between /e/ for Malay (M) and /e/ (MalE)

In Figure 4.21, it can be seen that teachers and pupils differentiate between the vowels of /e/ in *petak* for Malay and /e/ in *bet* for English as the plots show visible boundaries between both vowels with minimal overlap. T-test results found significant differences for F1of the pupils in the words of *petak* and *bet* ($t(58) = 8.9$, $p < .001$) but not in their F2 ($t(58) = 1.79$, $p = 0.039$). However, for teachers no significant differences were found for both F1 ($t(22) = 3.57$, $p = 0.0009$)and F2 in the words of *petak* and *bet* ($t(22) = 0.66$, $p = 0.258$). Since there is no /e/ in Malay, these vowels should contrast in terms of vowel height, and hence, there should be difference in terms of the F1 average values, which is why it is surprising that they do not for the teachers. In terms of F2, we would not expect much difference as both are front vowels.

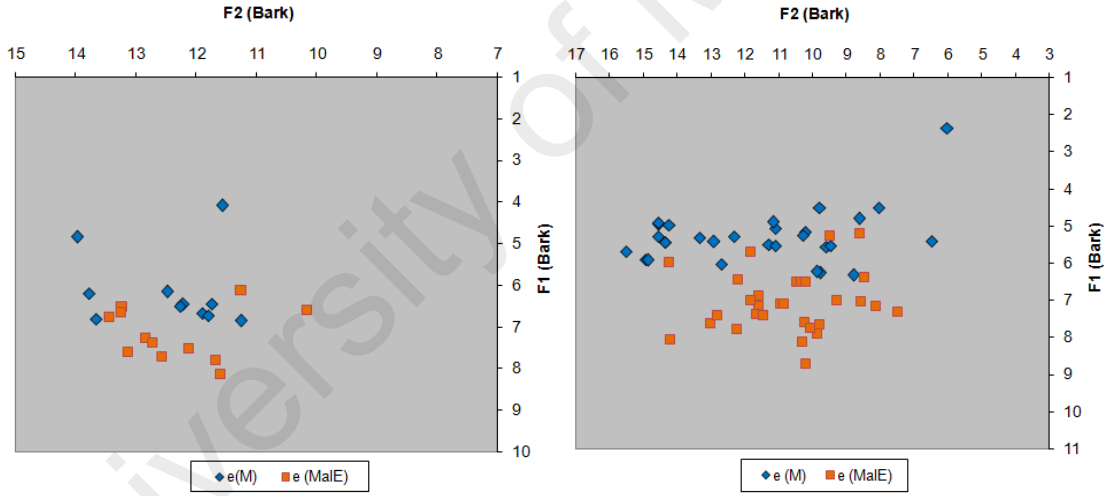


Figure 4.21: Scatter plot /e/ for Malay (M) and /e/ (MalE) by teachers (left) and pupils (right)

4.3.4 Vowel contrast between /e/ for Malay (M) and /æ/ for English (MalE)

Figure 4.22 shows a similar pattern of scatter plots for /e/ for Malay (M) and /æ/ for English (MalE). In addition, there were significant differences found in F1 for teachers ($t(22) = 4.7$, $p = < .001$) and pupils ($t(58) = 8.9$, $p < .001$) but not in their F2($t(22) = 1, 25$, $p = 0.112$; $t(58) = 2.39$, $p = 0.010$). This illustrates that both teachers and pupils

contrasted the vowels /e/ and /æ/ with significant differences in term of the vowel height of the vowels.

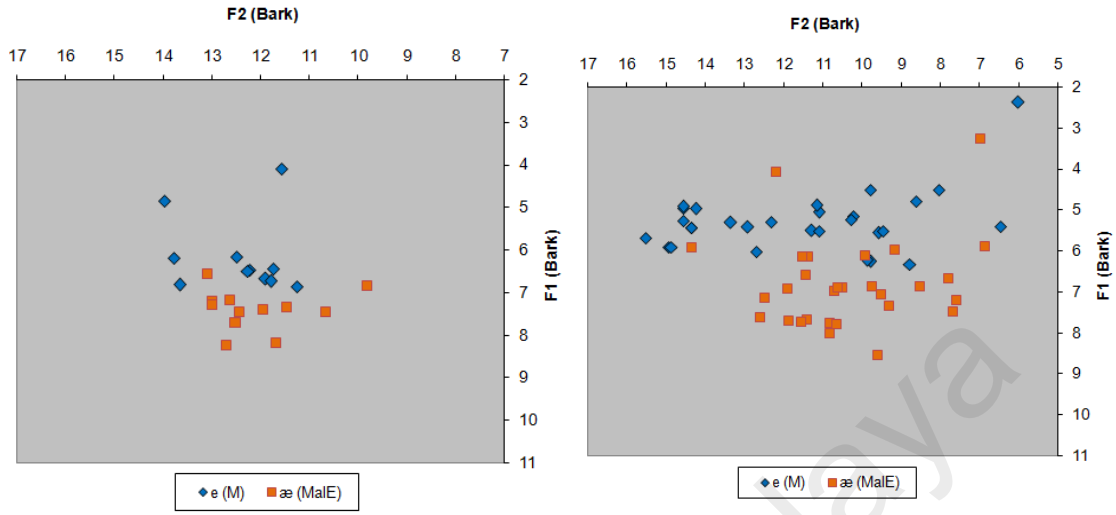


Figure 4.22: Scatter /e/ for Malay (M) and /æ/ for English (MalE) by teachers (left) and pupils (right)

4.3.5 Vowel contrast between /a/ for Malay (M) and for /ʌ/ English (MalE)

The scatter plots in Figure 4.23 suggest that teachers and pupils conflate the vowels of /ʌ/ English to /a/ in *pati* for Malay as the plots shown in the plot chart are overlapped. As anticipated, no significant differences were found for both F1 and F2 for the teachers (F1: $t(22) = 2.39$, $p = 0.010$, F2: $t(22) = 1.71$, $p = 0.050$) and pupils (F1: $t(58) = 0.88$, $p = 0.191$; F2: $t(58) = 1.73$, $p = 0.044$).

