CHAPTER THREE : METHODOLOGY

This chapter reports on how the study was carried out. First of all, it describes the participants, followed by the target words used in this study, the research instruments, the scoring method, the data collection procedure and the data analysis method.

3.1   Participants

Firstly, two rural secondary schools and two urban secondary schools in the district of Kuantan, Pahang, Malaysia, were selected to participate in this study. The four schools were randomly selected based on their geographical location. The participants are Form Five students, between the ages of 16 and 17, who had studied English as a second language in a formal government school environment for a minimum of 9 years. All the participants were chosen from the Science stream, to ensure that exposure and use of English in the classroom is almost similar, based on the subjects taught in English. They were also chosen on the basis of being native speakers of Malay, to minimize this variable from affecting the data. The participants' socio-economic status (SES) was then determined to ensure that their SES matches that of the typical rural-urban SES, whereby urban SES is higher than rural SES. The SES of participants was found to be in line with the typical rural-urban SES pattern. 30 copies of the research instruments in the form of translation tests and word association test were then sent to each school. After eliminating data which was incomplete and not properly answered, only 100 participants in total were considered; 50 from rural schools and 50 from urban schools.

3.2   Target Words

The Form Four Word List provided in the syllabus by the Education Ministry of Malaysia (2003) was used. This is in consideration of the fact that the participants had completed the Form Four syllabus the year before.

There are 305 words in total in the Form Four word list. The words were put through a few stages of selection. Firstly, they were categorized into bands, according to their frequency levels based on Collins COBUILD Dictionary (2001), which was derived from the 400 million word Bank of English corpus. COBUILD gives five frequency bands, from 1 to 5, with Band 5 containing the most frequent words and Band 1, the least frequent words. A summary of the breakdown of the number of words for each band can be seen in Table 3.1.

Table 3.1
The breakdown of the number of words for each band.

Band	Number of words
1	19
2	80
3	80
4	76
5	44

The number of words for each band varies greatly. To achieve a better balance of words in each band, for the purpose of instrument development, the words were 'rebanded'. Bands 1 and 2 were combined and labeled as 'Level A', with a total of 99 words at the 21,000 word level (least frequent). Band 3 remains alone and labeled as 'Level B', with a total of 80 words at the 3,300 word level. Bands 4 and 5 were combined

and labeled as 'Level C', with a total of 120 words at the 2,400 word level (most frequent). A sample list of words from Levels A, B and C can be seen in Table 3.2. The full list of words can be referred to in Appendix A.

Table 3.2
Sample word list according to Levels A, B and C

Level A	Level B	Level C
Amuse	Aside	Association
Applaud	Autumn	Average
Beam	Bare	Bar
Beast	Barrel	Beyond
Calculate	Conversation	Course
Cape	Co-operate	Cream
Deceive	Delight	Debt
Decrease	Discount	Declare
Enclose	Extraordinary	Extend
Envy	Extreme	Favour
Flame	Faith	General
Fond	Familiar	Human
Glory	Generous	Imagine
Hollow	Glad	Judge
Keeper	Heaven	Kind
Landslide	Immediate	Lead
Multiple	Literature	Moment
Neglect	Motion	Murder
Overdose	Native	Nature
Patriot	Observe	Occasion
Remedy	Proof	Public
Scratch	Remind	Rule
Temper	Spare	Sales
Ward	Tide	Terrible

These words were then pilot tested. As the nature of the main research instruments is translation, L1 words (Malay) will be used as cues for the L2 target words (English) and vice versa. From the piloting, a few considerations arose.

Firstly, the L2 target words which have an almost similar spelling in the L1 due to language borrowing were eliminated. For example, 'reputation' can be translated into 'reputasi' easily. The slight change of spelling does not ensure students recognize and have access to the target word.

Secondly, polysemous L1 cue words were identified. For example, the L1 cue 'bertukar' can be translated into different L2 words, each according to different situations, i.e.; 'exchange' (target word), 'modify' and 'transfer'. These words were either eliminated or modified using more specific descriptions to elicit the target response; in this instance, '*bertukar* pendapat', or, the '*exchange* of ideas'. Consequently, this brought about another ambiguity, whereby the participant would not be sure of which word to translate or to translate both words. Hence, the target word to be translated was underlined; 'bertukar pendapat'.

These factors were considered throughout two pilot tests, consisting of 10 different students for each test. An L1 language teacher was engaged to assist in the translation. Based on this, 172 L2 target words were selected for this study.

3.3   Research Instruments

Four instruments in the form of a participant profile and three vocabulary tests were used.

The first instrument was the Participant Profile (Appendix B). This profile is to determine participants' socioeconomic status (SES) and English language exam results, as well as to reconfirm their L1. An analysis was done to confirm a valid group of participants who fit in to the rural and urban categories to avoid too many varying factors affecting the study. To determine their SES, the income of their parents was requested.

