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**An Investigation into the Differential Effects of
Subtitles (First Language, Second Language, and
Bilingual) on Second Language Vocabulary
Acquisition**

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Abstract

Video recordings can be subtitled in three ways: with first language (L1) subtitles, with second language (L2) subtitles, or with first language plus second language (bilingual or L1+L2) subtitles. The first two types of subtitles are widely discussed in previous research with regard to how they affect language learning. However, the effects of bilingual subtitles have not been widely studied. This study aims to examine the pedagogical effects of bilingual subtitles on vocabulary acquisition in the L2 classroom. A seven-week quasi-experimental study was conducted with four English-major classes in year-3 in a Chinese university: three experimental groups and one control group. Students in the three experimental classes were exposed to three documentary films on very similar topics with the three different types of subtitles in turn. They then took a vocabulary test relating to the lexical items encountered in the films. At the end of the experiment, they were given a questionnaire to explore their opinions towards differential subtitles in relation to their language learning. The results demonstrated a significant advantage of bilingual subtitling in videos for students' receptive vocabulary knowledge and recall at post-test and this advantage was maintained at delayed post-test. The bilingual subtitles probably are more effective than monolingual subtitles with regard to students' vocabulary acquisition in short-term and long-term. Also, bilingual subtitles were preferred by a majority of students in respect of video understanding and vocabulary learning. L2 subtitles were favoured by more students for improving their listening comprehension. Pedagogical implications for the use of differential subtitles in the L2 classroom are discussed.

Key words: subtitles; second language vocabulary acquisition; bilingual subtitles

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Table of Contents

Abstract	I
Acknowledgements	II
List of Figures	VII
List of Tables	VIII
List of abbreviations	X
Chapter 1: Introduction	1
1.1 Overview	1
1.2 General Statements and Background	2
1.2.1 ELT in China.....	2
1.2.2 Vocabulary teaching in China.....	4
1.3 Motivation for the Study	6
1.4 Research Questions	10
1.5 Thesis Outline.....	11
Chapter 2: General Case for L1 and L2 Use	13
2.2 Historical Overview of Using L1 in the L2 Classroom.....	13
2.3 Theoretical Perspectives on L1 use in L2 Learning	16
2.3.1 Bilingual mind: cognitive perspectives.....	16
2.3.2 Sociocultural approaches to L1 use.....	20
2.4 Critical Perspectives of L1 Use in the L2 Learning	21
2.5 Pedagogical Perspective on L1 Use in the L2 Classroom.....	22
2.5.1 The extent of L1 use in the L2 classroom	23
2.5.2 The benefits of L1 use in the L2 classroom	23
2.5.3 L1 use in language skills development	24
2.6 Chapter Summary	28
Chapter 3: Vocabulary	29
3.1 Introduction	29
3.2 The Vocabulary Knowledge Framework	29
3.3 Incidental Vocabulary Learning	39
3.3.1 Incidental learning and intentional learning.....	39
3.3.2 Incidental vocabulary acquisition from listening and reading	43

3.4 The Importance of L1 in L2 Vocabulary Studies	47
3.4.1 Cognitive models of L1 in L2 vocabulary studies	50
3.5 Chapter Summary	54
Chapter 4: Videos and Subtitles	56
4.1 Introduction	56
4.2 Use of Videos and Subtitles in the L2 Classroom	56
4.2.1 Advantages of subtitles in language learning.....	57
4.2.2 Listening and reading understanding issues in subtitles	61
4.3 Advantages of Using Subtitles in L2 Vocabulary Learning.....	64
4.3.1 The dual coding theory	71
4.4 Debate about Using L1 and L2 Subtitles.....	73
4.5 Use of Bilingual Subtitles in the L2 Classroom	75
4.6 Chapter Summary	77
4.7 Literature Review Summary and Research Questions	77
Chapter 5: Research Design.....	81
5.1 Introduction	81
5.2 Methodology	81
5.2.1 Mixed methods research	81
5.2.2 Mixed method design.....	83
5.2.3 Quasi-experimental research.....	85
5.2.4 Questionnaires.....	86
5.3 Pilot Study	86
5.3.1 Sampling	87
5.3.2 Research Design.....	89
5.3.3 Intervention	90
5.3.4 Measures	93
5.4 Main Study	105
5.4.1 Sampling	105
5.4.2 Research design.....	107
5.4.3 Intervention	110
5.4.4 Measures	111
5.5 Data Analysis	114
5.5.1 Preparing the data.....	115

5.5.2 Exploring the data	115
5.5.3 Analysis of quantitative data.....	116
5.5.4 Analysis of qualitative data.....	122
5.6 Ethical Issues	123
5.7 Chapter Summary	124
Chapter 6: Findings and Discussion: quantitative data	126
6.1 Introduction	126
6.2 Descriptive Data	126
6.3 Comparison of Students' Performance under Subtitles and No Subtitles Condition	130
6.3.1 Summary and Discussion.....	133
6.4 Comparison of Students' Performance among L1 Subtitles, L2 Subtitles and Bilingual Subtitles	137
6.4.1 Word Recognition: Post-test	137
6.4.2 Word Recognition: Delayed post-test	139
6.4.3 Word Recall: Post-test	140
6.4.4 Word Recall: Delayed post-test	141
6.4.5 Summary and Discussion.....	143
6.5 Long-term Effects.....	147
6.5.1 Descriptive statistics	147
6.5.2 Significant difference from post-test scores to delayed post-test scores.....	149
6.5.3 Individual items for the scores differences between the post- and delayed post- tests	149
6.5.4 Summary and Discussion.....	151
6.6 The Effectiveness of Differential Subtitles on Individual vocabulary Items .	153
6.6.1 Word frequency.....	153
6.6.2 Word class.....	158
6.7 Chapter Summary	167
Chapter 7: Findings and Discussion: qualitative data from students' perspectives.....	174
7.1 Introduction	174
7.2 Overview of the Qualitative Data.....	174
7.3 Students' Perspectives on the Three Types of Subtitles as regards Video Understanding	177

7.4 Students' Perspectives on the Three Types of Subtitles as regards Listening Comprehension.....	183
7.5 Students' Perspectives on the Three Types of Subtitles as regards Vocabulary Learning.....	192
7.5.1 Students' perspectives on bilingual subtitles as regards vocabulary learning.....	192
7.5.2 Students' perspectives on monolingual subtitles as regards vocabulary learning.....	200
7.6 Students' Perspectives on Differential Subtitles for Different Aspects of Language Learning.....	204
7.6.1 Students' perspectives for their language learning under no subtitles condition	204
7.6.2 Students' perspectives for their language learning under monolingual subtitles condition	205
7.6.3 Students' perspectives for their language learning under bilingual subtitles condition	206
7.7 Chapter Summary	208
Chapter 8: Conclusion	212
8.1 Introduction	212
8.2 Review of the Research	212
8.2.1 Purpose of the study and contributions	212
8.2.2 The main findings and discussions	214
8.3 Pedagogical Implications	221
8.4 Limitations and Further Directions	223
References	225
Appendix 1: Vocabulary baseline test	248
Appendix 2: Updated version of post-test.....	249
Appendix 3: Questionnaire	252
Appendix 4: Tests of normality for post-test and delayed post-test (Normal Q-Q plot).....	254
Appendix 5: Test of homogeneity of variance	255
Appendix 6: Consent form	256
Appendix 7: Table of Spearman's correlation	258

List of Figures

Figure 3.1: A multistate model of vocabulary acquisition	34
Figure 3.2: Bilingual Interactive Activation Model (Dijkstra & Van Heuven, 1998) ...	51
Figure 3.3: Revised Hierarchical Model (Kroll & Stewart, 1994).....	52
Figure 3.4: Bilingual Dual Coding Theory (Paivio & Desrocher, 1980).....	53
Figure 4.1: The Dual Coding Theory (Paivio, 1986)	72
Figure 6.1: Mean scores in baseline (English proficiency) tests.....	128
Figure 6.2: Histogram for students' mean score at post-test and delayed post-test grouping by L1 subtitles, L2 subtitles and bilingual subtitles	130
Figure 6.3: Histogram for students' mean score at post-test and delayed post-test grouping by no subtitles and subtitles.....	131
Figure 6.4 Histograms for the comparison of vocabulary tests mean score between post- test word recognition.....	148
Figure 6.5 Histograms for the comparison of vocabulary tests mean score between post- test word recall.....	148
Figure 7.1: Histogram for the number of students' preference of subtitles in language learning	176
Figure 7.2: Histogram for the number of students' in the control group preference of subtitles in language learning.....	177

List of Tables

Table 3.1: What is involved in knowing a word	36
Table 3.2: Kinds of vocabulary knowledge and the most effective kinds of learning ...	38
Table 3.3: Ways of quickly giving attention to words (Nation, 2005, p.1).....	48
Table 4.1: Summary of research on vocabulary acquisition from subtitles	68
Table 5.1: An overview of the timescale in the pilot study and the main study	87
Table 5.2: Pilot study procedure	90
Table 5.3: Test complexity in reading and listening of the three videos	92
Table 5.4: A comparison between FCE test and TEM4 test in English major students	94
Table 5.5: List of words changed from pilot study to main study for vocabulary post-test	96
Table 5.6: The transformation of the word frequency level.....	100
Table 5.7: Number of students in each class for post-test and delayed post-test.....	106
Table 5.8 Number of students in each class in questionnaire	106
Table 5.9: Main study timescale	107
Table 5.11: Plans of differential subtitles in video showing	111
Table 5.12: The word class and frequency of occurrence in the video of the targeted words.....	112
Table 5.13: Tests of Normality for post and delayed post-test grouping by subtitles and without subtitles	118
Table 5.14: Tests of Normality for post-test and delayed post-test, grouping by without subtitles, L1 subtitles, L2 subtitles and bilingual subtitles.....	119
Table 5.15: Tests of Normality for English proficiency baseline test.....	119
Table 5.16: The themes for coding of qualitative data.....	123
Table 6.1: Descriptive data for baseline (English proficiency) tests.....	127
Table 6.2: Descriptive data for post-test and delayed post-test in each subtitles condition	129
Table 6.3: Mann-Whitney test for post-test and delayed post-test.....	132
Table 6.4: Friedman's ANOVA for post-test word recognition section	138

Table 6.5: Friedman’s ANOVA pair-wise comparison for post-test word recognition section	139
Table 6.7: Friedman’s ANOVA pair-wise comparison for delayed post-test word recognition section	140
Table 6.8: Friedman’s ANOVA for post-test word recall section	141
Table 6.9: Friedman’s ANOVA pair-wise comparison for post-test word recall section	141
Table 6.10: Friedman’s ANOVA for delayed post-test word recall section	142
Table 6.11: Friedman’s ANOVA pair-wise comparison for delayed post-test word recall section	142
Table 6.12 Wilcoxon Signed Ranks Test of the significant difference from post-test scores to delayed post-test scores.....	149
Table 6.13 Individual items for a considerable drop from post-test to delayed post-test	150
Table 6.14: The high frequency of occurrence word in the advantage of bilingual subtitles in test items	156
Table 6.15: Noun word in the advantage of bilingual subtitles in test items	160
Table 6.16: Adjective word in the advantage of bilingual subtitles in test items	163
Table 6.17: Verb word in the advantage of bilingual subtitles in test items	165
Table 6.18: The number of students answering correctly for individual items at post-test and delayed post-test.....	168
Table 7.1 Number of students in each class in questionnaire	175
Table 7.2: Students’ perspectives of using bilingual subtitles for video understanding	178
Table 7.3: Students’ perspectives on using L2 subtitles for listening improvement...	184
Table 7.4: Students perspectives towards the easiness of subtitles for listening improvement	189
Table 7.5: Students perspectives of the advantage of bilingual subtitles for vocabulary learning	193
Table 7.6: Students perspectives of the advantage of L2 subtitles for vocabulary learning	201

List of abbreviations

BIA—Bilingual Interactive Activation

CET-4/6—College English Test grade 4/6

DCT—Dual Coding Theory

EFL—English as Foreign Language

ELT—English Language Teaching

ESL—English as a Second Language

FCE—First Certificate in English

L1—First Language

L2—Second Language

L1+L2—First plus Second Language

RHM—Revised Hierarchical Model

SLA—Second Language Acquisition

TEM 4/8—Test for English Majors grade 4/6

TETE—Teaching English through English

UBL—Usage-Based Linguistics

VKS—Vocabulary Knowledge Scale

Chapter 1: Introduction

1.1 Overview

English continues to grow and consolidate its position as the dominant international language in the field of business, culture, education and politics. It is an important tool which assists communication and knowledge exchange internationally. Learning English, therefore, gradually becomes a compulsory task for students who wish to connect with the world. Learning English in China begins from primary schools to universities and there are various private English teaching institutions opening for Business English learning, passing exams and learning for daily life communication. Given the wide spread of English learning in public and private educational institutions, a principled guidance for teaching is needed. Teaching English in China has experienced various approaches, from grammar translation to communicative language teaching. The use of L1 in the L2 classroom is one of the focuses during recent English teaching developments. The L1 and L2 use in the L2 classroom has experienced changes from L1 use only to L2 use only and to L2 with L1 use. Although L2 use is still favoured by school policies and students' parents, a number of studies (for example, Macaro, 1998; Storch & Wigglesworth, 2003; Hennebry et al., 2013) gradually point to use of L1 for some certain purposes in the L2 classroom. The importance of L1 is seen from the L2 vocabulary learning, listening comprehension and reading and writing tasks. The current situation of vocabulary teaching in China remains at teaching wordlists word by word but some teachers are beginning to teach vocabulary by designing tasks or constructing contexts. Additionally, teachers usually utilise videos to facilitate teaching.

With the development of technology, the classroom is not the only source of students' exposure to English. Multimedia materials (e.g. videos, TV programmes) have been promoted and exploited as language learning resources. These multimedia environments not only make the authentic videos available, but also provide listening support by means of a 'technological overlay' (Robin, 2007) such as scripts and on-screen text. Subtitles is one of the particular types of on-screen text. In China, subtitles

could be turned on and off according to the viewer's preference. Also, it is possible to switch between types of subtitles.

This thesis focuses on the study of the differential effects of subtitles on second language vocabulary acquisition. There are different kinds of subtitles: first language (L1) subtitles, second language (L2) subtitles, and first language plus second language (bilingual or L1+L2) subtitles. One of the purposes of this study is to identify the impact of bilingual subtitles by comparing the effects of L1 subtitles, L2 subtitles and bilingual subtitles on learners' receptive vocabulary knowledge. Pedagogically, it aims to provide teachers with a framework of principles to guide them to use the different types of subtitles in the L2 classroom.

1.2 General Statements and Background

This section provides an overview of English language teaching in China. Following that, it provides details of the vocabulary teaching situation in China.

1.2.1 ELT in China

English Language Teaching (ELT) is now well-acknowledged in China, from nursery schools to universities at both private and public level. In the 'foreign-language' context, the issue of balancing the use of L1 and L2 can be seen from different angles in terms of the differential roles in the L2 classroom. Firstly, learners from all the proficiency levels are required to use L2 as much as possible in their classrooms. However, it is a fact that young learners and beginners have to use L1 to communicate with each other and to complete the tasks. In this case, L1 appears to be an essential tool for their language learning. Things are not different among students at the intermediate and advanced levels. Despite being able to conduct a L2 conversation, they prefer to use their mother tongue to avoid any confusion and misunderstanding in class. Secondly, teachers in China are encouraged to use mainly L2 in class with the purpose of providing a language learning environment for learners (Ministry of Education of the PRC, 2000). However, they appear to prefer to use code-switching for the sake of their actual practise. This is particularly used in the L2 grammar and listening class for teachers to explain and further expand the topic. The above circumstances can be found in beginner and intermediate classrooms. For the advanced

class, such as year-4 English-major classes in the university, teachers mainly use L2 to conduct the lesson, but L1 is not ignored for explaining technical terms and local expressions or slangs which are difficult to express in L2. With various proficiency levels, teachers may regard their use of the L1 as acceptable or have a sense of ‘guilt’ when they do not use the L2 enough in class (Littlewood & Yu, 2011). Last but not least, a further angle on L1 use in the L2 classroom is the students’ parents. Although they are not in the L2 classroom, their opinions and perspectives towards language use in class, to some extent, may guide schools’ decision making, especially in private schools. There is a popular principle among parents for judging a good teacher or school in China: that is, whether or not teachers use L2 to conduct the class. Apart from this, some parents hope their children could use L2 as much as possible at home with the view of ‘practise makes perfect’. The above roles provide different angles for using the L1 and the L2 in the classroom, but they demonstrate a similar conclusion which is to use mainly L2 but in particular circumstances, the use of L1 cannot be ignored.

Although most university students have a basic knowledge of English in middle school or high school, learning English continues to be a challenge for them and their competency requires to be upgraded by the time they reach university. For non-English major students, the English course is compulsory, but only offers 2-4 hours a week. Non-English major students have two national English level tests within their university years: CET-4 (College English Test grade 4) and CET-6 (College English Test grade 6). Students cannot achieve CET-6 if they failed in CET-4. English majors on the other hand have a more intense course of specific language skills, such as listening, intensive reading, speaking and translation. They also face two national tests: TEM-4 (Test for grade 4) and TEM-8 (Test for grade 8). One difference from non-English majors is that students could take TEM-8 although they failed their TEM-4. Some universities connect student graduation with these test results, for example, the non-English majors cannot graduate if they failed in CET-4 and English majors if they failed in TEM-4 or TEM-8. In this case, learning English becomes necessary in student university years and providing an effective English class is essential to improve students’ L2 language.

A number of beginners explore English with curiosity aroused by a foreign TV programme or a foreign film in China. They may lose their interest when they find learning language is not as interesting as they imagine, or they have a boring English course. Second language learning requires long-term effort which turns into a requirement of an appropriate teaching approach and learning strategies to guide learners for their L2 skills development. Continuous efforts focusing on the efficient methods of teaching are made from the national educational department, the local schools and universities in China. Using multimedia in the L2 classroom is a typical strategy with the development of technology. This is also an ideal option for self-learning at home because learners can download the videos from the internet, which offer learners numerous opportunities to practise, for example, their listening and vocabulary improvement. Videos, undoubtedly, are an interesting way to teach English, and they are able to motivate students L2 learning.

1.2.2 Vocabulary teaching in China

The teaching and learning of vocabulary in China have never received the same degree of attention as grammatical competence, reading or writing in the Chinese universities (Zhou, 2010, p.19). In the textbook, vocabulary is introduced through a glossary provided after each reading text. Also, there is an alphabetical glossary for the reading texts at the end of textbook. Teachers teach vocabulary in an explicit way by introducing words and their meaning from the glossary. In the English proficiency test, vocabulary is rarely examined as an individual test item. Language teaching has experienced a number of approaches, such as the grammar translation method, the audio-lingual method, the communicative language teaching approach and, most recently, the multi-dimensional vocabulary teaching mode (Zhou, 2010). The role of vocabulary teaching in these methods will be introduced separately and the multi-dimensional mode will be detailed.

The main goal of the grammar translation method was to assist students reading and writing materials and to pass exams. Students were taught grammar in L1, and they were provided with vocabulary lists to learn well known stories. The glossary in the grammar translation method was used as a part of a grammar teaching aid instead of taught individually word by word. The audio-lingual method regarded vocabulary as

a vehicle for pronunciation and intensive oral drilling. In this case, only focusing on teaching the word's pronunciation, students were not taught vocabulary in a systematic way to acquire vocabulary knowledge in depth. Similarly, the communicative language teaching approach did not give attention to vocabulary teaching either in Chinese context. Although teachers of the communicative approach tried not to depend on translating words within the students' cultural context, there was no systematic teaching guidance for vocabulary acquisition.

A number of university teachers in recent years have tended to choose the multidimensional teaching mode (Zhou, 2010). The multidimensional mode is to use various teaching methods to teach vocabulary. One of these is to use an eclectic method for vocabulary teaching. The eclectic method is not a new approach but a mixed mode to integrate the communicative vocabulary teaching approach, the grammar translation approach, as well as audio-lingual methods, a wide range of task designs, constructing a rich context in order to raise students' awareness, stimulate their learning and improve their vocabulary knowledge. Students are normally asked to underline the lexical chunks, explain them in various ways or translate them into Chinese and explore their usage in various situations. These actions might make it possible to raise students' awareness of the words and further they would get ready to receive knowledge about the word be enabled to develop further language production. To help students to acquire word usage, teachers design a wide range of activities to encourage students to use the word in cloze passages, discussion-dialogues and story-telling, which intend to aid students to internalize the words.

In addition to the eclectic method, the university teachers design various tasks for vocabulary teaching. Students could develop their vocabulary knowledge through communication. Transformation of text materials is used by university teachers to attract students' attention and to engage students in learning the phrases. It includes changing the key, genre and norms of interaction (Zhou, 2010). Other activities such as discussing situational dialogues, word games, problem solving and expressing personal views in a debate by means of pair work, group work and role playing are welcomed by students during their vocabulary learning process. Alternatively, theme-based vocabulary instruction is also popular in China as another dimension of

vocabulary teaching. The vocabulary instruction is based on one theme and students are engaged with using thematic words in different activities. Apart from teaching the target word, teachers are able to provide a group of words related to the theme. This not only enlarges students' vocabulary knowledge quantitatively, but also provides an overall understanding of the theme itself. The last dimension of vocabulary instruction in China is constructing context. This sounds very similar to the theme-based instruction, but it gives more attention to the identity of participants and to scenarios during the discourse. Constructing the context is able to be established by the students, and can easily motivate them to use the target words (Zhou, 2010) and acquire vocabulary knowledge from different perspectives.

1.3 Motivation for the Study

My motivation for this study is to identify the impact of bilingual subtitles by comparing the effects of L1 subtitles, L2 subtitles and bilingual subtitles on learners' receptive vocabulary knowledge. I used bilingual subtitles either for language learning or entertainment. I found that I could acquire vocabulary easily and I remembered the words in my long-term memory through bilingual subtitles. However, the bilingual subtitles appeared not to be commonly used or studied in the UK, nor in most European countries. I investigated students' and teachers' attitudes towards types of subtitles for their listening comprehension and vocabulary learning in the L2 classroom in my master's dissertation. The results demonstrated that teachers and students preferred videos with bilingual subtitles for L2 learning in most situations. However, according to their perceptions, the efficiency of bilingual subtitles depended on several factors such as students' current L2 level, the difficulty of the videos and the stages of teaching. From the vocabulary learning perspective, bilingual subtitles were favoured by students and teachers. This encouraged me to take the first step to examine its effectiveness on students' vocabulary acquisition through experimental research and I further investigated students' perspectives towards subtitles immediately after their video watching.

From the theoretical perspective, previous studies have widely discussed L1 in the L2 classroom. In spite of the domination of monolingual imperatives in the theories of language teaching in the past decades, L1 has continued to be used in the L2 classroom

around the world (Benson, 2000). However, it appears difficult to draw a general conclusion regarding the quantity of L1 use by teachers and learners. The use of L1 varies by institutions, students' language proficiency, as well as teachers' teaching purposes. In addition, the effectiveness of L1 can be seen from language skills development, including reading (Kern, 1994; Seng et al., 2006), listening (Harley, 2000; J. Field, 2008), grammar (Kaneko, 1992), writing (Freidlander, 1990; Kobayashi & Rinnert, 1992) and vocabulary (Hennebry et al, 2013). Despite the fact that previous discussions on L1 use in the L2 classroom did not draw a definite conclusion regarding the quantity of L1 use in the L2 classroom, the effectiveness of L1 use cannot be ignored in language teaching and learning settings.

The discussion of L1 and L2 continues in the field of subtitles. Previous experimental studies showed controversial results in terms of the age and level of proficiency of the participants and the aspect of language being tested. Specifically, L1 subtitles appeared to be more facilitative in videos in terms of vocabulary learning, understanding L2 phrases and slang, enhancing L2 listening comprehension and reading (Katchen, 1997; d'Ydewalle & Van de Poel, 1999; Koolstra & Beentjes, 1999; Markham et al., 2001; Zarei & Rashvand, 2011). On the other hand, studies of L2 subtitles showed that L2 subtitles could allow students to map phonology directly onto written words (Markham, 1999; Bird & Williams, 2002; Danan, 2004; Vandergift, 2011; Hayati & Mohmedi, 2011). These studies confirmed the effectiveness of subtitles in acquiring a range of vocabulary knowledge and developing students' listening and reading comprehension. However, bilingual subtitles, as a new form of subtitles on the screen, have not been widely discussed. The definition of bilingual subtitles can be found in Bartolome and Cabrera (2005), that is, each block being made up of two lines, each in a different language. Bilingual subtitles are widely used on TV in Finland and Belgium, and they are also common in China.

Bilingual subtitles can be found in films and TV programmes and they provide a useful teaching resource for language teachers in China. An exploration of the effectiveness of bilingual subtitles bears significant implications for the wider field of study concerning the use of L1 in the L2 classroom (L1 and L2 in videos' text and L2 in auditory). The use of bilingual subtitles, to some extent, reflects the practise by

introducing L1 in the L2 classroom. But the fact that bilingual subtitles come from the full translation from the video text rather than the teachers' decision to code-switch for certain teaching purposes is worthy of notice. In this case, bilingual subtitles are not the same as teachers' code-switching in the L2 classroom. Students would decide by themselves about choosing the right subtitles to look at according to their purposes. In addition to bilingual subtitles in the context of L1 in the L2 classroom, the monolingual L1 subtitles, to some extent, also reflect the fact of the use of L1 in the L2 classroom. That is, the L1 in the on-screen text is in the L2 auditory atmosphere. In this case, these two forms of L1 in the L2 classroom would be an interesting point to investigate their different effects on vocabulary. This study intends to contribute to knowledge of the effect of differential effects of subtitles on students' vocabulary acquisition in authentic videos.

Regarding the focus of vocabulary, it is a core component of language proficiency and provides much of the basis for how well learners speak, listen, read and write (Richards & Renandya, 2002). Additionally, the importance of L1 can be seen from the L2 vocabulary learning in terms of its appropriateness to promote the learning process, efficiency in learning the word meaning and expanding the vocabulary size, and the activation of L1 during the L2 vocabulary learning from cognitive aspect. Vocabulary acquisition was investigated in the field of subtitles. Previous studies demonstrated that students benefited from both L1 subtitles and L2 subtitles from various stages of vocabulary knowledge (Neuman & Koskinen, 1992; Markham, 1999; Zarei, 2009; Harji, Woods & Alavi, 2010; Winke et al., 2010; Etemadi's, 2012). Whether students benefit from bilingual subtitles on their vocabulary learning becomes an interesting subject on which to focus. The following question further arises: what stages of the vocabulary knowledge could students master when watching the bilingual subtitles? These questions would be the main concern in this study with the discussion of the differential effects of subtitles.

Of equal importance is the potential pedagogical contribution of the study. There has been an increasing emphasis on L2 teaching as a tool for communication, and technology has played an essential role in promoting authentic communication (Harji et al, 2010). Videos, as a normal form of technology in the L2 classroom, have been

widely used in the L2 class for the purpose of increasing students' motivation, building confidence for students' understanding as well as providing vivid information about a foreign culture (De Bot et al, 1986). In this case, videos could be a way to facilitate the teaching technique of integrating real-life situations with L2 in language teaching settings. As there are a wide variety of videos on the internet, authentic videos relating to language learning are accessible to second and foreign language classrooms. However, teachers might find that the speakers in authentic videos always talk so fast that they might be difficult to understand for beginners or intermediate level L2 learners. Students might feel depressed and lose interest in L2 learning. Subtitles, then, turn into an ideal tool for teachers to facilitate their teaching outcomes. On the other hand, the lack of principles to guide the integration of types of subtitles into teaching purposes makes it difficult for teachers to make a decision for their teaching purposes. This study intends to provide clear guidance on the differential effects of subtitles on students' vocabulary acquisition for teachers. Also, students' attitudes towards different subtitles for their L2 learning hopefully could lead teachers to choose the most appropriate subtitles in their language skills teaching.

Bilingual subtitles can be widely found in the L2 classroom and in students' self-learning materials in China (Li, 2012). Despite this widespread practise, there has been little research examining its effectiveness in the L2 classroom. It is hoped that this study can lead to useful pedagogical suggestions informed by an understanding of the effectiveness of the use of bilingual subtitles specifically in terms of vocabulary acquisition. Specifically, the study may shed some light on the extent to which the use of subtitles contributes to students' L2 vocabulary acquisition; a crucial factor for teachers in deciding whether they should continue to use videos with subtitles in L2 classrooms and in deciding which kind of subtitles may prove more effective. While the study is located in the Chinese context, it nevertheless constitutes an important first step in paving the way to further and more extensive research in this area.

The possibility of conducting the research in China is due to the fact that there is accessibility to three types of subtitles in videos as well as wide usage of videos in second language classrooms in Chinese universities. As stated above, videos with monolingual or bilingual subtitles are commonly viewed in daily life, from films to

TV programmes, from news reports to academic lectures. It is possible for individuals to download the different subtitled videos from the internet. With the development of technology, video showing gradually becomes a popular teaching tool in the second language classroom in Chinese universities. Subtitled videos are not only popular in the L2 classroom; they are also favoured by students for their after-class self-learning or entertainment. In this case, the common use of subtitles and the familiarity of students to subtitles in video make it possible to conduct this study in China.

1.4 Research Questions

The main issue guiding this study concerns the comparison of differential effects of subtitles on students' vocabulary acquisition: comparing students' performance with subtitles and without subtitles and comparing their performance under L1 subtitles condition, L2 subtitles condition and bilingual subtitles condition. The main research questions are:

RQ1: Do subtitles (L1, L2, L1+L2) have an effect on receptive vocabulary knowledge recognition and recall?

RQ2: Is bilingual subtitling more or less effective for developing vocabulary learning than monolingual subtitling?

Alongside these leading questions, this study detailed a number of key variables which contribute to the study findings and results. These variables are: proficiency level, vocabulary recognition and vocabulary recall. Also, in RQ1, variables also involve subtitles and no subtitles. In the case of RQ2, variables include bilingual subtitles and monolingual subtitles (L1 subtitles and L2 subtitles). Students' level of proficiency was tested before the experiment. The role of students' proficiency level in this study is to give an overview of the students' language competence within the four classes and to see if this difference will affect the results of the experiment. If there were a significant difference in students' proficiency scores among the four classes, the experiment's result is likely to be affected because it is not known that the different students' performance results come from the effect of subtitles or from their previous proficiency difference. Vocabulary recognition and vocabulary recall are the two

variables for the subtitle conditions comparison. Vocabulary recognition is measured with a multiple-choice test and vocabulary recall is designed as target word translation.

RQ3: What are learners' perspectives on the three types (L1, L2 and L1+L2) of subtitles?

Students' perspectives are investigated by questionnaire with the following detailed sub-questions in terms of video understanding, listening comprehension and vocabulary learning. In addition, it is also interesting to investigate students' preference for subtitles in their differential language skills learning.

1.5 Thesis Outline

The next three chapters give a detailed orientation to a theoretical and empirical review of previous studies. Chapter 2 starts from the general case for L1 and L2 use by providing an historical overview, the theoretical perspectives, the critical perspectives of L1 and L2 use and the pedagogical perspectives. Chapter 3 introduces vocabulary including the vocabulary knowledge framework, incidental vocabulary learning and the importance of L1 in L2 vocabulary studies. Chapter 4 focuses on videos and subtitles by introducing the use of videos and subtitles in the L2 classroom, the advantages of subtitles in L2 vocabulary learning, the debate about using L1 and L2 subtitles and further narrows down to the use of bilingual subtitles in the L2 classroom.

Chapter 5 introduces the research design based on the research questions. It first presents the methodology and explains the reasons for choosing this framework. Next, the pilot study and main study are discussed in detail in terms of sampling, research design, intervention and measures. After that, a description of the data analysis is presented, which includes sections addressing the various data types collected (quantitative and qualitative). Lastly, it addresses the related ethical issues of this study.

Chapter 6 presents the findings and discussions of the quantitative data (RQ1 and RQ2) in this study. Initially the sample is considered, looking at the overall descriptive data by students' scores in English proficiency test, post-test and delayed post-test. The chapter then compares students' performance under subtitles condition and no subtitles condition. This section is followed by a further comparison of students' performance among L1 subtitles, L2 subtitles and bilingual subtitles. This comparison is sorted by

the type of tests (word recognition and word recall) and the test time (post-test and delayed post-test). It then presents the change over time by comparing students' performance at post-test and delayed post-test. The final section presents effectiveness of differential subtitles in individual items in terms of students' vocabulary acquisition.

Chapter 7 discusses students' perspectives towards subtitles according to RQ3. This discussion is mainly based on the qualitative data on the questionnaire. In particular, the discussion focuses on their video understanding, listening comprehension, vocabulary learning, and their perceptions toward different types of subtitles in different learning aspects. Specifically, video understanding emphasizes understanding the gist of the video. Listening comprehension focuses on students' understanding of the video through listening, including the particular word pronunciation recognition and understanding, and the specific video content understanding. Vocabulary learning includes word recognition and recall.

Chapter 8 summarizes the main findings for the research questions and reviews the main findings and discussions. Following that, it suggests the implications for teachers in the L2 classroom. Finally, it discusses limitations and future directions.

Chapter 2: General Case for L1 and L2 Use

2.1 Introduction

As explained in Chapter 1, this study on the impact of subtitles (especially bilingual) on learners' vocabulary acquisition is positioned in the area of the discussion of L1 and L2 use. The first part of this chapter gives the historical overview of using L1 in the L2 classroom. Next, theoretical perspectives on L1 use in the L2 classroom are introduced, including cognitive perspectives (section 2.3.1), and sociocultural perspectives (section 2.3.2). The critical perspectives of L1 in the L2 learning are provided in section 2.4. The last section (2.5) introduces the pedagogical perspectives on the L1 use in the L2 classroom, including the extent of L1 use in the L2 classroom (section 2.5.1), the benefits of L1 use in the L2 classroom (section 2.5.2), and L1 use in language skills development (section 2.5.3).

2.2 Historical Overview of Using L1 in the L2 Classroom

Since the late nineteenth century, the usual assumption in the literature has been expressed that monolingual teaching and learning is the best in L2 classroom for explanation, testing, classroom management or general communication between teachers and students (Hall & G. Cook, 2012). This notion demonstrated that students were discouraged or even banned from using L1 during a language class. This assumption has been accepted as regulatory in the nineteenth century, and was taken for granted in the L2 teaching literature through the twentieth century. However, this monolingual assumption has been increasingly challenged by the merits of using L1 in the L2 classroom.

Despite the dominance of monolingual imperatives in the theories of language teaching and SLA research, L1 or translation have continued to be used in L2 classrooms around the world (Benson, 2000). For example, Adamson (2004) revealed that Grammar Translation in English language teaching boomed until the 1960s in China. In the meantime, Nasrin (2005) noted that the Grammar Translation approach was being used in Bangladesh. Numerous studies have focused on bilingual teaching

and code-switching in a range of L2 classrooms around the world, for instance, studies from Canada, with its particular history of bilingual education, studied L1 use and code choices (e.g. Swain & Lapkin, 2000; Liebscher & Dailey-O’Cain, 2005; Cummins, 2007; Dailey-O’Cain & Liebscher, 2009). Other places like the United Kingdom (Macaro, 1997, 2001; Allford, 1999; Meiring & Norman, 2002), the United States (Polio & Duff, 1994; Kramersch, 1998; Alley, 2005), Australia and New Zealand (Ellwood, 2008); Finland (Nikula, 2007); Germany (Butzkamm, 1998); Italy (Moore, 2002); Japan (Hobbs, Matsuo & Payne, 2010); South Korea (Liu et al., 2004; Kang, 2008); Spain (Unamuno, 2008); Sri Lanka (Canagarajah, 1999); Sweden (Cromdal, 2005); Thailand (Forman, 2007, 2008) also documented the use of L1 in the L2 classroom. Moreover, the use of translation activities in the L2 classroom has also been increasingly acknowledged in recent years. For example, Kern (1994) explored the role of translation in L2 reading and Lally (2000) revealed the use and effects of translation tasks within writing activities. The review of L1 use in the pedagogical L2 context will be detailed in section 2.4.