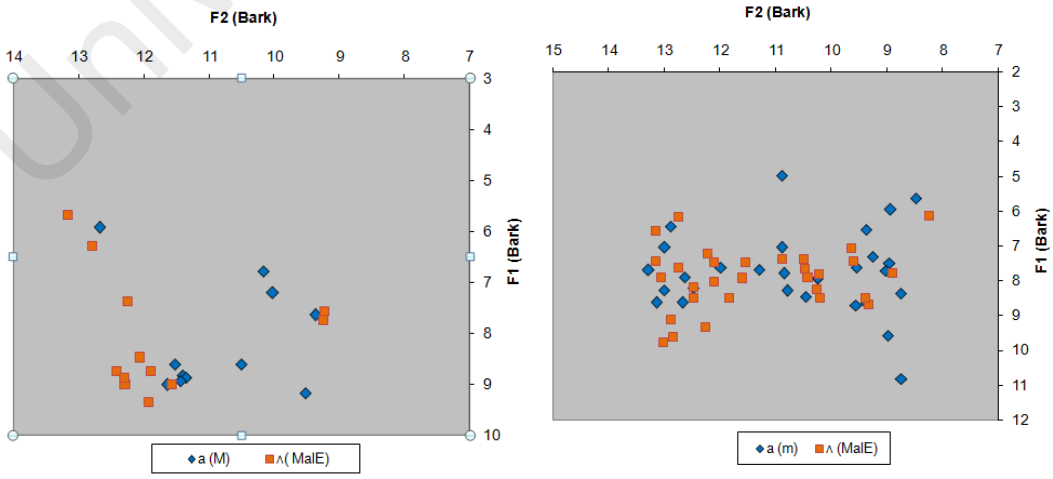


Figure 4.23: Scatter plot /a/ for Malay (M) and for /ʌ/ English (MalE) by teachers (left) and pupils (right)

4.3.6 Vowel contrast between /a/ for Malay (M) and /ɑː/ for English (MalE)

In Figure 4.24, similar to Figure 4.23, it can be seen that that the teachers and pupils conflate the vowel of /ɑː/ for English to /a/ in *pati* for Malay as vowels shown in the charts clearly overlap. As expected, no significant differences were found for both F1 and F2 for the teachers (F1: $t(22)= 0.88$, $p= 0.192$; F2: $t(22) =1.47$, $p= 0.077$) and pupils (F1: $t(58) = 0.84$, $p= 0.013$; F2: $t(58) = 0.71$, $p= 0.24$).

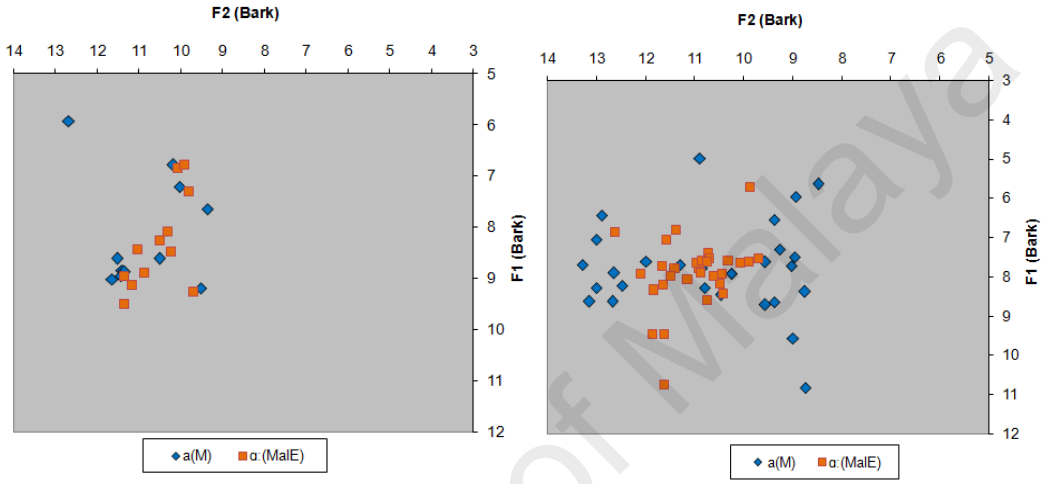


Figure 4.24: Scatter /a/ for Malay (M) and /ɑː/ for English (MalE) by teachers (left) and pupils (right)

4.3.7 Vowel contrast between /o/ for Malay (M) /ɒ/ for English (MalE)

From Figure 4.25, based on the scatter plots and t-test results, the vowels /o/ in *kota* and /ɒ/ in *pot*, it appears the two vowels are distinguished. Significant differences in theF2 of the teachers ($t(22) =1.42, p<.001$), and also in F1 of the pupils ($t(58) =8.03, p<.001$. To conclude, both teachers and pupils do not conflate the vowels /ɒ/ from English to/o/ in Malay, which is a higher vowel compared to /ɒ/. This phenomenon is similar to what is illustrated in Figures 4.21 and 4.22.

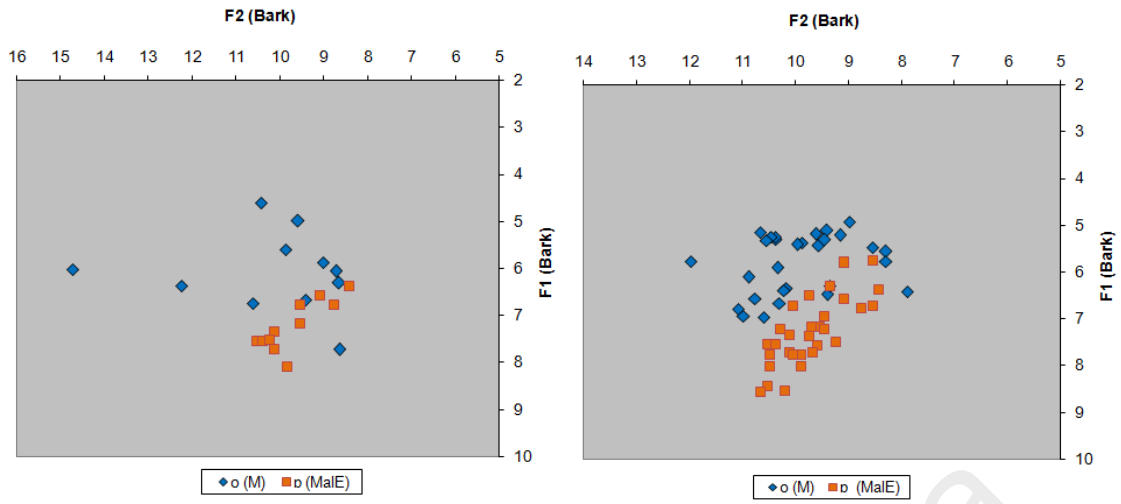


Figure 4.25: Scatter plot /o/ for Malay (M) and /ɒ/ (MalE) by teachers (left) and pupils (right)