The amount was categorized into four income levels per month, namely Level 1 (less than RM1,000), Level 2 (RM1,000-5,000), Level 3 (RM5,001-RM10,000) and Level 4 (more than RM10,000). Participants had to choose an income level for each parent. To obtain their English language achievement (ELA) results, their overall result for their Form 4 English language Final Exam was acquired. To ensure that their L1 was Malay, a series of questions were asked, where participants had to write down the type of language used in different situations. For example, *"What language do you speak most of the time?"* and *"What language do you speak to your family members?"*.

The second instrument was the Receptive Translation Test (Appendix C). This is one of the two main instruments used in this study. Participants were required to translate L2 target words (cue words) into L1. There were 90 words in total to be translated, with 30 words each for Levels A, B and C. The target words were sequenced according to their respective level, starting from the most frequent to the least frequent; from Level C, to B, to A. The words were put in a table format and participants had to write down responses next to each cue. The use of more than one word in the response was allowed to gauge a clearer understanding of the L2 target word. To illustrate, 'beyond' can be translated into 'menjangkau' or 'di luar jangkaan'. An example is illustrated in Table 3.3.

Table 3.3
Sample Receptive Translation Test

No	English	Bahasa Melayu	No	English	Bahasa Melayu
1	Advantage		3	Explain	
2	Approve		4	Extend	

The other main instrument was the Productive Translation Test (Appendix D). Participants were required to translate L1 cue words into only a single word L2 answer, for each item. The L2 target words to be elicited here were specifically ensured to be different from the Receptive Translation Test. This is to avoid a learning effect. The arrangement and format of presentation is similar to the first test. However, the number of words in each level differ slightly; Level C, 28 words, Level B, 29 words and Level A, 25 words. This is due to the difficulty in providing appropriate L1 cue words. This difference was then standardized in the scoring.

The fourth instrument is Meara and Fitzpatrick's (2000) Lex30. Lex30 is supplementary to the data from the receptive and productive translation tests. It is used in this study to gauge students' productive vocabulary, beyond the wordlist, in terms of low frequency words. The version of Lex30 used in this study (Appendix E) is an adaptation of the original Lex30. A total of 20 general stimulus words were used as prompts for participants. The stimulus words were general themes found in the Form Four syllabus and words from the original Lex30 developed by Meara and Fitzpatrick (2000), which met reliable criteria. Participants were given a space next to each stimulus word to list down a minimum of three words associated to the stimulus. An example was illustrated in the instrument to provide a clearer demonstration of the task. A sample of the Lex30 can be seen in Table 3.4.

Table 3.4
Sample Lex30

No	Word	Associated Words
0	*Food*	*Burger, home-cooked, rice, fragrant*
1	Attack	
2	Close	

3.4   Scoring

For both the translation tests, each correct response was given one mark. An L1 teacher assisted in the scoring of L1 responses for greater rater reliability. A few factors were taken into account during the scoring process. First of all, misspellings and wrong grammatical forms which do not distort or change the meanings of the words would be scored as correct as the purpose of this test is more for placement rather than diagnostic, hence, the focus is on meaning and not accuracy. For example, 'disapointed', with the missing 'p' and 'hosts', with the additional 's', are scored as correct. However, 'access' instead of 'excess' and 'foreign' instead of 'foreigner', are marked as wrong answers, as they change the meaning of the words.

Another consideration was when participants included more than one response. When the responses prove to be near synonyms and can be used in the context of the L1 cue words, one mark was awarded. For example, 'orang asli' can be translated into 'aborigines' and 'natives' (target word) and it was marked as correct. However, when one of the responses does not reflect the L1 translation, eventhough the target word was also included as a response, no mark was awarded. For example, when the response for 'keamanan' was 'peaceful' (correct target word), but not 'prosperous' (semantically wrong response), it was marked as a wrong answer. The mixed response assumes the participant was unsure of the appropriate target word.

The third factor to consider was when participants provided a synonym of the target word instead of the target word. Polysemous L1 cue words were still not entirely eliminated even after two pilot tests. The synonym was marked as correct if it fitted the translation and was in the same or lower band of frequency. The rate of an appropriate synonym being used is very low and usually, the synonym fell within the same frequency

band or lower. Thus, the item was not eliminated from the test, as it was likely that the participant knew the target word when his knowledge is of the same or lower band (Webb, 2008). An example would be 'philanthropic' (less frequent than COBUILD Band 1) instead of 'generous' (target word) (COBUILD Band 3).

The total mark for each level was then calculated and put into percentage. This is to standardize the marks as the number of words for each level differs in the Productive Translation Test. A summary of the scoring method for an individual participant is shown in Table 3.5.