In China, the L1 use in language classroom was developed alongside the ELT approach. The ELT approach has experienced uneven development in China in the past. In 1966, the Cultural Revolution, which was a political movement of ideological extremism, gave rise to a decade of chaos and isolation (Guangwei, 2002, p.31). Thus, the lowest quality of ELT methodology was a teacher-centred, grammar-translation methodology. At this time, L1 was used overwhelmingly in the language classes. When China’s “Four Modernisations” programme was undertaken, the recognition of English was turned into a vehicle for exchanging with the rest of the world in matters of economy, business, culture, and science and technology. But the ideological vestiges which include “English as a weapon for international class struggle” determined the coexistence of two approaches, namely, “a combination of the grammar-translation method and audiolingualism” (Adamson & Morris, 1997). The coexistence of these two approaches led teachers to use L2 in their classes, but L1 still occupied the main role in the L2 classroom. With the further opening up in China, the increasing English requirements put English teaching into a very significant place. Meanwhile, with ongoing nationwide educational reform, the government required teachers to adopt Communicative Language Teaching approaches in the English teaching settings. This

required teachers to use as much English as possible in the language class. There was widespread agreement among administrators that L1 should not be used in the L2 classroom (van de Meij & Zhao, 2010), and that teachers and students should follow this norm. Moreover, some Chinese schools or universities used 'L2 teaching only' as their teaching advantage for students recruitment. This ignorance of L1 in L2 classroom not only took place at schools level, but also can be found at national policy level. Guo (2007) noted that the issue of L1 use in the L2 classroom was deliberately ignored in new syllabi in 2001 and 2004 by the Ministry of Education. This was probably due to the continuing debate around this issue. Therefore, the L1 use in the L2 classroom in China changed from L1 only to L1 mainly with little L2 and to L2 only stages.

The national policy of the monolingual principle has been embodied in guidelines in many countries. In France, for example, it was claimed that the students must be "led gradually towards distancing himself/herself from the mother tongue" (Ministère de L'Éducation Nationale, 1993, p.11). Similarly, from the English language curriculum guide (primary 1-6), Hong Kong urged teachers to create 'a language-rich environment [which] incorporates, for example, the use of English in all English lessons and beyond: teachers should teach English through English and encourage learners to interact with one another in English' (Curriculum Development Council, 2004, p.109). The Department of Education and Science in England and Wales stated that 'The natural use of the target language for virtually all communication is a sure sign of a good modern language course' (Department of Education and Science, England and Wales, 1990, p.58), but recent revisions have revealed a 'gradual shift policy... to a measured inclusion of the mother tongue' (Meiring & Norman, 2002, p.28) for the sake of raising language awareness and assisting learning by comparing between L1 and L2. In mainland China, in 2000, the Ministry of Education adopted a principle in its experimental English syllabus for high-school English classrooms, encouraging teachers to use English (L2) as much as possible in the English (L2) classroom. It released instruction that L1 could be used for purposes 'such as explaining or translating abstract English words and expressions, or special English structures' (Ministry of Education of the PRC, 2000). Interestingly, in South Korea, L1 has been extensively used in language classrooms, the recent government adopted a policy

named 'Teaching English through English' (TETE). The National Curriculum for English in 1999 revision stated that English (L2) will be the only language used in the elementary- and secondary-school L2 classroom (e.g. Jeon, 2008; Kang, 2008).

In spite of these arguments from the realms of principles and policy, the following sections will present theoretical and pedagogical discussions of L1 use in the L2 classroom which offer a different picture.

2.3 Theoretical Perspectives on L1 use in L2 Learning

This section is introduced from the theoretical perspective, focusing on the explanation of the learning ability in the bilingual mind. It further discusses the possible ways to turn from the monolingual bias to bilingual through a deliberate strategic theoretical commitment (UBL). Following that, it provides the general sociocultural approaches to L1 use.

2.3.1 Bilingual mind: cognitive perspectives

According to Hall and G. Cook (2012), the role of L1 could be a 'natural' reference system and 'pathfinder' (Butzkamm, 1989) for learners. From the psycholinguistic perspective, the multicompetence model states that language learners as bilingual users who have different uses for language from monolinguals, have a different knowledge and even different minds of both L1 and L2 from monolinguals (V. Cook, 2008, p.231). Meanwhile, Bialystok et al. (2005) and Bialystok and Feng (2009) point out that the significant differences between monolingual and bilingual language users can be seen from the ways in which linguistic tasks are performed. Cummins (2007, p.299) also highlights that bilingual learners could develop their metalinguistic awareness as a result of processing two languages. Learners are likely to benefit from paying attention to the similarities and differences in the two languages (for example, focusing on cognates or working on dual language projects).

Regarding how languages interact in the minds of bilingual language learners, Cummins (2007) points out that the development of a language skill or proficiency assists the development of that same skill in the other language due to the interdependence across languages. In this case, learners have a common underlying

proficiency which is interdependent across languages to facilitate ‘the transfer of cognitive/academic or literacy-related proficiency from one language to another’ (Cummins, 2007, p.232). Cummins (2007) further suggests that learning is likely to be more efficient if teachers draw learners’ attention to the L1 and L2’s similarities and differences for the sake of coordinating and reinforcing learning strategies across languages.

From the cognitive perspective, Ortega (2014) proposes ways forward for a bilingual turn in SLA. She demonstrated that Usage-Based Linguistics (UBL), as a deliberate strategic theoretical commitment, could be a helpful move to support the bilingual turn for linguistic-cognitive SLA research communities. The UBL encompasses many theories which could be viewed as diverse interrelated approaches. These have been used for explaining language change and grammar (Bybee, 2010) and for examining bilingual first-language acquisition (Paradis et al., 2011). In terms of SLA, Ortega (2014) suggests that there are at least three ways in which UBL can provide theoretical apparatus and impetus to carve some ways out from the monolingual bias so as to support the bilingual turn in linguistic-cognitive SLA.

The first way of the theoretical commitment to UBL for a bilingual turn in linguistic-cognitive SLA is general and it shifts its explanatory burden from birth to history and experience in explanations for the ontogeny of language (Ortega, 2014, p.40). UBL posits that actual language experience drives language development over the full life span (Bybee, 2010). Therefore, a theoretically congruent working hypothesis is that linguistic development is shaped by lived changes in experience (Ortega, 2014, p.40). This hypothesis has been found robustly in a number of empirical studies, including various experiments among adult native users of a given language with differences in several respects: working memory ability that regulates their capacity to comprehend difficult relative clauses (Wells et al., 2009); observed brain activity during language processing (Abutalebi, 2008); and growth of white matter in brain (Carreias et al., 2009). These studies have involved a number of differential facts, such as different levels of schooling and education, different occupations and jobs of participants. The above studies demonstrated that the UBL theory focuses on the explanation of the roles

played by experience in driving change and learning, banning the assumption that the individuals are uniform in language competency by virtue of their nativeness. In other words, the variability is an inherent and exclusive characteristic of non-nativeness (Ortega, 2014).

This general theoretical predisposition of UBL makes it possible to assist SLA research communities to explore the relevant phenomena without depending on assumed fixed consequences of nativeness and non-nativeness. This motivates the linguistic-cognitive SLA researchers to work against the ideology of linguistic birth-rights and their fixity (Ortega, 2014). A recent study by Muñoz and Singleton (2011) calls for a reorientation of SLA research on age effects. They argue that the explanation for learning additional-language success as a function of age is mistaken. This is for the reason that age could be a proxy for experience (Ortega, 2014). As a result, they suggest prioritizing alternative explanations for the age effects, including linguistic variables and de-emphasizing age as an explanatory variable. As the theoretical guidance of UBL for Muñoz and Singleton's investigation, it shows that UBL could provide sound claims 'because it shifts the explanatory burden and the empirical focus from birth to history and experience' (Ortega, 2014, p.41).

The second benefit of committing to UBL for a bilingual turn in linguistic-cognitive SLA focuses on the link between language input affordances and learning success. This way relates to the first benefit in terms of the experience in explanations for the ontogeny of language. The UBL researchers have prioritized the study of the linguistic environment, understood as the language input (this particularly can be found in bilingual and monolingual child-language acquisition). For instance, the theoretical principle of nativism stimulated Chomsky and generative researchers of first language acquisition to argue that the linguistic environment around children was insufficient to allow the induction of a grammar. That is, the input information to children has to be emptied of any useful language evidence for the sake of locating language knowledge prior to any experience in the child's mind. However, it is impossible to empty any language evidence in the real life, and this in turn leaves room for the first language on the way on the second language learning. Without those useful pieces of linguistic input information, and a grammar knowledge that was said to be complete, the only

alternative conclusion left could be an innate endowment for language from the logical perspective (Ortega, 2014, p42). This caused the introduction of the new frame of the poverty of the stimulus, which marked as a cornerstone of the theory in the mid-1980s (Thomas, 2002).

Meanwhile, although the UBL researchers opposed nativism, they knew the need to empty children's minds of any endowed knowledge and to input the acquisition-rich information instead (Tomasello, 2003; Behrens, 2009). Their central empirical task was to reflect that the input included the potential for the children to stimulate language knowledge from the bottom up. The bilingual first-language acquisition researchers have established the link between bilingual development and language input affordances (Ortega, 2014). According to De Houwer (2011), the frequency and quality of the language usage patterns around bilingual children predict the individual variation in their final competency in the two languages. When one of the languages are exposed at a lower level input for the children, children's learning accordingly may slow down as they will need more time to recruit the relevant experience from that language. And if the exposure is minimal, the children's language development may pause. 'These observations hold true even when comparing bilinguals whose chronological age and overall months or years of use of those languages are kept constant' (Ortega, 2014, p.42). The empirical link between language input affordances and language development not only can be seen from word learning, but also from grammatical development (Hoff et al., 2012). This effectiveness was maintained in the second language into adulthood (Gathercole & Thomas, 2009).

The third and final way of the theoretical commitment to UBL in linguistic-cognitive SLA is from the methodological-analytical aspect. That is, analysing linguistic development as self-referenced, non-teleological and unfinished (Ortega, 2014). The goal in UBL is mapping construction-specific inventories of linguistic resources. The interest of the UBL-acquisition researchers, in other words, is in exploring coexisting degrees of formulaicity and schematicity instead of sorting target-likeness and non-target-likeness over time. To be specific, UBL investigates degrees of language schematization in the form-function units by which learners could handle different

levels of language, including holophrases (those words or phrases could be learned as frozen units, e.g. get-it, all-gone), pivot schemata (early item-based constructions with two internal parts, e.g. more car, all wet, no bed) and item-based construction (lexical-specific islands) as well as the most abstract constructions (Tomasello, 2003). Ortega (2014) realised that there might be a potential danger of ‘falling back on teleologism if one assumed that acquisition should proceed towards the most schematized or abstract end of the graded continuum as an end goal’ (Ortega, 2014, p.44). However, this danger is fully pre-empted by UBL’s maximalism (Behrens, 2009), which demonstrated that the linguistic resources of constructions from usage events remain redundant. That is, there could be coexistence of item-specific and highly abstract encodings for the same form-meaning units. Although schemata arise from sufficient experience, the fully frozen equivalents will not be cropped.

To summarise, from the cognitive perspective, it is possible for learners to cultivate a bilingual mind for language learning. These possibilities of bilingual turn are likely to pave ways from a deliberate strategic theoretical commitment (UBL), which demonstrates shifting the explanatory burden from birth to history and experience, focusing on the link between language input affordance and learning success and providing the linguistic development analysis in a self-referenced, non-teleological and unfinished way.

2.3.2 Sociocultural approaches to L1 use

From the language perspective, sociocultural approaches assert that cognitive development is a collaborative process through social interaction (Levine, 2011, p.24). Language is regarded as a cognitive tool from which learners could mediate their mental processing, such as planning, noticing or reasoning (Swain & Lapkin, 2000, p.253). Language is seen to mediate learners’ cognitive activity on both the internal (intrapsychological) and external (interpsychological) aspects (Antón & DiCamilla, 1999). In this case, therefore, L1 use is regarded as a cognitive tool through which learning is scaffolded. From an intrapsychological perspective, Antón and DiCamilla’s (1999) reveal that learners use L1 to direct their own thinking in private speech. Also, Centeno-Cortés and Jiménez (2004) note that Spanish learners use L1 private speech

for reasoning at the initiation, progression and conclusion of tasks. From an interpsychological perspective, Antón and DiCamilla (1999) observed that learners use L1 for collaborative talk in tasks, for instance, explaining the nature of the tasks in order to solve problems and maintain focus. Similarly, acknowledgement of the L1 use during language learning tasks is regarded as a normal psycholinguistic process, which ‘facilitates L2 production and allows learners to initiate and sustain verbal interaction with one another’ (Brooks & Donato, 1994, p.268). The nature of this study, to some extent, is not relevant to the social interaction because students do not learn with each other. However, it is relevant to the engagement through the real context: learning L2 from watching videos with subtitles.

2.4 Critical Perspectives of L1 Use in the L2 Learning

The development of L1 in the L2 classroom was not smooth throughout the years. The exclusive use of L2 in classrooms was supported, as it provided a real foreign language environment for developing learners’ in-built language system (Macdonald, 1993). Atkinson (1993) pointed out that teaching L2 approaches were focused on ‘a subconscious and spontaneous development of L2 competence gained in favour over rule-governed approaches to developing L2 competence’ (Scott & Fuente 2015, p.101). A number of approaches (Omaggio, 2001; Lee & VanPatten, 2003) of L2 teaching emphasised the importance of using L2 and suggested that using L1 might be detrimental to the acquisition process.

In terms of L2 learning, V. Cook (2002) contended that the L1 and the L2 (and the L3 etc.) would relate in some ways regardless of whether a language is acquired in a classroom setting or through immersion. V. Cook (2001) argued that the L1 could serve a useful purpose in the process of L2 teaching. The effectiveness of L1 could particularly be used in the task-based learning approaches: students could use L1 to explain their tasks, negotiate roles or check understanding or production of language with their peers (V. Cook, 2001, p.418). Based on V. Cook’s (2001) argument, Belz (2002) added that the use of L1 and/or multiple language may provide insight into the ways in which multi-/bilingual users inhabit and link with a pluralistic and multilingual world (Belz, 2002, p.234). Atkinson (1993) also argued that there was no study reporting the requirement for L2 use 100% of the time. When considering the learning

contribution of L1 to L2, Macaro (2009) further indicated a theoretical framework revealing that L1 use enhanced L2 learning. He proposed that predicting, processing and storing knowledge were dovetailed with the cognitive theory, which were used in L1 and L2 learning via interaction in short- and long-term memory. On the other hand, in terms of L1 usage in the socio-cultural aspect, opposition to excluding L1 from the L2 classroom has been considered in the light of traditional culture in the L1 country. For example, Van der Walt (1997) links the exclusivity of L2 with linguistic imperialism and culture, namely, exclusive use of L2 may result in the entire loss of home cultures. Also, the socio-cultural theory supported L1 assistance in L2 learning and emphasised that thinking aloud and engaging in mental commentaries often happened in L1 and further contributed to the L2 learning.

Some researchers took the middle ground in this debate. For example, Harbord (1992) considered a humanistic need to switch from the L2, however, he advised against the overuse of L1 due to the fear of breaking the creative construct in the learning process. Gearon (1998) cited in Macaro (2001) was concerned about how to limit unbridled use of L1 if the principle of its inclusion in the classroom was accepted. The above authors who stood in the middle provide an issue regarding how much L1 teachers should use in the L2 classroom, and do they do so intentionally and, if so, for what purposes?

Despite continued debate over the decades, the impact and the effectiveness of L1 in L2 teaching settings appears to be a valuable issue for further discussion. The following section will provide detailed review in terms of the pedagogical perspectives of L1 use in L2 classroom.

2.5 Pedagogical Perspective on L1 Use in the L2 Classroom

In recent years, increasing recognition of the value of the L1 as a pedagogical tool has begun to challenge the exclusion of the L1 in the L2 classroom (Hennebry et al., 2013). A number of studies have tried to explore how much, when and why teachers use L1 in the L2 classroom. This section will structure the review as the extent of L1 use in the L2 classroom, the benefits of L1 use in the L2 classroom, and L1 use in language skills development.

2.5.1 The extent of L1 use in the L2 classroom

The use of L1 has been found in varying degree of purpose in the L2 classroom (Duff & Polio, 1990; Kaneko, 1992; Macaro, 2001; Oga-Baldwin & Nakata, 2014; Nakatsukasa & Loewen, 2015). For instance, Duff and Polio (1990) investigated the use of L1 in the L2 classroom at thirteen U.S. universities. The results illustrated that L1 use ranged from 0%-90% of the discourse depending on the function of item/utterances produced, difficulty of the language being used and interactive effect involving students' use of L1. Similarly, Macaro (2001) explored L1 use at four state comprehensive schools in the south of England. He found that the use of L1 as a proportion of a L2 lesson ranged from 4%-12%. Oga-Baldwin and Nakata (2014) did the exploration in twelve elementary schools (four from the U.S., eight from Japan). The results showed that L1 use occupied less than 20% of teachers' utterances and less than 10% of class time. Interestingly, Nakatsukasa and Loewen (2015) indicated that the university teacher used 39.7% of L1 in focus-on-form episodes, and the teacher used code-switching in 11% of his utterance.

According to the above findings, therefore, it appears difficult to draw a general conclusion regarding the quantity of L1 use by teachers and learners. The use of L1 could vary according to the institutions, students' language proficiency, as well as teachers' teaching outcomes. However, the fact that L1 use is welcomed in the L2 classroom cannot be ignored. According to Kharma and Hajjaj (1989), 93% of teachers used the learners' native language (L1) to some degree in the classroom. The highest L1 use was associated with new and difficult items, and 75% of learners felt that L1 was helpful in facilitating learning. In this case, studies suggested that L1 could be an effective teaching tool for the facilitation of teacher instruction and student learning.

2.5.2 The benefits of L1 use in the L2 classroom

The contribution of L1 in the L2 classroom is complex, and this review will explore it in two parts: the benefits of L1 in the L2 classroom at linguistic communication level and the purposes of L1 use.

The role of L1 on L2 learners has been investigated from an interactionist perspective. Brooks and Donato (1994) found that metatalk (language talk to reflect on language

use) in L1 was possible to sustain the verbal interaction. Brooks et al. (1997) further indicated that the use of L1 resolved communication problems among L2 learners. Similarly, Centeno-Cortés and Jiménez (2004) addressed the importance of L1 use in problem-solving tasks. Therefore, using L1 in classroom discourse endorses a communicative level of negotiation in which students answer or ask questions with the motivation of consecutive learning in class (Moore, 2002, p.282).

In addition to facilitating communication, researchers attempt to identify the functions of L1 in the L2 classroom (Hosoda, 2000; Moore, 2002; Tang, 2002). They suggested that the functions were neither limited nor highly principled. For example, functions were reported as: providing metalinguistic cues, providing instructions for conducting tasks; contrasting L1 and L2 forms; eliciting learner participation; translating; giving L1 explanations of previously used L2 utterances, prompting L2 use and classroom management. The above list could be open-ended (Ferguson, 2009) and somewhat ad hoc (Tian & Macaro, 2012).

According to Moore (2002, p.281), a teacher might switch to L1 to arouse students' attention, including concentrating on discourse, content, and/or form, and beginning a new sequence of negotiation and production of L2. Specifically, using L1 can be a call for help from students who need to keep up with the teacher. Tang (2002) also conducted an observation study and revealed that L1 could be used for the provision of activity instructions and vocabulary explanations.

2.5.3 L1 use in language skills development

As for the linguistic aspect of specific tasks, the literature has identified the main purpose for using L1 in a grammar class. Teachers use L1 to explain metalanguage which is hard to understand (see Macaro, 1998; Neil, 1997). Kaneko (1992) investigated students' claims about their teachers' use of L1 in the L2 classroom. The results reported that the more L1 use, the less progress students made with pronunciation, but that mixed L1 and L2 use was beneficial for grammar and vocabulary acquisition. As seen from the above finding, using L1 in a grammar class benefited teachers in terms of offering clear explanations of their teaching instructions. However, L1 might have an impact on the grammar of L2 when the two language systems are different.

Also, benefits of L1 in the L2 classroom (for example, preparing for activities and externalising students' inner speech) are seen in writing activities (Freidlander, 1990; Kobayashi & Rinnert, 1992). Storch and Wigglesworth (2003) conducted a study in a writing class. They tried to explore to what extent the students used the L1, what particular functions of L1 served, and what the students' attitudes were toward L1 use in the L2 classroom. The results revealed that L1 was useful for writing task management and clarification, determining meaning and words as well as explaining grammar. Zamel (1982) first called for the application of an L1 process approach (translation exercise) to the L2 composition classroom. Zamel (1982) indicated that advanced ESL students showed great improvement in their writing as a result of translation exercises. In particular, students became more logical and clearer in the preceding sentence after rewriting. They became more frequently focused on the vocabulary, tense and punctuation (Zamel, 1982, p.203). Similarly, Akyel (1994) found that L1 use had a positive effect on L2 writing plans among lower-proficiency students. She further suggested that students should be encouraged to organise ideas both in L1 and L2 (Akyel, 1994, p.182). More recently, Kim (2010) explored the translation exercises in the communicative EFL writing classroom. The results also revealed that L1 use in L2 writing classrooms could be a positive tool in terms of improving students' writing proficiency and assisting them to realize the importance of viewing their writing more objectively. Therefore, the benefits of L1 in L2 writing tasks also could be seen from assisting writing class management and task processes. In addition, applying translation exercises to L2 composition was found to be a positive tool to improve their language proficiency and to help students focus on their writing.

In reading tasks, Kern (1994) explored whether using L1 translation during L2 reading facilitated the generation and conservation of meaning. He argued that L1 allowed the reader to represent portions of L2 text that exceed cognitive limits in a familiar, memory-efficient form. The results suggested that teachers could use L1 to reduce memory constraints and avoid losing track of meaning (Kern, 1994). Seng and Hashim (2006) further investigated the extent of L1 use while reading L2 texts in a collaborative situation among tertiary ESL learners. The findings confirmed that all learners used L1 during L2 reading because L1 facilitated resolution of word-related and idea-related difficulties.

The form of L1 use in reading also can be presented as glossaries. These are used for the purpose of assisting comprehension and for the acquisition of vocabulary (Hennebry et al., 2013). However, the results have been mixed when glosses in L1 were compared with L2. Miyasako (2002) indicated that glosses given in the L2 were better for word learning in reading than L1 glosses. On the other hand, Laufer and Shmueli (1997) found more conducive learning with L1 glosses, but this was dependent on the context in which the target word was presented. The study of vocabulary gains from L1 use in L2 reading is closely relating to the current study, which will provide a specific review of this aspect in the vocabulary chapter.

Other benefits of L1 use could be found in listening classes. L1 could be used in teaching two particular listening strategies: syntactic cues and prosodic cues. For example, Harley (2000) indicated that Chinese and Polish students at diverse level of proficiency derived assistance prosodically (i.e. information for the intonation and stress patterns of sentences) from L1. Also, L1 was used when students encounter confusing sentences or they rely on syntax to reconstruct prosodic cues. Further supporting the L1 use in listening strategy development, J. Field (2008) asserted that L1 listening strategy enhanced L2 listening by some osmotic processes because students manipulated the phonology of L2. Bozorgian and Pillay (2013) explored the effectiveness of L1 in listening strategies teaching and its impact on L2 listening comprehension. EFL students were taught five listening strategies: Guessing, making inferences, identifying topics, repetition, and note-taking over 14 weeks during a semester. The listening post-test results showed that students performed much better under listening strategies taught in L1 condition than in L2.

In addition to listening strategy, the effectiveness of L1 use in listening class was found in the vocabulary improvement. Hennebry et al. (2013) conducted a study regarding L1 use after incidental learning plus brief explicit instruction (listen-plus). Results indicated that brief vocabulary instruction with L1 after the listening activity led to more effective recall than a listening-only condition. In light of research which indicates the beneficial effects of using L1, Macaro (2001, p.548) proposes that a framework should be provided, especially for less experienced teachers, to develop a principled approach, so that L1 can be a valuable tool as well as an easy option.

For the purpose of classifying teachers' reasons for L1 use, researchers explored various ways of using L1 in the L2 classroom. Rolin-Ianziti and Varshney (2008) pointed out the 'medium-oriented goals' and 'framework goals' in classroom interaction. The medium-oriented goals refers to the teaching of the L2 (the medium) (such as explaining vocabulary items or teaching grammar) and the framework goals refers to 'goals associated with the organization and management of classroom events' (such as giving procedural instructions and assigning homework) (N. Ellis, 1994, p.557-578). Similarly, Littlewood and Yu (2011) draw upon Kim and Elder's (2005) distinction to explore a number of ways in which teachers strategically employ L1 in L2 classroom. They revealed three goals: 'core goals' (teaching the target language), 'framework goals' (managing the classroom situation) and 'social goals' (expressing personal concern and sympathy).

Although the use of L1 has been unwelcome in the past and has lacked support from national policy, L1 or translation has continued to be used in daily life and in the classroom in China. From the individual learning perspectives, the above sections showed that learning is likely to be more efficient if students paid attention to the L1 and L2's similarities and differences (Cummins, 2007). In other words, the cognitive processing of language learning, to some extent, could be stimulated from another language. Although critical debate of the L1 and L2 continues, increasing recognition of the value of the L1 as a pedagogical tool has begun to challenge the exclusion of L1 in the L2 classroom. A number of studies (e.g. Centeno-Cortés & Jiménez, 2004; Macaro, 2001; Nakatsukasa & Loewen, 2015; Storch & Wigglesworth, 2003) have explored the L1 use in the L2 classroom in terms of the extent and the purposes of L1 use, linguistic communication level and language skills development aspect. However, bilingual subtitles, as another form of L1 use in the L2 learning, have not been paid much attention. In particular, such questions relating to the L1 use in the L2 classroom are probably worth considering. Such as how L1 subtitles within L2 subtitles and L2 auditory in videos could benefit students learning? Will bilingual subtitles better facilitate students to acquire language than monolingual subtitles? What are students' perspectives towards this way of adding L1 in the L2 learning? These questions are a clue to structure my final research questions.

2.6 Chapter Summary

The description of the L1 and L2 use was described from historical, theoretical and pedagogical perspectives. Section 2.2 showed the history of L1 and L2 use from the domination of monolingual imperatives to the effectiveness of L1 in the L2 classroom around the world. It also provided the L1 and L2 use in Chinese ELT situation, which experienced L1 domination, L1 mainly with L2 and L2 only stages. The national policy demonstrated various attitudes towards using L1 in the L2 classroom around the world. Section 2.3 revealed the L1 use from cognitive and sociocultural approaches. The discussion between the L1 and L2 use in classroom further provided valuable debate for researchers. The review of empirical work in section 2.4 explored to what extent L1 was used in classroom from various studies results and summarised the benefits of L1 use in L2 classroom including learners' language skills development. The following chapter looks at research on vocabulary including a review of vocabulary knowledge, incidental vocabulary learning and the importance of the L1 in L2 vocabulary acquisition.

Chapter 3: Vocabulary

3.1 Introduction

The first part of this chapter presents several vocabulary knowledge frameworks according to two dimensions of vocabulary knowledge: breadth (size) and depth (quality). Next, incidental vocabulary learning (section 3.3) is introduced, including incidental vocabulary acquisition from listening and reading, and word frequency which is one of the important variables to have an effect on students' vocabulary acquisition. The final section (3.4) focuses on the importance of L1 in L2 vocabulary studies. It further provides three cognitive models in L1 lexical activation in L2: the bilingual interactive activation model (BIA) (Dijkstra & Van Heuven, 1998); the revised hierarchical model (RHM) (Kroll & Stewart, 1994) and bilingual dual coding theory (Paivio & Desrocher, 1980).

3.2 The Vocabulary Knowledge Framework

Vocabulary is a core component of language proficiency and provides much of the basis for how well learners speak, listen, read and write (Richards & Renandya, 2002). The vocabulary knowledge framework is instrumental for measuring learners' vocabulary level. In this case, setting up the vocabulary knowledge framework is necessary in several learning aspects, such as reading and vocabulary research. This section reviews the vocabulary knowledge framework according to two dimensions of vocabulary knowledge: breadth (size) and depth (quality).

In recent years, second language researchers have attempted to define what it means to know a word. Various frameworks have been proposed (Richards, 1976; Meara 1996; Nation, 1990; Wesche & Paribakht, 1996; Qian, 1998). There is a tendency that L2 vocabulary researchers view vocabulary knowledge as a multidimensional construct rather than a single dimension (Qian & Schedl 2004, p29). Read (1989), Wesche and Paribakht (1996) and Qian (1999) advocate that vocabulary knowledge should comprise at least two dimensions: vocabulary breadth (size) and depth (quality). According to Qian (2004), the breadth of vocabulary refers to “the number of words

the meaning of which a learner has at least some superficial knowledge” (Qian, 2004, p.29). And the vocabulary depth refers to “how well a learner knows a word” (Qian, 2004, p.29). This section will focus on the depth of vocabulary.

Many influential researchers have been interested in setting an agenda for vocabulary knowledge framework in the past decades. One of the influential statements along this line was produced by Richards (1976), and it has continued to impact and inform research in vocabulary acquisition for over 20 years. For example, R. Ellis’ work on the acquisition of word meanings through oral input (1995) and Schmitt and Meara’s research into vocabulary through a word knowledge framework (1997) are developed on the basis of Richards’ vocabulary knowledge framework. Specifically, Richards outlined eight assumptions as a framework for describing vocabulary knowledge:

1. The native speaker continues to expand his vocabulary in adulthood, whereas there is comparatively little development of syntax in adult life.
2. Knowing a word means knowing the degree of probability of encountering that word in speech or print. For many words, we also know the sort of words most likely to be found associated with the word.
3. Knowing a word implies knowing the limitations imposed on the use of the word according to variations of function and situation.
4. Knowing a word means knowing the syntactic behaviour associated with that word.
5. Knowing a word entails knowledge of the underlying form of the word and the derivatives that can be made from it.
6. Knowing a word entails knowledge of the network of associations between that word and the other words in the language (sic.).
7. Knowing a word means knowing the semantic value of the word.
8. Knowing a word means knowing many of the different meanings associated with the word.

Richards (1976, p.83)

Although this set of assumptions was a way to assist understanding word knowledge and was frequently referred to as a general framework for vocabulary knowledge, Meara (1996) points out that some problems appeared at the same time. Firstly, the aspects of items in the assumptions were debatable. Specifically, Richards pointed out eight assumptions in total to account for word knowledge, which does not give a complete picture. It omitted several aspects which might be important in knowing a word. Actually, the list of topics may already have been familiar to the people who were interested in linguistic research at that time. For example, Lyons (1970) mentioned the eight assumptions in his work. Secondly, the odd ordering is another point to be questioned. Assumptions seven and eight (knowing a word means knowing the semantic value of the word, and knowing a word means knowing many of the different meanings associated with the word) appear at the bottom of the list. These two aspects of knowledge seem to be crucial in vocabulary knowledge. In contrast, assumption two (knowing whether a word is frequently used or not) seems to be more peripheral. Thirdly, after reviewing the eight assumptions, with the exception of item six (word association), the rest of the list is ‘driven exclusively by the concerns of descriptive linguistics, rather than by psycholinguistic or pedagogical concerns’ (Meara, 1996, p. 2). This left some obvious gaps in word knowledge such as the description of active and passive vocabulary, vocabulary growth and vocabulary attrition and so on. Also, it might be argued that the topics of assumptions overlap with each other. Assumptions seven and eight, for instance, contain the same points in terms of word meaning.

“Richards’s paper is not really an attempt to provide a systematic account of what it means to know a word” (Meara, 1996, p.2), which is not as straightforward as it might seem at first sight. Nevertheless, considering the complex nature of vocabulary in Richards’s framework, memorising the meaning of a word is not the only one item to be involved (Read, 2000, p25). Therefore, Read (2000) indicates that there are two main approaches to measuring the quality (depth) of an individual’s vocabulary knowledge. One is called the developmental approach. That is incremental acquisition of a word from a basic level (“I don’t know the word”) to an advanced level (“I master

the word in almost all contexts of use”). The second one is termed the dimension or components approach. That is, knowing a word in terms of mastery of specific concepts of lexical items including word class, pronunciation, spelling and collocation.

A number of researchers (Qian, 2004; Wesche & Paribakht, 1996; Schmitt & Zimmerman, 2002) have further developed the vocabulary knowledge framework from the developmental approach. The Vocabulary Knowledge Scale (VKS), which was developed by Wesche and Paribakht (1996), is one of the best known and most widely-used depth-of-knowledge scales. They suggest five stages that learners might know about a word. The five stages are regarded as statements of learners’ knowledge levels of a particular word. The VKS format is listed below:

Stage 1: I don’t remember having seen this word before.

Stage 2: I have seen this word before, but I don’t know what it means.

Stage 3: I have seen this word before, and I think it means_____. (synonym or translation)

Stage 4: I know this word. It means_____. (synonym or translation)

Stage 5: I can use this word in a sentence: _____.

Wesche and Paribakht (1996, p.28)

The VKS has proved to be workable in measuring learners’ vocabulary knowledge (Read, 2000, p.135). For example, Wesche and Paribakht (1997) conducted a study to compare two approaches (reading plus themes and reading only) to the acquisition of theme-related vocabulary through reading. VKS was administered as the pre-test and post-test for measuring learners’ acquisition of the target words. The results showed that students’ vocabulary knowledge was increased by both of the approaches, but the reading plus themes approach gains greater vocabulary knowledge, especially for nouns and verbs.

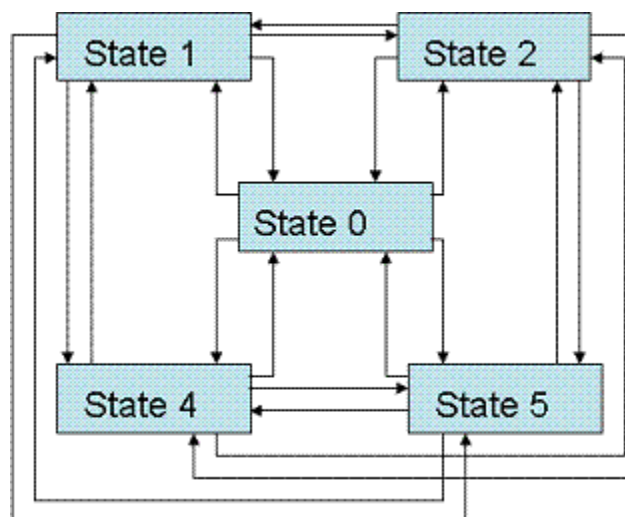
However, Meara (1996, p. 6) argues that when compared with Richards’ vocabulary knowledge framework, the description of the level of knowledge is ‘coarser’ than the previous framework model. In other words, this makes the description of the levels of word knowledge considerably simpler for detailing the knowledge that develops over

time. Admittedly, Wesche and Paribakht argue that the purpose of their instrument is not to evaluate general vocabulary knowledge, 'but rather to track the early development of specific words in an instructional or experimental situation' (Wesche & Paribakht, 1996, p.33).

A second problem with the VKS arises from the consecutive five stages list in VKS. According to Wesche and Paribakht (1996), a transition of the word knowledge is from one level to the next and the order of stages remains permanent. For instance, the learner could go from stage one to stage two and further to stage three and four. However, this seems not always to be case in real life learning. If we come across a word in a foreign language text and look it up in a dictionary, we know we understand the meaning of the word. "The transient nature of this knowledge sometimes becomes apparent when we find ourselves looking at self same word again, often only a few minutes after the original looking up took place" (Meara, 1996, p. 7). In light of description of word learning, Meara (1996, p. 7) suggests that word knowledge may be much more volatile than the consecutive stages. For example, learners could directly go from stage one to stage three or stage four. Regarding this point, he further developed this approach into a multistate model of vocabulary acquisition on the basis of Wesche and Paribakht's (1996) five states. This model indicates five discrete states, and learners can move from any one state to any other state. This means that it is possible to make a single move from state 0¹ to state 4 directly. Also, it is possible to move from any higher state to state 0 or any of the intermediate states, which indicates that a learner may forget the word that they know. This model reflects the specific word knowledge state for a particular learner in a particular learning circumstance (Meara, 1996, p. 7).

¹Meara adopted a different system to Wesche and Paribakht in which unknown words start off in state 0.

Figure 3.1: A multistate model of vocabulary acquisition



Unknown words start in State 0.

Known words can be in a number of different states (here five²).

State 0: I don't remember having seen this word before.

State 1: I have seen this word before, but I don't know what it means.

State 2: I have seen this word before, and I think it means_____. (synonym or translation)

State 3: I know this word. It means_____. (synonym or translation)

State 4: I can use this word in a sentence: _____.

Meara (1996)

VKS measures stages that individual words pass through, which assesses depth of lexical knowledge. In a broader sense, Henriksen (1999) indicates that the construction of lexical competence should involve three dimensions:

- 1) The partial-precise knowledge dimension;
- 2) The depth of knowledge dimension; and
- 3) The receptive-productive dimension.