4.3.8 Vowel contrast between /o/ for Malay (M) and /ɔː/ for English (MalE)

In Figure 4.26, it is shown that teachers and pupils produced /ɔː/ in *port* and /o/ in *kota* differently as the plots show scattered distributions of in the vowel space. This is supported by the t-test results whereby there were significant differences between found in F1 of the teachers ($t(22) = 1.28$, $p<0001$) but not in the F2($t(22) = 1.26$, $p= 0.0003$), and also in F1 of the pupils ($t(58) = 8.6$, $p< .001$, and not in their F2 ($t(58) = 1.11$, $p= 0.135$). Thus, both teachers and pupils do not conflate the vowels /ɔː/ from English to the higher back vowel /o/ in Malay. This phenomenon is similar to the one shown in Figure 4.25

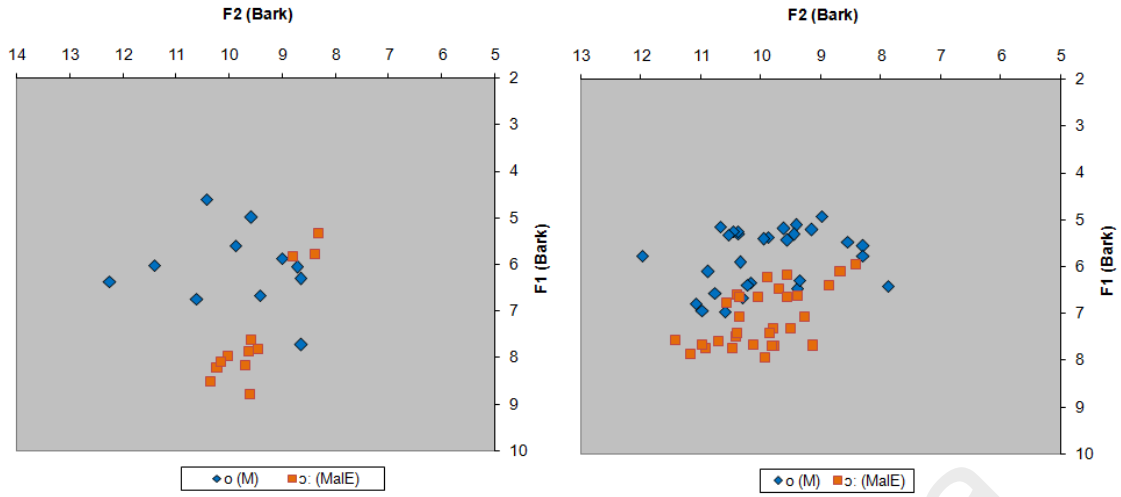


Figure 4.26: Scatter plot /o/ for Malay (M) and /ɔː/ for English (MalE) by teachers (left) and pupils (right)

4.3.9 Vowel contrast between /u/ for Malay (M) and /ʊ/ for English (MalE)

Figure 4.27 implies that teachers and pupils conflate the vowels of /ʊ/ in *could* for English to the vowel of /u/ in *kutu* for Malay as the plots show overlap plots. This finding is supported by the results of the t-tests which found no significant differences for F1 and F2 for both teachers (F1: $t(22) = 1.92$, $p = 0.03$; F2: $t(22) = 1.44$, $p = 0.081$) and pupils (F1: $t(58) = 2.12$, $p = 0.019$; F2: $t(58) = 1.58$, $p = 0.059$).

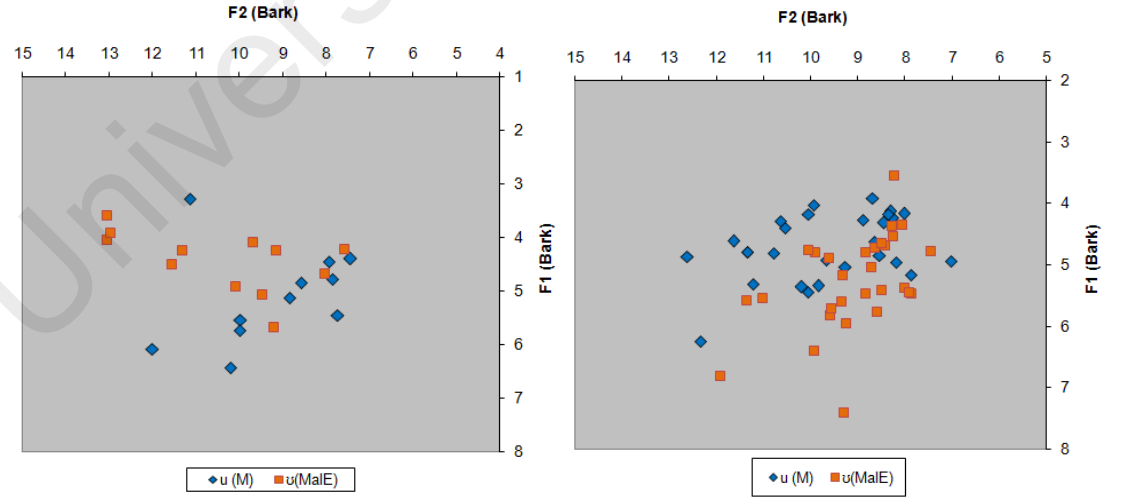


Figure 4.27: Scatter plot /u/ for Malay (M) and /ʊ/ for English (MalE) by teachers (left) and pupils (right)

4.3.10 Vowel contrast between /u/ for Malay (M) and /uː/ for English (MalE)

Figure 4.28 suggests that teachers and pupils conflate the vowels of /uː/ for English to the vowel of /u/ in *kutu* for Malay based on the overlapping vowels in both scatter plots. As anticipated, no significant differences were found for the average F1 and F2 values for both teachers (F1: $t(22)= 2.05$, $p= 0.026$; F2: $t(22)= 0.48$, $p=0.317$) and pupils (F1: $t(58)= 1.63$, $p= 0.054$; F2: $t(58)=0.37$, $p= 0.356$).