Table 3.5
Translation tests: Individual participant scoring sheet

	Level C		Level B		Level A	
Receptive Translation Test	Total number of items, N = 30		N = 30		N = 30	
	Marks	%	Marks	%	Marks	%
	x	$\dfrac{x}{N}$ x 100%				
Productive Translation Test	N = 28		N = 29		N = 25	
	Marks	%	Marks	%	Marks	%
	x	$\dfrac{x}{N}$ x 100%				

For Lex30, each of the response words was firstly 'lemmatised'. This is done in accordance to Meara and Fitzpatrick's (2000) scoring method. Inflectional suffixes and frequent regular derivational affixes were counted as examples of base-forms of these words. This would be in accordance to Bauer and Nation's criteria for Level 2 and 3

affixes (1993, cited in Meara and Fitzpatrick, 2000, p.29). A list of the inflectional

suffixes and frequent regular derivational affixes can be seen in Table 3.6.

Table 3.6
List of inflectional suffixes and frequent regular derivational affixes

Level 2 : Inflectional Suffixes	Level 3 : Most frequent and regular derivational affixes
- Plural 3rd person singular present tense - Past tense - Past participle -ing - Comparative - Superlative - Possessive	-able not when added to nouns -er -ish -less -ly -ness -th cardinal –ordinal only -y adjectives from nouns - non- - un-

Any other words with affixes apart from these were considered separate words.

For example, 'employed' contains a level 2 suffix (past tense –ed) and is lemmatized as

'employ'. 'Employ' will be scored according to its frequency level, in this case, Level B.

In contrast, 'employee' contains the affix –ee which is not included in the level 2 or 3

lists. Hence, it is not lemmatized and is considered as a separate word and will be scored

according to its frequency level (Level C).

Secondly, L1 words and repeated words were eliminated. For example, 'baju

kurung' and 'rambutan' (L1 words) were not scored. Frequent repetitive words such as

'friend', were only scored once, even though it was written repeatedly for different

stimulus words. Words which are worthy of scoring were given 1 mark each.

The responses were then banded individually according to COBUILD's frequency

bands and subsequently categorized into this study's three levels (Levels A, B and C). The

total number of words scored under each word level was then changed into percentage over the total number of words produced by each individual. This was done because this test does not intend to study the number of responses (words) produced, but it serves to explore only the general production of low frequency words. If the raw scores were used, it may possibly affect the result of the analysis as it reflects the number of responses produced by the students. In order to avoid this, the percentages will provide a stable numerical data with a maximum score of 100% for each individual.

The Lex30 score of low frequency words was then calculated. It comprises the percentage of Level A and B scores (low frequency words). Level C score (high frequency words) remains only as a comparison to the official score. It would not be used in the main analysis of data. A summary of the scoring method for each individual for Lex30 is presented in Table 3.7.

Table 3.7
Lex30: Individual participant scoring sheet

Levels	A		B	C	
COBUILD Bands	1	2	3	4	5
Number of responses, x	x_1	x_2	x_3	x_4	x_5
Total number of responses	$x_1 + x_2 = x_a$		$x_3 = x_b$	$x_4 + x_5 = x_c$	
	$x_a + x_b + x_c = N$				
Percentage of responses for each level (%)	$\dfrac{x_a}{N} \times 100\% = X_a$		$\dfrac{x_b}{N} \times 100\% = X_b$	$\dfrac{x_c}{N} \times 100\% = X_c$	
Scores	**Lex30:** $X_a + X_b$			**Level C:** X_c	

3.5   Data Collection Procedure

Firstly, the Participant Profile was distributed to the selected participants by teachers of the selected schools. An analysis of the data was conducted immediately to confirm that their L1 was Malay and that they fit into the urban and rural category, in terms of SES and ELA. The general assumption is that urban students have a higher mean of both income level and ELA compared to rural students. Analysis of the data showed that they reflect these criteria. Participants' L1 was Malay. Urban students showed a higher mean of SES (2.46, SD = .58) and ELA (65.50, SD = 6.49), compared to rural students' SES (1.74, SD = .69) and ELA (51.62, SD = 11.15).

Only then were the three vocabulary tests administered. This was also carried out by teachers of the respective schools as well as the researcher. The teachers were given a short briefing by the researcher before hand. Participants were then briefed by their teachers on the nature of this study and also to determine their willingness to participate. Before taking the tests, the participants were given instructions on what to do. Written instruction was also provided on the test sheets. The recommended duration for the administration of the tests was two teaching periods, or 80 minutes. Due to time and logistics constraints, some of the participants took the tests separately, over a period of three days. For participants who took the test in more than one sitting, each test was handed out separately to prevent anticipation and 'cheating'. The participants were also not allowed to complete the test at home or use any other forms of guidance, to ensure a reliable result.

3.6   Data Analysis Method

The data was analysed using PASW Statistics version 18 to establish the vocabulary sizes of rural and urban students. Descriptive statistics was used to determine the mean and standard deviation. The ratio between different groups of data was also calculated to note their difference. To analyse the significance of the difference in scores, One-way repeated measures ANOVA was used. The Pearson's Product Moment Correlation Test was performed to explore the relationship between vocabulary size and ELA of rural and urban students.

The analysis of the data will be presented and the results will be discussed in detail in the following chapters.