The first dimension indicates that vocabulary knowledge can be defined as precise

² The original text of Meara stated 5 stages (no Stage 3) in the diagram but not in the list below. This is a misprint that checked with the author.

comprehension by numerous quantitative studies: for example, measuring the vocabulary size or breadth in reading studies (Hazenberg & Hulstijn, 1996). That is, the knowledge of “the ability to translate the lexical item into the L1, to find the right definition in a multiple-choice task, or to paraphrase in the target language” (Henriksen, 1999, p.305). The second dimension focuses on the depth of knowledge. It is defined by Read (1993, p. 357) as “the quality of the learners’ vocabulary knowledge”. And the third dimension is shared by Nation (1990, 2001), which provides two aspects of word knowledge: receptive and productive. This measures the word knowledge in terms of the dimensions approach. According to Nation (2001, p. 26), receptive and productive terms can be applied to a variety of kinds of language knowledge and use. Regarding vocabulary, at the most general level, knowing a word consists of form, meaning and use. Specifically, the form of word knowledge includes spoken (knowledge about pronunciation), written (knowledge about word spelling) and word parts (knowledge about word recognition and construction). The meaning knowledge comprises form and meaning (the relationship between form and meaning in a word), concept and references (the ability to use the word in different contexts), and associations (knowledge of synonyms and opposites). Further, word knowledge in use consists of grammatical functions (to use a word correctly in a sentence), collocations (knowledge of the related word phrase) and constraints on use.

This further work is valuable for research purposes, which helps us to “understand better the complex nature of vocabulary knowledge at the micro-level of individual items” (Read, 2000, p. 248). Fitzpatrick (2012, p.84) indicates that Nation’s model of word knowledge is multidimensional to specify various types of word knowledge with receptive and productive facets in each aspect. Furthermore, this model of receptive/productive word knowledge could probably provide information about learners’ overall ability in word usage and enable an understanding of “the movement of vocabulary from receptive to productive mastery” (Schmitt, 2010, p. 225).

Table 3.1: What is involved in knowing a word

Form	Spoken	R	What does the word sound like?
		P	How is the word pronounced?
	Written	R	What does the word look like?
		P	How is the word written and spelled?
	Words parts	R	What parts are recognisable in this word?
		P	What word parts are needed to express the meaning?
Meaning	Form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	Concept and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	Associations	R	What other words does this make us think of?
		P	What other words could we use instead of this one?
Use	Grammatical functions	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	Collocations	R	What words or types of words occur with this one?
		P	What words or types of words must we use with this one?
	Constraints on use	R	Where, when and how often would we expect

	(register, frequency...)		to meet this word?
		P	Where, when and how often can we use this word?

Note: In column 3, R=receptive knowledge, P=productive knowledge.

Nation (2001, p.27)

Nevertheless, this multidimensional approach also has limitations. In terms of assessment, practically speaking, it is impossible to measure all the word knowledge terms when assessing a specific word (Schmitt, 2010, p. 225). Furthermore, in terms of measuring learners' vocabulary knowledge, findings of the test-takers' vocabulary knowledge will be fewer if we create the whole set of those terms. This would be a danger of having a definite assessment of learners' vocabulary knowledge. In this case, researchers are suggested to focus on one, or a limited number, of word knowledge aspects in this approach (Schmitt, 2010, p. 225).

In addition to Nation's (1990, 2001) category of a number of word knowledge aspects, N. Ellis (1994) further showed an interest in the explicit-implicit contrast for vocabulary. He distinguished the form learning aspects of vocabulary learning (N. Ellis calls them input/output aspects) and the meaning aspects of vocabulary. He argues for dissociation between explicit and implicit learning where formal recognition and production rely on implicit learning but the meaning and linking aspects rely on explicit, conscious processes. The table below provides a broad overview of the different kinds of knowledge and the most effective kinds of learning. N. Ellis distinguished two groups of components. Namely, the connection between the form of a word and its meaning and the various semantic relations between words that can be best learned explicitly and components regarding the form of the word and its receptive (input)/ productive (output) aspects of usage that can be best learned implicitly (but the constraints on use can also be learned explicitly).

Table 3.2: Kinds of vocabulary knowledge and the most effective kinds of learning

Kinds of knowledge		Kinds of learning	Activities
Form		Implicit learning	Repeated meetings as in repeated reading
Meaning		Strong explicit learning	Depth of processing through the use of images, elaboration, deliberate inferencing
Use	Grammar collocation	Implicit learning	Repetition
	Constraints on use	Explicit learning	Explicit guidance and feedback

N. Ellis (1994)

As Sonbul and Schmit (2013) commented on N. Ellis's distinction: 'N. Ellis's (1994) distinction does not stop at the learning process, but can also be applied to knowledge representations' (Sonbul & Schmit, 2013, p.125). They showed that the meaning-related aspects of word knowledge were explicit but the formal and usage related aspects might be uncertain and were likely to depend on the presence or absence of awareness. Similarly, R. Ellis (2004, p.242) made a claim that the form of a word and of word collocations was implicit in most occasions and the word meaning was likely in learners' explicit knowledge. Additionally, he expressed that individuals might develop a conscious awareness of the form of words and of some collocations.

The above perceptions highlight the value of the explicit-implicit distinction in understanding vocabulary knowledge. However, Sonbul and Schmit (2013, p.126) criticised the fact that a lack of conventional measures of implicit vocabulary knowledge might result in previous vocabulary studies being explicit in nature, assessing breadth, depth as well as organization of vocabulary knowledge (see Read,

2000). The implicit measures applied in psychological studies are just starting to be applied in exploring vocabulary acquisition issues (e.g. Elgort, 2011). In other words, using implicit measures in the investigation of vocabulary acquisition could be an effective way to explore gains in vocabulary knowledge, which could be further explored in the future study.

In conclusion, this section illustrates different ways to formulate the vocabulary knowledge: vocabulary breadth and depth. It details the depth of vocabulary knowledge by using the developmental approach and the dimensional approach. Although neither of these approaches are considered as accepted standards, it is obvious that they provide rich information about learners' lexical knowledge. Further study could probably combine the approaches according to the particular situation for a greater understanding. That is, it could either combine the "quantity" (vocabulary breadth) with the "quality" (vocabulary depth) or a combination between developmental and dimensional approaches.

3.3 Incidental Vocabulary Learning

This section firstly reviews incidental learning and intentional learning, including incidental and intentional vocabulary learning. In addition, viewing subtitles in videos requires students to combine their listening and reading skills: this section, therefore, is followed by students' incidental vocabulary acquisition from listening and reading.

3.3.1 Incidental learning and intentional learning

In a broader sense, Kerka (2000) defines incidental learning as unintentional or unplanned learning which results from other activities. It happens in numerous ways: by assumptions, beliefs, and attributions (Cseh, Watkins, & Marsick 1999); from observation, repetition, social interaction, and problem solving (Cahoon 1995; Rogers, 1997); through watching or talking to colleagues or experts during the tasks (Van den Tillaart et al., 1998); or from being required to accept or adapt to situations (English, 1999). Rogers (1997) regards it as a "natural" way of learning which is situated, contextual and social in learning situations.

Whenever the term incidental learning is mentioned, it is typically linked with another term, intentional learning. According to Hulstijn (2003, p.349), intentional learning includes ‘the deliberate committing to memory of thousands of words (their meaning, sound, and spelling) and dozens of grammar rules’. On the other hand, incidental learning includes ‘picking up’ words and structures from engaging in a variety of communicative activities, particularly from reading and listening activities. Tian and Macaro (2012, p.368) define incidental learning and intentional learning from learners’ attention. Specifically, during intentional vocabulary learning, learners’ main attention would be on the form-meaning relationships and properties of that word, with the assumption that they may acquire the word to some degree. On the other hand, in the process of incidental learning, the learners’ attention is focused on the meaning within the text or utterance rather than on the form of language. For some researchers, incidental and intentional learning overlap with the two terms of implicit and explicit learning respectively. However, they are not totally equivalent to implicit and explicit learning. Taking the incidental learning as an example, it could be implicated in implicit learning, whereas implicit learning consists of more than what is meant by incidental learning (Hulstijn, 2003, p.360). Particularly, Paradis (1994, p.394) distinguishes incidental learning from implicit learning by a definition of implicit competence: the implicit learning is ‘acquired incidentally (i.e., by not focusing attention on what is being internalized, as in acquiring the form while focusing on the meaning), stored implicitly (i.e., not available to conscious awareness), and used automatically (i.e., without conscious control)’. Reber (1976, p.93), the pioneer implicit learning researcher, defined implicit learning as ‘a primitive process of apprehending structure by attending to frequency cues’. On the other hand, DeKeyser (2008, p.314) stated a relatively simple definition of implicit learning as learning without awareness of what is being learned. Hayes and Broadbent (1988, p.251) are slightly more precise in stating that implicit learning is ‘the unselective and passive aggregation of information about the co-occurrence of environmental events and features’.

Although it is not appropriate to regard incidental learning as implicit learning, they share the most characteristic feature, which is the absence of conscious processing

during language learning (N. Ellis, 1994, p.1). Applied linguists have different opinions on whether unconscious learning is possible for language acquisition. Schmidt (1990) indicates that acquisition of word knowledge will not occur by unconscious learning in some sense. On the other hand, N. Ellis (1997) argues that learners always learn word forms and collocations with other words in a largely unconscious way. Experimental evidence shows the value of unconscious learning in language. For example, Çetin and Flamand (2012) conducted a study regarding unconscious vocabulary learning through posters in a Turkish primary school. The result shows that posters enhance students' L2 vocabulary knowledge by attracting their attention and providing class engagement opportunities. To some extent, incidental learning turns into a conscious and cognitive level when learners themselves are actively engaged in learning and learners are responsible for their own learning (Çetin & Flamand, 2012, p.3). N. Ellis (1994) further asserts that “inferring unknown word meanings from context does indeed involve conscious cognitive operations, i.e. selective attention, hypothesis formation and strategy application” (N. Ellis, 1994, p. 32).

In vocabulary learning, according to Carlisle et al. (2000, 186), “incidental word learning involves a process of inferring the meaning of words from context”, while the intentional word learning provides explicit instruction about word meanings by teachers. The debate on their efficiency has continued for decades (Hulstijn, 1992, 2001; Hulstijn et al., 1996). Although some discrepancies are found among researchers, it is generally agreed that intentional learning provides a greater opportunity for word learning in terms of direct engagement on vocabulary (Hulstijn, 1992, 2001; Ko, 1995; Nation, 1990, 2001). As for incidental learning, it is defined as “a by-product, not the target, of the main cognitive activity, reading” (Huckin & Coady, 1999, p. 182). Researchers obtain evidence of incidental vocabulary learning from several different aspects, such as reading tasks (Horst, Cobb & Meara, 1998; Laufer & Hulstijn, 2001) and listening tasks (Brown, 1993; R. Ellis, 1995). According to Chen (2006, p.19), the advantages of incidental vocabulary learning over explicit vocabulary instruction lie in several points:

- (1) In comparison to the isolated word lists sometimes used in explicit instruction, incidental learning presents the known words in context (Oxford & Crookall, 1990). For example, learners raise more interests to learn a new word in the context of reading or listening rather than simply providing a single word list with meanings.
- (2) Pedagogically speaking, incidental learning promotes simultaneously both vocabulary acquisition and reading comprehension.
- (3) By triggering selective attention, incidental learning enables more individualized learning of vocabulary (Schmitt, 2000).

However, compared with explicit vocabulary instruction, the number of new words learned incidentally is relatively small in most contexts (Hulstijn, 1992). Hulstijn et al (1996) summarise reasons why incidental words failed to be learned by the L2 learners: (1) sometimes L2 learners failed to notice the new words, or they assumed that the new words were familiar to them; (2) sometimes L2 learners noticed the new words, but ignored them; (3) the learners did not focus their attention on the unknown words; (4) the inferred meanings from context by the L2 learners were incorrect; (5) the low frequency of most unknown words prevents effective acquisition. In this case, it is necessary to find ways for facilitating incidental vocabulary learning. One way to solve this problem is to use annotation or gloss by offering the word meanings in the context or in the margin. However, the use of glossaries in reading is open to debate. When new words occur, students might have an intention to know the meaning and look back to refer to the glossary. This action, to some extent, could be intentional learning rather than incidental learning. On the other hand, inferring the meaning of words from context could belong to incidental learning.

When it comes to vocabulary learning through films, subtitles or script seem easily accessible to students. Subtitles are run by offering a glossary as well, but subtitles are different from a glossary. To be more specific, subtitles are positioned at the bottom of the screen in videos, they are played along with the video content. In other words, students do not have to pay much attention to searching for the meaning of the new words because they can glance at subtitles of the word meaning without intention. In this case, using subtitles in videos largely belongs to incidental learning. Experimental

evidence is obtained from Dupuy and Krashen (1993). The research was conducted by providing part of a French film script containing colloquial expressions that the viewers were unlikely to be familiar with. It indicates that American students obtain more new words with the French film script than those without.

To summarise, language learning efficiency can be achieved through a combination of incidental and intentional learning. They are differentially important for different classes of target language features (Hulstijn, 2003, p.360). Namely, “incidental is used in connection with the learning of both abstract and factual knowledge; the use of intentional is restricted to the learning of factual knowledge” (Hulstijn, 2003, p.360). In the realm of language learning, abstract knowledge refers to the complex system in the learner’s brain to deal with the knowledge, for instance, the way learners remember a word. In contrast, factual knowledge refers to the actual linguistic knowledge such as learning grammar rules, vocabulary items and conventions for oral discourse and so on.

3.3.2 Incidental vocabulary acquisition from listening and reading

Numerous studies have been carried out on incidental vocabulary acquisition in reading (e.g. Dupuy & Krashen, 1993; Hulstijn, 1992) and listening (e.g. Vidal, 2003; Brown et al., 2008). Comparisons between reading and listening are also discussed in terms of students’ learning gains (Brown et al., 2008; Vidal, 2011). Watching videos with subtitles requires students to combine both reading and listening skills, and therefore, it is worth looking at students’ incidental vocabulary gains from listening and reading perspectives.

Several researchers explore the incidental acquisition of vocabulary from reading by using the vocabulary dimensions framework. Researchers also explore the role of word frequency in videos. Waring and Takaki (2003) investigated students’ vocabulary learning from graded readers. The results revealed that learners recognised and recalled the meaning of 10.6 (42.4%) and 4.6 (18.4%) of the 26 target words, while they managed to recognise the form of 15.3 (61.2%). The delayed post-test three months later showed that most knowledge was forgotten and on average learners only

gained one word meaning. Regarding word frequency that occurred in reading, the study showed that the more frequently the word occurred in the video, the more word knowledge (including word form recognition, meaning recognition and meaning recall) students acquired. The authors suggest that the full word knowledge can be gained through more than 20 encounters by reading.

Pellicer-Sa'nchez and Schmitt (2010) investigate students' word knowledge from word recognition (spelling), word class recall, and meaning recognition and recall through reading an authentic novel. Results show that 28% target words are enhanced by students in word knowledge. And there is a substantial increase in learning at 10 or more word occurrences for all knowledge types. This study contradicts Waring and Takaki's (2003) in finding that meaning recognition requires fewer exposures than form recognition.

Results of these studies present a complex picture of incidental vocabulary knowledge acquisition from reading. However, there is an agreement that the researchers reached: learners gradually develop the word knowledge from the very first exposure to it, long before they acquire mastery of the word's form-meaning link (Zeeland & Schmitt, 2013).

Regarding incidental vocabulary acquisition from listening, Vidal explores the effect of numbers of variables (e.g. frequency of occurrence, predictability from word form and parts) on students' vocabulary learning from listening (2003), and compares gains from listening and reading (2011). It measures the word knowledge gains with a modified version of the Vocabulary Knowledge Scale, on which students could score 1 to 5. The results indicate that both listening and reading lead to vocabulary knowledge gains, and gains from reading are significantly higher than from listening. On the other hand, students retained their gains from listening more than from reading. The effect of word frequency occurrence is found in both reading and listening modes but this effect is stronger in reading.

A similar study can be found in Brown et al. (2008) who compare vocabulary learning from reading and listening as well as reading-while-listening. Their study measures

vocabulary knowledge of meaning by a multiple choice test (meaning recognition) and a translation test (meaning recall). Results show that reading leads to significantly more vocabulary learning. For the frequency occurrence effect, it is effective in both reading and listening modes, but is smaller in the listening mode. In the two tests, scores on the multiple choice test are considerably higher than those on the translation test. This indicates that students' word recognition is acquired before recall (though correct MC test scores can be the result of guessing) (Zeeland & Schmitt, 2013, p.611).

Although both Vidal (2011) and Brown et al. (2008) provide a thorough comparative analysis of vocabulary acquisition through reading and listening, the initial concern in this study is, to some extent, to explore the effectiveness of reading-while-listening. The two tests results used by Brown et al. demonstrate very different scores, which provide a further exploration on the incidental vocabulary acquisition from reading and listening.

Word frequency

The above literature shows that word frequency could be one of the important variables to impact on students' vocabulary learning from reading and listening. Early researchers (Cattell, 1886; Howes & Solomon, 1951) demonstrate that frequent words in the input reduce learners' visual recognition threshold. For instance, Cattell (1886) indicates that the word frequency in a language influences the most basic processing of the word, namely, its speed of recognition. For example, people may not process *aardvark* or *kumquat* as quickly as *banana* or *cat*. The word frequency in the input contribution of reading is also examined from the eye fixation durations. Staub et al. (2010) explore the impact of word frequency manipulation on fixation durations in reading. The results demonstrated that word frequency affects "only a subset of fixations and support models in which there is a tight connection between eye movement control and the progress of lexical processing" (Staub et al., 2010, p.1280). Lehtonen and Laine (2003) further investigate the impact of word frequency on morphological processing in monolinguals and bilinguals at university. The access and representation of morphologically complex word forms is relevant to the word frequency. The word forms, such as *talk+ed* or *apple+s*, could be accessed for recognition in two ways. One is from the words' constituent morphemes, namely, the

so-called decomposition route which is slower but stored in long-term memory. The other is from the representations in line with whole word forms, namely, so-called full-form or direct route which is faster but might require more storage space. The frequency might be an important factor of the recognition route for the regular inflections. Lehtonen and Laine (2003) examine morphologically complex words in three different frequency ranges (high, medium, low) in monolingual Finnish speakers and Finnish-Swedish bilinguals. The results presented that monolinguals and bilinguals perform different patterns by applying a visual decision task. That is, monolingual students are likely to process mostly for the low frequency and medium frequency inflected Finnish nouns by morpheme-based recognition, but high frequency inflected nouns through full-form representations. However, bilingual students postpone the processing within the whole frequency range for all inflections, but decompositional representations are usually possible for inflections (Lehtonen & Laine, 2003, p.223).

The importance of word frequency lies in its impact on vocabulary acquisition and processing. In terms of acquisition, Schmitt et al. (2001) indicate that learners normally acquire more frequent vocabulary than low- frequency words in both the L1 and L2. Frequent words also assist processing. De Groot (1992) demonstrated that frequent lexical items were translated faster and with fewer errors than lower frequency words. N. Ellis (2002, p.152) further summarized that the effects of word frequency can be found in the speed and accuracy of lexical recognition processes (speech perception, reading, object naming, and sign perception) and lexical production processes (speaking, typing, writing, and signing), in children and adults as well as in L1 and L2.

In this case, there has been extensive discussion of word frequency from learners' visual recognition threshold, the speed of recognition, visual duration from the eye movement as well as from morphological processing among monolinguals and bilinguals. The research about its contributions to the vocabulary acquisition and processing make word frequency a well-covered and reliable measure to analyse the target words in subtitles. Specific to this study, reading subtitles is a significant step during the experiment which contains visual duration of the eye movement and vocabulary recognition among bilingual learners, which match the relevant aspects in

word frequency. That is, word frequency can be an important factor for the speed of learners' eye movement and vocabulary recognition. Therefore, word frequency is one of the most important variables to consider for students vocabulary acquisition from listening and reading.

3.4 The Importance of L1 in L2 Vocabulary Studies

When mentioning L1 in L2 learning, firstly, it is necessary to present the "learning burden". According to Nation (2001, p. 23), a word's learning burden is "the amount of effort required to learn it". In other words, different words have different learning burdens for learners at their different learning levels. The general principle of learning burden (Nation, 1990) is that the more the learners are familiar with the word knowledge, the lighter learning burden. This word knowledge can be obtained "from the first language, from knowledge of other languages, and from previous knowledge of the second language" (Nation, 2001, p. 23). In this case, using L1 in L2 vocabulary learning can, to some extent, lighten the learners' learning burden.

There is no doubt that L1 exerts a considerable influence on the learning and use of L2 vocabulary in a number of ways (Schmitt, 2010, p.25). Firstly, the appropriateness of L1 utilised in vocabulary learning can be found in the areas of language processing. When the word comes up in the context of reading or listening, or in the process of speaking or writing, which need quick help in order not to interrupt their continuing activity too much (Nation, 2005). In this case, L1 translation of the word helps lighten the learners' learning burden at the same time.

In terms of word meaning, there are a number of ways of conveying the unfamiliar word meaning. These ways include second language definitions, giving a demonstration, drawing a picture or a diagram, showing an object, giving L2 context clues or an L1 translation (Nation, 2003). Due to the difference of particular words, it is hard to say which one is the best to present the intrinsic word meaning. However, many studies compare the effectiveness of the ways above for vocabulary learning. The results show that an L1 translation is the most effective way of vocabulary learning. For example, Laufer and Shmueli (1997) examined teaching techniques involving different modes of vocabulary presentation and different language of vocabulary

glossing for memorising new words. The four modes were: words presented in isolation; in “minimal context” (for example, in one meaningful sentence); in text-context; and in “elaborated” text context (for example, explaining phrases and sentences in the original text). Half (ten) of the words were translated into learners’ L1 and half were left in the L2 in each mode of presentation. The short-term and long-term retention of the target words were tested for all subjects. Retention scores were compared according to the mode of presentation. From the glossary aspect, words in L1 were better for the students than those in L2. The result emphasised the importance of relating the newly learnt vocabulary to the first language. Bilingual lists may also affect retention because of mental elaboration³. Furthermore, Nation (2005) (see table 3.3) lists ways of quickly giving attention to words. Attention paid to the word is divided into three parts, namely, the meaning of the word, the form of the word and the use of the word. In the first row, using L1 translation rank in the first place indicates learners quickly drawing attention to the words’ meaning. It is followed by using a known L2 synonym or a simple definition in the L2 and showing an object or picture, and so on. This may be due to L1 translations for words usually being clear, short and familiar for the learners, which are crucial aspects in effective definitions for a word (McKeown, 1993). However, there might be some problems with teaching vocabulary via translation. For example, students might pay too much attention to the L1 translation for understanding but ignore the L2 word spelling and word usage.

Table 3.3: Ways of quickly giving attention to words (Nation, 2005, p.1)

<p>1 Quickly give the meaning by (a) using an L1 translation, (b) using a known L2 synonym or a simple definition in the L2, (c) showing an object or picture, (d) giving quick demonstration, (e) drawing a simple picture or diagram, (f) breaking the word into parts and giving the meaning of the parts and the whole word (the word part strategy), (g) giving several example sentences with the word in context to show the</p>

³ Mental elaboration has been described simply as ‘thinking while learning’ by Rohwer (1970). ‘Mental’ is used as this process is best viewed as a covert rather than an overt activity. ‘Elaboration’ occurs as the learner actively adds context to materials he is asked to process (Russell, 1974, p.203).

meaning, (h) commenting on the underlying meaning of the word and other referents.

2 Draw attention to the form of the word by (a) showing how the spelling of the word is like the spelling of known words, (b) giving the stress pattern of the word and its pronunciation, (c) showing the prefix, stem and suffix that make up the word, (d) getting the learners to repeat the pronunciation of the word, (e) writing the word on the board, (f) pointing out any spelling irregularity in the word.

3 Draw attention to the use of the word by (a) quickly showing the grammatical pattern the word fits into (countable/uncountable, transitive/intransitive, etc), (b) giving a few similar collocates, (c) mentioning any restrictions on the use of the word (formal, colloquial, impolite, only used in the United States, only used with children, old fashioned, technical, infrequent), (d) giving a well known opposite, or a well known word describing the group or lexical set it fits into.

L1 is not only effective in learning the meaning of vocabulary, but also as a way to increase vocabulary size. Folse (2004, p. 68) reports that his review of the literature reveals that “research is clear: Translations are not bad but are in fact a helpful tool in learning new foreign language vocabulary”. When combining L1 translation with the use of word cards for the initial learning of vocabulary, it is a quick way to speed up learners’ vocabulary growth. The word cards, according to Nation (2001, p.296), are “used to describe the formation of associations between a foreign language word form (written or spoken) and its meaning (often in the form of a first language translation)”. However, Oxford and Crookall (1990) would regard directly presenting L1 translation as decontextualized learning. They argue that the word is not in a “communicative” context, and which means it is not being used for a communicative purpose. Although the word card strategy suffers criticisms in terms of difficulty in remembering and using the word, it enjoys the values of efficiency of time and effort, and “focusing on an aspect of word knowledge that is not easily gained from context or dictionary use” (Nation, 2001, p.302). Lotto and de Groot (1998) also found that L2-L1 word pairs

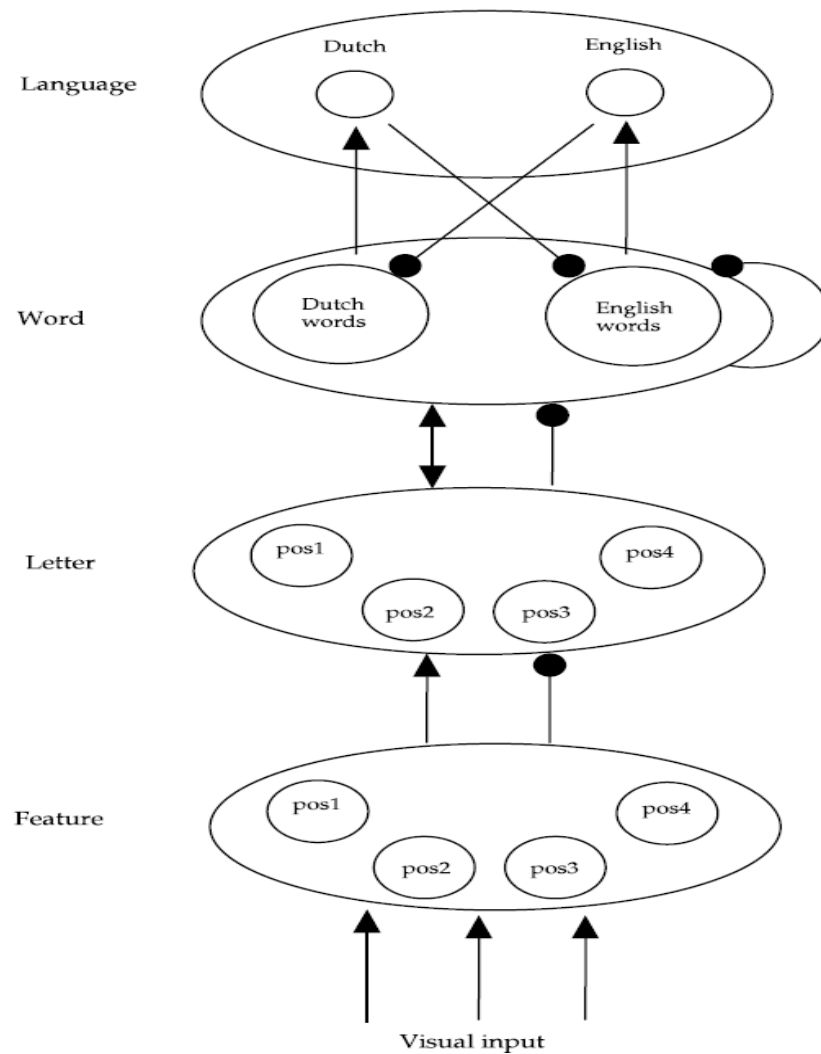
lead to better learning than L2-picture pairs, at least for relatively experienced foreign-language learners.

3.4.1 Cognitive models of L1 in L2 vocabulary studies

Schmitt (2010, p.25) reveals that ‘the best evidence for L1 influence comes from psycholinguistic studies’. In other words, L1 is likely to be active during L2 lexical processing among learners at different proficiency level. This section will provide three types of models in L1 lexical activation in L2: the bilingual interactive activation model (BIA) (Dijkstra & Van Heuven, 1998); revised hierarchical model (RHM) (Kroll & Stewart, 1994) and bilingual dual coding theory (Paivio & Desrocher, 1980).

The bilingual interactive activation model (BIA) (Dijkstra & Van Heuven, 1998) focuses on the level of word form. As seen in figure 3.2, the BIA model is structured by a hierarchical arrangement of features, letters, words, and language nodes. The arrows stand for activation and the filled circles stand for inhibition. According to the model, when the learners are exposed to an input letter string, some lexical features—regardless of language—are activated. The activated candidates compete with each other for selection to establish a word. The language nodes exert a top-down inhibitory effect on the words of the other language. Ultimately, this induces differential language selection processes. The BIA model is more suitable for the languages that share the same lexical features. That is, only if the native language and the target language are cognate items, can the letters access the language selection. For example, English and Spanish are possible for L1 activation in the L2 lexical process because there are the same letters in both languages. However, in English and Chinese it would be difficult to achieve each language’s lexical features activating the other because they are not cognate items.

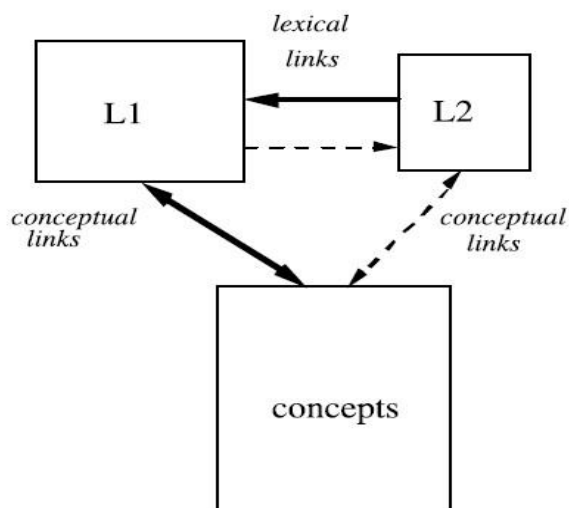
Figure 3.2: Bilingual Interactive Activation Model (Dijkstra & Van Heuven, 1998)



Compared with the BIA at the level of word form, the revised hierarchical model (RHM) (Kroll & Stewart, 1994) is presented at the level of translation equivalents. In the RHM (see Figure 3.3), the L1 is assumed to have privileged access to meaning, whereas the L2 is assumed to more likely depend on mediation via the L1 translation equivalent until the learners acquired the sufficient skill in the L2 to access meaning (concept) directly. In this case, according to the diagram, if the word in L2 can be translated lexically, translation from L2 to L1 can be finished lexically. On the contrary, due to the strong link between L1 and the concept, L1 to L2 translation would be semantically mediated (Kroll et al., 2010). This is the direct transfer of the word from one to another. Regardless of the different kinds of translation (L1 to L2 or L2 to L1),

it is undoubted that L1 translation equivalent plays an important role in the process of L2 vocabulary learning.

Figure 3.3: Revised Hierarchical Model (Kroll & Stewart, 1994)

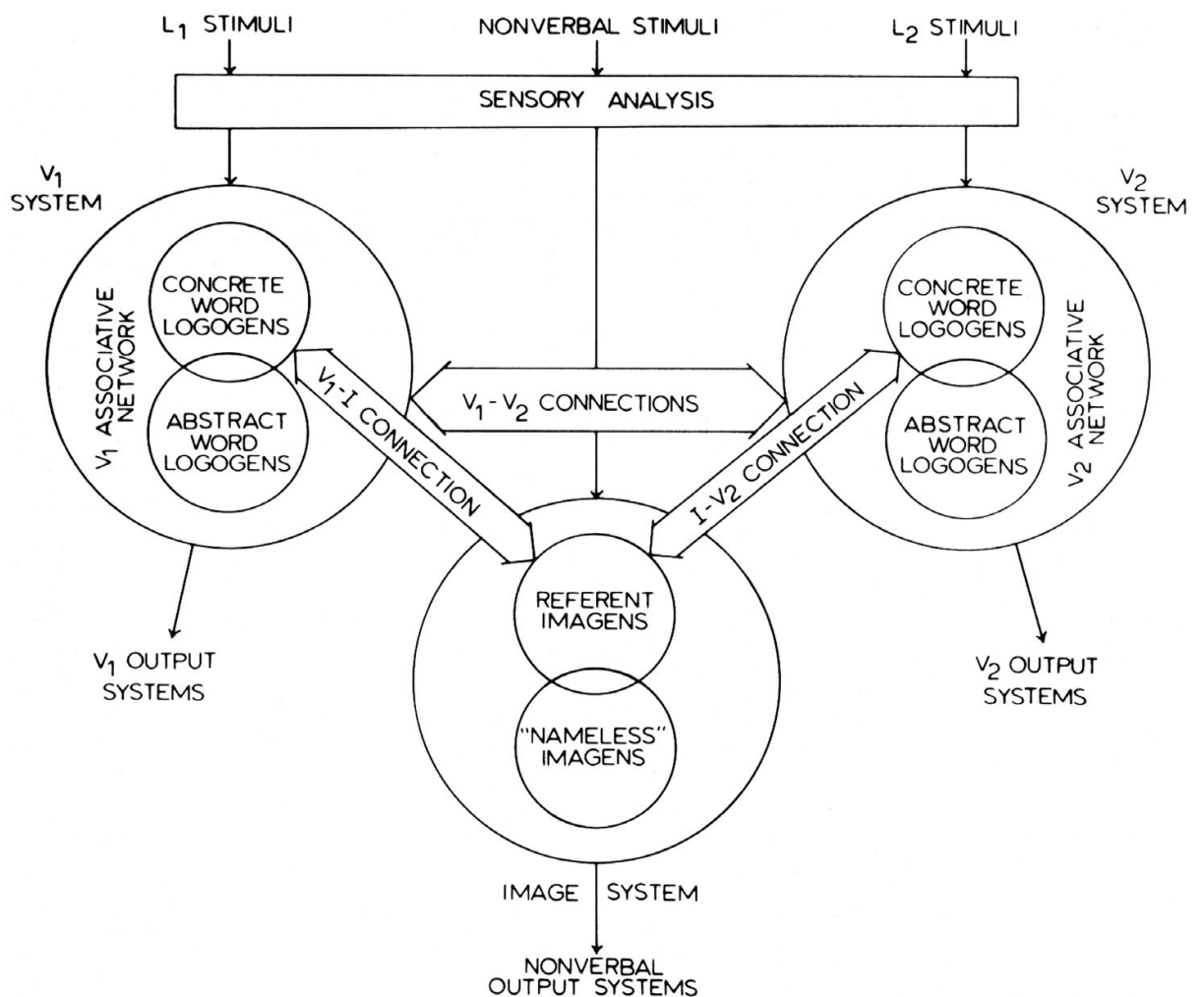


Sunderman and Kroll (2006) investigated lexical processing in L2 by both the BIA model and the RHM model. Specifically, it tested whether both types of form-related interference occur: form related to the L1 word itself (as proposed by the BIA model) and form related to the translation equivalent (as proposed by the RHM model) (Sunderman & Kroll, 2006, p.396). Two native English speaker groups were compared for translation recognition, one being less proficient and the other being more proficient in Spanish. Critically speaking, the testing items were not translation equivalents, but they were similar to the correct translation in either form (either as a lexical neighbour of the L2 word or by form similarity to the L2 translation equivalent) or meaning. The result showed that all the participants, regardless of proficiency, experienced interference for lexical neighbours (BIA model) and for meaning-related pairs (RHM model). Additionally, only the less proficient learners showed effects of form relatedness through the translation equivalent. Furthermore, it confirmed that predictions of the BIA and RHM models could be the lexical activation of the L1 (Sunderman & Kroll, 2006, p.414).

Comparing the BIA and the RHM, the bilingual Dual Coding Theory (Paivio & Desrocher, 1980) is a model showing the two languages in the brain. There are two

systems: the logogen system which relates to languages and the imagen system which relates to images. As shown in figure 3.4, the logogen system is separated by two languages (L1 and L2). These concrete word logogens for the two languages are linked to the imagen system. This model further specifies that there could be connections from L1 and L2 to separate or shared imagens, which depend on the way the two languages are learned. In other words, bilingual dual coding theory not only focuses on the imager-verbal connections, but on the L1-L2 connections (Soh, 2010).

Figure 3.4: Bilingual Dual Coding Theory (Paivio & Desrocher, 1980)



A number of studies have provided experimental evidence for bilingual dual coding theory (see Paivio, 1986, 1991; Paivio, Clark & Lambert, 1988; Paivio & Lambert, 1981; Vaid, 1988; Hummel, 2010). Paivio et al. (1988) investigated French-English bilinguals who were free to recall lists of concrete and abstract words that were

repeated at different inter-item lags, including repetitions of the same words, translation equivalents, or same-language synonyms. The findings showed that semantic repetitions through translations had additive effects on recall, and that semantic repetition effects were weaker for intra-lingual synonyms than for translations, especially for abstract words, although pair recall was higher for translations than for synonyms, especially for concrete words, at long lags. Hummel (2010) studied the role which active translation may have in second language vocabulary learning. French learners were enrolled in a Teaching-English-as-a-Second-Language program. They were asked to do three tasks: L1 to L2 translation; L2 to L1 translation, and a rote-copying task. Results showed no difference between the two translation conditions in short-term memory, but the rote-copying condition showed an advantage over the translation conditions.