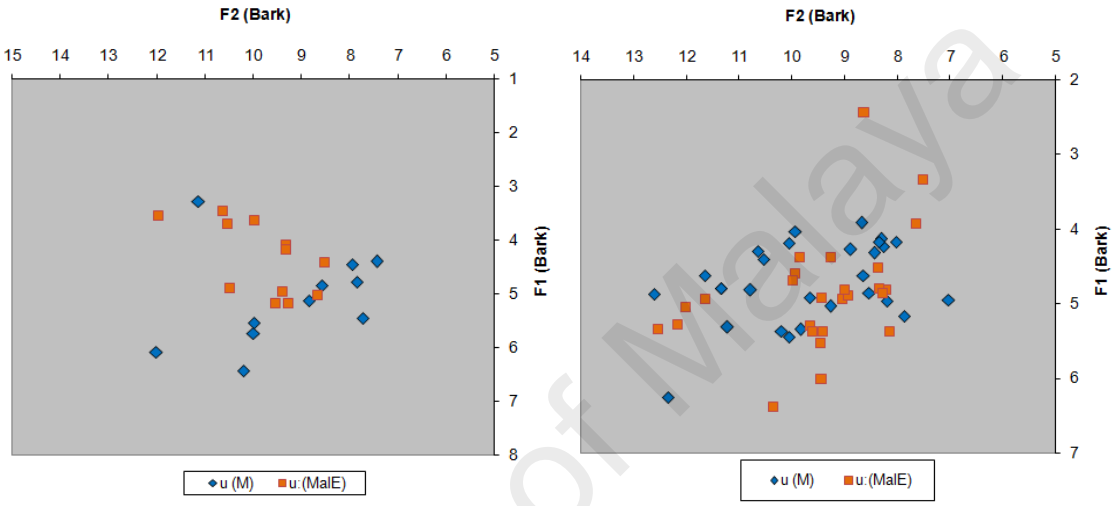


Figure 4.28: Scatter plot /u/ for Malay (M) and /uː/ for English (MalE) by teachers (left) and pupils (right)

4.3.11 Vowel contrast between /ə/ for Malay (M) and /ɜː/ for English (MalE)

For Figure 4.29, the plots show that both overlaps between the vowels for teachers and pupils for /ə/ (M) in *peta* to the vowel of /ɜː/ in *bird* for English. However, significant differences were found in the average F1 of the teachers ($t(22) =1.42$, $p< .001$) and the F2 of the pupils ($t(58) =0.353$, $p< .001$).

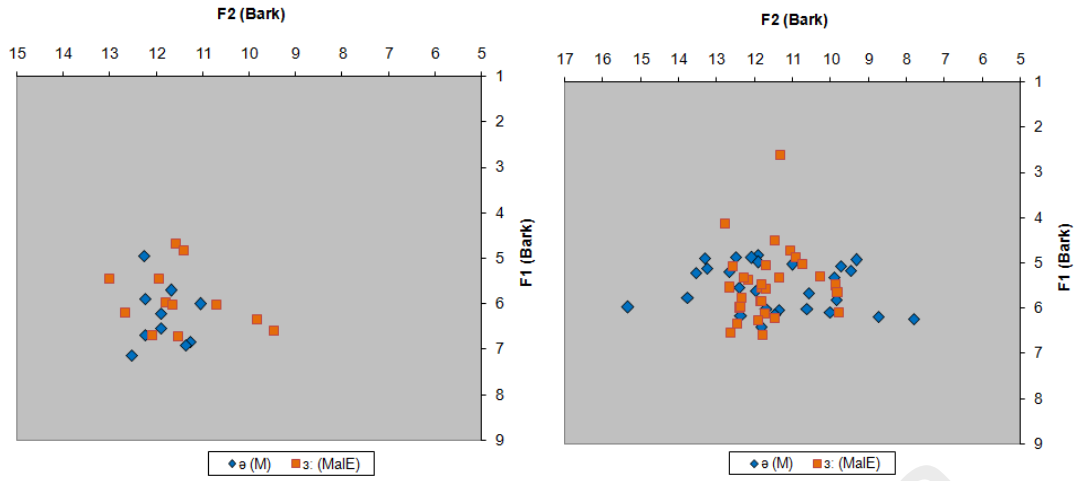


Figure 4.29: Scatter plot /ə/ for Malay (M) /ɜː/ and for English (MalE) by teachers (left) and pupils (right)

On the other hand, for the comparison of English (MalE) long vowels and Malay, based on independent samples t-tests, there were significant differences between the average lengths for the English vowels produced by teachers for Malay /a/ and MalE /ɑː/(t(58)=5.66,p< .001),Malay /o/ and MalE /ɔː/(t(58)= 6.71,p< .001),Malay /u/ and MalE /uː/(t(58) = 5.25,p< .001) and Malay /ə/ and MalE /ɜː/ (t(58)=10.66,p< .001).This could be an indication that the teachers produced the English long vowels longer as they distinguished the long vowels, /iː/, /ɑː/, /ɔː/, /uː/ and /ɜː/,from the shorter ones in the pair. However, there were no significant differences found for the pupils indicating that the since pupils did not lengthen these vowels English.

4.4 Discussion

The findings suggest that both teachers and pupils tend to conflate vowel pairs in terms of quality. This situation is similar to previous studies such as in Zuraidah (2000), Pillai et al. (2010) and Tan and Low (2010) which validates the fact that MaIE speakers do not contrast English monophthongs in terms of quality. This is supposed to be related to influences of L1 to the L2 as claimed by Dahaman (1994), which he posits that it could be due to the different vowel inventories in Malay which does not have long

vowels, and where there is not vowel contrast for quality and length. Moreover, in the case of MalE, the influence of Malay as the L1 for majority of Malays may be an influencing factor in the pronunciation of MalE. This is because Malay has a smaller vowel inventory with no vowel length distinction (Nair-Venugopal, 2000; Soo, 1990;Zuraidah, 1997). In addition, Zuraidah (1997) states that Malay vowels also tend to have equal duration compared to SBE vowels. Hence, long vowels which do not exist in Malay tend to be pronounced similar to Malay vowels in terms of quality.