However, Jared et al. (2013) pointed out that the bilingual dual coding theory did not address the issue of ‘whether an image could be more strongly associated with a word in one language than the other, and it is not clear how that could happen if activation must first flow through a common conceptual store without more specific details on the nature of the conceptual representations’ (Jared et al. 2013, p.389). The above issues are also worth considering for conducting further study.

To summarise, research provides evidence that L1 use influences L2 vocabulary learning in terms of its appropriateness to promote the learning process, efficiency in learning the word meaning and expanding the vocabulary size, and L1 is active during the L2 vocabulary learning in terms of the cognitive aspect.

3.5 Chapter Summary

In the first part of the chapter (section 3.2), several vocabulary knowledge frameworks were introduced from two dimensions: breadth (size) and depth (quality). It details the depth of vocabulary knowledge both by the developmental approach and the dimensional approach (Read, 2000). Although neither of them are considered as accepted standards, it is obvious that they provide rich information about learners’ lexical knowledge. The next section (3.3) reviewed incidental and intentional learning and further discussed the advantages and disadvantages of explicit and implicit instruction. Students’ language learning efficiency could be gained through a

combination of incidental and intentional learning. Following this, it discussed in detail incidental vocabulary acquisition in the area of reading and listening. As one of the important variables to impact on students' vocabulary learning from reading and listening, word frequency was reviewed in terms of vocabulary learning processing. Section 3.4 presented the importance of L1 in L2 vocabulary studies learning in terms of its appropriateness to promote the learning process, efficiency in learning the word meaning and expanding the vocabulary size. The cognitive models that followed further appeared to show the activeness of L1 in L2 vocabulary learning. The following chapter looks at the use of videos and subtitles in the L2 classroom, including its advantages in language learning (specific to L2 vocabulary learning), the debate around using L1 and L2 subtitles and the use of bilingual subtitles in the L2 classroom.

Chapter 4: Videos and Subtitles

4.1 Introduction

Having introduced the target domain (vocabulary) of this study in the previous chapter, this chapter discusses the effectiveness of videos and subtitles in students' L2 learning. This chapter begins with an overview of the use of videos and subtitles in the L2 classroom (section 4.2), which specifies the advantages of subtitles in L2 learning (4.2.1) and the listening and reading issues in subtitles (4.2.2). Following that, section 4.3 reviews in detail the advantages of subtitles in L2 vocabulary learning, including the cognitive supports from Paivio's dual coding theory (1986; 1991; 2007) (section 4.3.1). Regarding subtitles in L2 learning, section 4.4 further reviews the debate about using L1 and L2 subtitles and section 4.5 focuses on the use of bilingual subtitles in the L2 classroom. The main findings from this chapter are summarised in section 4.6.

4.2 Use of Videos and Subtitles in the L2 Classroom

There has been an increasing emphasis on L2 as a tool for communication, and technology has played an essential role in promoting authentic communication. Multimedia has been effective in improving communication and comprehension (Dwyer, 1978). Meanwhile, multimodality within Computer Aided Language Learning (CALL) plays an important part in multimedia learning (Rost, 2002, p.105). Crinon and Legros (2002) define multimodality as reflecting sensory information through different semiotic codes, which offers the chance to understand information from diverse angles, such as sounds and images. In this case, multimodality implies not only understanding information in diverse formats, but also building interactivity through these representations (Guichon & McLornan, 2008, p.86). Videos, undoubtedly, play a major role in multimedia as well as multimodality, with a combination of visual and verbal information.

It is now commonly accepted by most researchers that video materials can be valuable instructional equipment in L2 classroom. As De Bot et al. (1986, p.72) put it, "video materials can greatly increase motivation, provide vivid information about a foreign culture, and build students' confidence in their ability to understand foreign utterances, or at least the gist of a message, through visual cues". Guichon and McLornan (2008,

p.87) reveal that one of the most obvious merits of using video is that having images in addition to sound helps “to set the scene of events”. Baltova (1999) also reflects that videos with real-life, face to face experiences present sources of information. For instance, students could get the video information from speakers' body language or their physical actions. Additionally, videos aid the teaching technique of integrating real-life situations with L2 in language teaching settings. In this way, students are exposed to L2 in an authentic environment, whilst cultivating their language acquisition at the same time (Harji et al., 2010). Using videos in the L2 classroom also develops students' recognition of foreign culture. For example, Tomalin and Stempleski (1993) say that films can activate and enrich students' background knowledge and at the same time cultivate their cultural awareness.

As there is a wide variety of videos on the internet, authentic videos relating to language learning are accessible to second and foreign language classrooms. However, in real-life circumstances, the speed of speakers can be fast which means lower-level learners cannot keep up with the conversation, and some of the words are unfamiliar to learners. In this case, using only authentic videos might be difficult for intermediate-level or lower-level learners to comprehend, and the teaching outcomes will be hard to reach (Hao-Jan, 2011, p.118). Day (2003) and Flowerdew and Peacock (2011) also reveal that the authentic input could be argued to be too challenging for L2 learners. Therefore, as suggested by Gilmore (2007), audio-visual material (videos with subtitles) could be an ideal source of authentic input. Previous studies (Neuman & Koskinen, 1992; Baltova, 1999; Bianchi & Ciabattoni, 2008) agreed that especially when the audio-visual material is accompanied by subtitles, it could be a particularly good source of authentic input.

4.2.1 Advantages of subtitles in language learning

Subtitles in videos are favourable tools for language learning in several aspects. Firstly, subtitles increase the depth of processing language for learners (Winke et al., 2010). Using subtitles was regarded as a way to increase learners' attention, give learners instant confirmation of their understanding of what was heard, reduce anxiety, and increase motivation (Burger, 1989; Grimmer, 1992; Vanderplank, 1988). The general consensus was that subtitles facilitate subsequent comprehension and vocabulary

learning. For example, Bird and Williams (2002) revealed that subtitles were a beneficial tool for language learning by looking at how bimodal presentation (aural and visual) of novel words would affect vocabulary learning. Advanced English learners in this study were given the words under three conditions: text with sound, text without sound and sound without text. Learners vocabulary learning was measured by 'spoken word recognition efficiency' (how long learners remember the words) and 'recognition memory' (If the students remember the word meaning). The results demonstrated that words under text and sound condition lead to better recognition memory for spoken words and non-words than in the other two conditions. The researchers summarised that bimodal presentation facilitates novel word learning by increasing spoken-word processing. Furthermore, they revealed that the results provide evidence that the auditory and visual processing in cognitive systems were interactive and interconnected, which suggests that subtitles facilitate learners' comprehension as they increase processing depth.

The other concern of the efficiency of subtitles is the students' level of proficiency: which level of learners would benefit most from subtitles. Previous research showed various results. For instance, Markham (1993) found that subtitles were beneficial for advanced learners when the videos were more complex containing a high number of technical terms. He concluded that subtitles were suggested to be used only when the videos were difficult for intermediate to advanced learners. On the other hand, Guillory (1998) found that subtitles were helpful for beginning-level learners. Furthermore, she found that subtitles were more beneficial when only key words were presented as subtitles on the screen instead of the entire sentence. She explained that the key words presentation on the screen as subtitles might be better for beginners as it may not impose a high degree of cognitive load. However, Taylor (2005) found no level difference from students' scores with subtitles between first-year of Spanish and third- or fourth-year of Spanish. Interestingly, first-year students reported that they found with subtitles they find it difficult to concentrate on sound, image and subtitles. However, the third- and fourth-year learners expressed a positive attitude towards subtitles. The above findings showed that it is difficult to draw a conclusion regarding the benefits of subtitles for students at different proficiency levels, but the results of

experimental study showed that students at all proficiency levels with subtitles could acquire more language knowledge than without subtitles.

The advantage of subtitles also lies in specific language skills including listening (Vanderplank, 1988; Markham, 1989; Guillory, 1998; Danan, 2004; Tsai, 2010; Winke et al., 2010), content comprehension (Markham, 2001; Grgurvoić & Hegelheimer, 2007; Etemadi, 2012), reading comprehension (Koskinen et al., 1993; Markham & Peter, 2003; Hwang & Huang, 2011), and vocabulary acquisition (Huffman, 1986; Neuman & Koskinen, 1992; Koskinen et al. 1996; Markham, 1999; Markham & Peter, 2003; Stewart & Pertusa, 2004; Zarei, 2009; Harji, Woods & Alavi, 2010; Etemadi, 2012). As the current study focuses on students' vocabulary acquisition, the following paragraphs will briefly review the benefits of subtitles in listening, content and reading comprehension and the detailed review of vocabulary acquisition will be introduced in section 4.3.

Subtitles are a bonus for listening comprehension in terms of a connection between auditory and visual input (Garza, 1991), and this may aid form-meaning mapping (Doughty, 2004). Form-meaning mapping refers to the psycholinguistic process of linking the meanings of novel words or grammar to the spoken and written representations (Winke et al., 2010). Markham (1989) investigated the effects of watching TV with and without subtitles (L2) on ESL (English as a Second Language) students' listening comprehension in a university, through a multiple-choice test. The findings demonstrated that the students who watched TV with subtitles performed significantly better in listening comprehension than those who watched it without, and he speculated that ESL students might be able to improve their listening and reading comprehension simultaneously when they are exposed to TV with L2 subtitles (see Holobow, Lambert & Sayegh, 1984). This study measured students' performance only through the multiple-test scores. However, the reliability of the multiple-test might be arguable. This is a likely result in the shortcomings, that is, students could choose the best answer by luck instead of understanding the words through subtitles. On the other hand, it is difficult to tell that students' listening comprehension came from subtitles rather than through referring to images on the video. Guillory (1998) also investigated French beginner learners' comprehension in digital video subtitles, including no

subtitles, full subtitles and keyword subtitles. She reported that students from the full subtitles group in L2 showed a better performance than the other two, and both groups with subtitles showed an advantage over those with none. Tsai (2010) confirmed this by using subtitles for the enhancement of listening comprehension, which highlighted the effectiveness of films with subtitles for improving students' English learning.

Advantages of subtitles can also be found in facilitating content and reading comprehension. Markham (2001) investigated whether subtitles and the familiarity of video background affects video comprehension. Muslim, Buddhist, and non-Muslim/Buddhist ESL students were given videos in English about their respective religions. Within each of these three groups, half of the students were shown the videos with subtitles and half of them without. The results demonstrated that both subtitles and background knowledge contributed substantially to learners' video comprehension. Using subtitles also facilitates the students' reading comprehension. Markham and Peter (2003, p.332) revealed that L2 subtitles could provide reading input to augment the pictorial and audio input supplied by various forms of commonly used video technology. This can be found in the study of subtitles in the first language context. Koskinen, Wilson and Jensema (1985) found that subtitles improved the reading word knowledge in elementary school. M. Goldman and S. Goldman (1988) further found that subtitles improved the general reading comprehension among first language readers in elementary and secondary level settings.

In addition to increasing students' linguistic knowledge, video subtitles are also a way of lowering students' affective filters and reaching expected teaching outcomes. Vanderplank (1988) investigated 15 high-intermediate and advanced level European learners of English to explore the potential benefits of watching subtitled programmes. The material includes a selection of BBC programmes varying in accent, genre, content, pace, and so on. The findings not only confirm that subtitles are useful to students' language development of flexible learning strategies and techniques, but also indicate that using subtitles lowers students' affective filter and releases spare language-processing capacity. In a similar manner, Borrás and Lafayette (1994) conducted an experiment among advanced French learners using digital videos with and without subtitles. Treatments were varied in terms of subtitles (with subtitles vs.

without subtitles) and the oral task level (higher level vs. lower level). The subjects reported that subtitles might provide a way for students to relax, grow their confidence in their ability to understand, and guide their mental energy towards actual learning. In additional findings, Winke et al. (2010) explore the effects of subtitles during video-based listening activities. They draw their conclusion through interviewing the participating students. The data reflects that understanding subtitle-supported videos is advantageous in increasing students' attention, improving processing and reinforcing previous knowledge. At the same time, subtitles, a desirable tool for teaching outcomes, were taken into consideration for building a more effective teaching environment. Similar results were obtained by Hao-Jan (2011), who showed that synchronised subtitles can be a supporting tool for easing students' anxiety, and reducing their cognitive loads, when they are exposed to videos.

The above studies demonstrated that subtitles appear to be a welcome tool to facilitate listening comprehension and reading comprehension as well as a way of lowering students' affective filters. However, these studies did not provide an explanation regarding why and how subtitles help those language skills; and how students are able to balance reading and listening with subtitles: will subtitles help or hinder their understanding when they are reading or listening? The following section (4.2.2) will further explore the listening and reading issues that might arise when using subtitles.

4.2.2 Listening and reading understanding issues in subtitles

With the advantages of subtitles, several arguments have also emerged. The obvious concern is that learners might not pay attention to audio when they have subtitles, which could hinder their listening skills development (Borrás & Lafayette, 1994). The hypothesized reason for this is that learners might have to divide their focus between three types of stimuli: visual images, written text and audio. This might cause cognitive overload. The cognitive overload occurs even when tasks are performed in L1 and is attributed to the limits of working memory (Baddeley, 1986; Chandler & Sweller, 1991; Sweller, 1999). This links to the redundancy principle in the cognitive load theory (Sweller, 2005). This principle assumes that redundant material slows down information processing and learning. Mayer, Heiser and Lonn (2001) applied the cognitive overload theory into the generative theory of multimedia learning and found

that learners who were exposed to an animation and listened to corresponding narration in their L1 gained more information from the narration than those who were exposed to subtitles as a third modality. In this case, researchers stated that subtitles, which carried the same information as the audio, would be regarded as the redundant information for distracting listening (Sydorenko, 2010). Therefore, according to the cognitive load theory, videos without subtitles would seem to be an easier way to process the information than with subtitles.

However, the above prediction seems ‘not borne out in the second language acquisition field’ (Sydorenko, 2010, p.52). This means that subtitles may not hinder students’ second language processing. As explained above, learners have three input information channels: auditory input in the L2 (listening), nonverbal visual information (the images in video) and verbal visual information (subtitles). According to Baltova (1999), the combination of the three channels input information could be argued to contribute to a better L2 learning environment than when only two or only one of these three are available. Vulchanova et al. (2015) revealed that ‘the textual information serves as an extra source of linguistic input either in the L1 or the L2’ (Vulchanova et al., 2015, p.2). Zanon (2006, p.43) also elaborated that the three channels’ connection generally encouraged strong associations for retention and language, which was necessarily a very powerful combination.

The above studies demonstrated that the three input information channels could work well in second language processing, which seems to contradict the cognitive load theory. The reasons for this might be that subtitles (such as L1 subtitles) are a necessary tool for assisting students’ understanding of their L2 listening. This might not be considered as redundant information, which would not slow down their L2 information processing and learning. On the other hand, subtitles could facilitate the speed of video understanding if students balanced the three channels well. However, students from advanced level probably find that subtitles hinder their information processing as their listening proficiency is good enough to understand the video without subtitles. Therefore, the three input information channels in videos could assist second language processing according to students’ proficiency and their learning purposes.

Further expanding the three input channels, the following paragraphs will review the investigations of subtitles in videos by using eye-tracking methods. The eye-tracking method is regarded as the richest record of a person's cognitive behaviour when he/she deals with textual information (Frenck-Mestre, 2005). According to Duchowski (2002), eye movements are heavily influenced by textual and typographical variations presented in the text. In their eye-tracking study, d'Ydewalle and Van de Poel (1999) revealed that readers could read the subtitles automatically. They further noted that the auditory and the verbal textual information probably could be processed in parallel. These studies are likely to suggest that subtitles do not distract audiences' processing of auditory information input (d'Ydewalle & Gielen, 1992). Bisson et al. (2014) further conducted the eye-tracking study indicating that the reading of subtitles still allows for the processing of image. The soundtrack did not take students' more time on processing than reading subtitles. Therefore, audiences appear to be able to balance the three channels at the same time.

Other studies also showed that automatic reading of subtitles does not seem to prevent the processing of the soundtrack. To demonstrate this point, De Bot et al (1986) examined to what extent television viewers focus on L1 subtitles, on L2 speech or on both when watching subtitled foreign programmes. Experiments were conducted using short items of a news bulletin in which speech and subtitles presented conflicting information. Participants then answered multiple-choice questions. The results of the experiment tended to show that watching foreign, L1 subtitled TV programmes contributes to learners' input and intake of second language learning, relearning and maintaining. This standpoint can also be found in d'Ydewalle & Pavakanun's (1997) experiments, which revealed that students' attention seemed, in fact, to be divided between subtitles (either in L1 or in L2) and sound according to their understanding requirements, with more time usually spent on subtitles when relatively complex information was presented.

The above studies appear to indicate that students would benefit more from the three channels input information than from two channels (i.e. images and audio). However, the following questions might be worthy of further discussion and investigation: how do learners divide their attention on the three channels? Do they continuously focus on

audio, but switch between images and subtitles? Or when the images do not carry useful information, do they concentrate on subtitles and audio instead of images? It is also possible that learners do not pay attention to audio as much as they do to subtitles (Sydorenko, 2010).

4.3 Advantages of Using Subtitles in L2 Vocabulary Learning

Subtitles in videos are favourable tools for language learning in several aspects. Previous sections have introduced the benefits of subtitles in specific language skills including listening, content comprehension and reading comprehension. This section focuses on the impact of subtitles on learners' vocabulary acquisition and will be briefly categorised into vocabulary learning stages according to VKS (see table 4.1).

As mentioned in chapter 3, Vocabulary Knowledge Scale (VKS), which was developed by Wesche and Paribakht (1996), will be applied to the following vocabulary research to find which vocabulary stage the research focuses on. The VKS includes five stages of vocabulary knowledge, and "they suggest a set of short tests which might characterise where any particular word is positioned on the scale" (Meara, 1996, p.6). The five stages (see section 3.2) are regarded as statements of learners' knowledge levels of a particular word. The following review is carried out according to the VKS stages, for the purpose of analysing students' vocabulary state when accessing videos with subtitles in L2 classrooms.

The impact of subtitles on vocabulary learning was assessed by Garza (1991), who found that L2 subtitles enhanced advanced L2 learners' comprehension and memorisation. Some researchers' investigated (Neuman & Koskinen, 1992; Zarei, 2009) (see table 4.1) the impact of subtitles on vocabulary acquisition covering a number of stages of VKS. For example, Neuman and Koskinen (1992) conducted their investigation from a comprehensible input perspective in order to examine whether subtitling television programmes affected vocabulary acquisition and conceptual knowledge. Middle school students participated in this study and video material was chosen from science lessons. 90 difficult target words were picked out, and ten of them per week were given to the students in a vocabulary test. Students were divided into four treatment groups: subtitled TV, TV without subtitles, reading along with aural soundtrack, and reading only. At the end of each week, students were required to take

a word recognition test, and were given a new word as it occurred in the subtitles and asked to give a written explanation of its meaning. The results favouring subtitles (L2) revealed not only different degrees of word knowledge, including word recognition, sentence anomalies, and word meaning post-tests, but also qualitative kinds of word knowledge, which dealt with conceptual understanding. The investigation reflects the different stages of word knowledge in VKS as above (*I have seen this word before, but I don't know what it means. I have seen this word before, and I think it means... (synonym or translation) and I know this word. It means... (synonym or translation)*).

Another study (Zarei, 2009) was conducted to examine learners' vocabulary recognition and recall by comparing L1 subtitles, L2 subtitles and reversed subtitles (foreign videos with L1 soundtrack and L1 subtitles). 92 Iranian university students participated in this study and they were divided into three groups (group one watched all episodes with L1 subtitles, group two with L2 subtitles and group three with reversed subtitles). Participants were exposed to nine episodes (30 minutes each) of a British TV comedy. All groups watched the same film but different episodes. After the films, they were tested by short content comprehension quizzes and two vocabulary tests. The first vocabulary test contained 40 multiple-choice questions for their comprehension of the words that appeared in the film. Another vocabulary test involved 40 fill-in-the-blank questions which were administered a week after the film viewing in order to measure their vocabulary recall. The results showed no significant difference of students' performance between L1 subtitles and L2 subtitles in vocabulary recognition; both groups, however, showed a significantly better performance than the reversed subtitles group. On the other hand, L2 subtitles were found to be significantly more effective than L1 subtitles. This study reveals stage 2, 3 and 4 in VKS, which is '*I have seen this word before, but I don't know what it means*' and '*I can use the word in a sentence*', '*I have seen this word before, and I think it means... (synonym or translation)*' and '*I know this word. It means... (synonym or translation)*' (Wesche & Paribakht, 1996). However, this study could be criticised by comparing students' performance with L1 subtitles and L2 subtitles with reversed subtitles. As the reversed subtitles were both L1 input for students' listening and reading, which make no sense for a second language learner, they could not learn any second language information from it.

As for the effect of subtitles on aural word recognition skills, Markham (1999) designed another experiment with oral multiple-choice tests, involving 118 advanced ESL students who were given two short videos to watch: one with subtitles and one without. Participants were required to recognise the correct key word belonging to a sentence which was taken from the script. The results showed that students were more likely to recognise the key word when they had watched the video with L2 subtitles (see also Koolstra, Jonannes & Beentjes, 1999). The experiment only takes word recognition element of VKS into consideration (*I have seen this word before, but I don't know what it means*).

Winke et al. (2010) investigated the impact of subtitles on learners' content comprehension and vocabulary recognition. 150 second and fourth-year EFL learners in a U.S. university participated in this study. They watched a series of three English language documentaries videos and they watched each documentary twice (once with subtitles and another time without subtitles). After the video viewing, students were given two tests: content comprehension and vocabulary tests. The results indicated that subtitles were more effective as significantly higher scores were recorded on both tests. Subtitles were found especially useful for the novel vocabulary acquisition and the overall comprehension of the videos. However, this study could be criticised from its repeated video showing method, which would be a variable to impact on the result. In particular, the first time of video showing could leave students an impression of the video content as well as some vocabulary, which would be benefit for the second video showing. The experiment takes word recognition element of VKS into consideration (*I have seen this word before, but I don't know what it means*).

Etemadi (2012) explored the effects of L2 subtitles on content comprehension and vocabulary recognition in English movies. 44 Iranian undergraduates watched two BBC documentaries. The video showing was reversed to counteract the order effects. Group one viewed film one with subtitles and film two without subtitles, and group two viewed the same documentaries in a reverse order. A set of 20 multiple choice questions (10 questions each on vocabulary and content comprehension) were given to the students immediately after the film viewing. Results revealed that L2 subtitles had a positive impact on content comprehension but not on vocabulary recognition.

The experiment only takes the word recognition element of VKS into consideration (*I have seen this word before, but I don't know what it means*), however, the results appeared to show no positive effect of subtitles on vocabulary recognition.

Harji, Woods and Alavi (2010) investigated subtitles' effectiveness from the vocabulary usage, and their research reinforced the status of L2 subtitles among Iranian EFL learners' in vocabulary learning. Samples were collected from audio/video translation course students divided into two groups (treatment group and control group) and given two conditions (with and without English subtitles) respectively. Two sequential tests were conducted. One was a part of the Michigan English Test. This was intended to evaluate their vocabulary proficiency to check the homogeneity of their levels. The other test was a post-test procedure in order to vary between the treatment and control groups. The scores demonstrated that the existence of subtitles helped learners acquire words which were used in conversations. This study reflects stage 5 in VKS, which is "*I can use the word in a sentence*" (Wesche & Paribakht, 1996).

Table 4.1: Summary of research on vocabulary acquisition from subtitles

Study	Country	Target students	Types of subtitles	Implicit VKS Stage	Main findings
Neuman and Koskinen (1992)	U.S.A.	Middle school students (grade 7 and grade 8)	L2 subtitles Without subtitles Reading with soundtrack Reading only	Stage 2,3,4 Word recognition; Word meaning; conceptual understanding	The results favouring subtitles (L2) revealed not only different degrees of word knowledge, but also qualitative kinds of word knowledge, which dealt with conceptual understanding.
Zarei (2009)	Iran	university students (non-English major)	L1 subtitles L2 subtitles reversed subtitles	Stage 2, 3,4 Word recognition; Word meaning	L2 subtitles were found to be significantly more effective than L1 subtitles.

Markham (1999)	U.S.A.	Advanced ESL students (non-English major) (students from 15 different L1 background)	L2 subtitles Without subtitles	Stage 2 Word recognition	The results showed that students were more likely to recognise the key word when they had watched the video with L2 subtitles.
Winke et al. (2010)	U.S.A.	EFL learners (Midwestern University, non-English major)	L2 subtitles Without subtitles	Stage 2 Word recognition	The results indicated that L2 subtitles were more effective as significantly higher scores were recorded on both tests. They are especially useful for the novel vocabulary acquisition and the overall comprehension of the videos.
Etemadi (2012)	Iran	University students (non-English major)	L2 subtitles Without subtitles	Stage 2 Word recognition	Results revealed that L2 subtitles had a positive impact on content comprehension but not on vocabulary recognition.

Harji and Alavi (2010)	Iran	University students (studying Translaton)	L2 subtitles Without subtitles	Stage 5 The use of the word	The results demonstrated that the existence of subtitles helped learners acquire words which were used in conversations.
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4.3.1 The dual coding theory

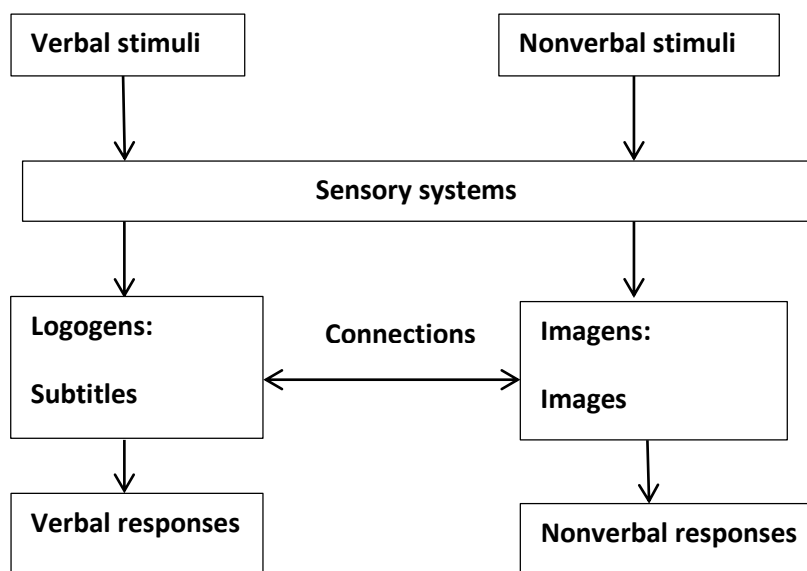
The above studies appear to show that subtitles are a potentially effective modality of input for vocabulary acquisition. The combination of text, audio and imagery has been argued to enhance input by making it more comprehensible (Plass & Jones, 2005), which supports Paivio's dual coding theory (1986; 1991; 2007).

Dual coding theory (DCT) is developed as a contrast to the above single code theories (Jared et al., 2012). In DCT, it asserts that all cognition contains activation and use of two modality systems: verbal system and nonverbal system. The verbal system refers to linguistic symbols in thinking and communication, whereas the nonverbal system refers to the perceptual properties and affordances of nonverbal objects and events (Jared et al., p.387 2012). There are two representational units underneath the verbal and nonverbal systems: logogens and imagens. Logogens, according to Morton (1979), are modality specific entities which can be described as visual, auditory, or haptic logogens corresponding to phonemes, morphemes, words, fixed phrases, and longer linguistic structures that can be remembered and expressed as holistic units. Activated imagens can operate imagery consciously and give rise to mediate performance in recognition, memory, language and other tasks unconsciously (Jared et al., 2012). Imagens come in diverse sensorimotor modalities and sizes, which includes visual, auditory, tactile, and motor imagens corresponding to objects and their attributes (Jared et al., p.387 2012). As regards the showing subtitled videos to students, they combine images (imagens) and subtitles visually and auditory (logogens).

As shown in Figure 4.1, students' word stimuli activation occurs via pathways that connect the two systems with each other. According to Jared et al. (2013), direction activation of corresponding imagens and logogens via intermediate sensory systems leads to familiar objects and language stimuli recognition. There are two connections in terms of different word categories: referential connections and associative connections. Referential connections occur between imagens and concrete word logogens. These connections permit objects to be named and the names to evoke mental images. Another type is associative connections, which occur between imagens and between logogens. It allows activity to spread within systems. Some complex word acquisition could involve patterns of activity that engage both dual-coding systems in

a probabilistic fashion (Jared et al., 2013). For instance, the abstract-word logogens lack direct referential connections to imagens but students could activate imagens through associations to concrete logogens indirectly (e.g. the abstract word ‘religion’ could be presented as an image of the church).

Figure 4.1: The Dual Coding Theory (Paivio, 1986)



The dual coding theory has received support over the years. Studies have shown the activation of both systems results in better recall. A comprehensive early summary (Paivio, 1983) presented 60 independent findings that were predicted or explained by DCT. From the second language learning aspect, studies (Garza, 1991; Zanón, 2006; Winke et al., 2010; Etemadi, 2012) have revealed that different channel sources were more likely to activate the two coding systems to process information than only words or images. However, Baltova (1994) argues that students’ global comprehension of the video could be facilitated by the visual images, but videos do not increase understanding of the language per se. This is probably because visual images cannot convey full language information for learning. Regarding this point, combining visual images with verbal information was found to enhance vocabulary learning from written text (Al-Seghayer, 2001; Plass et al., 1998, 2003) and aural passages (Jones & Plass, 2002). The novel words which were annotated with both verbal input and images

were acquired more by learners than when they were annotated with only one of these stimuli.

Considering the use of dual coding theory in this study, it appears to show that playing the sounds with full subtitles on the screen, learners at any level manage to understand the video. This is no doubt providing a convenient atmosphere for language learning. In this case, the authentic videos are more likely to contribute to the L2 learners with textual support (subtitles) in the classrooms.

4.4 Debate about Using L1 and L2 Subtitles

Despite the effectiveness of subtitles in L2 teaching videos, debate continues concerning the type of subtitles which are used: L1 or L2. Experimental studies showed conflicting results in terms of the age and level of proficiency of the participants and the aspect of language being tested. The debate around using L1 and L2 subtitles is a similar topic to the controversial issue on the use of L1 and L2 in chapter 2. Although the discussion of L1 and L2 use in chapter 2 did not provide an obvious result showing which one is best, it demonstrated a number of benefits of using L1 in the L2 classroom from cognitive, sociocultural and pedagogical perspectives. The following paragraphs reveal two distinct sides of using L1 subtitles or L2 subtitles from previous studies.

Numerous studies (Katchen, 1997; d'Ydewalle & Van de Poel, 1999; Koolstra & Beentjes, 1999; Markham et al., 2001; Zarei & Rashvand, 2011) have found that L1 subtitles are more facilitative in an auditory text. For example, Katchen (1997) is one of the advocates of L1 subtitles, and conducted an empirical study on instructional issues with televisions with L1 subtitles in the L2 classroom. Fourteen native Chinese speakers were enrolled in an advanced listening class. Results reflected that students enhanced receptive vocabulary acquisition in terms of L2 phrases, slang and vocabulary. The findings also revealed that L1 subtitles may have slowed the tempo of the watching process among relatively higher level students, but they were still helpful for understanding.

In addition, Koolstra and Beentjes (1999) reported the efficacy of L1 subtitles in vocabulary acquisition and word recognition among fourth and sixth year students who

were assigned into three groups in learning Dutch. The results reflect that the experimental group of students who were watching L2 spoken video with L1 subtitles performed well in vocabulary learning. In addition to vocabulary consideration, researchers are also interested in listening comprehension. For instance, Markham et al. (2001) conducted a study with 169 intermediate native English (L1) students learning Spanish (L2) in university. The learners were required to write a summary in L1, and complete a 10-item multiple-choice test, after seeing the movie. The results indicated that the English (L1) subtitles group outperformed both the Spanish (L2) subtitles group and the no subtitles group. This reveals the value of using subtitles to enhance L2 listening comprehension and reading. Therefore, it can be argued that L1 subtitles are useful, since they facilitate a better understanding of the video content, they allow vocabulary learning and listening comprehension. Also, L1 subtitles could compensate for difficult vocabulary and fast speech in the videos (Guillory, 1998).

On the other hand, a number of studies (Vanderplank, 1988; Markham, 1999; Bird & Williams, 2002; Danan, 2004; Guichon & McLornan, 2008; Mitterer & McQueen, 2009; Gunderson et al., 2011; Vandergift, 2011; and Hayati & Mohmedi, 2011) showed a trend for favouring L2 subtitles in the L2 classroom. Those studies argued that L2 subtitles could allow students to map phonology directly onto written words. Those written words in L2 subtitles are not affected by intonation, accents or background noise and further enhance word segmentation making processing and comprehension of the auditory material much easier (Mitterer & McQueen, 2009). In the L2 classroom, as Guichon and McLornan (2008) investigated, L2 subtitling is more beneficial than L1 because it causes less lexical interference. Results were presented by students' written summary report after they were exposed to L1 and L2 subtitles in different groups. Students with L1 subtitles made specific mistakes when translating back. Hayati and Mohmedi (2011) also found that the groups with English (L2) subtitles performed at a considerably higher level than those with Persian (L1) subtitles in intermediate students, based on a proficiency test. The material of the DVD was divided into six segments, and students watched only one of three types: English subtitles, Persian subtitles and no subtitles. To examine listening comprehension rates, six sets of multiple-choice tests were given. The findings showed that the English subtitles group performed better than the other two.

Bianchi and Ciabattini (2008) revealed that different subtitles preferences depend on students' proficiency level. They found that L1 subtitles were more beneficial for less proficient students, whereas L2 subtitles were more beneficial for more advanced learners. This difference might be because students could automatically process the L1 subtitles, while they might need more advanced knowledge of the L2 under the L2 subtitles condition to gain a positive effect (Vulchanova et al., 2015).

The above studies showed the advantages of using L1 and L2 subtitles separately. As discussed in chapter 2 regarding using L1 and L2 in the L2 classroom as well as L1 use in the L2 classroom, it is probably worthwhile to further consider putting L1 subtitles in the L2 videos (including L2 auditory and L2 subtitles). This new combination would probably be an efficient L2 learning tool, and is detailed in the following section.

4.5 Use of Bilingual Subtitles in the L2 Classroom

As well as confirming the effectiveness of subtitles in the L2 classroom, it is worth noticing the effectiveness of bilingual subtitles, as one of the types of subtitles. . Bartolome and Cabrera (2005) define bilingual subtitling as each block being made up of two lines, each in a different language. This is common practise in Finland and Belgium on TV. Similarly, bilingual subtitling is widely used in foreign language films in China, and can be a useful teaching tool for language teachers. However, there is only very limited literature exploring the effectiveness of bilingual subtitles in L2 classroom. Li (2012) investigated student and teacher attitudes towards bilingual subtitles, by comparing L1-only or L2-only subtitles in listening comprehension and vocabulary learning in the L2 classroom. The study involved two case studies of advanced level and intermediate level students and their teachers, seeking their perspectives on the use of subtitles in the L2 classroom. Three students and their teachers from each level were interviewed in depth, and a questionnaire was conducted with the whole class. The results showed that both teachers and students preferred videos with bilingual subtitles for L2 learning in most situations. However, according to their perceptions, the efficiency of bilingual subtitles depended on several factors such as students' current L2 level, the difficulty of the videos and the stages of teaching.

Bilingual subtitles were favoured by students and teachers for their vocabulary learning.

Specifically, students and teachers revealed that bilingual subtitles were helpful in vocabulary learning in both groups. However, there are different reasons for this across different language levels, from the point of view of vocabulary. The intermediate students revealed that bilingual subtitles helped them to have a better understanding and learn some new words that were essential for comprehension or that left them with a deep impression when used in idioms or authentic expressions. On the other hand, students in the advanced group showed that they upgraded their translation skills by comparing the bilingual subtitles and that they learnt to be more native-like in expression through bilingual subtitles. Furthermore, students reflected that bilingual subtitles help them not only to know the meaning of a word, but also to know how to use the word. Secondly, according to students' and teachers' comments, bilingual subtitles were useful in listening comprehension for understanding relatively harder listening material. Bilingual subtitles assist students to recognise nonstandard pronunciation and help better understanding, especially in the intermediate group. Finally, most students and teachers said that bilingual subtitles were an effective way to release their learning anxiety and build up their learning confidence. They also provide a way to bridge the culture gap between the target language culture and the native language culture.

According to Li's (2012) study, L2 subtitles seem to be more popular among the advanced group than the intermediate group. Students from the advanced group revealed that L2-only subtitles provide them with a complete L2 environment for learning. Teachers also mentioned that they will use L2-only subtitles when the listening material is aimed at listening practise or a listening exercise.

To summarise, although bilingual subtitles are widely used in foreign films in China, there is very limited research exploring its effectiveness in the L2 classroom. Previous studies investigated students' and teachers' attitudes towards bilingual subtitles in listening comprehension and vocabulary learning in the L2 classroom. Further studies might explore the effectiveness of bilingual subtitles from experimental study. In particular, there are some questions to be addressed: will bilingual subtitles have a

positive impact on students' language learning? In which aspects? Are there any factors that may hinder learners' language processing when they look at bilingual subtitles?

4.6 Chapter Summary

The first part of this chapter (section 4.2) introduced the use of videos and subtitles in the L2 classroom: it introduced the benefits of videos and subtitles in the L2 classroom and discussed the listening and reading issues that occurred during students' viewing of subtitles in videos. The second section, 4.3, focused on the impact of subtitles on learners' vocabulary acquisition and briefly categorised the findings of previous studies into vocabulary learning stages according to VKS. Also, the benefits of subtitles were supported from cognitive theory: the dual coding theory.

Section 4.4 reviewed the debate about using L1 and L2 subtitles. Experimental studies showed contrasting results in terms of the age and level of proficiency of the participants and the aspect of language being tested. Section 4.5 provided the other type of subtitles: bilingual subtitles. Despite limited studies investigating the effectiveness of bilingual subtitles, it appears that the bilingual subtitles were welcomed by intermediate and advanced level of students and their teachers for vocabulary learning (Li, 2012).

The following chapter describes the research design of this study, including methodology, pilot study and main study design, data analysis and ethical issues.

4.7 Literature Review Summary and Research Questions

The three chapters above reviewed the literature in terms of the general case of L1 and L2 use, vocabulary and videos and subtitles. Those three themes are the core subjects of my study: an investigation of the impact of differential subtitles (L1 subtitles, L2 subtitles and bilingual subtitles) on students' vocabulary acquisition. Considering that there is very few studies on the investigation of bilingual subtitles, and bilingual subtitles could be regarded as L1 subtitles in the L2 videos (including L2 auditory and L2 subtitles), I started the literature review from a broader sense: the general case of L1 and L2 use. The description of the L1 and L2 use was described from historical, theoretical and pedagogical perspectives. It demonstrated the effectiveness of L1 in

the L2 classroom around the world but also pointed out that the use L1 in the L2 classroom lacks support from national policies. Specific to the empirical work in the L2 classroom, previous studies (Centeno-Cortés & Jiménez, 2004; Duff & Polio, 1990; Kaneko, 1992; Macaro, 2001; Oga-Baldwin & Nakata, 2014; Nakatsukasa & Loewen, 2015; Tian & Macaro, 2012) tried to find the answer to questions such as how much L1 was used in the L2 classroom and researchers explored the benefits of L1 use in the L2 classroom including learners' language skills development. In addition, it is possible for learners to cultivate a bilingual mind for language learning from the cognitive perspective. Those possibilities are likely to pave the way for the effectiveness of bilingual subtitles, as a form of L1 use in the L2 videos, in aspects of language learning.

Following the general L1 and L2 use, I reviewed the other core theme of the study: vocabulary. I started by reviewing vocabulary knowledge frameworks including the breadth (size) and depth (quality) of vocabulary (Qian, 1999; Wesche & Paribakht, 1996). Following that, I focused on the exploration of the depth of vocabulary knowledge from developmental approach and dimensional approach (Read, 2000). Specific to my study, I am interested in looking at the impact of differential subtitles on the depth of vocabulary knowledge: word recognition and word recall. The vocabulary chapter also includes the description of incidental vocabulary learning. It discussed in detail incidental vocabulary acquisition in the area of reading and listening. Subtitles, as a tool for assisting understanding during the video showing, can be regarded as incidental learning. Of course, subtitles cover listening and reading in videos. The literature provided the possibilities and the problems that may occur in incidental learning in the reading and listening areas. It further narrowed down the literature by combining the use of L1 in L2 with vocabulary studies. It presented the importance of L1 in L2 vocabulary studies learning in terms of its appropriateness to promote the learning process, efficiency in learning the word meaning and expanding the vocabulary size. The discussion above further explained to the effectiveness of bilingual subtitles in vocabulary acquisition by presenting positive findings of L1 in the L2 classroom and incidental vocabulary learning.

Last but not least, this study reviewed studies of videos and subtitles. Previous studies (Danan, 2004; Huffman, 1986; Koskinen et al., 1993; Markham, 2001; Markham & Peter, 2003) demonstrated that subtitles appear to be a welcome tool to facilitate listening comprehension, reading comprehension as well as a way of lowering students' affective filters. Also, the benefits of subtitles were supported from cognitive theory: the dual coding theory (Paivio, 1986). However, these studies did not provide an explanation regarding why and how subtitles help those language skills, and how students are able to balance reading and listening with subtitles. In addition, the following discussion focused on whether subtitles help or hinder students' understanding when they are reading or listening. Previous studies (Baltova, 1999; Sydorenko, 2010; Vulchanova et al., 2015; Zanon, 2006) appeared to provide evidence that students would benefit from the three channels input information (images, audio and subtitles). However, they did not fully discuss the following questions: how learners divide their attention on the three channels? Do they continuously focus on audio, but switch between images and subtitles? Or when the images do not carry useful information, do they concentrate on subtitles and audio instead of images? In terms of types of subtitles, previous studies demonstrated the benefits of L1 subtitles and L2 subtitles and there was debate about using L1 or L2 subtitles in language learning. Meanwhile, it considered the other type of subtitles: bilingual subtitles. Despite limited studies investigating the effectiveness of bilingual subtitles, it appears that bilingual subtitles were welcomed by intermediate and advanced level of students and their teachers for vocabulary learning (Li, 2012). By reviewing the previous discussions concerning benefits of L1 in the L2 classroom and incidental vocabulary knowledge, I intend to fill the gap in research concerning the effectiveness of differential subtitles.

By discussing the relative core themes and the potential gap in the literature, the research questions are as following:

RQ1: Is the use of subtitles more effective than omission of subtitles for the acquisition of receptive vocabulary knowledge and recall?

RQ2: What kind of subtitles are more effective for developing vocabulary knowledge- L1, L2 or L1+L2?

RQ3: What are learners' perspectives on the three types (L1, L2 and L1+L2) of subtitles?

Chapter 5: Research Design

5.1 Introduction

This chapter first presents the methodology and explains the reasons for choosing this framework. Next, the pilot study and main study are discussed in detail in terms of sampling, research design, intervention and measures. After that, a description of data analysis is presented, which includes sections addressing various data types collected (quantitative and qualitative). Lastly, it addresses the ethical issues of this study.

For the first two research questions, in order to investigate the impact of different subtitles in students' vocabulary learning, this study explored the questions by the quantitative method, which involved conducting a quasi-experimental study in one of the Chinese universities. The quasi-experimental study consists of an English proficiency test, a vocabulary baseline test and a vocabulary post-test. Regarding research question 3 which focused on the students' perceptions towards different types of subtitles, this was examined by the qualitative method by carrying out questionnaires to the participant students. Before the main study, a pilot study was conducted to test the experiment instruments, which were then used in the main study.

5.2 Methodology

5.2.1 Mixed methods research

This research employed mixed method enquiry. Mixed methods has been defined as 'a type of research design in which qualitative and quantitative approaches are used in types of questions, research methods, data collection and analysis procedures, and/or inferences' (Tashakkori & Teddlie, 2003, p.711). As its name suggests, it combines quantitative and qualitative research approaches (Newby, 2010, p.124). In mixed method research, both quantitative and qualitative methods and data are combined (Punch, 2009, p.288). Before explaining the mixed methods, each will be explored separately recognising their characteristics.

Generally speaking, the quantitative approach features the use of numbers, which is central to the whole research process. The quantitative method enjoys obvious strengths, such as being able to access large and perhaps representative samples and to

generalise through sampling afterwards, as well as providing overall descriptions of situations (Punch, 1998, p.243). In addition, the quantitative proponents reflect that the quantitative inquiry is focused, systematic and tightly controlled, which involves precise measurement and producing reliable data that is generalizable to other contexts (Dörnyei, 2009, p.34). The statistical analytical apparatus offers in-built quality checks and indices which facilitate the reader to decide on the validity of quantitative findings. Practically, although the quantitative studies might take a longer preparation period, the research process is relatively quick and offers good value for money (Dörnyei, 2009, p.34). This is particularly true because the quantitative data is analysed by statistical computer software (Dörnyei, 2009). Meanwhile, with the general overview of the study, it is likely to have an in-depth understanding of the research. As Punch (1998, p.243) puts it, qualitative research focuses on lived experience and research in accordance with local settings in order to reach an in-depth and holistic understanding of the research. Its advantages, such as its exploratory nature, making sense of complexity and flexibility in carrying out the work, will be reflected in this research. Moreover, qualitative research is an ideal way to get the insider's perspective (Punch, 1998, p.243). In this case, with the holistic and rich data, the qualitative method will be able to deal with the complexity of this social research.

The majority of previous studies' (e.g. Katchen, 1997; Markham, 1999; Markham et al., 2001; Danan, 2004; Mitterer & McQueen, 2009; Gunderson et al., 2011; Vandergift, 2011; Zarei & Rashvand, 2011) methodology were to conduct experiment in order to explore the impact of subtitles (L1 subtitles or L2 subtitles) on students' language learning. Those studies' results did reveal the effectiveness of subtitles under certain learning conditions through comparing the experimental data. However, only conducting the experiment is not enough to explain why and how subtitles assist students' language learning. On the other hand, the investigation of students' and teachers' attitude towards differential subtitles (L1 subtitles, L2 subtitles and bilingual subtitles) (Li, 2012) by surveys and interviews, to some extent, answered how differential subtitles help or not help students and teachers in the language learning classroom. In this case, only by combining both quantitative and qualitative method, can the study further explore the effectiveness of differential subtitles and explain how they work in the language learning classroom.

In order to answer the research question 1 and 2, this study conducts a quasi-experimental research in one of the Chinese universities by seeking to ascertain the impact of different subtitles in students' vocabulary learning. In addition, a questionnaire was given to the whole class to collect perspectives towards different subtitles. This intends to assist providing an overall description of students' performance and attitudes towards different types of subtitles in their vocabulary learning.

Combining the two approaches provides the possibility of applying the two strengths for answering the specific research questions in this study. Bryman (2006, p.105) summarises the potential benefits of mixed method design, including enhancing the validity of findings by combining quantitative and qualitative data, providing a more complete and comprehensive picture of the research and addressing a broader range of research questions and so on. The advantages of the mixed method design can strengthen the study results due to its validity as well as its completeness.

When reviewing the research questions, the first two research questions explore whether subtitles have an effect on receptive vocabulary knowledge and recall and whether bilingual subtitling is more effective for developing vocabulary learning than monolingual subtitling. This includes investigating a cause and effect relationship and the comparison between groups by numbers for quantitative methods. On the other hand, the third research question explores learners' perceptions on the three types of subtitles, which focuses on collecting learners' perspectives to reach an in-depth and holistic understanding of this study. The above explanations present that mixed-method research is the most suitable way to answer the research questions by researching a more complete and comprehensive picture of this study.

5.2.2 Mixed method design

This section introduces the purpose of using mixed method and its design frameworks.

Greene et al. (1989) identify five main purposes of using mixed method in a review of 57 evaluation studies. The purposes include triangulation; complementarity; development; initiation; and expansion. Triangulation means combining quantitative and qualitative methods to assess the same conceptual phenomenon (Gray, 2014,

p.197). In a complementary mixed method study, quantitative and qualitative methods are combined to measure overlapping but also different aspects of a phenomenon (Gray, 2014, p.197). Development means that the results of one method are used to inform the development of the second. Initiation uses quantitative and qualitative method to explore paradoxes, new perceptions and contradictions (Gray, 2014, p.197). The focus of initiation lies in the development of the new insights which are likely to reframe the research questions. Expansion uses mixed methods to widen and broaden the range of a study (Gray, 2014, p.197). The purpose of this study is to use mixed methods to expand the range of the study. The quantitative method explores students' performance in vocabulary acquisition and the qualitative method further expands the investigation to a broader sense: students' perspectives towards subtitles in their language learning. In addition, the quantitative and qualitative methods are used to measure overlapping but different aspects of the study. To be more specific, this study investigates students' vocabulary performance under the subtitles condition as quantitative data and further explores their perspectives towards differential types of subtitles in vocabulary learning.

Combining the two methods provides the possibility of mixing the two strengths and compensating for the weaknesses (Punch, 2009, p.290). Creswell and Clark (2007, pp.58-88) classify four types of main mixed methods design. This study attempts to use the triangulation design. That is, both qualitative and quantitative data are collected and analysed at the same time and are given equal weight. Newby (2010, p.128) advocates that "triangulation takes on a different mantle when qualitative and quantitative approaches are brought to bear on an issue". According to Gorard and Taylor, the mixed method approaches allow researchers to compare results in a complementary way (2004, pp.44-46).

Creswell and Clark (2011, p.68) further suggest six major mixed method design frameworks according to the design decision points like interaction, priority, timing and mixing. This study utilized the embedded design which combines the collection and analysis of qualitative and quantitative data within a qualitative research design or a quantitative research design (Greene & Caracelli, 1997; Greene, 2007). It takes place sequentially: the quasi-experiment is followed by a questionnaire in the data collection

and analysis stages. It utilizes quantitative method as priority where a greater emphasis is placed on the quantitative methods and the qualitative methods are used in a secondary role. The quantitative and qualitative data strands are mixed during the final step of the research process after both sets of data collection and analysis. The qualitative data are collected after the quantitative data collection process. The following qualitative data are used to enhance understanding and explain the quantitative data. In this study, the quantitative data present students' performance under different types of subtitles; and the following qualitative design aims to explain whether students' perceptions to differential subtitles echo their performance in the quasi-experiment. In addition to the supplemental data of the qualitative design in vocabulary aspect, the qualitative data is also used to extend to a larger picture of the use of bilingual subtitles in language learning. Specifically, it is going to investigate students' perceptions towards the differential subtitles regarding other language learning aspects including video understanding and listening comprehension.

5.2.3 Quasi-experimental research

The quasi-experiment is the clearest case in quantitative research design for comparison-between-groups in an educational context (Punch, 1998, p.71). Also, it is a simple but ingenious methodological idea to answer the cause-effect dilemma (Dörnyei, 2011, p.116). In terms of the quasi-experiment, naturally occurring treatment groups make it possible for the comparisons. Although those groups are not designed for the research question, they are fairly clear-cut (Punch, 1998, p.74). The quasi-experimental studies take place in authentic learning environments using genuine class groups, which will not cause reduced external validity (Dörnyei, 2011, p.120). Regarding the internal validity, the absence of random assignment in the research causes a certain amount of doubt because the groups may not have been equivalent. On the other hand, conducting experiments in intact classes gives these non-artificial interventions in social life a very strong ecological validity (Bryman, 2012, p.56).

By conducting quasi-experimental research, this study is able to answer the cause-effect relationship to explore the effectiveness of subtitles as well as to make the comparison between different subtitles groups. Also, external and internal validity is

strengthened through the authentic learning video environment which is carried out in intact classes.

5.2.4 Questionnaires

Survey research offers a way of answering the research questions and achieves its aim by “its own logic, of collecting and analysing empirical evidence” (Walliman, 2011, p.175). The questionnaire, a type of survey, enjoys the advantage of being a structured data gathering process and a straightforward method of presenting research questions (Newby, 2010, p.337). Meanwhile, using the open-ended question followed by a close-ended question is able to gather a wide range of answers of the target question. Additionally, open-ended questionnaires ‘avoid imposing researchers’ ideas and concepts upon the respondent’ (Dörnyei, 2007, p.172). The advantage of using a questionnaire in a mixed methods approach presents promising patterns of variables, for analysing more detailed and rich data (Greener, 2011, p.40).

Comparing with interviews, questionnaire is possible to assess each participant’s opinion after they watched the subtitled videos. Also, participants from interview might not likely to represent all students’ opinion. Therefore, the data results from the questionnaire are likely to be more comprehensive and more convinced. On the other hand, the open-ended questions, which follow by the close-ended questions, are possible to further explore the target question in-depth. This, to some extent, is likely to cover the advantages of interviews for getting holistic and rich data.

To summarise, the research questions led this study into a mixed method research with quantitative and qualitative approaches. This mixed method design enjoys the advantage of strengthening the study results by its validity and completeness. Meanwhile, by using quantitative and qualitative data, mixed method is an ideal way to reach the complementarity and expansion purpose of the study. Additionally, quasi-experimental research and the questionnaire were considered as the best tools for collecting the data according to the research questions.

5.3 Pilot Study

Before the main study, a pilot study was conducted to test the instruments, which were used in the main study. This included the purpose of testing the validity of the FCE

(First Certificate in English) test for reflecting students' English proficiency, investigating students' previous vocabulary knowledge towards the target words in the vocabulary baseline test and checking the facilities for running videos with three types of subtitles. The pilot study was conducted in April 2013 and the main study followed five months later in September 2013 (see the table below). The detailed timescale in the main study will be presented in the following section 5.4.

Table 5.1: An overview of the timescale in the pilot study and the main study

Study	Class access	Length	Time
Pilot study	1 class (about 30 students) in each university (two universities in total)	1 week	April 2013
Main study	4 classes (about 120 students) in one university	About 8 weeks	September 2013

The structure of the section in the pilot study and the main study is similar: it contains sampling, research design, intervention and measures. There are some overlaps between them, which are explained in the pilot study section. But the main study presents the more comprehensive information of this study.

5.3.1 Sampling

The previous introduction chapter shows that video showing has gradually become a popular teaching tool in the second language classroom in Chinese universities and students are familiar with learning second languages with videos. In this case, this study was conducted in a Chinese university. According to the Statistical Communiqué on National Educational Development (2011) from the education ministry in China, there were 2,409 regular colleges and universities (including 309 independent colleges) in China in 2011. Among them, 1,129 were four-year undergraduate institutions, and 1,280 were junior colleges. The four-year undergraduate institutions are classified into key universities, regular universities and independent colleges (colleges founded by enterprise and national education funding). The key universities normally enrolled students with a higher total entrance exam score in all subjects. There is no location

preference for choosing the target university because each university enrolls students nation-wide.

The target universities in this study ideally are located in the developed cities in China. This is because universities in more developed cities are likely to have a more open mind to accept my experiment requirement and they might have had similar experience before and knew how to arrange my experiment time alongside the class teaching time. In addition, those universities' classrooms in the developed cities are normally installed with computers with updated systems, which is an essential factor to guarantee playing videos with differential subtitles smoothly. In this case, three universities were chosen in Guangdong, two universities in Beijing, one university in Shanghai and one university in Chongqing. Those universities in the developed cities were paying close attention to English language education and they were likely to know the current study results that could facilitate their teaching methodology improvement.

These seven key universities were contacted through email about conducting the pilot study and the main study and four of them replied. In the end, after trying to arrange possible experiment time in class, two universities were willing to conduct the research. One was Sichuan International Studies University, which was able to assess their 3rd-year English major students. Another was Shenzhen University, which was able to assess their 2nd-year non-English major students. Therefore, the pilot study accessed the two universities in order to get an overview towards this study in different majors. It also intended to choose one university from the two pilot universities in order to provide an indication of which sample would yield richer responses to enable a deeper understanding of the study focus.

Robson (2011) asserts that "an experiment should be piloted on a small scale in virtually all circumstances" (Robson, 2011, p.405). In this case, the pilot study in this research assessed one class in each university. There were 30 students in English-major class in Sichuan International Studies University, and 60 students in non-English major class in Shenzhen University. Students were in their intact classes. To be more precise, the English-major students were in their third year of university and had listening, reading, writing, and translation as their compulsory courses. This quasi-

experiment was conducted in their listening class. On the other hand, non-English major students had English course as their compulsory course too but they did not have particular language skill courses like listening, reading and speaking. The participant students were in their second year of learning.

5.3.2 Research Design

Considering the purpose of the pilot study, the research design procedure was simpler than in the main study. To be precise (see the table below), before the pilot study started, the researcher sent out the consent form to all students in order to introduce the research and explaining what they will do during the research. The form was given through their teachers. Afterwards, students in both universities took part in the FCE test and vocabulary baseline test in class and completed them in the required time. A week later, they watched the video episodes in class under the researcher's control. Students in Sichuan watched three types of video episodes (described in more detail below in section 5.3.3) in the order of: Buckingham Palace episode (L1), Winsor Castle episode (L2) and Holyrood House episode (L1+L2), while Shenzhen students only watched Holyrood House episode (L1+L2) in the first 20 minutes of their class. After each video, they completed the post-vocabulary test within 15 minutes. This was followed by a questionnaire seeking students' perspectives towards types of subtitles. Finally, all the test answer-sheet papers were collected by the researcher.

Table 5.2: Pilot study procedure

Stage	Researcher's /Teacher's role	Students' role
<i>Before the study (130 minutes)</i>		
1. English proficiency test (115 minutes)	Hand out the test paper and collect them	Complete the test in 115 minutes.
2. Vocabulary baseline test (15 minutes)	Hand out the vocabulary material and collect them	Complete the 3 part vocabulary test in 15 minutes
<i>During the study (75 minutes)</i>		
3. Watching the films (60 minutes)	Play the films in different subtitles in one class. Play the films with subtitles in the following order: L1(film 1) , L2 (film 2), L1+L2 (film 3)	Watch the films with three types of subtitles
4. Vocabulary test (15 minutes)	Hand out the test paper and collect them	Complete the test according to what they saw in the film.
<i>After the study (15 minutes)</i>		
5. Questionnaire (15 minutes)	Hand out the questionnaire and collect them	Complete the questionnaire about how they felt during the study.

5.3.3 Intervention

Before the study, the listening teacher handed out the vocabulary baseline test paper to all the classes and collected them within 15 minutes. After each episode was shown, the vocabulary post-test was handed out and immediately collected in by the researcher and the teacher within 15 minutes. After the last video was shown, an additional questionnaire was handed out and collected in by the researcher and the teacher.

Video materials

The video episodes were chosen from a series of BBC documentary films about the Queen's palaces. It has three episodes about this topic: Buckingham Palace, Windsor Castle and Holyrood House which are three official residences for the Queen. Each has a distinctive story which images good and bad times and the lives of some kings and queens (Ian, 2012). Each episode lasted 60 minutes in total, but due to the limited class time, this study played the first 20-minutes of each video.

As three episodes with different types of subtitles were shown to students in an individual class, it was necessary to measure the videos' difficulty in order to control the impact of different language levels of subtitles on the research result. Whether they understood the videos or not may partially depend on the degree of their subtitles' comprehension. In this case, understanding subtitles in the films was based on a combination of learners' reading and listening skills. Testing the language difficulty in a film with subtitles, therefore, is relevant to testing text complexity in reading and listening.

Regarding text complexity in reading, I focused on two aspects of text complexity, namely, lexical level and syntactic level. Lexical density and word frequency are measured at lexical level. One of the key measures of spoken texts is lexical density (Read, 2000, p.203). The importance of word frequency measure lies in its intense relationship with bilingual vocabulary recognition as well as the visual duration of eye movement. These are close to the students' performance on vocabulary acquisition through videos with subtitles. Additionally, addressing word frequency is a reference for choosing the words from the text in the vocabulary post-test. Therefore, word frequency is one of the most important factors to measure the text complexity. The lexical density was measured by a lexical analysis software Wordsmith. Word frequency was measured by a computational linguistic tool Coh-metrix.

Text complexity is not only determined by word identification and meaning, but is also a function of syntactic structure (Mesmer et al., 2012, p.242). Among the syntactic measures, I focused on measuring the T-unit length in this study. The length of T-unit correlated highly with syntactic complexity (Jiang, 2013). That is, "the longer the

mean T-unit length, the more syntactically mature/complex the discourse is” (Jiang, 2013, p.2). Therefore, T-unit length is a key dimension for analysing text complexity. Stanford parser (Klein & Manning, 2003) was used to measure the syntactic complexity (T-unit length).

When it comes to text complexity in listening, according to Buck (2001, p.32), these significant characteristics include phonology, accents, prosodic features and speech rate. As the three episodes are spoken by the same BBC speaker, the way of speaking is more or less similar in terms of phonology, accents and prosodic features. This is likely to lessen the impact of spoken text variables on text complexity. In this case, speech rate is the only factor to be measured in this study. Evidence indicates that speech rate is a key factor in listening comprehension. Specifically, listeners’ comprehension declines as the speech rate gets faster and comprehension increases as the speaker talks slower (Nygaard, Sommers & Pisoni, 1994; Shi & Farooq, 2011). The speed rate was calculated with a measure of words per minute.

The results are shown below in Table 5.3. As can be seen from the table, the difficulty of each complex item was considered to be relatively equivalent. Therefore, the three films are regarded as having the same difficulty level for understanding. Also, this will not be a factor that impacts the study’s results.

Table 5.3: Test complexity in reading and listening of the three videos

	Buckingham Palace	Windsor Castle	Holyrood House
Lexical density ⁴	0.51	0.51	0.52

⁴ Lexical density is referred to the type/token ratio (Carter, 1987), the higher the lexical density, the more difficult the text is. Considering the length of text may affect ratio, this study uses standardised type/token ratio. It is computed every *n* words through each text. Here *n*=500, in other words the ratio is calculated for the first 500 running words, then calculated afresh for the next 500 and so on to the end of the text.

Word frequency ⁵	3.07	3.13	3.06
T-unit length ⁶	14.38	13.26	13.79
Speed of rate (wpm) ⁷	146	130	140

5.3.4 Measures

In the pilot study, the English proficiency test, baseline-test and post-test were used to measure the students' performance. The English proficiency test and baseline-test were conducted before the study. The purpose of doing a baseline-test rather than a pre-test was perhaps to avoid students recognising those target words before the video was shown so that they acquire the target words incidentally.

English proficiency test

As an English proficiency test in the pilot study, the Cambridge FCE test was chosen from the official FCE test practise papers. Each test section was chosen from different test papers from FCE test practise books. The purpose of using the FCE was to test students' English proficiency before the experiment, especially their listening and reading performance which might affect their understanding of the videos with subtitles. Conducting an English proficiency test is a way to determine the similarity of the groups being compared before the study (Schmitt, 2010, p.179). However, the pilot study data showed that the majority of students had low marks, which led to a floor effect. This means that the FCE scores occupy a distinct lower limit for the potential responses and a large number of participants' scores are concentrated on this limit (Baron & Byrne, 2004). This results in a low construct validity which means students' test performance cannot be interpreted as a meaningful measure of some characteristic or quality (Gronlund, 1985, p.58). Further, this would threaten the

⁵ Word frequency refers to the mean frequency of types in the text. The higher the word frequency, the easier the text is.

⁶ The higher T-unit length, the more difficult the text is.

⁷ The speed of rate is calculated by words per minutes. The higher the speed of rate, the more difficult the video is.

validity of the research, namely, an outcome presents no variation at the lower end of its potential range. Additionally, another paired t-test of the FCE scores was carried out between English major and non-English major students to explore whether the FCE test is able to discriminate between different students levels. Results showed that 2 (reading and cloze test sections) out of 3 test sections demonstrated failure of FCE in discriminating different level of students ($t = -.500$, $p > .05$ in reading; $t = 1.884$, $p > .05$ in cloze test).

Except for an inter comparison of the FCE test, I also did a simple comparison with TEM-4 test with the English major students. The TEM-4 (Test for English Majors Grade 4) is a national test among English major students in China. According to the table below, it is obvious that the English level of the same students was quite different in the two tests. The TEM test generally reflected the different levels of students' English proficiency which distributed the number of students in three levels and most of the students were in Grade B and C. Therefore, with 26 students below Grade C in the FCE test, it probably means the test was too difficult for the current English level of students. This gave FCE a low concurrent validity when compared with "other measure for the same candidates taken at roughly at the same time" (Alderson, Clapham & Wall, 2005, p.177).

Table 5.4: A comparison between FCE test and TEM4 test in English major students

	Number of students in FCE test	Number of students in TEM-4 test
Grade A	--	--
Grade B	--	11
Grade C	4	15
Below Grade C	26	4

Vocabulary baseline test

The vocabulary baseline test in this study was designed to determine students' pre-existing vocabulary knowledge before the quasi-experimental treatment. This is usually explored with some form of T1 (Test 1/ baseline test)—T2 (Test 2/post-test) research design (Schmitt, 2010, p.179). The importance of baseline test is that it is possible to know whether T2 knowledge is newly acquired or the knowledge that existed before the study began. Two main ways might be considered to control pre-existing knowledge: ensuring none exists and measuring and then adjusting for it. Specifically, the former was considered to use low-frequency words or non-words (or pseudowords or nonce words) to ensure that no word knowledge exists for participants. This approach used the baseline test to measure any pre-existing knowledge of the target lexical items. Consequently, making sure that every target lexical items is unknown for the learners before watching the video in order to get more reliable results at the end of the study. It is also useful to have distractors to minimize the chances of students' awareness of the target lexical items.

The vocabulary baseline test was designed according to the form of Meara's (1992) checklist test. As Schmitt (2010, p.199) puts it, the checklist test is the simplest format of the vocabulary test. It requires test-takers to read lists of lexical items in isolation and figure out whether they know the target word or not. In this case, the checklist test is also called Yes/No tests. Meara (1996, p.8) indicates a number of advantages of the checklist test. The main advantage is the simple format which makes the test taking time short. This is a bonus for testing a very large vocabulary in some detail. Additionally, the test is easy to construct and it does not require an extra standardisation in order to define the correct answer. The method seems to work well across a range of proficiency levels: the test is equally suitable for beginners as well as advanced learners. However, with no direct demonstration of knowledge, it is possible for examinees to overestimate their vocabulary knowledge (Schmitt, 2010, p.200), for example, they do not actually know the word although they tick "yes". This might be controlled by adding meaning-recall items behind to guarantee examinees' actual knowledge of the target word. Therefore, the vocabulary baseline test in this study contains a "Yes"/ "No" checklist with meaning-recall items behind each word.

The vocabulary baseline test (see appendix 1) contained a word recognition test and a word receptive knowledge test for asking for the word’s meaning. The words in three episodes are listed separately and around 30 target words were selected from each video episode—10 words are the target words in the post-test and 20 are distractor words from the same episode. From the pilot study report, the majority of the vocabulary was known by the English major students, so new words were picked up for the post-test in the main study according to students’ vocabulary baseline test in the pilot study. The table below listed the target words that were changed from the pilot study to the main study for vocabulary post-test.

Table 5.5: List of words changed from pilot study to main study for vocabulary post-test

Pilot study	Main study
Buckingham palace	
Monarch	Backwater
Facade	Priggish
Chase	Encapsulate
Exotic	Intrepid
Mansion	Claret
Windsor castle	
Looming	Melancholy
Chivalry	Siege
Knight	Austerity
Abolish	Exuberant
Glittering	Sumptuous
Instinctively	Lit

Heir	Prophecy
Holyrood house	
Vibrant	Scruffy
Stich	Imbue
Alien	Smitten
Tribe	Moorland
Dye	Tapestry
Co-conspirator	Boar

Vocabulary post-test

The format of the post-test (see in appendix 2) was different from that of the vocabulary baseline test. The post-test involved a multiple-choice test for the word usage in the L2 context and a meaning writing test which was adopted from the format of Hennebry et al. (2013). The study of Hennebry et al. (2013) compared the effects of vocabulary instruction on recognition and recall through provision of either an L1 equivalent or an L2 (French) definition. The purpose of my study was also to explore vocabulary recognition and recall through differential subtitles. It was suggested that the two test formats avoided favouring one kind of subtitles over the other two. Specifically, students were asked to choose the correct usage of the word and write down its Chinese meaning. Each episode test had 12 target words, 2 of them would be deleted according to the vocabulary baseline test results for avoiding the target words that they had known before. The target words were chosen from the video according to their word frequency, word class and some particular features in the video such as a concrete word with its picture on the screen. The test papers were reviewed for test items by three native speakers in order to remove test items that may have been ambiguous in terms of the differences of English and Chinese.

Target words were selected by various word classes and the frequency of occurrence in the video as well as the frequency in English and Chinese vocabulary profiles. The purpose of these was to explore whether the word class or the word frequency makes differences for students when they acquire vocabulary. As discussed in chapter 3 (section 3.3.2), word frequency could be one of the important variables to impact on students' vocabulary learning from reading and listening (De Groot, 1992; Ellis, 2002; Lehtonen & Laine, 2003; Schmitt et al. 2001). The target text in this study is a transcript of a film, which might have several key words with frequent occurrences. This turns to be a factor to influence learners' understanding for the subtitles as well as the film. Furthermore, addressing word frequency is also a reference for choosing the words from the text in the vocabulary post-test.

The frequency of the target words in English was referred to the vocabulary profiles of Tomas Cobb's website⁸ (based on Laufer & Nations' Lexical Frequency Profiler) and the American Heritage frequency dictionary (1969). The reason for using these two sources as references is because they were based on two corpuses (Cobb's data was based on British English corpus, while the dictionary was based on American English). This led to not many differences in presenting the level of word frequency. As the video used in this study was from BBC documentary films, this would be more reliable for the British English based corpus. Therefore, I chose Cobb's BNC vocabulary profiler (the BNC vocabulary profiler was based 20 levels of word frequency plus the off-list words) as my main reference for the target words' frequency and used the American Heritage frequency dictionary as the second resource as the reference.

The frequency of target words in Chinese was referred to the Dictionary of Modern Chinese Frequency (1986). Although the dictionary was published in 1986 and some new words were not included, this was the only authoritative and comprehensive vocabulary list profile.

In Cobb's BNC vocabulary profiler, there were 25 word frequency levels for the words (K1-K25). On the other hand, the Chinese frequency dictionary showed the word

⁸Tomas Cobb's website : <http://lextutor.ca/cv/>

frequency as numbers. Since the illustrations of the word frequency were not the same in Chinese and in English, I attempted to transfer those particular frequency details into two levels: high frequency level and low frequency level. The purpose of the transformation was that the unification of the frequency level in English and Chinese made an easier comparison afterwards. Also, according to Schmitt (2010, p.68), the most common distinction of word frequency levels are high- and low-frequency. However, merging those words into two levels may not provide accurate word frequency information. In this case, in order to analyse the impact of subtitles on the individual word frequency, I decided to do the transformation into two levels of frequency.

According to the Chinese dictionary, the word frequencies are in high/low level of frequency list, and the rest of them are in the low level frequency. Few Chinese words were not listed in the dictionary, but I allocated some particular words into the frequency level, such as *backwater* and *coronation* (a low frequency level of usage in Chinese), and *claret* (a high frequency level of usage in Chinese nowadays). Regarding Cobb's BNC vocabulary profiler, the high frequency level was regarded as those words above level K6 and the low frequency level was regarded as those words under or equal K5. The following table shows a detailed transformation of the target words in the video.

Table 5.6: The transformation of the word frequency level**(Buckingham palace)**

Word item	Frequency level in English	Re-edited Level of frequency in English	Word item in Chinese in video	Frequency in Chinese	Re-edited Level of frequency in Chinese
Item 1 backwater	K10	low	回水	--	low
Item 2 priggish	K14	low	死板的	0.00038	low
Item 3 retreat	K3	high	休息地	0.01354	high
Item 4 coronation	K8	low	加冕礼	--	low
Item 5 marshy	K5	high	泥泞的	0.00061	low
Item 6 encapsulate	K8	low	概括	0.00152	high
Item 7 mulberry	K12	low	桑树	0.00099	high
Item 8 intrepid	K10	low	勇敢的	0.00533	high
Item 9 claret	K11	low	红酒	--	high
Item 10 flamboyant	K8	low	炫耀的	--	--

(Windsor Castle)

Word item	Frequency level in English	Re-edited Level of frequency in English	Word item in Chinese in video	frequency in Chinese	Re-edited Level of frequency in Chinese
Item 1 fortress	K6	high	堡垒	0.00076	low
Item 2 stern	K4	high	坚定的	0.00692	high
Item 3 gem	K6	high	珍宝	0.00107	high
Item 4 austerity	K6	low	朴素	0.00236	high
Item 5 exuberant	K7	low	生机勃勃的	0.00084	high
Item 6 sumptuous	K8	low	豪华的	--	--
Item 7 lit	K1	high	明亮的	0.00365	high
Item 8 levee	K11	low	早朝	--	low
Item 9 restoration	K3	high	复辟	0.00205	high
Item 10 prophecy	K7	high	预言	0.00061	low

(Holyrood house)

Word item	Frequency level in English	Re-edited Level of frequency in English	Word item in Chinese in video	frequency in Chinese	Re-edited Level of frequency in Chinese
Item 1 scruffy	K8	low	破旧的	0.00084	high
Item 2 embroidery	K5	high	刺绣	--	low
Item 3 imbue	K9	low	渗透/灌输	0.00114	high
Item 4 turbulent	K5	high	动荡的	0.00030	low
Item 5 smitten	K10	low	迷住的	0.00023	low
Item 6 moorland	K5	high	沼泽地	0.00038	low
Item 7 drizzly	K7	low	下毛毛雨的	--	--
Item 8 lavish	K5	high	奢华的	--	--
Item 9 tapestry	K7	low	挂毯	0.00129	low
Item 10 boar	K8	low	野猪	0.00030	low

Scoring Outcome Measures

The vocabulary baseline test and post-test papers were marked by the researcher. In the baseline test, students were not given scores for their answers, but the number of their correct answers of each word was noted for selection of words in the post-test. In the post-test, each target word has two sections: multiple-choice and target word translation. The scores were given separately for the two sections. The total score for

each section was 100 (10 points for each target word test item). The maximum score was the same as that of English proficiency test, which made it easier to compare them with each other in data analysis. In the multiple-choice section, each test item had only one correct answer. A word in English had various translations in Chinese, which contained the same meaning. The scores in the translation section were given for the correct meaning instead of the correct Chinese words.