Despite that, the findings show that the teachers tend to maintain the length of the English long vowels in typical vowel pairs, even though Malay does not have vowel length contrast. This phenomenon of teachers, who reconsidered as fluent speakers of English, distinguishing vowel length, was also found in other studies, such as in Subramaniam and Darus (2009) and Pillai et al (2010). Fluent speakers of MalE appear to contrast their vowels in terms of duration even though they may not do so for vowel quality. In the case of the teachers in this study, perhaps this is because they are aware of the vowel length discrimination in English compared to the pupils.

Meanwhile, the fact that pupils had significant difference in term of maintaining vowel length for the vowel pairs /ɒ/ and /ɔː/, this may be an effect of the influence of rhoticity in the words that contained the consonant *r* in the spelling. Based on Figures 4.15 and 4.16 it is evident to note that the ratio of vowel pairs of *pot –port* and *cut-cart* were smaller ratio numbers compared to vowel pairs in *could-cooed* and *bit-beat*. This means that the rhotisised words could have influences the pronunciation the vowel, i.e., causing it to lengthen. This phenomenon which is known as compensatory lengthening is explained by Crowley (1997). For this study, it is likely to be apparent amongst the pupils compared to the teachers. For instance, the words *port*, *bird* and *cart* are likely to be lengthened due to the pronunciation of the *r* in the spelling, found more commonly among younger speakers (Jayalapan, 2016; Pillai, 2015).

Based on Schneider's Dynamic Model of Postcolonial Englishes, Schneider (2007) suggests that MalE is in the nativisation phase where the existence of 'phonological innovations which is related to transmission of L1 to L2 or vice versa. Besides that, anon-native variety shifts to an endonormative orientation due the spread of systematic and standardized phonological divergences from the native languages which are distinct in terms of linguistic features.

The findings also indicate that most of the conflated vowels were produced similar to Malay ones except for Malay /o/ and /e/ which were contrasted to the conflated /ɒ/ and /ɔː/, and /e/and /æ/. It is interesting to note that in spite of the fact that both teachers and pupils conflated the English vowels /ɒ/ and /e/ to Malay ones which are /o/ and /e/, what had happened is that they have conflated Malay vowels of /o/ and /e/ to MalE /ɒ/ and /ɛ/.This situation would relate to the status of MalE in Malaysia as an L2 which is widely used in Malaysia which gives it a status in the society. Hence, this peculiar pattern from the findings suggests that MalE is developing in a way that is not necessarily influenced by Malay.

4.5 Conclusion

Based on the results presented in this chapter, the indication is that both teachers and pupils tend to conflate vowel pairs in terms of quality which is similar to the findings in previous studies. Most monophthongs were generally produced similarly by teachers and pupils for both short and long vowels of English. On the contrary, the teachers tended to contrast vowel length. Meanwhile, for vowel contrast between English and Malay vowels monophthongs, most of the conflated vowels were produced similar to the equivalent Malays ones except for Malay /o/ and /e/ which were contrasted to the conflated English/ɒ/ and /ɛ/. There were no significant differences found in term of

vowel quality of MalE produced by teachers and pupils which suggest that they produced MalE vowels similarly.

CHAPTER 5: CONCLUSION

5.1 Introduction

This chapter presents a summary of the findings based on the results gathered in Chapter 4. Besides that, the relation of the findings to the four research questions will also be explained in detail as well as the implication of the study. In addition, recommendations for future studies are also included at the end of this chapter.

5.2 Summary of research questions

This study was set out to investigate the production of English monopthongs of Malay female pupils and teachers in a primary school in Klang Valley. From the findings, it could be concluded that MaIE speakers do not distinguish the vowel quality but the teachers appeared to maintain the vowel length.

A summary for the findings related to the four research questions are presented in the following sections. The first two research questions focus on the description of the vowels based on their acoustic properties. Meanwhile, the third and fourth questions are aimed at examining how closely the vowels produced by the participants resemble those in Malay, the first language of the participants and to each other's productions.

5.4.1 Research question 1: What are the characteristics of English monophthongs produced by Malay primary school pupils and their teachers?

From the findings, it is evident that Malay female teachers and pupils produced monophthong vowels without discriminating each vowel in terms of quality. Although there are attempts to maintain the vowel length especially by the teachers, it is not

significant for most of the typical vowel t-test results show that both teachers and pupils distinguished vowel length only in long vowel /ɔː/.

Based on the vowel plots that were generated based on the F1 and F2 values, it is evident that they are similar to the study by Pillai, Zuraidah, Knowles (2010) with a few adjustments of the position of certain vowels. In comparison, the teachers' vowel plot is quite similar to their study especially for the vowels of /ʊ/, /uː/, /ʌ/, /ɔː/ and /ə/.The pupils' vowels were also similar to the same study but with several adjustments as the vowels /ɒ/ and /æ/produced by the pupils were located in more central position. This situation might be due to the different levels of English proficiency of the participants. Findings from Pillai, Zuraidah, Knowles (2010) are similar to the teachers' in this study as the respondents are both fluent speakers. Pillai, Zuraidah, Knowles (2010) collected their data from fluent speakers who were undergraduates at a tertiary institution, and in this current study the teacher participants are all TESL degree holders.

Referring to the vowel plots of MalE generated from the averages of F1 and F2 of each vowel, it is clear that teachers' vowel plot is more dispersed compared to the pupils. The pupils tend to conflate the vowel pairs but the teachers contrasted some of the vowels pairs /ɪ/ - /iː/, /ʊ/ - /uː/ and /ʌ/, /ɑː/. However, based on t-tests, there was no significant difference obtained to prove the above claims.

5.4.2 Research question 2: To what extent are the vowels contrasted in terms of vowel quality and vowel length in typical vowel pairs?

As mentioned previously, the findings show that both teachers and pupils did not contrast MaIE vowels in terms of quality. Based on the vowels plot and also the formant charts, teachers and pupils have produced the vowel pairs quite similar to each other in terms of quality. They tend to conflate all typical vowel pairs of/ɪ/ - /iː/, /e/-/æ/,/ʌ/-/ɑː/, /ʊ/-/uː/ and /ɒ/-/ɔː/ to the equivalent Malay vowels except for /o/ and/e/ as depicted in

the format charts of each vowel pairs comparison. All typical vowel pairs were overlapped which indicate that they were conflated. In fact, the t-tests also did not show any significance result to prove that teachers and pupils contrast the vowel quality of each pair.

Besides that, in terms of vowel length, based on the ratios of each vowel pair, it is evident that teachers tended to discriminate the vowels in the typical vowel pairs than the pupils. However, the t-test results show that there are no significant differences in the production of most English long vowels and short vowels among both teachers and pupils. The only significance difference appeared in the long vowel of /ɔː/ in the /ɒ/-/ɔː/ for both teachers and pupils.

5.4.3 Research question 3: To what extent are the pupils' productions similar to that of the teachers'?

Based on the t-test results they indicate that teachers and pupils produced the vowels in each pair similarly. This is because there was no significant difference detected in the quality of the vowels. Both teachers and pupils appeared to conflate the equivalent English vowels their L1 vowels. Nevertheless, in terms of vowel length, teachers tended to distinguish the vowels based on the ratios of the average duration. In addition, Figure 4.17 too shows that teachers and pupils produced MalE monophthongs similarly.

5.4.4 Research question 4: How do these vowels compare to the Standard Malay vowels produced by the same participants?

Based from tables (Tables 4.15 and 4.16) and figures (Figures 4.18 to 4.29) in Chapter 4, both teachers and pupils produced the equivalent English vowels similar to the Malay ones. T test results too indicate the same verdict. Both teachers and pupils,

however, did not conflate the English vowel pairs /ɒ/-/ɔː/ to Malay/o/, and English vowel pair /e/-/æ/ to Malay /e/, but they conflated them to the conflated English vowels which were /ɒ/ and /ɛ/.

5.5 Significance of the study

Studies of the Malaysian English is relatively scarce, hence there are limited data available compared to other related studies. In fact, there is a lack of published data available on the instrumental analysis of the English monophthong vowels produced by the ESL primary school pupils as well as their current descriptions. Hence, this study contributes data obtained from the instrumental analysis which would shed light as well as provide a platform or guidance to other researchers who are interested in this area of study to understand the patterns of English monophthongs by primary school pupils and its influences.

Apart from that, the researcher also hopes that this study will help the stakeholders involved in building the curriculum to build a better pedagogical model for the teaching and learning of English as a second language in Malaysia. It is also hoped that the findings of this research would be able to assist teachers to understand and acknowledge the characteristics of the production of English monophthongs among the female pupils while preparing the materials and lesson planning for the teaching and learning process of English especially in teaching of pronunciations so that it will no longer be side lined. Besides, hopefully it would also boost their confidence to teach pronunciation in the classroom effectively.

5.6 Limitations of the study

The results of the study cannot be generalized to every primary school pupil as the respondents of this study were selected according to their performance in English in order to ensure that all of them were at the same level of proficiency. In addition, the respondents were limited to only ten Malay pupils and four teachers who encompass one gender and ethnic group.

5.7 Recommendation for future studies

Firstly, future studies of MalE vowel production should use a wider range of words and participants. Data from different ethnic groups with different language backgrounds and from different age groups in Malaysia should be gathered and analysed in order to understand this area in greater depth.

Apart from that, as rhoticity amongst the pupils were discovered in this study, thus future studies should also look into this and its influence on the production of vowels in MalE .

5.8 Concluding remarks

In conclusion, this acoustic study provides an instrumental analysis of the production of English monophthongs by female teachers and pupils. By reading two wordlists of BM and English, the data collected during the recordings were analysed and discussed. The findings were also compared to the previous studies as well as neighbouring varieties of English. The results of this study show that both teachers and pupils did not contrast the English vowel pairs either in terms of quality. However, the teachers tend to maintain the vowel length but with inconsistencies. They also conflated the English vowels with the Malay ones with an exception of vowel /o/ and /e/ which is conflated to the MalE /ɒ/ and /ɛ/.

REFERENCES

Abdullah Hassan. (2005). *Linguistik Am. Siri Pengajaran dan Pembelajaran Bahasa Melayu.* Selangor: PTS Professional Publishing Sdn. Bhd.

AdiYasran Abdul Aziz. (2011). Suku Kata Dasar Dialek Kelantan Berdasarkan Teori Optimaliti. *GEMA Online Journal of Language Studies, 11*(2), 121-136.

Ashby, M. (1989). A note on the vowel quadrilateral. *Journal of the International Phonetic Association*, *19*(02), 83-88.

Asmah Haji Omar (1980). Linguistic Consideration in the Treatment of Place-Names'. *Malaysian Geographers, 2,* 1-10.

Asmah Haji Omar. 1985. *Susur galur Bahasa Melayu* [Genealogy of Malay]. Kuala Lumpur: Dewan Bahasa dan Pustaka

Asmah Haji Omar. (1988). *Susur Galur Bahasa Melayu.* Kuala Lumpur: Dewan Bahasa dan Pustaka.

Asmah Haji Omar (1993). The first congress for Malay. In *The Earliest Stage of Planning: The "First Congress" Phenomenon. Berlin: Mouton de Gruyter* (pp. 181-198).

Asmah Haji Omar (2000). Managing languages in conflict situation: A special reference

Baker, W. (2011). Intercultural awareness: Modelling an understanding of cultures in intercultural communication through English as a lingua franca. *Language and Intercultural Communication, 11*(3), 197-214.

Baskaran, Loga M. (1994) The Malaysian English mosaic. *English Today 37*, 27–32.

Baskaran, L. (2004). ―Malaysian English phonology‖. In Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton, (Eds.). *A Handbook of Varieties of English. A Multimedia Reference Tool.* Vol. 1: *Phonology*. (pp. 47- 56). Berlin, New York: Mouton de Gruyter.

Baskaran, L. M. (2005). *A Malaysian English Primer: Aspects of Malaysian English*

Features. University of Malaya Press.

Boersma, P., & Weenink, D. (2016). Praat: Doing Phonetics by Computer.Amsterdam, Netherlands. Retrieved fromhttp://www.fon.hum.uva.nl/praat/

Bohn, O. S., & Flege, J. E. (1992). The production of new and similar vowels by adult German learners of English. *Studies in Second Language Acquisition*, *14*(02),

Chalaya, P. (2007). *Lexical borrowings from Malaysian Substrate Language in local English dailies.* Unpublished Masters dissertation, University of Malaya.