To summarise, from the pilot study report, the English proficiency test was changed from FCE test into TEM-4 (Test for English Majors Grade 4) test for the English major students (this will be described in the main study). Additionally, the majority of the target words were known by the English major students, so new words were chosen for the main study according to students' vocabulary baseline test in the pilot study.

Qualitative measure

In the 'naturalistic' field research, the term 'ethnographic' and 'interpretivist' often denote the same fundamental approach as 'qualitative' (Bryman, 1984). The qualitative research is concerned with understanding 'the world in which we live and why things are the way they are' (Hancock, 1998, p.2). It aims to develop explanations with the social phenomena. Qualitative research seeks to answer questions which begin with: why? how? in what way? In this study, in order to investigate learners' reactions to the three types (L1, L2 and L1+L2) of subtitles, a questionnaire (see Appendix 3) was carried out after the video was shown. Students should complete the questionnaire according to their language learning understandings from the video. The decision made to use a survey rather than the interviews is that surveys are possible to assess each participant's opinion. Also, the participants from interview might not likely to represent all students' opinions. Therefore, the data results from the survey are likely to be more comprehensive and more convinced. On the other hand, the open-ended questions in the survey, which follow by the close-ended questions, are possible to further explore the target question in-depth. This, to some extent, is likely to cover the advantages of interviews for getting holistic and rich data.

The questionnaire in this research was designed to expect both open and closed responses. According to Ian (2011), the interpretations of external world might vary

between research subjects and societal groups. In order to capture differences between interpretation and understanding which might exist, it is necessary to conduct qualitative work, which especially through open-response questions in the questionnaire (Ian, 2011, p.40). The questionnaire in this study attempted to assess participants' interest in different types of subtitles in terms of video understanding, listening comprehension and vocabulary learning. Therefore, open-ended and closed-ended questions were devised to provide an overall picture of the research. As mentioned from the previous study, the advantage of questionnaire is seen from the structured data gathering process and the straightforward method of presenting research questions (Newby, 2010). Adding the open-ended questions may allow crosschecking the questions to reinforce the validity and consistency of the responses (Dörnyei, 2007). The questions in the questionnaire were further developed from my previous study (Li, 2012). According to students' responses from the previous study, this study further added the open-ended questions. The new version was also piloted in this pilot study. There were one point to be noticed before conducting the questionnaire: the researcher need to ask the students from the control group to write down if they watched three types of subtitles before. As students from the control group were given no subtitles videos thoroughly, it was necessary to guarantee that students' answers in the control group were from their experiences instead of from their imaginations. Considering there might be some overlaps in the understanding of the three terms, it was clarified for the three items in different language learning aspects. Specifically, video understanding places emphasis on getting the gist of the video. Listening comprehension focuses on students' understanding of the video through listening, including the particular word pronunciation recognition and understanding, and the specific video content understanding. Vocabulary learning includes word recognition and recall as well as its usage.

The use of qualitative data, on the one hand, is to further explain the quantitative findings according to students' perspectives towards the differential subtitles. Also, if students' perspectives towards subtitles reached an agreement of the quantitative results, the quantitative analysis could be considered trustworthy. On the other hand, the qualitative data explore broader aspects of language learning, which further complement the findings of previous study (Li, 2012). The difference from previous

study (Li, 2012) is that the questionnaire in this study is conducted directly after video showing. This could be an advantage because the questionnaire is likely to collect students' perspectives timely instead of their perspectives from memories.

5.4 Main Study

The content of the main study section is the same as the pilot study. It begins with sampling section. This is followed by the research design, which gives a detailed main study timescale and procedure. The next section presents intervention that focuses on discussing diverse plans of differential subtitles in videos. The following measures section reveals the changes from the pilot study in the English proficiency test and also lists the detailed target word frequencies in vocabulary post-test.

5.4.1 Sampling

According to the students' quality response and the possibility of universities' access in the pilot study, the decision was made to carry out the main study in Sichuan International University among English major students. 120 students from four intact classes participated in the main study. To be more precise, three classes were randomly allocated as experimental groups, and the other one as a control group. Among those students, 86 of were female and 34 were male. They were year-3 English major students aged 21 (age range: 20-22, mean: 21). As there are three types of subtitles (L1, L2 and L1+L2), each experimental class was shown the three video episodes with a type of subtitle (this will be discussed in detail in the following section).

As shown in table 5.7, the total number of students in each class was 30, but two or three students went to Japan as exchange students in class 1, class 2 and class 3 in this semester. Apart from these students, there was full attendance in classes during the intervention weeks.

Table 5.7: Number of students in each class for post-test and delayed post-test

	Gender		Post-test film 1	Post-test film 2	Post-test film 3	Delayed post-test film 1	Delayed post-test film 2	Delayed post-test film 3
	Male	Female						
Class 1	9	19	28	28	28	28	28	28
Class 2	7	21	28	28	28	28	28	28
Class 3	10	17	27	27	27	27	27	27
Class 4	9	21	30	30	30	30	30	30

All the students (113 in total) completed the questionnaire after the experiment and 91 were valid. Seen from table 5.8, there were 67 questionnaires in the experimental group and 24 questionnaires in the control group. Taking into account that students in the control group were not exposed to the differential subtitles, they were asked to write whether they used to watch three types of subtitles before on the questionnaire as well. Only one student wrote that he/she did not watch all the three types of subtitles before in the control group.

Table 5.8 Number of students in each class in questionnaire

Experimental group			Control group	Total
Class 1	Class 2	Class 3	Class 4	
21	23	23	24	91

5.4.2 Research design

The experimental procedure for the main study followed that of the pilot study with one main exception: the videos were separated out for playing with different types of subtitles. That is, each video episode was played each week with its corresponding vocabulary post-test. The detailed schedule was as follows:

Table 5.9: Main study timescale

Date	Procedure	Experimental group			Control group
		Class A	Class B	Class C	Class D
March 2013	Pre-test	TEM-4 Test			
Week 1 (Sept. 2013)		Vocabulary baseline test			
Week 2	Film 1+ vocabulary post-test 1	L1 subtitles	L2 subtitles	L1+L2 subtitles	No subtitles
Week 3	Film 2+ vocabulary post-test 2	L2 subtitles	L1+L2 subtitles	L1 subtitles	No subtitles
Week 4	Film 3+ vocabulary post-test 3	L1+L2 subtitles	L1 subtitles	L2 subtitles	No subtitles
Week 5	Delayed vocabulary post-test for film 1				
Week 6	Delayed vocabulary post-test for film 2				
Week 7	Delayed vocabulary post-test for film 3				

Regarding the first two research questions, which investigated whether subtitles have an effect on receptive vocabulary knowledge and recall and whether bilingual subtitling is more effective for developing vocabulary learning than monolingual

subtitling, a quasi-experimental research was conducted. In the main study, there were four groups and three of these were in the experimental groups for watching videos with different types of subtitles and the other one was in the control group for watching videos without subtitles. The comparison between experimental groups and the control group was expected to provide answers to the first research question and the comparison of the three experimental groups was expected to provide answers to the second research question. The schedule before the study was the same as the pilot, but I changed the English proficiency test material into the TEM test (see the details in the following section 5.4.4). During the study, the time at which the video was shown in each class was the same as in the pilot study, but it was added to three more classes: two more classes in the experimental group and one class in the control group. The different viewing order of video was shown with three types of subtitles in the experimental group and this will be explained in detail in the following section 5.4.3. The delayed post-test was carried out three weeks after each video showing by the researcher. Within the delayed test, the teacher handed out the vocabulary post-tests again and collected them within 15 minutes. The detailed procedure of the main study was as follows:

5.4.3 Intervention

Before the study, the teacher handed out the vocabulary baseline test paper to all the classes and collected them within 15 minutes. A week later, the researcher and the teacher played each episode with different types of subtitles to the experimental classes. This was repeated within the consecutive two weeks. The control group was shown three episodes without subtitles at the same time. After each episode was shown, the vocabulary post-test was handed out and immediately collected in by the researcher and the teacher within 15 minutes. After the last video was shown, an additional questionnaire was handed out and collected in by the researcher and the teacher. The procedures up to this point were kept constant for playing all the videos in the classes.

Video materials

Regarding the order of subtitles in the video playing procedure, there were three alternative options of subtitles order during the video playing in three classes. As demonstrated in the following table, plan A gives students the same type of subtitles of videos in one class. However, if students indicated a better performance under one type of subtitles than the other two, we did not know if this was due to the advantage of subtitles or due to the advantage of students' higher English proficiency in this class. Alternatively, plan B gives students the same type of subtitles in one film. Similarly, if students showed a better performance under one type of subtitles than the other two, we do not know whether this is due to the advantage of subtitles or due to the advantage of the film. In this case, Plan C is designed as the final video showing procedure, which gives students different types of subtitles in different films. This makes it to avoid the disadvantages of plan A and B and to strengthen the impact of subtitles on students' language acquisition.

Table 5.11: Plans of differential subtitles in video showing

Plan A				Plan B				Plan C			
	Class A	Class B	Class C		Class A	Class B	Class C		Class A	Class B	Class C
Film 1	L1	L2	L1+L2	Film 1	L1	L1	L1	Film 1	L1	L2	L1+L2
Film 2	L1	L2	L1+L2	Film 2	L2	L2	L2	Film 2	L2	L1+L2	L1
Film 3	L1	L2	L1+L2	Film 3	L1+L2	L1+L2	L1+L2	Film 3	L1+L2	L1	L2

The video materials were the same as those in the pilot study.

5.4.4 Measures

In the main study, the English proficiency test, baseline-test, post-test and delayed post-test were used to measure the students' performance. As in the pilot study, the purpose of doing a baseline-test rather than a pre-test was to avoid students recognising target words before they were shown in the videos which contain them so that any development in their noticing of words can be considered to have taken place as a result of being shown the videos. And the aim of delayed post-test was to explore whether students acquire the target words in the long-term.

English proficiency test

From the pilot study reports, it was suggested to change the English proficiency test from the FCE test to the TEM-4 (Test for English Majors Grade 4) test for the English major students. The TEM is one of the predominant national English tests for English majors in China, winning extensive recognition from test takers, relevant institutions and society at large and playing an increasingly important role in English language teaching and learning at the tertiary level (Jin & Fan, 2011, p.590). According to a Sino-British cooperative validation study from 1993 to 1996, the TEM internal consistency coefficients were acceptably high with TEM 4 at .854 (n=13,675) (The TEM Test Centre, 1997, p.63). It is shown that the average internal consistency coefficients of reliability from 2008 to 2010 were 0.836 for TEM 4 (Zou & Chen, 2010). The English major students take the TEM-4 administered by their university in April and get their results in September of the same year.

Vocabulary baseline test

The vocabulary baseline test was the same as the one used in the pilot study.

Vocabulary post-test

In the post-test, some new words were added to guarantee all the words were unknown for the students. As for the pilot study, target words were selected by various word classes and the frequency of occurrence in the video as well as the frequency in English and Chinese vocabulary profiles. The word class and frequencies are listed below. Whether the interesting words like ‘coronation’ (with a high frequency of occurrence in the video but low frequency in English and Chinese profile) and ‘mulberry’ (with a low frequency of occurrence in the video, high frequency in Chinese but low frequency in English) will make a difference on students’ acquisition under subtitles condition. This will be detailed in the findings chapter (see chapter 6).

Table 5.12: The word class and frequency of occurrence in the video of the targeted words

(Buckingham Palace)

Word item	Word class	Word frequency of occurrence	Level of frequency	
			English	Chinese
Item 1 backwater	n.	1	low	low
Item 2 priggish	adj.	1	low	low
Item 3 retreat	n.	2	high	high
Item 4 coronation	n.	4	low	low
Item 5 marshy	adj.	1	high	low
Item 6 encapsulate	v.	1	low	high
Item 7 mulberry	n.	4	low	high

Item 8 intrepid	adj.	1	low	high
Item 9 claret	n.	1	low	--
Item 10 flamboyant	adj.	2	low	low

(Windsor Castle)

Word item	Word class	Word frequency of occurrence	Level of frequency	
			English	Chinese
Item 1 fortress	n.	3	high	low
Item 2 stern	adj.	1	high	high
Item 3 gem	n.	1	high	high
Item 4 austerity	n.	1	low	high
Item 5 exuberant	adj.	1	low	high
Item 6 sumptuous	adj.	1	low	--
Item 7 lit	adj.	1	high	high
Item 8 levee	n.	1	low	low
Item 9 restoration	n.	2	high	high
Item 10 prophecy	n.	1	high	low

(Holyrood house)

Word item	Word class	Word frequency of occurrence	Level of frequency	
			English	Chinese
Item 1 scruffy	adj.	1	low	high
Item 2 embroidery	n.	2	high	low
Item 3 imbue	v.	1	low	high
Item 4 turbulent	adj.	1	high	low
Item 5 smitten	v.	1	low	low
Item 6 moorland	n.	1	high	low
Item 7 drizzly	adj.	1	low	--
Item 8 lavish	adj.	2	high	--
Item 9 tapestry	n.	2	low	low
Item 10 boar	n.	1	low	low

Vocabulary Delayed tests

The delayed vocabulary tests were the same as vocabulary post-tests.

Scoring Outcome Measures and Qualitative Measures

The scoring outcome measures and qualitative measures in the main study were the same as those in the pilot study.

5.5 Data Analysis

Firstly, the steps in qualitative and quantitative forms of analysis will be introduced. According to Creswell and Clark (2007, p.218), in data analysis, both analysis stages involve preparing the data, exploring the data, analysing the data, representing the data

analysis and validating the data. It is widely agreed that qualitative and quantitative data should be analysed in the initial step (the first three stages) separately (Creswell, 2011; Punch, 1998). In this study, in order to answer different research questions, data were analysed separately. As Robson puts it, the quantitative and qualitative data can make separate contributions to different research questions, but “there is also a possibility of their integration to take full advantage of the opportunity provided by this type of design” (Robson, 2011, p.412).

5.5.1 Preparing the data

For the quantitative data, the analysis started by converting the raw data into a table, which included scoring the data by assigning numeric values to each response, clearing data entry errors from the database, and creating special variables that would be needed, such as creating items on variables with inverted scores or computing new variables that comprise multiple items. Recording and computing were completed with the Statistical Program for the Social Sciences (SPSS).

For qualitative data, the preparation included organizing the document for review and translating text from the open-ended questionnaire into word processing files for analysis.

5.5.2 Exploring the data

Exploring the data in quantitative data involved checking the data visually and calculating descriptive statistics (the mean, standard deviation, and the variance of responses). The purpose of this was to determine the overall trends in the data. During the data exploration, the distribution of the data was investigated to determine whether it was normally or non-normally distributed in order to decide which statistical measure to use in the analysis. The quality of the scores from the data collection instruments was also examined for their reliability and validity.

Regarding exploring the qualitative data, it involved reading through the data to develop a general understanding of the database by writing short memos. These memos -typically short phrases or notes-became an initial step in forming broader categories of information into codes or themes. A codebook was also created at this time. This was the statement of the codes for a database, which included codes from

previous literature and codes which emerged during the analysis. The coding process helped with organising the data and classifying agreement on the contents of the questionnaire (Creswell & Clark, 2011, p207).

5.5.3 Analysis of quantitative data

In quantitative data analysis, appropriate statistical tests were used to address the research questions. The choice of statistical tests was based on the type of research question (e.g., a comparison of the groups, the relationship of variables or the effect of variable), the number of independent and dependent variables, the types of scales used to measure those variables and whether the variable scores are normally or non-normally distributed (Creswell & Clark, 2011, p.207). A. Field (2013, p.132) indicates the importance of checking the assumptions before deciding on the appropriate statistical test. This is also a critical first step in analysing the data from the quasi-experimental study (White, 2009). The following section presents the data screening and is divided into tests for normality and for homogeneity of variance.

Tests for normality

The distribution of the data was examined for each experimental group before the main analysis. The intention was to find a fitting statistical model for analysis according to the specific data distribution. In light of research questions 1 and 2, I tested the normality in two conditions (with subtitles and without subtitles) group and four conditions (no subtitles, L1, L2, bilingual) group.

The first test of normality in students' vocabulary scores was carried out with word recognition at post-test, word recognition at delayed test, word recall at post-test and word recall at delayed post-test in the two subtitles conditions (subtitles and no subtitles). The second test of normality in students' vocabulary scores was run on word recognition at post-test, word recognition at delayed test, word recall at post-test and word recall at delayed post-test under the subtitles conditions (no subtitles, L1 subtitles, L2 subtitles and bilingual subtitles). Additionally, the English proficiency test was examined for normality as well. This was applied to the English proficiency total score in the four classes.

The normal Q-Q plots (see Appendix 4) for word recognition show that the distribution was almost exactly on the line visually, which means the data were probably normally distributed. However, there were clear deviations from normality for word recall test, which indicates that the data were probably not normally distributed. Given that the normal Q-Q plots are judged visually, a further test was applied to get an accurate result. Table 5.13 presents the findings from the Kolmogorov-Smirnov (K-S) test, which was used to examine the scores in the sample in a normally distributed set of scores with the same mean and standard deviation. If the test is significant ($p < .05$), this means the distribution of the sample is significantly different from a normal distribution. On the other hand, the distribution of the sample is not significantly different ($p > .05$) from a normal distribution which means that the data sample is normally distributed (A. Field, 2011, p.185).

When the tests of normality were run with subtitles type (without subtitles and with subtitles) (see table 5.13), students' performance in word recognition without subtitles at post-test and delayed post-test deviated significantly from normal, as did those with subtitles at post-test and delayed post-test ($p < .05$). Moreover, students' performance in word recall without subtitles at post-test and delayed post-test deviated significantly from normal, so did those with subtitles at post-test and delayed post-test ($p < .05$). All the above showed the samples as a non-normal distribution.

Table 5.13: Tests of Normality for post and delayed post-test grouping by subtitles and without subtitles

		Kolmogorov-Smirnov		
		Statistic	df	Sig.
Word recognition at post-test	Without subtitles	.171	90	.000
	With subtitles	.112	248	.000
Word recognition at delayed test	Without subtitles	.196	90	.000
	With subtitles	.117	248	.000
Word recall at post-test	Without subtitles	.464	90	.000
	With subtitles	.183	248	.000
Word recall at delayed test	Without subtitles	.514	90	.000
	With subtitles	.228	248	.000

When the tests of normality were run with subtitles type (no subtitles, L1 subtitles, L2 subtitles and bilingual subtitles) (see table 5.14), students' scores in word recognition at post-test and delayed post-test for all subtitles types were significantly different from a normal distribution. A non-normal distribution can also be found in the word recall section at post-test and delayed test. To summarise, all the above showed a non-normal distribution of the samples' data.

Table 5.14: Tests of Normality for post-test and delayed post-test, grouping by without subtitles, L1 subtitles, L2 subtitles and bilingual subtitles

		Kolmogorov-Smirnov		
		Statistic	df	Sig.
Word recognition at post-test	No subtitles	.171	90	.000
	L1 subtitles	.152	82	.000
	L2 subtitles	.130	83	.001
	Bilingual	.192	83	.000
Word recognition at delayed test	No subtitles	.196	90	.000
	L1 subtitles	.139	82	.000
	L2 subtitles	.121	83	.004
	Bilingual	.126	83	.002
Word recall at post-test	No subtitles	.464	90	.000
	L1 subtitles	.210	82	.000
	L2 subtitles	.266	83	.000
	Bilingual	.195	83	.000
Word recall at delayed test	No subtitles	.514	90	.000
	L1 subtitles	.293	82	.000
	L2 subtitles	.300	83	.000
	Bilingual	.144	83	.000

A test of normality was also run on the English proficiency baseline test (see table 5.15). The English proficiency total score ($D(118) = .065, p > .05$) was not significantly different for a normal distribution. That is, the scores in total were normally distributed.

Tests for homogeneity of variance

Table 5.15: Tests of Normality for English proficiency baseline test

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
English proficiency test	.065	118	.200

The homogeneity of variance means that the variance of the other variables should be stable when the levels of one variable were tested (A. Field, 2011). The Levene's test (Levene, 1960) was used to test the values of variances for groups of data. It examined the null hypothesis which regards the variances in different groups as equal. However, when the sample size is large, small differences in group variances can produce statistical significance on the Levene's test. In this case, the test could refer to the variance ratio /Hartley's Fmax (David, Hartley & Pearson, 1954). This is the ratio of the variances between the group with biggest variance and the group with the smallest variance.

When the tests of homogeneity of variance were run with subtitles type (without subtitles and with subtitles) (see Appendix 5), the variance was significantly different in the post-test word recognition ($F(1,336) = 14.825, p < .001$) and word recall section ($F(1,336) = 98.663, p < .001$). A significant difference was also found in the delayed post-test word recognition ($F(1,336) = 36.346, p < .001$) and word recall section ($F(1,336) = 116.231, p < .001$). When the tests for homogeneity of variance were run with differential subtitles type (L1 subtitles, L2 subtitles and bilingual subtitles) (see Appendix 5), the variance was significantly different in the post-test word recognition ($F(2, 245) = 5.419, p < .001$) and word recall sections ($F(2,245) = 10.979, p < .001$), and in the delayed post-test word recall section ($F(2,245) = 19.261, p < .001$). The variances in word recognition section ($F(2,245) = 1.258, p > .05$) were not significantly different. The above data demonstrated that there was a significant difference of variance in most variables, which means most of assumptions were violated among groups. This might result in that the spread of scores is unequal in different groups of cases.

Considering the violation of the assumptions was due to the large sample size, variance ratio was tested as well to double test the homogeneity. When grouping by subtitles and no subtitles (see Appendix 5), the variance ratio in all the tests was not significantly different between groups, at post-test, $F_{max} = 2.08$ in word recognition section, $F_{max} = 18.55$ in word recall section; at delayed test, $F_{max} = 3.10$ in word recognition section, $F_{max} = 21.70$ in word recall section. Similarly, the assumption was not violated when grouping by no subtitles, L1 subtitles, L2 subtitles, and bilingual

subtitles (see Appendix 5). The variance ratio in the tests was not significantly different among groups, at post-test, $F_{max}= 2.08$ in word recognition section, $F_{max}= 2.76$ in word recall section; at delayed test, $F_{max}= 1.29$ in word recognition section, $F_{max}= 3.32$ in word recall section.

To summarise, the Levene's test showed students' scores were significantly different in both post-tests and delayed post-tests when grouping subtitles types as with subtitles and without subtitles as well as grouping subtitles types as L1 subtitles, L2 subtitles and bilingual subtitles (only excluding word recognition at delayed post-test when grouping by L1 subtitles, L2 subtitles and bilingual subtitles). The variance ratio showed a non-significant difference among groups in post- and delayed tests, which means the assumption was not violated.

In conclusion, the first research question explores whether subtitles (L1, L2, L1+L2) have an effect on receptive vocabulary knowledge and recall. This was to compare students' post-test scores with subtitles with those without subtitles. The Mann-Whitney test was used for examining differences between two conditions and different participants were used in each condition for non-parametric variables (A. Field, 2011). The non-parametric test was used because the data deviated significantly from a normal distribution for both the subtitles and no subtitles conditions. In order to investigate whether students' English proficiency level relates to the quasi-experimental results, Spearman's correlation coefficient was used.

Regarding the second research question, it explores the extent to which bilingual (L1+L2) subtitles was effective for developing vocabulary learning compared with monolingual (L1 or L2) subtitles. This involved a comparison between the experimental groups. The data of the three subtitles groups in the second research question were also non-normally disturbed, which led to the use of the non-parametric: Friedman's ANOVA test (A. Field, 2011). Like the Mann-Whitney test, the Friedman's ANOVA showed significant differences between groups. Furthermore, in order to investigate a specific difference between subtitles (L1, L2 and bilingual), pairwise comparisons were used to follow up this finding.

5.5.4 Analysis of qualitative data

In the case of the qualitative data, it addresses the last research question in terms of students' reactions to different types of subtitles. Content analysis was used in this study. Generally speaking, content analysis defines the process of summarizing and reporting written data which is a systematic set of procedures for rigorous analysis (Cohen, 2013, p.563). The content analysis is used in the examination of any form of communicative material. The process of content analysis is referred to Cohen's work (Cohen, 2013, p.569), which includes the following stages:

Stage 1: Extract the interpretive comments that have been written on the data

Stage 2: Sort data into key headings/areas

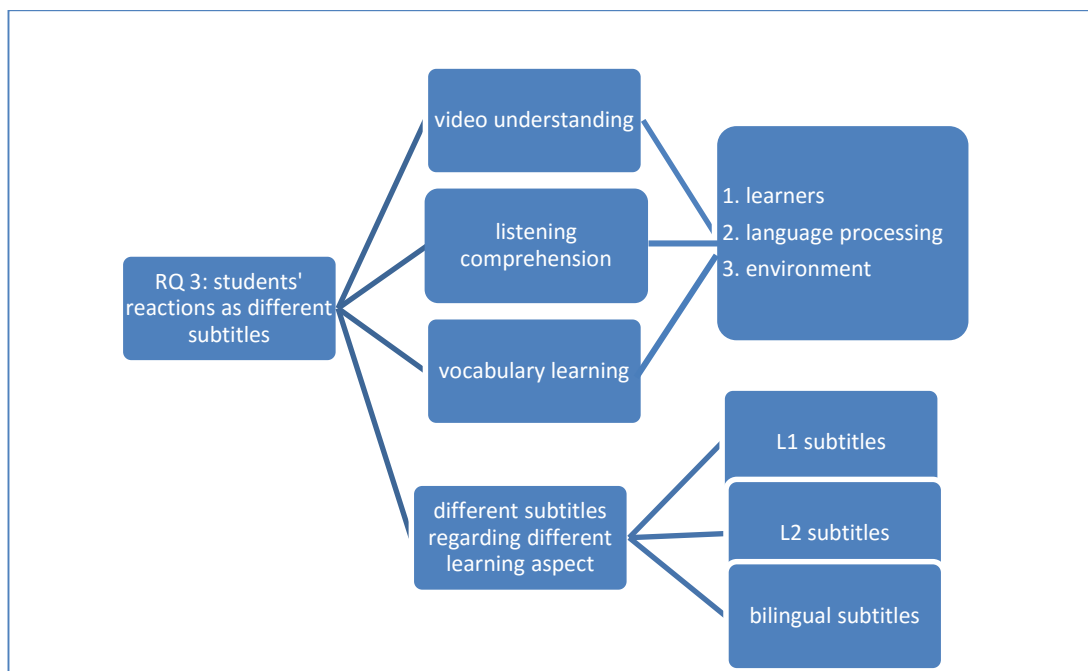
Stage 3: List the topics within each key area/heading and put frequencies for each item that is mentioned

Stage 4: Go through the list generated in stage 3 and put the issues into groups (avoiding category overlap)

Stage 5: Comment on the groups or results in stage 4 and review the messages

Precisely, coding began by sorting students' reactions towards subtitles in their language learning. As the questionnaire was collected in both paper and electronic versions (mostly the paper version), hand-coding is used in the analysis process. That is, the researcher assigned code words to text segments in one margin and recorded broader themes in the other margin (Creswell & Clark, 2011, p208). As Cohen (2013) puts it, coding not only enables researchers to identify similar information, but it enables researchers to search for and retrieve the data regarding those items that bear the same code. Following that, the rest of the content analysis involving sorting and categorising into the following table 5.16 for the qualitative data. The video understanding, listening comprehension and vocabulary learning had subsidiaries as learners, language processing and environment. And the different subtitles regarding different learning aspect had subsidiaries as L1 subtitles, L2 subtitles and bilingual subtitles.

Table 5.16: The themes for coding of qualitative data



5.6 Ethical Issues

In this study, ethical guidelines for educational research (BERA, 2011) are referred to as a source from which to discuss the principles of ethics. The guidelines focus on researchers' four responsibilities, namely, responsibilities to participants, responsibilities to sponsors of research, responsibilities to the community of educational researchers, and responsibilities to educational professionals, policy makers and the general public (BERA, 2011, p.4). This study was carried out with student participants. They were the active subjects in the quasi-experiment and questionnaires; and also collaborators in the research process. Ethical issues therefore were considered at each stage of the research process. According to BERA, this study had the responsibilities to the participants, so it attempted to present how ethical issues are considered in each research stage.

Before the research, voluntary informed consent was given before the research started in order to guarantee that participants understood the research process and potential risks in the research (see Appendix 6). Specifically, students were clearly informed of how they were engaged before and during the experiment, including how they

participated and how and to whom it would be reported (BERA, 2011, p.5). Also, participants also knew that there would not be any detriment to them arising during their participation.

Openness and disclosure also started before the research. It was necessary to avoid deception or subterfuge in terms of securing participants' voluntary informed consent. There was no particular local or institutional ethics committee involved in this study. The research was done with full disclosure in an open way.

Any problems concerning physical or mental illness have been checked before the research as well. According to the university students' profile, all participants were in a healthy condition. There were not therefore any ethical issues relating to children, vulnerable young people or vulnerable adults.

During the research, participants were given the right to withdraw from the study for any or no reason at any time.

Confidentiality and anonymity are assured after the research through the use of pseudonyms in the data analysis and findings. This study follows Data Protection Act (1998) of the legal requirements on the storage and use of data. Participants were informed that their personal data was going to be accessed only by the researcher and will be stored at the Moray House School of Education, the University of Edinburgh. They would be asked for permission if the data were to be used by a third party. Meanwhile, any future publication will not breach the norm of confidentiality and anonymity.

5.7 Chapter Summary

The first part of this chapter provided details on the methodology and the rationale for conducting this study. In the middle of the chapter I gave extensive details on the pilot study and the main study including sampling, research design, intervention and measures which were at the centre of this study. The last part of the chapter explained how the experimental and questionnaire data were analysed in order to present valid and reliable answers for the research questions guiding this study. The last part also addressed the related ethical issue of this study. The following two chapters provide

the results of the quantitative and qualitative data together with discussion of the findings according to the research questions.

Chapter 6: Findings and Discussion: quantitative data

6.1 Introduction

This chapter presents the findings and discussions of the quantitative data in this study. Initially the sample is considered, looking at the overall descriptive data by students' scores in English proficiency test, post-test and delayed post-test. The chapter then compares students' performance under subtitles condition and no subtitles condition. This section is followed by a further comparison of students' performance among L1 subtitles, L2 subtitles and bilingual subtitles. This comparison is sorted by the type of tests (word recognition and word recall) and the test time (post-test and delayed post-test). It then presents the change over time by comparing students' performance at post-test and delayed post-test. The final section presents the effectiveness of differential subtitles in individual items for students' vocabulary acquisition.

6.2 Descriptive Data

As described in chapter 5 (section 5.4.1), the total number of students in each class was 30, but two or three students went to Japan as exchange students in class 1, class 2 and class 3 in this semester. Apart from these students, there was a full attendance in classes during the intervention weeks. The numbers of participants in the four classes are: 28; 28; 27 and 30 respectively.

Table 6.1 reports the results of the baseline (English proficiency) tests among the 4 classes. Seen from the proficiency total score, the mean scores (see figure 6.1) in class 1, class 2 and class 3 were higher than those in class 4. A one-way ANOVA was applied for the comparison of students' scores in the four classes. Also, Bonferroni multiple comparisons were carried out for pairwise comparisons among L1, L2 and L1+L2 subtitles. The Bonferroni test is one of the 18 post hoc test procedures, which has more statistical power for a small number of comparisons and has a good control of the Type I error rate (A. Field 2011, p.374). Seen from table 6.2, there was a significant difference between students' total score in class 1 and class 4 ($F(3,117) = 5.19, p < .05$) as well as class 3 and class 4 ($F(3,117) = 5.19, p < .05$).

To summarise, students' scores in class 1, class 2 and class 3 were higher than those in class 4 in the English proficiency tests. As class 4 was the control group in the no subtitles condition in the experiment, the following comparison between the experimental group (students were exposed to videos with subtitles) and control group (students were exposed to videos without subtitles) needed to take the baseline tests into consideration for the results of the comparison.

Table 6.1: Descriptive data for baseline (English proficiency) tests

		English proficiency test (total score)
Class 1	Mean(SD)	68.7 (1.5)
	Range	29
	(Min, Max)	(52, 81)
Class 2	Mean(SD)	67.9 (1.7)
	Range	39
	(Min, Max)	(45, 84)
Class 3	Mean(SD)	66.7 (1.1)
	Range	22
	(Min, Max)	(55, 77)
Class 4	Mean(SD)	61.4 (1.4)
	Range	33
	(Min, Max)	(43, 76)
Class 1-Class 2 (Sig.)		1.000
Class 1-Class 3 (Sig.)		1.000
Class 1-Class 4 (Sig.)		.012*

Class 2-Class 3 (Sig.)	1.000
Class 2-Class 4 (Sig.)	.071
Class 3-Class 4 (Sig.)	.003*

Figure 6.1: Mean scores in baseline (English proficiency) tests

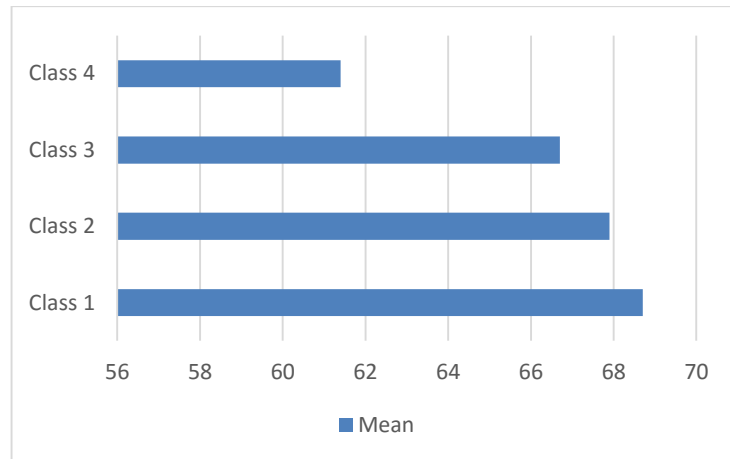


Table 6.2 gives an overview of students' performance at post-test and delayed post-test under each subtitles condition. As seen from the mean in each test, bilingual subtitles showed a higher mean score over L1 subtitles and L2 subtitles at post-test and maintained this advantage in the delayed post-test (M=69.5 in word recognition and M=30.1 in word recall for bilingual; M=29.5 in word recognition and M=7.6 in word recall for L1; M=35.4 in word recognition and M=7.7 in word recall for L2). Overall, students' performance was better at post-test than in the delayed post-test, and their performance on the word recognition section was better than on the word recall section under each subtitles condition.