Clark, John; Yallop, Colin.(1992). *Introduction to phonetics and phonology*.Oxford: Blackwell

Hammer, C. S., Jia, G., & Uchikoshi, Y. (2011). Language and literacy development of dual language learners growing up in the United States: A call for research. *Child Development Perspectives*, *5*(1), 4-9

Clements, G. N., & Keyser, S. J. (1983). Cv phonology. a generative theory of the syllabe. *Linguistic Inquiry Monographs Cambridge, Mass.*, (9), 1-191.

Creswell, J. W. (2012). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.

David, M. K. (2000). T*he language of Malaysian youth - an exploratory study*. In Halimah Mohd Said, & Keat, S. N. (Eds.), *English is an Asian language: the Malaysian context* (64-72). Kuala Lumpur and Sydney: Persatuan Bahasa Moden Malaysia and The Macquarie Library Pty Ltd

Derwing, T.M. (2008). *Curriculum issues in teaching pronunciation to second language learners*. In J.G. Hansen Edwards & M. L. Zampini (Eds.), p*honology and second language acquisition studies in bilingualism*(pp. 347-369).Amsterdam: John Benjamins Publishing Company.

Deterding, D. (2003). An instrumental study of the monophthong vowels of Singapore

English. *English World-Wide*, *24*(1), 1-16.

Deterding, D., Wong, J., & Kirkpatrick, A. (2008). The pronunciation of Hong Kong English. *English World-Wide*, *29*(2), 148-175.

Doshi, A. (2012). Changing tides: The story of English language in Malaysia. *English in multicultural Malaysia: Pedagogy and applied research*, 15-30.

Essen, O. (1979). *Allgemeine und angewandte Phonetik.* Berlin: Akademie Verlag.

Fant, G. (1960). *Theory of speech production*. The Hague, Netherlands: Mouton De Gruyter.

Flege, J. E. (1995). Second Language Speech Learning Theory, Findings, and Problems.In W. Strange, *Speech Perception and Linguistic Experience: Issues in Cross-Language Research* (pp. 233-277). Timonium, MD: York Press.

Foote, R. (2011). Integrated knowledge of agreement in early and late English–Spanish bilinguals. *Applied Psycholinguistics*, *32*(01), 187-220.

Gill, S. K. (2002). Language policy and English language standards in Malaysia: Nationalism versus pragmatism. *Journal of Asian Pacific Communication*, *12*(1), 95-115.

Graddol, D. (2006). English next. British Council. Retrieved on October 15, 2015 from http://www.britishcouncil.org/files/documents/learning-research-english-next.pdf

Grimson, A., & Cruttenden, A. (1994). *Gimson's pronunciation of English (5th ed.). London:* Edward Arnold.

Gut, U. (2010). Cross-linguistic influence in L3 phonological acquisition. *International Journal of Multilingualism*, *7*(1), 19-38.

Harrington, J. (2010). *Phonetic analysis of speech corpora.* West Sussex, UK: Blackwell Publishing

Hayward, Katrina (2000). Experiential phonetics: Harlow. Longman.

Hubais, A., & Pillai, S. (2010). An instrumental analysis of English vowels produced by Omanis. *Journal of Modern Languages*, *20*, 1-18.

Jamin, S. (2010). Correct phonics to be part of new English curriculum. *Kamus Dewan* (4th ed.). (2005). Kuala Lumpur: Dewan Bahasa dan Pustaka.

Kent, R. D., & Read, C. (2002). *Acoustic Analysis of Speech* (2nd ed.). Albany, New York: Thomson Learning.

Kirkpatrick, Andy. 2007. *World Englishes: Implications for International Communication and English Language Teaching*. Cambridge: Cambridge University Press.

Ladefoged, Peter. 2001. *Vowels and Consonants: An Introduction to the Sounds of Language*. Ox-ford: Blackwell.

Ladefoged, P. (2003). *Phonetic Data Analysis: An Introduction to Instrumental Phonetic Fieldwork.* Oxford: Blackwell

Lei, W., & Jun, C. (2007). A study of L1 transfer in the second language acquisition [J]. *Journal of Xi'an International University*, *4*, 022.

Littlewood, W. (1984). *Foreign and Second Language Learning. Language-acquisition research and its implications for the classroom.* Cambridge: CambridgeUniversity Press.

Lowenberg, P. H. (1986). Non-native varieties of English: Nativization, norms, and implications. *Studies in Second Language Acquisition*, *8*(01), 1-18.

Malakar, R. (2004). *An analysis of lexical borrowing in English dailies in Malaysia.* Unpublished Masters dissertation, University of Malaya

Maniam, R. D. (1998). *Tolerance Towards Malaysian English As a New Variety of English* (Doctoral dissertation, Universiti Putra Malaysia).

Mariam, I.(2015). *An acoustic study of Nigerian English vowels produced by Hausa speakers.* Unpublished Masters dissertation, University of Malaya.

Mardian Shah Omar. (2005). Perbezaan bunyi vokal dan konsonan: Satu analisis spektografik. *Proceedings of the Seminar Kebangsaan Linguistik (SKALI 2005)*(pp. 1-9). Bangi, Malaysia.

McMahon, A. M. (2002). *An introduction to English phonology* (Vol. 22). Edinburgh: Edinburgh University Press.

Melchers, G., & Shaw, P. (2003). World Englishes: An Introduction.

Morais, E. (2000). Talking in English but thinking like a Malaysian: Insights from a car assembly plant. *Halimah & Ng*, 90-106.

Nair-Venugopal, S. (2000). English, identity and the Malaysian workplace. *World Englishes*, *19*(2), 205-213.

Nik Safiah Karim, Farid M. Onn, Hashim, Hashim Haji Musa & Abdul Hamid Mahmood. (2008). *Tatabahasa dewan* (3rd ed.) Kuala Lumpur: Dewan Bahasa dan Pustaka.

Noraini Seman, & KamaruzamanJusoff. (2008). Acoustic Pronunciation Variations Modeling for Standard Malay Speech Recognition. *Computer and Information Science, 1*(4), 112-120.