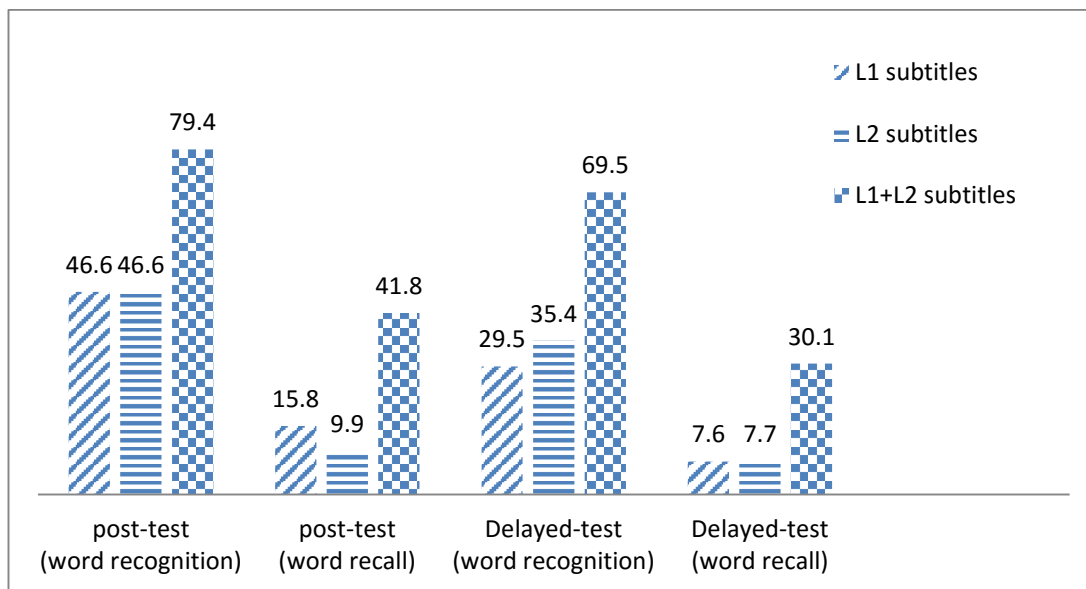
Table 6.2: Descriptive data for post-test and delayed post-test in each subtitles condition

		L1 subtitles (n=83)	L2 subtitles (n=83)	bilingual subtitles (n=83)
Post-test (word recognition)	Mean (SD)	46.6 (20.9)	46.6 (19.2)	79.4 (16.1)
	Range	90	80	50
	(Min, Max)	(0, 90)	(0, 800)	(50, 100)
Post-test (word recall)	Mean (SD)	15.8(11.6)	9.9 (9.8)	41.8 (16.3)
	Range	50	40	70
	(Min, Max)	(0, 50)	(0, 40)	(10, 80)
Delayed post-test (word recognition)	Mean (SD)	29.5 (16.9)	35.4 (18.8)	69.5 (16.5)
	Range	70	80	70
	(Min, Max)	(0, 70)	(0, 80)	(30, 100)
Delayed post-test (word recall)	Mean (SD)	7.6 (9.7)	7.7 (9.4)	30.1 (17.1)
	Range	40	30	70
	(Min, Max)	(0, 40)	(0, 30)	(0, 70)

Seen from Figure 6.2, it is clear that students' performance under bilingual subtitles condition enjoyed the advantage over all the tests and sections. Specifically, in the post-test word recognition section, the students' mean score under bilingual subtitles was 32.8 higher than their scores under L1 subtitles and L2 subtitles condition, and in the recall section, it was 31.9 higher than L2 subtitles and 26 higher than L1 subtitles. Likewise, students' performance under bilingual subtitles condition in the delayed post-test was higher than their performance under monolingual subtitles (40 higher

than L1 subtitles in word recognition section and 22.5 higher than L1 subtitles in word recall).

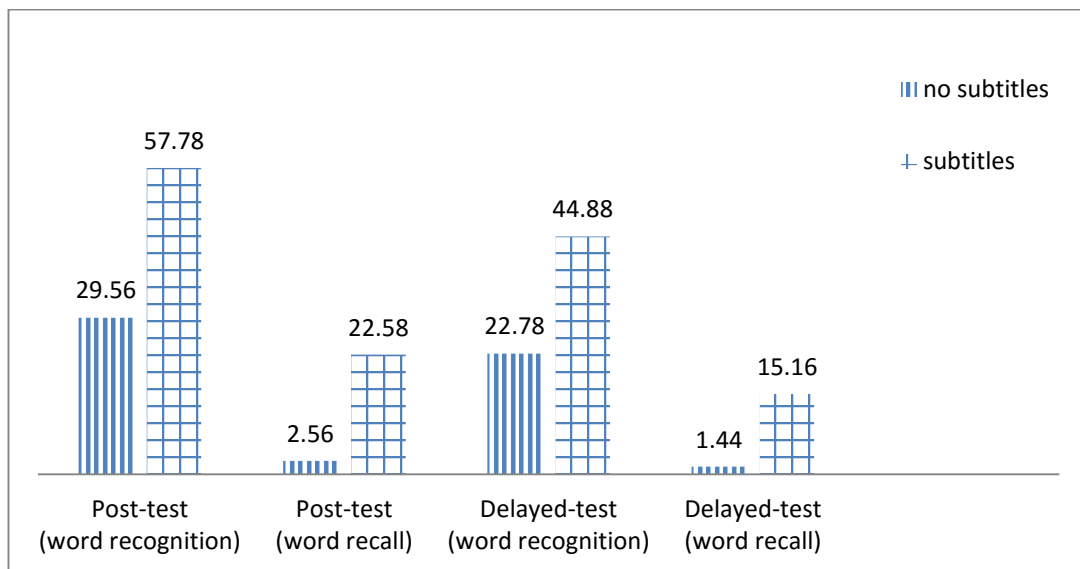
Figure 6.2: Histogram for students' mean score at post-test and delayed post-test grouping by L1 subtitles, L2 subtitles and bilingual subtitles



6.3 Comparison of Students' Performance under Subtitles and No Subtitles Condition

The first research question investigated whether students under subtitles condition (3 groups) performed better than they did without subtitles (1 group). Figure 6.3 shows histograms for students' mean score at post-test and delayed post-test grouping by no subtitles and subtitles. Students in the subtitles conditions illustrated a higher score than those in the no subtitles condition at post-test and delayed post-test. To be more precise, in the post-test, students under subtitles condition performed 28.28 higher than those under no subtitles condition in word recognition section and 20.02 higher in word recall section. This advantage was maintained in the delayed post-test, with 22.1 higher than without subtitles in word recognition section and 13.72 higher in word recall section ($p < .05$).

Figure 6.3: Histogram for students' mean score at post-test and delayed post-test grouping by no subtitles and subtitles



Furthermore, the Mann-Whitney test was run by SPSS. Table 6.3 shows the results of the non-parametric Mann-Whitney test. In word recognition at post-test, students' scores with subtitles were significantly higher than those without subtitles ($U=3925$, $z=-9.18$, $p< .001$, $r=-.49$). The same results can be seen from other tests, specifically, in word recall at post-test, students' scores with subtitles were significantly higher than those without subtitles ($U=3177$, $z=-10.35$, $p< .001$, $r=-.56$). In the delayed post-test of word recognition, students' scores with subtitles were significantly higher than those without subtitles ($U=5339$, $z=-7.39$, $p< .001$, $r=-.40$). In word recall, students' scores with subtitles were significantly higher than those without subtitles ($U=4980$, $z=-8.35$, $p< .001$, $r=-.45$).

Table 6.3: Mann-Whitney test for post-test and delayed post-test

subtitles		N	Mean	Mann-Whitney U	Z	Sig. (2-tailed)
word recognition at post-test	no-subtitles	90	29.56	3925.00	-9.18	.000
	subtitles	248	57.78			
	Total	338				
word recall at post-test	no-subtitles	90	2.56	3177.00	-10.35	.000
	subtitles	248	22.58			
	Total	338				
word recognition at delayed post- test	no-subtitles	90	22.78	5339.00	-7.39	.000
	subtitles	248	44.88			
	Total	338				
word recall at delayed post- test	no-subtitles	90	1.44	4980.00	-8.35	.000
	subtitles	248	15.16			
	Total	338				

The English proficiency baseline tests showed that students in class 4 (control group without subtitles) had lower English proficiency scores than the other three classes (experimental group with subtitles). In this case, there was an assumption that the lower English proficiency score in the control group may have an effect on the experimental results. Specifically, if students' scores in the control group in the experimental test were lower than the experimental group, there might be an assumption that these results were due to students' lower English proficiency in the control group before the experiment rather than to the effectiveness of the subtitles. In this case, a correlation test was conducted. Spearman's correlation coefficient is a non-parametric statistic used for testing whether two variables are related. Spearman's correlation test (see appendix 7) was carried out and there was no significant correlation between their English proficiency baseline scores and post-test scores under no subtitles condition for word recognition and word recall ($r = .150$, $p = .160$ and $r = .154$, $p = .151$ respectively). Similarly, there was no significant correlation

between students' English proficiency scores and delayed post-test scores under the no subtitles condition for word recognition and word recall ($r = .014$, $p = .895$ and $r = .014$, $p = .895$ respectively). In other words, when grouping the students by subtitles and no subtitles, there was no significant relationship between students' English proficiency level and their post- and delayed scores under no subtitles condition.

6.3.1 Summary and Discussion

Summary of key findings

- There was a significant advantage to students' vocabulary recognition and recall with subtitles in contrast to those without subtitles, in both post-test and delayed post-test.
- Students performed significantly better in vocabulary recognition and recall under bilingual subtitles condition than they did under monolingual subtitles condition. And the advantage maintained in the delayed post-test.
- Under exposure to monolingual subtitles, students' scores under L1 subtitles condition were higher than their scores under L2 subtitles condition in the post-test word recall section. However, they performed better under L2 subtitles condition than they did under L1 subtitles at delayed post-test word recognition section. There was no significant difference in how they did in monolingual subtitles at post-test word recognition and delayed post-test word recall.

The histograms showed that students performed better with subtitles than without them on both the post-test and delayed post-test. The Wilcoxon-Mann-Whitney test further confirmed that students' scores with subtitles were significantly higher than their scores without subtitles. Taking into account the fact that students' English proficiency scores in the control group were lower than the experimental group, which may affect the research results, Spearman's correlation test was carried out. This data suggests that there is no significant difference between students' proficiency and their performance on the test.

The above analysis has provided answers to RQ1:

Do subtitles (L1, L2, L1+L2) have an effect on receptive vocabulary knowledge recognition and recall?

The main findings for this interaction were as follows:

- Students showed a clear advantage at post-test in vocabulary recognition and recall with subtitles than without.
- This advantage was maintained in the delayed post-test.

The main issues arising from these findings, and which are discussed below, are: (1) the discussion of the use of subtitles in the L2 classroom; (2) the discussion of the advantage of subtitles on students' vocabulary acquisition.

As regards the first issue, this analysis has shown the advantage of using subtitles in the L2 classroom. Previous research on this issue has been rather contradictory. Previous studies found that subtitles distract students from paying attention to the images and sounds in videos (Taylor, 2005). As for the advanced learners in this study, the results indicate that they managed to take advantage of subtitles for vocabulary acquisition. This study confirms that automatic reading of subtitles does not prevent the processing of the soundtrack (De Bot et al., 1986; d'Ydewalle & Pavakanun, 1997). Precisely, subtitles would not be an obstruction during students' understanding process, on the contrary, students were able to balance their concentration for learning the language through video and subtitles.

Taking account of increasing the depth of language processing (Winke et al., 2010), the advantage of subtitles in students' language learning echoes Bird and Williams' (2002) findings. That is, the auditory and visual processing in cognitive systems were interactive and interconnected, which suggests that subtitles facilitate learners' comprehension as they increase processing depth. Students' clearly advantaged scores with subtitles in word recognition and word recall revealed that they not only successfully recognised the word usage in a correct sentence but also knew their translation equivalence in the video.

When seeking the way of language processing systems, the efficiency of subtitles with the combination of auditory and visual channels provide evidence for the dual coding theory (Paivio, 1986; 1991; 2007). Subtitles actively use the two modality systems in the brain: the verbal system and the nonverbal system which refers to auditory and visual channels. In this case, word stimuli activation occurs via pathways that connect the two systems to each other. This study echoes previous findings that the activation of both systems results in better recall (Garza, 1991; Zanon, 2006; Winke et al., 2010; Etemadi, 2012). That is, different channel sources were more likely to activate the two coding systems to process information than only words or images. Specific to vocabulary learning, the combination of visual images with verbal information was found to echo the previous results in enhancing vocabulary learning from written text (Al-Seghayer, 2001; Plass et al., 1998, 2003).

The fact that students performed better with subtitles than without in vocabulary recognition and recall is due to the positive impact of subtitles on students' language learning processing (Nation, 2001). In the case of vocabulary recognition, subtitles, as a textual support, provide support for language processing. This presents students a complete view of language with sound, images and texts, which facilitates students' recognition of the correct use of the target words in another sentence after watching the video. On the other hand, in the case of vocabulary recall, subtitles provide a direct way for students to remember the word meaning (if the subtitles have L1 in it). By giving the target word in a sentence, students can easily recall the meaning of the word. Although the long-term impact of subtitles on students' vocabulary recognition and recall was not as strong as in the short-term, the advantage of subtitles was maintained. The above result suggests that videos with subtitles can lead to short-term and long-term development in students' receptive knowledge.

Another interesting aspect to note is the impact of subtitles on VKS (Vocabulary Knowledge Scale) (Wesche & Paribakht, 1996) stages in students' vocabulary knowledge acquisition. This study focused on receptive vocabulary acquisition which relates to VKS stage 3: I have seen this word before, and I think it means _____ (synonym or translation) and stage 4: I know this word. It means _____ (synonym or

translation). According to students' performance, they could acquire the new word knowledge directly from stage 1: I don't remember having seen this word before stage 4: I know this word. It means_____ (synonym or translation). This is not exactly following the order of vocabulary knowledge acquisition according to VKS. In VKS, the transition of the word knowledge is from one level to the next and the order of stages remains permanent. However, this study appears to show Meara's (1996) suggestion that word knowledge could be gained more flexibly instead of following the consecutive stages during students' vocabulary acquisition. That is, the possibility of the direct movement from stage 1 to stage 4 in this study is due to the use of subtitles in videos. This in turn probably further confirms the effectiveness of subtitles on the development of students' vocabulary knowledge.

The way of acquiring vocabulary through subtitles can be regarded as a form of incidental learning. Acquiring vocabulary through subtitles not only showed students' better performance than without subtitles, but also this advantage was maintained two weeks later. This obvious strength of incidental learning helps long-term memory for students' vocabulary acquisition. The results appear to show that students could acquire vocabulary knowledge in an incidental way (Schmidt, 1990; Ellis, 1997). Additionally, when learners actively engaged in video and they were responsible for their own learning, incidental learning probably could turn into a conscious and cognitive level (Çetin & Flamand, 2012, p.3). That is, when students focus on the videos and concentrate on understanding, subtitles turn into an assistant in the process of vocabulary learning and video understanding. In this case, the number of new words that students acquired incidentally would be impressive if they pay attention to the subtitles. The discussion regarding which types of subtitles could contribute to more new words acquisition will be stated in the following section 6.4.5.

Students' vocabulary acquisition through subtitles, to some extent, is a way to acquire vocabulary from both listening and reading. If students watch videos without subtitles, the words that they acquired from videos are mainly from listening. On the other hand, if they are exposed to the videos with subtitles, the words that they acquired from videos could come from both listening and reading. The better students' performance with subtitles than without subtitles in vocabulary tests appears to echo the previous

study results. That is, students' vocabulary gains after reading-while-listening was better than after reading or listening (Brown et al., 2008). Additionally, this study further shows that the advantage of subtitles at post-test was maintained at delayed post-test. Possible reasons for the advantage of subtitles could relate to advantages of students' vocabulary acquisition from listening and reading. This in turn relates to the nature of spoken and written language. Spoken language requires fast processing, which leaves less time for the reader to focus on the linguistic information. And this makes it more difficult to notice and acquire new words in the input (Zeeland & Schmitt, 2013). On the other hand, written language compensates for this disadvantage and makes the new word acquisition more likely.

In conclusion, students showed a better performance with subtitles in acquiring receptive vocabulary knowledge. It was also worth considering that the way of using subtitles could be an ideal way for students to acquire vocabulary in the long-term. On the other hand, using subtitles in the L2 vocabulary classroom further shows the strength of incidental learning. The next section will further analyse and discuss the impact of individual type of subtitles (L1, L2 and bilingual) on students' vocabulary acquisition.

6.4 Comparison of Students' Performance among L1 Subtitles, L2 Subtitles and Bilingual Subtitles

The second research question explored whether bilingual subtitles were more or less effective for developing vocabulary learning than monolingual subtitles. Friedman's ANOVA test was used to test the differences between these conditions. This section presents findings of students' performance in word recognition post-test and delayed post-test as well as their performance in word recall post-test and delayed post-test under three types of subtitles conditions. Following that, it summarises and discusses the main findings related to research question two.

6.4.1 Word Recognition: Post-test

Table 6.4 shows the comparison of three types of subtitles for students' scores in the post-test word recognition section. Generally, students' performance in the word

recognition was significantly different between the three types of subtitles ($\chi^2(2) = 93.09, p < .05$). The mean score of students' performance under L1 subtitles condition ($M=46.63$) and L2 subtitles ($M=46.64$) condition was the same, but students' performance under bilingual condition ($M=79.4$) was significantly higher than their scores under monolingual subtitles ($p < .05$). According to students' performance above, the ranking of their scores under types of subtitles was: L1 subtitles = L2 subtitles < bilingual subtitles.

Table 6.4: Friedman's ANOVA for post-test word recognition section

	N	Mean	Std. Deviation	Minimum	Maximum
L1 subtitles	83	46.63	20.85	.00	90.00
L2 subtitles	83	46.64	19.21	.00	80.00
Bilingual subtitles	83	79.40	14.09	50.00	100.00

The overall result showed a significant difference between groups; in order to investigate a specific difference between groups, Friedman's ANOVA pair-wise comparisons were used to follow up this finding. Table 6.5 shows that students' performance under L1 subtitles condition did not significantly differ from the L2 subtitles condition at post-test word recognition section ($T = 1206, z = -.006, p = .995, r = -6.59e^{-4}$). Interestingly, students' performance under L1 subtitles condition was significantly different from the bilingual condition ($T = 3022, z = -7.4, p < .001, r = -.81$). Similar results can be found in the comparison between students' scores under L2 subtitles condition with the bilingual subtitles condition ($T = 2812, z = -7.35, p < .001, r = -.81$). Therefore, the results indicate that students' performance under bilingual subtitles condition was significantly better than under the L1 subtitles and L2 subtitles conditions on the post-test word recognition section. To summarise, students' performances under bilingual subtitles condition were significantly better than those under monolingual subtitles condition, and there was no significant difference between the monolingual subtitles conditions at post-test word recognition section.

Table 6.5: Friedman’s ANOVA pair-wise comparison for post-test word recognition section

	L2 subtitles- L1 subtitles	Bilingual subtitles- L1 subtitles	Bilingual subtitles - L2 subtitles
Sum of ranks (T)	1206	3022	2812
Z	-.006	-7.40	-7.35
Asymp. Sig. (2-tailed)	.995	.000	.000

6.4.2 Word Recognition: Delayed post-test

The delayed post-test in table 6.6 shows the comparisons of three types of subtitles of students’ performance in word recognition section. Generally, students’ performance in the word recognition of delayed post-test was significantly different among the three types of subtitles ($\chi^2 (2) = 105.29, p < .05$). Their mean scores under L1 subtitles (M=29.5), L2 subtitles (M=35.4) and bilingual subtitles (M=69.5) conditions were different from each other. Therefore, students’ performance under types of subtitles ranking was: L1 subtitles < L2 subtitles < bilingual subtitles.

Table 6.6: Friedman’s ANOVA for delayed post-test word recognition section

	N	Mean	Std. Deviation	Minimum	Maximum	Chi- Square	Sig.
L1 subtitles	83	29.52	16.89	.00	70.00	105.29	.000
Bilingual subtitles	83	69.52	16.52	30.00	100.00		
L2 subtitles	83	35.42	18.76	.00	80.00		

Pair-wise comparisons were used to follow up this finding for the delayed post-test data. Table 6.7 indicates that students’ performance under L1 subtitles condition was significantly lower than the L2 subtitles condition at delayed post-test word recognition section ($T = 1239, z = -2.13, p < .05, r = -.23$). Students’ performance under L1 subtitles condition were significantly lower than the bilingual condition ($T = 39, z$

= -7.66, $p < .001$, $r = -.84$). Likewise, Students' scores under L2 subtitles condition were significantly lower than bilingual subtitles condition ($T = 3106.5$, $z = -7.48$, $p < .001$, $r = -.82$). Therefore, the advantage of bilingual subtitles from the post test was maintained in the delayed post-test; that is, students' performance under bilingual subtitles condition was significantly better than those under both L1 and L2 subtitles conditions at delayed post-test word recognition section. The difference of students' scores between L1 subtitles condition and L2 subtitles condition was also found.

Table 6.7: Friedman's ANOVA pair-wise comparison for delayed post-test word recognition section

	L2 subtitles- L1 subtitles	Bilingual subtitles- L1 subtitles	Bilingual subtitles - L2 subtitles
Sum of Ranks (T)	1239	39	3106.5
Z	-2.13	-7.66	-7.48
Asymp. Sig. (2-tailed)	.033	.000	.000

6.4.3 Word Recall: Post-test

Table 6.8 shows a comparison of three types of subtitles of students' performance at post-test word recall section. Generally speaking, students' performance in word recall at post-test was significantly different between three types of subtitles ($\chi^2(2) = 98.17$, $p < .05$). The mean scores of the students' performance under the different subtitles conditions were different from each other. According to students' performance above, the ranking of their scores under types of subtitles was: L2 subtitles < L1 subtitles < bilingual subtitles.

Table 6.8: Friedman’s ANOVA for post-test word recall section

	N	Mean	Std. Deviation	Minimum	Maximum	Chi-Square	Sig.
L1 subtitles	83	15.78	11.59	.00	50.00	98.17	.000
Bilingual subtitles	83	41.81	16.32	10.00	80.00		
L2 subtitles	83	9.88	9.81	.00	40.00		

Specifically, Friedman’s ANOVA pair-wise comparisons (see table 6.9) were used to follow up this finding. They indicated that students’ performance under L1 subtitles condition was higher than those under L2 subtitles condition at post-test in the word recall section ($T = 551, z = -3.05, p < .01, r = -.33$). Similarly, students’ performance under L1 subtitles condition was significantly lower than under the bilingual condition ($T = 75, z = -7.22, p < .001, r = -.79$). Similar results can also be found in the comparison between students’ scores under L2 subtitles condition and their scores under bilingual subtitles condition ($T = 3135.5, z = -7.63, p < .001, r = -.84$). In this case, the results illustrated that students’ performance under bilingual subtitles condition was significantly better than those under L1 subtitles and under L2 subtitles condition at post-test word recall section. The difference of students’ scores between L1 subtitles condition and L2 subtitles condition can also be found.

Table 6.9: Friedman’s ANOVA pair-wise comparison for post-test word recall section

	L2 subtitles- L1 subtitles	Bilingual subtitles- L1 subtitles	Bilingual subtitles - L2 subtitles
Sum of Ranks (T)	551	75	3135.5
Z	-3.05	-7.22	-7.63
Asymp. Sig. (2-tailed)	.002	.000	.000

6.4.4 Word Recall: Delayed post-test

The delayed post-test in word recall demonstrated the comparisons of three types of subtitles of students’ performance. As the findings of the post test, table 6.10 also

showed that students' performance in word recall of delayed post-test was significantly different between three types of subtitles ($\chi^2(2) = 92.77, p < .05$). According to students' performance above, the ranking of their scores under types of subtitles was: L1 subtitles \leq L2 subtitles < bilingual subtitles.

Table 6.10: Friedman's ANOVA for delayed post-test word recall section

	N	Mean	Std. Deviation	Minimum	Maximum
L1 subtitles	83	7.59	9.70	.00	40.00
Bilingual subtitles	83	30.12	17.14	.00	70.00
L2 subtitles	83	7.71	9.41	.00	30.00

The pair-wise comparisons were used to follow up the delayed post-test in word recall findings (see table 6.11). There was no significant difference in students' performance under L1 subtitles condition and under L2 subtitles condition at delayed post-test word recognition section ($T = 550.5, z = -.15, p = .882, r = -.02$). Findings of students' performance under L1 subtitles condition were significantly lower than bilingual subtitles condition ($T = 78, z = -6.92, p < .001, r = -.76$). Likewise, students' scores under L2 subtitles condition were significantly lower than bilingual subtitles condition ($T = 2397, z = -7.15, p < .001, r = -.79$). The bilingual subtitles advantage was maintained in the delayed post-test word recall section, that is, students' performance under bilingual subtitles condition was significantly better than L1 subtitles and L2 subtitles condition.

Table 6.11: Friedman's ANOVA pair-wise comparison for delayed post-test word recall section

	L2 subtitles- L1 subtitles	Bilingual subtitles- L1 subtitles	Bilingual subtitles - L2 subtitles
Sum of Ranks (T)	550.5	78	2397
Z	-.15	-6.92	-7.15
Asymp. Sig. (2-tailed)	.882	.000	.000

6.4.5 Summary and Discussion

Friedman's ANOVA tests confirmed that students' scores with bilingual subtitles were significantly higher than their score with monolingual subtitles at post-test and delayed post-test for both word recognition and word recall. Within monolingual subtitles, Friedman's ANOVA pair-wise comparison presented diverse results between monolingual subtitles in word recognition and word recall at post-test and delayed post-test. To be precise, in the word recognition section, students performed better under L2 subtitles condition than L1 subtitles at delayed post-test. There was no difference between the two monolingual subtitles conditions at post-test. In word recall, students' scores under L1 subtitles condition were higher than under the L2 subtitles condition on the post-test word recall section. There was no difference between monolingual subtitles at delayed post-test. The above findings provide evidence demonstrating the impact of bilingual subtitles on students' receptive vocabulary knowledge and recall.

The above analysis has provided answers to RQ2:

Is bilingual subtitling more or less effective for developing vocabulary learning than monolingual subtitling?

The main findings for this interaction are as follows:

- Students showed a clear advantage in post-test score in vocabulary recognition and recall with bilingual subtitles than with monolingual subtitles. This advantage was maintained in the delayed post-test.

The main issues arising from these findings, and which are discussed below, are: (1) the discussion of the advantage of bilingual subtitles on students' vocabulary acquisition; (2) the discussion of the use of bilingual subtitles in the L2 classroom; (3) the effectiveness of bilingual subtitles from the psycholinguistic aspect.

When extending the discussion to related issues, as discussed in the literature review chapter, the use of bilingual subtitles in videos (the use of L1 subtitles in the L2 videos

with L2 subtitles and L2 auditory) is relevant to the L1 use in the L2 classroom. The advantages of bilingual subtitles in the L2 learning demonstrated that the benefits of L1 use in the L2 classroom (Hosoda, 2000; Moore, 2002; Tang, 2002). L1 could serve a useful purpose in the process of L2 teaching (V. Cook, 2001). However, it is the learner who decides when to look at the L1 subtitles, when not to look at any and when to look at the L2 (assuming they do). This uncertainty can be answered through word recall results. In the word recall section, bilingual subtitles presented an obvious advantage over monolingual subtitles in both post-test and delayed post-test. It showed that students managed to look at the two subtitles when the new words occurred. Only by looking at both subtitles at the same time can students know the word spelling and meaning in the video. Therefore, students would automatically switch between subtitles when the new words occurred.

Students' outperformance with bilingual subtitles also reflects the effectiveness of the bilingual mind. Students' management of looking at subtitles indicated that the role of L1 was likely to be a natural 'reference' system and 'pathfinder' (Hall & G. Cook, 2012). That is, students' concentration of L1 subtitles occurred naturally and it appeared to be a way out of the L2 imperialism to gain direct understanding. This further echoes Cummins' (2007) statement: bilingual learners could develop their metalinguistic awareness as a result of processing two languages. To be more specific, students appeared to benefit from concentrating on the similarities or differences in the two languages (Cummins, 2007). Although the two languages in this study belonged to different language systems, namely, there were no similarities on the form of the word, the outperformance of bilingual subtitles demonstrated that students were likely to acquire the meaning and recognised the correct usage in a sentence by comparing the two subtitles. Of course, students' successful acquisition of vocabulary may not be totally determined by two languages comparison, this will be further discussed through students' perceptions towards bilingual subtitles in vocabulary learning in chapter 7 (section 7.5).

From the vocabulary acquisition perspective, many studies compare the effectiveness of the ways for acquiring word meaning. Many results showed that an L1 translation

is the most effective way of vocabulary learning, in terms of paying attention to the word, learning the meaning of the word, the form of the word and the use of the word (Laufer & Shmueli, 1997; Nation, 2005). The results of bilingual subtitles further appeared to echo the previous research. That is, adding L1 subtitles in L2 videos could be effective for the meaning and the form of the word. This is probably due to the fact that L1 translations are a clear and familiar shortcut for the learners, which is a crucial aspect in effective definition for a word (McKeown, 1993). This looks like a fruitful line of the use of L1 subtitles in bilingual subtitles in L2 videos. On the other hand, there may be an inquiry concerning why L1 subtitles cannot attain the same effect as bilingual subtitles. The reason for this is probably that the bilingual subtitles could provide a full picture of two languages for students' comparison. Only L1 subtitles or L2 subtitles appear to be able to provide the full vocabulary information through the students' reading process.

The effectiveness of vocabulary acquisition through bilingual subtitles also relates to students' listening and reading skills when they watch subtitles. Previous research indicated the use of L1 in L2 reading and listening tasks in terms of reducing students' memory constraints and avoiding losing track of meaning and leading to effective word recall (Kern, 1994; Hennebry et al., 2013). With a combination of listening and reading, bilingual subtitles appear to show the positive impact on students' word recognition and recall. This infers that students could balance listening and reading at the same time when they watch video with bilingual subtitles. Also, they could pick up new words and acquire them which echoes the benefits of L1 use in L2 classroom from previous research.

Specific to the depth of the vocabulary knowledge, the contribution of bilingual subtitles can be found in the developmental approach (Read, 2000). That is, students incrementally acquire a word from a beginning level ("I don't know the word") to a medium-advanced level ("I master the word in almost all contexts of use"). Certainly, it is impossible for students to master the new word in all contexts of use by watching the video once. However, the study results revealed that students showed the best performance with bilingual subtitles in word recognition and word recall. Although

this is not the advanced level of acquiring the vocabulary knowledge, it provides students with the most general level: the word form and the word meaning. On the other hand, the contribution of bilingual subtitles also reveals the measurement of word knowledge in terms of the third dimension in the dimensions approach: receptive and productive (Nation, 2001). This study focuses on receptive vocabulary knowledge, which can be applied to a variety of language knowledge and use. Specifically, bilingual subtitling appears to be the best choice for the knowledge of word form including spelling and word parts and the best choice for the knowledge of word meaning.

Seeking the explanation of the bilingual subtitles activation during L2 lexical processing, it might be worth to taking into account the psycholinguistic aspect (Schmitt, 2010). In bilingual subtitles, I assume that the L1 subtitling has privileged accessing to meaning, whereas the L2 subtitling is assumed to be likely to rely on mediation through the L1 translation equivalent until learners acquire sufficient skill in the L2 to access meaning (concept) directly. The results appear to show that the L1 translation equivalent plays a crucial role in the process of L2 lexical learning (Nation, 2005). This echoes the previous Revised Hierarchical Model (RHM) (Sunderman & Kroll, 2006) claiming that learners at early stages of L2 learning are likely to access L2 words by an L1 route leading to the concept. Although the participants in this study were not beginners, they had no knowledge of the target words before the experiment.

Similarly, the two lines of languages at the bottom of the screen in the bilingual subtitles are theoretically relevant to the two separate logogen systems of the two languages in Bilingual Dual Coding Theory (Paivio & Desrochers, 1980). With the translation equivalents as the direct connection, students were able to connect the word with referent images in the video easily. Therefore, with the two channels of language processing and image system, students shaped the bilingual memory which was able to acquire the new words. Students' outperformance of the concrete and abstract words in word recognition and word recall under bilingual subtitles condition provided the evidence for the Bilingual Dual Coding Theory as well as echoing previous studies' findings (Paivio, 1986, 1991; Paivio et al., 1988; Paivio & Lambert, 1981; Vaid, 1988;

Hummel, 2010). The further discussion with regards to the effectiveness of subtitles on individual vocabulary items is presented in section 6.6.2.

The above findings demonstrate a learning advantage for providing bilingual subtitles in the L2 videos. Pedagogically, the evidence from this study shows that bilingual subtitles can be additionally beneficial in recognising and recalling words. This advantage of some words can be maintained in students' long-term memory system. Teachers are suggested to use bilingual subtitles in videos to meet their vocabulary teaching goals. On the other hand, I am not claiming that monolingual subtitles should not or need not be provided; there are a number of advantages to providing these depending on different learning outcomes (see chapter 7).

6.5 Long-term Effects

In order to investigate if the effectiveness of differential subtitles on students' vocabulary acquisition changed overtime, a Wilcoxon signed-rank test was utilized to compare two related conditions: students' vocabulary scores in the post- and delayed post-tests.

6.5.1 Descriptive statistics

Figure 6.4 shows the decrease of mean scores from post-test to delayed post-test in the three types of subtitles in the word recognition section. Specifically, their performance under L1 subtitles condition decreased from 46.6 at post-test to 29.5 at delayed post-test, and under the L2 condition scores dropped from 46.6 at post-test to 35.4 at delayed post-test. The decline of students' scores under bilingual subtitles condition also can be found from 79.4 at post-test to 69.5 at delayed post-test. Although the decrease on the delayed post-test can be found in the three types of subtitles, bilingual subtitles still maintain its advantage (69.5) over L1 subtitles (29.5) and L2 subtitles (35.4) in word recognition. Additionally, the proportion of decrease between post-tests is smaller in the case of bilingual subtitles (12%) than the other two conditions (36% in L1 subtitles and 24% in L2 subtitles).

Figure 6.4 Histograms for the comparison of vocabulary tests mean score between post-test word recognition

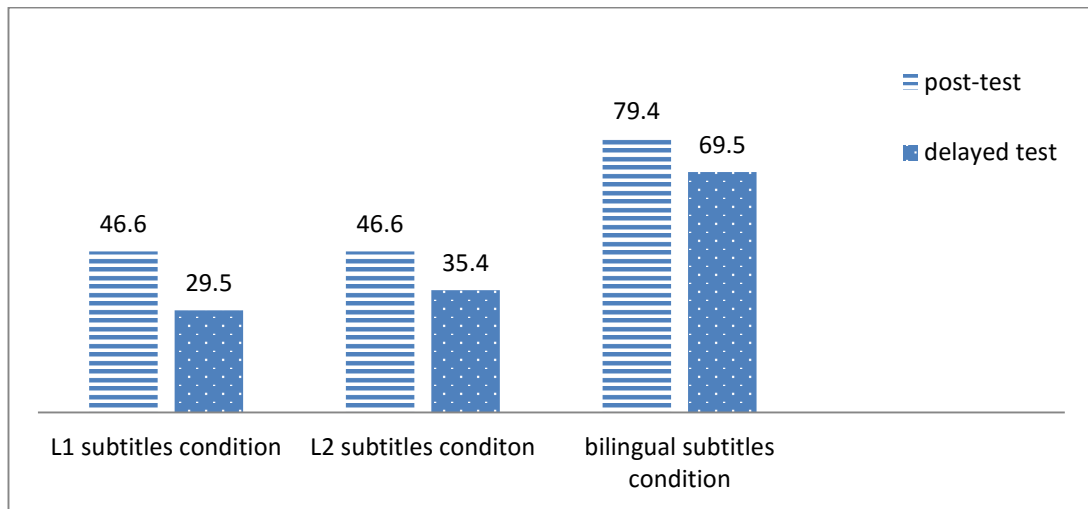
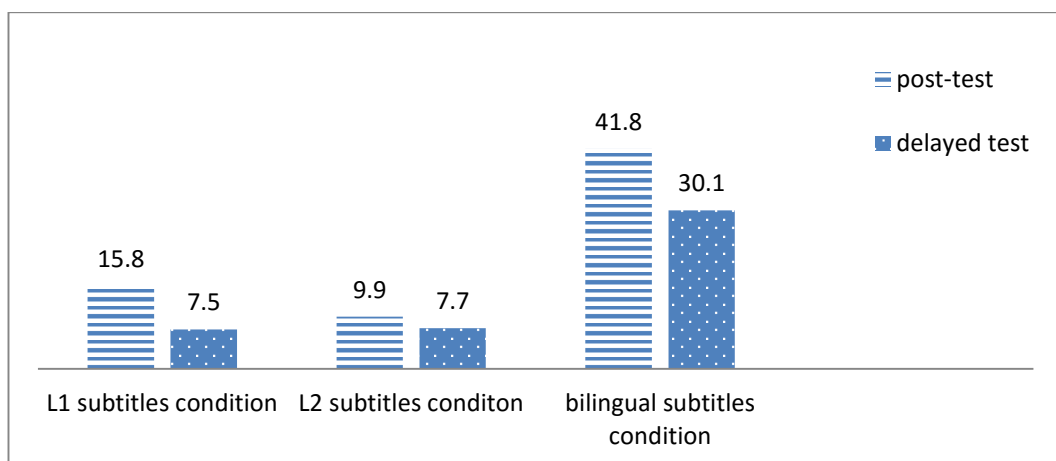


Figure 6.5 shows a similar pattern of decline in the word recall section. This decrease can be found under the condition of L1 subtitles, L2 subtitles and bilingual subtitles from the post-test to delayed post-test. Although students' scores declined among subtitles in the word recall section, it was obvious to see that the advantage of bilingual subtitles was maintained in the delayed post-test.