Nair, R. Krishnasamy, R. de Mello, G. (2006). Rethinking the teaching of pronunciation in the ESL Classroom". The English Teacher, XXXV, 27- 40.

Olive, J. P., Greenwood, A., & Coleman, J. (1993). Acoustics of American English.

Platt, John, and Weber, Heidi (1980) *English in Singapore and Malaysia*. Kuala Lumpur: Oxford University Press.

Pillai. S. (2008). Speaking English the Malaysian way – correct or not? *English Today 96*(24/4), 42-45.

Pillai, S. (2015). The Monophthongs and diphthongs of Malaysian English: An Instrumental Analysis. (Hajar Abdul Rahim, &Shakila Abdul Manan, Eds.) *English in Malaysia: Postcolonial and Beyond*, 55-85

Pillai, S. (2017). Local features of English pronunciation: to embrace or ignore in the ELT classroom? *Journal of English Language, Literature, and Teaching* (J-ELLiT)*1*(1), 1-8.

Pillai, S., & Khan, M. H. (2011). I am not English but my first language is English: English as a first language among Portuguese Eurasians in Malaysia. *Speaking in Many Tongues: Language Shifts in Malaysian Minority Communities and the Effects of National Language Planning. University of Amsterdam Press, Amsterdam*, 87-100.

Pillai, S., & Salaemae, W. (2012). An Instrumental Analysis of English Monophthongs Produced by Thai EFL Learners. *Pertanika Journal of Social Sciences & Humanities*, *20*(4)

Pillai, S., Zuraidah Mohd Don, Knowles, G. & Tang, J. (2010). Malaysian English: An instrumental analysis of vowel contrasts. World Englishes, 29(2), pages 159–172

Rajadurai, J. (2006). Pronunciation issues in non-native contexts: A Malaysian case study. Malaysian Journal of ELT Research, 12, 42-59.

Roach, P. (2000). *English Phonetics and Phonology* (3rd ed.). Cambridge: University Press

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

Schunk, G. (2002). *Studienbuch zur Einführung in die deutsche Sprachwissenschaft: Vom laut zum Wort.* Würzburg: Verlag Königshausen & Neumann GmbH.

Shaharina Mokhtar, & Shahidi A. Hamid. (2012). Analisis akustik terhadap forman bunyi vokal Bahasa Melayu: satu perbandingan antara gender. *Proceedings of the International Conference on Social Sciences & Humanities*, (pp. 301-313). Bangi, Malaysia.

Sharbawi, Sabrina &Deterding, David (2010). Rhoticity in Brunei English. *English World Wide*, 31(2), 121-137.

Snow, C. E. (1987). Second Language Learners' Formal Definitions: An Oral Language Correlate of School Literacy.

Subramaniam, K. &Darus, S. (2009). Error analysis of the written English essays of secondary school students in Malaysia: A case study. *European Journal of Social Sciences, 8*(3), 483-495.

Sukatan Kurikulum Standard Sekolah Rendah (2010). Pusat PerkembanganKurikulum Kementerian Pendidikan Malaysia.

Soo, K. (1990). Malaysian English at the crossroads: Some sign-posts. *Journal of Multilingual & Multicultural Development*, *11*(3), 199-214.

Tan, C. H., & Gupta, A. F. (1992). Post-Vocalic/r/in Singapore English.

Tan, R., & Low, E.-L. (2010). How different are the monophthongs of Malay speakers of Malaysian and Singapore English? *English World-Wide, 31*(2), 162-189.

Tan, Rachel S.K. and Low Ee Ling.(2012). "Phonology and phonetics of Malaysian English: An over-view and current research". In Kingsley Bolton and Azirah Hashim, eds.

Tan, T.-P., & Ranaivo-Malançon, B. (2009). Malay Grapheme to Phoneme Tool for Automatic Speech Recognition. *Third International Workshop on Malay and Indonesian Language Engineering.* Singapore.

Teoh, B. S. (1994). *The sound system of Malay revisited*. Dewan Bahasa dan Pustaka, Ministry of Education, Malaysia.

Tongue, R. K. (1974). *The English of Singapore and Malaysia*. Eastern Universities Press.

Tottie, G. (2016). Planning what to say. *Outside the Clause: Form and function of extra-clausal constituents*, *178*, 97.

Trudgill, P. (1991). *Dialects of English: Studies in grammatical variation*. Longman Pub Group.

Turner, G. W. (1966). *The English Language in Australia and New Zealand* (Vol. 6). Longman.

Wan AslynnSalwani Wan Ahmad. (2005). *Vowel Length Discrimination Among Malay Speakers of Malaysian English: An Instrumental Study.* Disertasi Master, Universiti Malaya, Kuala Lumpur.

Watson, C. I., & Harrington, J. (1999). Acoustic evidence for dynamic formant trajectories in Australian English vowels. *The Journal of the Acoustical Society of America*, *106*(1), 458-468.

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

Wells, J. C. (1982). *Accents of English* (Vol. 1). Cambridge University Press.

Yousif, A.-I., & Zuraidah Mohd. Don. (2000). Text-to-Speech Conversion of Standard Malay. *International Journal of Speech Technology*, *3*, 129-146.

Yunisrina Qismullah Yusuf. (2013). *A comparative study of vowels in the Acehnese language spoken in Kedah, Malaysia and Aceh, Indonesia. (Unpublished doctoral dissertation).* University of Malaya, Kuala Lumpur.

Yunus Maris. (1980). *Tha Malay sound system.* Kuala Lumpur: Fajar Bakti.

Zuraidah, M. D. (2000). Malay+ English→ A Malay variety of English vowels and accent. *Halimah & Ng*, 35-45.

ZuraidahMohd Don. 2000. "Malay + English → a Malay variety of English vowels and accent". In Halimah and Ng, eds. 2000: 35–45.*Malaysian English*.Hong Kong: Hong Kong University Press.

Zuraidah Mohd. Don (7 August, 2016). It's all in the pronunciation. Learning Curve, *New Straits Times*, pp.5.

Zwicker, E., & Terhardt, T. (1980). Analitical Expression for Critical - Band Rate and Critical - Bandwidth as a Function of Frequency. *Journal of the Acoustical Society of America, 68,* 1523-1525.