Figure 6.5 Histograms for the comparison of vocabulary tests mean score between post-test word recall



6.5.2 Significant difference from post-test scores to delayed post-test scores

In table 6.12, the statistics show significant changes in students' vocabulary scores in word recognition section between post-test and delayed post-test. The table below displays that students' performance at post-test was significantly higher than at delayed post-test under L1 subtitles condition ($z = -5.15, p < .001, r = -.40$), L2 subtitles condition ($z = -3.59, p < .001, r = -.28$) and bilingual subtitles condition ($z = -3.71, p < .001, r = -.29$) in word recognition section. Likewise, the considerable high score of post-test also can be found in word recall section under L1 subtitles condition ($z = -4.75, p < .001, r = -.37$) and bilingual subtitles condition ($z = -3.96, p < .001, r = .31$). Although there is a significant difference for each type of subtitles from post-test to delayed post-test, we still see the significant advantage of bilingual subtitles maintained in delayed post-test ($p < .001$, see previous table 6.13 and table 6.15).

Table 6.12 Wilcoxon Signed Ranks Test of the significant difference from post-test scores to delayed post-test scores

	L1 subtitles delayed post- test--post-test in word recognition	L2subtitles delayed post- test--post-test in word recognition	Bilingual subtitles delayed post-test--post- test in word recognition	L1 subtitles delayed post- test--post-test in word recall	L2 subtitles delayed post- test--post-test in word recall	Bilingual subtitles delayed post-test--post- test in word recall
Z	-5.15	-3.59	-3.71	-4.75	-1.34	-3.96
Asymp. Sig. (2- tailed)	.000	.000	.000	.000	.180	.000

6.5.3 Individual items for the scores differences between the post- and delayed post-tests

Section 6.5.2 has indicated overall significant changes among differential subtitles between post-test and delayed post-test on students' vocabulary acquisition. Table 6.13 displays only the items for those groups that revealed a clear decrease from the post-test to the delayed post-test. A clear decrease here means that the number of students whose scores declined from post-test to delayed post-test was more than 10. For example, in the video episode of Buckingham Palace with L1 subtitles, students'

correct answers for word item 2 declined from 15 in the post-test to 4 in the delayed post-test (see table 6.18). The decrease was more than 10 students. Such a clear decrease in word items under each subtitles condition was listed below.

Table 6.13 Individual items for a considerable drop from post-test to delayed post-test

		L1 subtitles	L2 subtitles	Bilingual subtitles
Buckingham palace	Word recognition	4 out of 10 (Item 2,4,5,7)	2 out of 10 (Item 2, 10)	1 out of 10 (Item 8)
	Word recall	2 out of 10 (Item 5, 7)	--	1 out of 10 (Item 2)
Windsor castle	Word recognition	6 out of 10 (Item 1, 4, 5, 6, 8, 9)	2 out of 10 (Item 5, 9)	1 out of 10 (Item 10)
	Word recall	2 out of 10 (Item 3, 7)	--	1 out of 10 (Item 3)
Holyroodhouse	Word recognition	--	2 out of 10 (Item 3, 10)	2 out of 10 (Item 1, 4)
	Word recall	--	--	1 out of 10 (Item 8)

The table points to the considerable decrease in the scores of individual items from post-test to delayed post-test. In Buckingham palace, the obvious decrease in items under L1 subtitles was more than those under L2 and bilingual subtitles in word recognition. In word recall, L1 subtitles condition revealed a considerable drop from post-test to delayed post-test. No considerable decrease showed in L2 subtitles

condition because there were few items correct under this condition. Only item 2 indicated the significant drop under bilingual subtitles. Windsor Castle displayed the considerable drop under L1 subtitles, but few items decreased under L2 condition and bilingual subtitles condition in word recognition and recall. As students' scores were low at post-test and delayed post-test, there was not a sharp drop under L1 subtitles in word recognition and recall in the Holyrood House video episode. Also, this can be found in L2 subtitles in word recall. But item 3 and 10 both saw an obvious decrease under L2 subtitles condition in word recognition. Only one or two drops under bilingual subtitles condition revealed that the number of words that students acquired at post-test was largely maintained at the delayed post-test level.

6.5.4 Summary and Discussion

In the first part of this section (6.2), the descriptive data showed histograms (Figure 6.2 and 6.3) showing comparison of students' scores between post-test and delayed post-test. The following Wilcoxon Signed Ranks test revealed that students' scores changed significantly from the post-test to the delayed post-test. However, students' scores under bilingual subtitles condition advantage were maintained. Specific to the individual items, except those items with a low score in both post- and delayed post-test, the number of individual items with a considerable decrease from post-test to delayed post-test was found more under L1 subtitles condition than under L2 and bilingual subtitles condition.

The above analysis has provided further answers to RQ2:

Is bilingual subtitling more or less effective for developing vocabulary learning than monolingual subtitling?

The previous section (6.3) revealed the significant advantage of bilingual subtitles over monolingual subtitles in the post-test and the delayed post-test, this section further explored the effectiveness of differential subtitles for developing vocabulary learning from the view of students' scores' changing over time. Although the results showed a decrease from the post-test to the delayed post-test for all types of subtitles, students' performance on the bilingual subtitles condition maintained their advantage and showed a small amount of word loss over time.

Students' vocabulary acquisition is not a tidy linear affair, with only consecutive increase and no forgetting process. As revealed by Schmitt (2010), learners also forget material. Firstly, students' receptive vocabulary acquisition, regardless of treatment types of subtitles, was not as strong in the long term. The number of lexical items that were recalled two weeks after the post-test was less than the items that acquired from post-test. Previous studies demonstrate that word attrition is a natural fact of learning (Schmitt, 2010, p.23), but the numbers of words lost from post-test to delayed post-test in this study were different under three types of subtitles condition. That is, the vocabulary knowledge acquisition under the monolingual subtitles condition is in a state of flux, with both learning and forgetting occurring. On the other hand, the vocabulary knowledge that students acquired under bilingual subtitles condition could be easier to master and fix in memory. This might further indicate that the monolingual subtitles condition is less likely to lead to long-term development in learners' vocabulary knowledge. However, students under bilingual subtitles condition with a high score at post-test and few sharp drops at delayed post-test showed an advantage of long-term memory of the vocabulary acquisition.

Apart from the large number of correct answers advantage of bilingual subtitles in post-test that might result in its advantage in the delayed post-test, the reason why bilingual subtitles were able to maintain the advantage in vocabulary acquisition probably can be explained from the nature of learning in short-term and long-term learning store. Baddeley (1988) indicated that 'Learning was assumed to involve transfer of information from the short-term to the long-term learning being a function of the time spent by the relevant item in the short-term store' (Baddeley, 1988, p.586). In other words, it was assumed that students acquire the vocabulary knowledge by looking at subtitles instead of other ways such as by the images on the video, the difference between bilingual subtitles and monolingual subtitles lay in if both subtitles occurred on the bottom of the screen. This probably could affect 'a function of the time spent by the relevant item' (Baddeley, 1988, p.586) in the short-term store and further affect the long-term learning. Specifically, for bilingual subtitles, 'the relevant item' could refer to both subtitles which probably facilitate students' language acquisition

process by comparing the two languages. Therefore, the vocabulary knowledge might be easy to acquire from short-term store and to pass to the long-term store. On the other hand, for monolingual subtitles, 'the relevant item' might refer to the monolingual subtitles which was likely to take learners more time in the language process or this process might pause when students search for the word meaning. In this case, monolingual subtitles are less likely to assist students to acquire the vocabulary in the long-term.

To summarise, word attrition was seen from the three types of subtitles condition in both word recognition and word recall sections overtime. However, the above result appears to show that bilingual subtitles could be an ideal option for vocabulary acquisition for the short-term and long-term memory.

6.6 The Effectiveness of Differential Subtitles on Individual vocabulary Items

This section refers to the differences in scores between groups on students' performance on individual items at post-test and delayed post-test. The purpose of taking the individual item into consideration is to provide a more detailed answer to the second research question by adding detail to the understanding of the obvious advantage of bilingual subtitles on students' vocabulary acquisition. The analysis of individual items in the test on the other hand offers an insight into the effectiveness of differential subtitles for the acquisition of a particular word. Where differences are referred to, the number of students who answered correctly can be found in table 6.19. This section will separate students' performance on individual items by word features (word frequency and word class).

6.6.1 Word frequency

Word frequency is the first interesting point for discussion. The individual word will be analysed through the frequency of occurrence in the videos (frequency occurrence) as well as its frequency in both English and Chinese vocabulary profiles (frequency in language). This intends to explore whether word frequency could illustrate the bilingual subtitles' advantage in vocabulary acquisition.

Table 6.14 shows the high frequency of words that occurred in the advantage of bilingual subtitles in test items. This section will start from the highest occurrence in the video. ‘Coronation’ occurred four times in the video episode including once in a plural form. However, it has a low frequency level in both English and Chinese, which probably could let us assume that both native speakers and Chinese learners are unlikely to be familiar with the word in English or Chinese. However, this unfamiliarity does not affect its advantage under bilingual subtitles condition in the post-test (with 26 correct answers) and delayed post-test (with 24 correct answers). This is perhaps due to repetition of the words that helps students’ awareness.

‘Mulberry’ is the other interesting word worth mentioning. The word ‘mulberry’ not only occurred four times in the video episode, but also has a low frequency level in both English and Chinese vocabulary profile. According to table 6.18, in the word recognition section, the majority of the students answered correctly under the three types of subtitles condition and the high number of students answering correctly were maintained in its delayed post-test under bilingual subtitles. Likewise, this high number of students who answered correctly can be found in the word recall section, there were 22 out of 27 students under L1 subtitles condition, 15 out of 28 students under L2 subtitles condition and 23 out of 27 students under bilingual subtitles condition answered correctly. Although there was a drop in the delayed post-test, most students maintained their performance of the word ‘mulberry’. Interestingly, apart from its frequent occurrence in the video, there was a mulberry tree on the screen when the word occurred with its sound, and it was the only word which occurred in subtitles at the bottom of the screen. All of these probably made the word ‘mulberry’ the best word among the target words answered correctly in the three video episodes.

With three times occurrence in the video (see table 6.14), there was slight difference under monolingual subtitles and bilingual subtitles condition about the word ‘fortress’. In the post-test (see table 6.18), 17 out of 28 under L1 subtitles condition, 11 out of 27 students under L2 subtitles condition and 21 out of 27 students under bilingual subtitles condition answered correctly with the word ‘fortress’ in word recognition section. And only the students under bilingual subtitles condition maintained its advantage in the delayed post-test. For the word recall section, although ‘fortress’ had a high frequency

of occurrence in the video, it was at low frequency level in Chinese vocabulary profile. With an unfamiliar Chinese word, it was difficult for students to have a better performance in the word recall section. This can be seen from table 6.19 (3 out of 28 students under L1 subtitles condition, 0 out of 27 students under L2 subtitles condition and 8 out of 27 students under bilingual subtitles condition in word recall at post-test).

The word ‘embroidery’ showed a consistent advantage of bilingual subtitles in the post and delayed post-test. This is probably due to the repeated occurrence in the video episode and its relatively high frequency compared to other vocabulary items in English vocabulary. Again, with the low frequency in the Chinese vocabulary profile, students did not get a higher score in word recall section under bilingual subtitles condition in the post-test. But interestingly, its advantage appeared in the delayed post-test in word recall section.

Similarly, the word ‘tapestry’ appeared twice in the video episode and had high frequency in English vocabulary profile and low frequency in Chinese vocabulary profile. It appeared as a plural in the video. However, students’ scores did not illustrate an obvious advantage under bilingual subtitles condition in word recognition at post-test. On the other hand, the advantage appeared in the delayed post-test. In the word recall section, students’ outperformance can be found at post-test and delayed post-test. In this case, with occurrences in the video and low frequency at Chinese vocabulary profile, it was difficult to find a consistent advantage of students’ performance under bilingual subtitles condition.

Another interesting word was ‘lavish’, which appeared twice during the video showing. Although its corresponding Chinese frequency did not show in the dictionary (this might be due to searching an old version of the dictionary), it was used frequently in Chinese and it was frequent word in the English vocabulary profile. As can be seen from table 6.19, there were 23 out of 27 students under L1 subtitles condition, 27 out of 28 students under L2 subtitles condition and 27 out of 27 students under bilingual subtitles condition answered correctly in the word ‘lavish’ in word recognition at post-test. These outstanding performances were maintained in the delayed post-test with a

slight decrease. However, students did not perform well with the word ‘lavish’ in the word recall section. This was because most students gave the meaning of ‘lavish’ as ‘奢侈的’ (means ‘wasteful’), which was not the meaning in the video nor the meaning in the vocabulary test sentence (‘奢华的’ means ‘luxurious’).

Table 6.14: The high frequency of occurrence word in the advantage of bilingual subtitles in test items

Word item		Word class	Word frequency of occurrence	Level of frequency		Word recognition		Word recall	
				English	Chinese	Post-test	Delayed post-test	Post-test	Delayed post-test
Buckingham palace	Item 3 retreat	n.	2	high	high		√		
	Item 4 coronation	n.	4	low	low	√	√	√	√
	Item 7 mulberry	n.	4	low	high				
	Item 10 flamboyant	adj.	2	low	low		√		
Windsor castle	Item 1 fortress	n.	3	high	low		√		
	Item 9 restoration	n.	2	high	high				

Holyrood house	Item 2	n.	2	high	low	√	√		√
	embroidery								
	Item 8	adj.	2	high	--				
	lavish								
	Item 9	n.	2	high	low		√	√	√
	tapestry								

To summarise, students' performance with the frequently occurring words in the videos indicated that the repetition of the word subtitles did contribute to students' vocabulary recognition and recall. Specific to the individual items, the compound words, words with a high frequency in the video and words with a high frequency of its L1 translation enabled to assist students to get a better performance with bilingual subtitles in the post-test. However, at delayed post-test, this advantage was only maintained when the word has a high frequency of occurrence in the videos. Also, the word with a high frequency of L1 translation as well as of L2 in the vocabulary profile plus a high frequency occurrence in the video was easier to acquire in the word recognition and recall. Its advantage was maintained in the delayed post-test. If the above advantages come together with a corresponding image showing the target word on the screen, students would perform well under any types of subtitles condition, of course a better performance can be found under bilingual subtitles condition.

The overall findings appear to show that learners could acquire more high frequent vocabulary than low-frequent words (Schmitt et al., 2001). Students' better performance in frequent words at word recognition, to some extent, demonstrates that the frequent words probably could reduce students' visual recognition threshold (Cattell, 1886; Howes & Solomon, 1951). Also, the findings of the effectiveness of word frequency can be found in the accuracy of lexical recognition processes in L1 and L2 (N. Ellis, 2002). Pedagogically, the repetition of the new word is suggested to be used in the L2 classroom. As N. Ellis (1994) indicates for the effective kinds of learning, repetition is the most effective activity for acquiring the word form and use.

Therefore, the frequent word under bilingual subtitles condition would probably be a wise choice for vocabulary teaching. The role of word frequency occurrence also reflects students' incidental acquisition of vocabulary through listening and reading. The frequent words that occurred in the videos in this study appear to show that when students encountered the more frequent of the words in the video, the more word knowledge they were likely to acquire. Similar conclusions could be found in the previous studies (Waring & Takaki, 2003; Vidal, 2011; Brown et al., 2008). Further, those studies also reveal that students' acquire vocabulary knowledge more through reading than listening. This indicates that students in this study probably acquire frequent words by watching subtitles instead of by listening to the videos.

6.6.2 Word class

This section will investigate whether word class relates to the advantage of bilingual subtitles in students' vocabulary acquisition. The word class will be divided by nouns, adjectives and verbs.

The noun will be further divided into concrete nouns and abstract nouns. Concrete nouns are things that can be experienced through the five senses: sight, smell, hearing, taste and touch. Abstract nouns refer to ideas and concepts. The purpose of this is to see if there were differences for acquiring vocabulary under bilingual subtitles condition. According to table 6.15, there are 12 concrete nouns and 3 abstract nouns in the three video episodes. Some interesting words will be discussed in the following.

The number of students answering correctly under bilingual subtitles was 10 more than the number of them under monolingual subtitles. This advantage can be seen from the word 'backwater'(see table 6.15): there were 14 students answering correctly under both L1 subtitles and L2 subtitles in word recognition, while the number of students answering correctly under bilingual subtitles was 24. The word 'backwater' is a concrete noun and appeared once in the video episode. Regarding the level of frequency in English and Chinese, the word 'backwater' was at a low level of frequency in the vocabulary profile. Therefore, the word 'backwater' was an uncommon noun. Interestingly, 'backwater' is a compound word from 'back' and 'water', which were two high frequency words in the vocabulary profile. This makes

it easy to remember its spelling for learners. Moreover, 'backwater' was the last word which occurred in the subtitles and its corresponding Chinese counterpart was exactly underneath.

With a high frequency level in English and Chinese in the case of the vocabulary profile, students outperformed with the concrete noun 'Gem' in word recognition section, and it also can be seen that the advantage maintained at delayed post-test. However, in the word recall section, there was no obvious advantage with the word 'gem' at post-test and delayed post-test.

Another interesting point can be found in the abstract noun 'prophecy', which appeared once in the video and had a high frequency in English and a low frequency in Chinese. With the low occurrence in the video and the unfamiliarity of the abstract word in L1 translation, students only performed better under bilingual subtitles condition in the post-test. Without a concrete impression in the brain, unfortunately, it was impossible for the students to maintain the advantage in the delayed post-test.

Table 6.15: Noun word in the advantage of bilingual subtitles in test items

Word item		Word class	Word frequency of occurrence	Level of frequency		Word recognition		Word recall	
				English	Chinese	Post-test	Delayed post-test	Post-test	Delayed post-test
Buckingham Palace	Item 1 backwater	Concrete noun	1	low	low	√		√	√
	Item 3 retreat	Concrete noun	2	high	high		√		
	Item 4 coronation	Concrete noun	4	low	low	√	√	√	√
	Item 7 mulberry	Concrete noun	4	high	high				
	Item 9 claret	Concrete noun	1	low	--				
	Item 1 fortress	Concrete noun	3	high	low		√		

Windsor Castle	Item 3 gem	Concrete noun	1	high	high	√	√		
	Item 4 austerity	Abstract noun.	1	low	high	√			
	Item 8 levee	Concrete noun	1	low	low				
	Item 9 restoration	Abstract noun.	2	high	high				
	Item 10 prophecy	Abstract noun.	1	high	low	√		√	
Holyrood House	Item 2 embroidery	Concrete noun	2	high	low	√	√		√
	Item 6 moorland	Concrete noun	1	--	low	√			
	Item 9 tapestry	Concrete noun	2	high	low		√	√	√
	Item 10 boar	Concrete noun	1	high	low		√	√	

The advantage of bilingual subtitles also can be seen from the words that are adjectives. For example, with a high frequency in Chinese and low frequency in English, the word ‘intrepid’ was another word worth mentioning. Although it appeared once in the video, with a common noun in Chinese, it was easy for the audience to remember it.

Interestingly, the advantage of bilingual subtitles presented in the word ‘exuberant’ and ‘sumptuous’ at delayed post-test in word recognition and word recall sections. Specifically, table 6.16, the number of students who answered correctly of the word ‘exuberant’ showed a decrease from the post-test to the delayed post-test. It was from 9 to 2 students under L1 subtitles condition, from 8 from 0 students under L2 subtitles condition and from 14 to 13 students under bilingual subtitles condition in word recognition. In the word recall section, no student answered correctly under L1 subtitles condition and L2 subtitles condition in the post-test and delayed post-test. But surprisingly, the number of students increased in the delayed post-test under bilingual subtitles condition, from 2 to 8. One explanation of this is that some students might acquire the word during the time between post-test and delayed post-test themselves. The word ‘sumptuous’ also presented an increase from post-test to delayed post-test in the word recall section: from 0 to 4 students under L2 subtitles condition and from 5 to 13 students under bilingual subtitles condition.

Another word with a high frequency in English and Chinese vocabulary profile was ‘lit’. The word ‘lit’ here was used as an adjective in the video and it was also tested as an adjective in the vocabulary post-test. Although it only occurred once in the video episode, it can be seen that students outperformed under bilingual subtitles condition in word recognition and word recall section with the word ‘lit’ and the advantage maintained in the delayed post-test. This might be due its high frequency in English and Chinese vocabulary profile. Also, the word ‘lit’ is the past participle for ‘light’ which is a familiar word for students.

Table 6.16: Adjective word in the advantage of bilingual subtitles in test items

Word item		Word class	Word frequency of occurrence	Level of frequency		Word recognition		Word recall	
				English	Chinese	Post-test	Delayed post-test	Post-test	Delayed post-test
Buckingham Palace	Item 2 priggish	adj.	1	low	low		√		
	Item 5 marshy	adj.	1	high	low		√		
	Item 8 intrepid	adj.	1	low	high	√		√	
	Item 10 flamboyant	adj.	2	low	low		√		
Windsor Castle	Item 2 stern	adj.	1	high	high				
	Item 5 exuberant	adj.	1	high	high		√		√
	Item 6 sumptuous	adj.	1	low	--		√		√
	Item 7 lit	adj.	1	high	high	√	√	√	√
Holyrood House	Item 1 scruffy	adj.	1	high	high	√			

	Item 4 turbulent	adj.	1	high	low		√	√	
	Item 7 drizzly	adj.	1	high	--			√	
	Item 8 lavish	adj.	2	high	--				

The other point that is worthy of mention is the verbs. Seen from the word ‘encapsulate’ (table 6.17), in the word recognition, 17 out of 27 students under L1 subtitles, 13 out of 28 students under L2 subtitles and 25 out of 27 students under bilingual subtitles answered correctly in the post-test. The bilingual subtitles advantage was maintained in the delayed post-test. However, students didn’t perform well in the word recall section: no students answered correctly under L1 subtitles condition, 1 student under L2 subtitles and 3 students under bilingual subtitles. Similarly, students performed well under bilingual subtitles condition with the word ‘imbue’ in the word recognition section, but few students answered correctly in the delayed post-test. Although a bilingual subtitles advantage can be seen from verbs, it was hard to find its advantage in the word recall section. The verb ‘smitten’ was shown as a past participle, with a low frequency in both English and Chinese profile. The number of students who answered correctly was low in word recognition and word recall although the number of students answering correctly under bilingual subtitles condition was slightly higher than those under monolingual subtitles.

Table 6.17: Verb word in the advantage of bilingual subtitles in test items

	Word item	Word class	Word frequency of occurrence	Level of frequency		Word recognition		Word recall	
				English	Chinese	Post-test	Delayed post-test	Post-test	Delayed post-test
Buckingham Palace	Item 6 encapsulate	v.	1	low	high				
Windsor Castle	Item 3 imbue	v.	1	low	high		√	√	
Holyrood House	Item 5 smitten	v.	1	low	low				

To summarise, in this study, the concrete nouns showed more clearly the bilingual subtitles advantages. It was difficult to be maintain the abstract nouns advantage in the delayed post-test. The data here also showed that adjective words enjoy high frequency in English and Chinese profile. Besides, by taking the advantage of its root, some adjectives in this study showed a consistent advantage of bilingual subtitles at post-test and delayed post-test. The bilingual subtitles advantage also can be seen from the verbs. However, it was hard to acquire verbs in the word recall section under all subtitles types.

The findings above demonstrate that there was word class variability in acquiring word recognition and word recall, especially the vocabulary acquisition that occurred in videos, where students were exposed to both images and sound. It has been demonstrated from the previous studies that the word class variable correlates with semantic variables such as image-ability (Janssen et al., 2010). As nouns tend to be more imageable than verbs (Chiarello, Shears, & Lund, 1999), students in this study demonstrated that they acquired more nouns than verbs under bilingual subtitles condition in word recognition. With regard to word recall, this study did not show any acquisition of verbs under all types of subtitles condition. Considering the previous studies above, in addition to the relativity between words and images, the absence of acquisition of verbs in word recall might be because verbs not only had a function of carrying the meaning but also had a function of expressing grammar. They are less likely to be paid attention to by students than the concrete words that only having the function of carrying meaning. This echoes Gentner's (2006, p.544) explanation of why verbs are hard to learn. Specifically, concrete nouns refer to naturally individuated referents and have the privilege of naming the cohesive bits of the world, whereas verbs are the individuation as part of a semantic system partitioning the leftovers. (Gentner, 1981; Gentner & Boroditsky, 2001).

Considering the students' acquisition with bilingual subtitles cognitively, the reason for the outperformance of concrete nouns probably lies in the referential connections. The connections between imagens and concrete word logogens are possible for objects to be named and names to evoke mental images (Paivio, 2010). That is, students'

mental activation occurs via pathways that connect concrete word and corresponding images in the video. Therefore, this direct activation of sensory system could benefit students' word recognition and word recall in short-term and long-term memory. On the other hand, this could be explained by the idea that the stimulation of the abstract nouns happened by the associative connection. Without the direct referential connections to images, abstract-word logogens activated images via associations to concrete logogens (Jared et al., 2013). This activation engaged both dual-coding systems in a probabilistic fashion, which resulted in less chance to recognise and recall new abstract words through videos.

6.7 Chapter Summary

This chapter of analysis and discussion focused in detail on the quantitative data. This analysis provided the overview of the descriptive data of students' scores in English proficiency test, post-test and delayed post-test (section 6.1). This chapter also provided insights into whether subtitles have an effect on receptive vocabulary knowledge recognition and recall (section 6.2) and whether bilingual subtitles are more effective for vocabulary learning than monolingual subtitles (section 6.3 - 6.5). These sections discussed the findings regarding research question one and two guiding this thesis. This appeared to show the effectiveness of subtitles on students' vocabulary acquisition. Among the subtitles, bilingual subtitles appear to be more effective than monolingual subtitles with regards to students' vocabulary acquisition in short-term and long-term. Therefore, this study provided important insights into the effectiveness of types of subtitles on vocabulary acquisition. The next chapter will provide findings and discussion from the qualitative data, investigating students' reactions towards types of subtitles in their language learning.

Table 6.18: The number of students answering correctly for individual items at post-test and delayed post-test

Buckingham palace (word recognition)

		Item 1 backwater			Item 2 priggish			Item 3 retreat			Item 4 coronation			Item 5 marshy		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recognition	14	14	24	15	20	23	15	13	19	15	16	26	18	11	25
Delayed post-test	Word recognition	8	13	21	4	10	19	8	12	24	6	14	24	6	10	22

		Item 6 encapsulate			Item 7 mulberry			Item 8 intrepid			Item 9 claret			Item 10 flamboyant		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recognition	17	13	25	25	23	27	10	10	22	4	4	10	9	17	20
Delayed post-test	Word recognition	7	12	20	13	21	27	3	7	12	4	2	10	4	11	20

Buckingham palace (word recall)

		Item 1 backwater			Item 2 priggish			Item 3 retreat			Item 4 coronation			Item 5 marshy		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recall	6	3	14	8	1	13	4	0	10	10	4	21	14	1	16
Delayed post-test	Word recall	7	5	18	1	0	4	1	1	7	4	3	19	3	2	8

		Item 6 encapsulate			Item 7 mulberry			Item 8 intrepid			Item 9 claret			Item 10 flamboyant		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recall	0	1	3	22	15	23	0	0	9	0	0	5	0	2	4
Delayed post-test	Word recall	0	0	1	11	7	19	2	0	6	2	0	7	1	4	6

Windsor Castle (word recognition)

		Item 1 fortress			Item 2 stern			Item 3 gem			Item 4 austerity			Item 5 exuberant		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recognition	17	11	21	11	19	23	10	14	23	13	10	22	9	8	14
Delayed post-test	Word recognition	11	11	22	11	17	23	9	13	24	8	14	20	2	0	13

		Item 6 sumptuous			Item 7 lit			Item 8 levee			Item 9 restoration			Item 10 prophecy		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recognition	13	14	16	17	13	26	10	3	11	24	19	26	7	8	21
Delayed post-test	Word recognition	8	9	22	12	12	23	4	3	8	17	13	24	8	4	12

Windsor Castle (word recall)

		Item 1 fortress			Item 2 stern			Item 3 gem			Item 4 austerity			Item 5 exuberant		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recall	3	0	8	4	3	7	7	6	14	5	0	13	0	0	2
Delayed post-test	Word recall	1	2	6	1	3	4	0	3	4	2	4	11	0	0	8

		Item 6 sumptuous			Item 7 lit			Item 8 levee			Item 9 restoration			Item 10 prophecy		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recall	2	0	5	9	4	18	0	1	1	8	3	15	2	1	18
Delayed post-test	Word recall	2	4	13	2	4	13	0	0	3	3	2	10	4	2	11

Holyrood House (word recognition)

		Item 1 scruffy			Item 2 embroidery			Item 3 imbue			Item 4 turbulent			Item 5 smitten		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recognition	7	8	22	12	6	22	5	16	23	9	11	22	2	5	11
Delayed post-test	Word recognition	9	6	12	7	7	18	4	5	19	7	8	12	4	4	9

		Item 6 moorland			Item 7 drizzly			Item 8 lavish			Item 9 tapestry			Item 10 boar		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recognition	8	12	23	11	15	23	23	27	27	15	17	28	6	14	23
Delayed post-test	Word recognition	12	9	18	10	9	17	18	24	25	12	13	24	6	4	22

Holyrood House (word recall)

		Item 1 scruffy			Item 2 embroidery			Item 3 imbue			Item 4 turbulent			Item 5 smitten		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recall	0	0	9	9	5	14	0	2	11	3	0	15	1	5	5
Delayed post-test	Word recall	0	0	2	3	1	14	0	1	6	1	2	7	0	1	4

		Item 6 moorland			Item 7 drizzly			Item 8 lavish			Item 9 tapestry			Item 10 boar		
		L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual	L1	L2	bilingual
Post-test	Word recall	0	3	5	3	4	13	5	4	13	8	7	19	4	5	14
Delayed post-test	Word recall	2	4	6	3	4	8	0	0	1	3	5	15	4	0	11

Chapter 7: Findings and Discussion: qualitative data from students’ perspectives

7.1 Introduction

This chapter presents the findings and discussions of the qualitative data in this study. The first part (section 7.2) of this chapter provides an overview of students’ perspectives towards types of subtitles according to the questionnaire data. The numerical data in the questionnaire is also shown and discussed at the beginning of this section. Following that, the next three sections present and discuss details about students’ perspectives on the three types of subtitles as regards video understanding (section 7.3), and pays attention to students’ preferences on getting the gist of the video; listening comprehension improvement (section 7.4), which focuses on students’ understanding of the video through listening, including the particular word pronunciation recognition and understanding, and the specific video content understanding; as well as regards vocabulary learning (section 7.5), which includes their perceptions on the effectiveness of subtitles on word recognition and word recall. The final section (7.6) discusses students’ perspectives on differential subtitles for different aspects of language learning. It is structured by types of subtitles (no subtitles, L1 subtitles, L2 subtitles and bilingual subtitles) for students’ language learning aspects.

7.2 Overview of the Qualitative Data

The third research question focuses on students’ perspectives towards the three types of subtitles on their second language learning. This discussion is based mainly on the qualitative data on the questionnaire. The questions in the open-ended questionnaire are as follows:

- 1. Which type of subtitles BEST help you understand the video episodes? Why? / How do they help?*
- 2. Which type of subtitles BEST help you improve your listening comprehension? (If different subtitles fulfil different functions, please explain.)*
- 3. Does having subtitles make any difference to how easy or difficult it is to listen? Why?*

4. Which type of subtitles is *MOST* useful for your vocabulary learning? Why? / How do they help? (If different subtitles fulfil different functions, please explain.)
5. How will you use the different types of subtitles for developing different aspects of language learning?

All the students (113 in total) completed the questionnaire after the experiment and 91 were valid (see table 7.1). Taking into account that students in the control group did not have exposure to the differential subtitles, they were asked to write whether they used previously to watch three types of subtitles on the questionnaire as well. Only one student wrote that he/she did not watch all the three types of subtitles before in the control group. This meant that students' answers from the questionnaire in the control group came from their watching experience instead of their imagination.

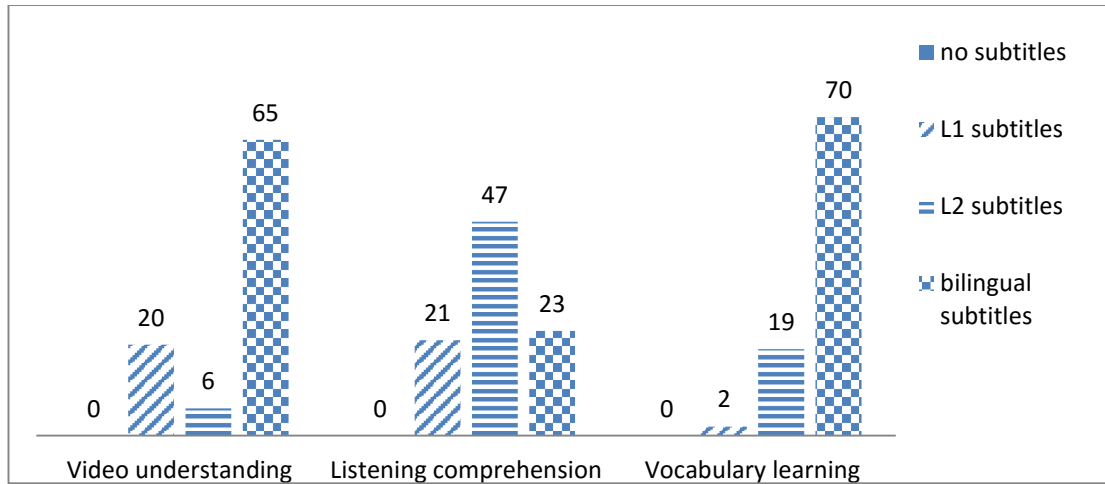
Table 7.1 Number of students in each class in questionnaire

Experimental group			Control group	Total
Class 1	Class 2	Class 3	Class 4	
21	23	23	24	91

Generally, as seen from figure 7.1, bilingual subtitles are preferred by a majority of students in respect of video understanding and vocabulary learning. To be precise, 65 out of 91 students preferred bilingual subtitles as being the most helpful for video understanding and 70 out of 91 students thought bilingual subtitles were the most useful for their vocabulary learning. Interestingly, L2 subtitles were favoured by more students for improving their listening comprehension. Specifically, 47 out of 91 students preferred L2 subtitles. The reasons why bilingual subtitles were favoured by students in video understanding and vocabulary learning were investigated in the open-ended questionnaire and are included in the following discussion. Also, there is an exploration focused on students' perspectives on L2 subtitles as regards listening

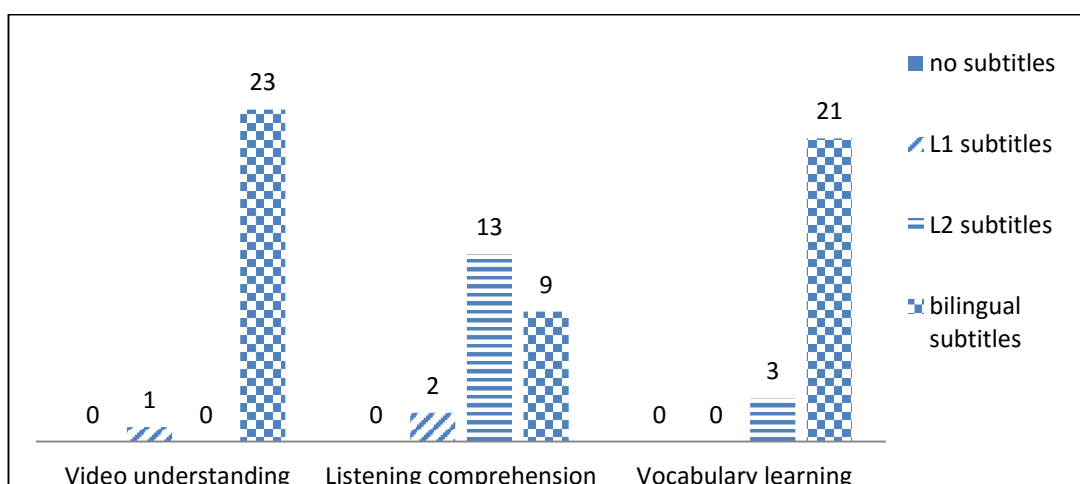
comprehension. The minority opinions regarding these aspects will also be mentioned where interesting points were made.

Figure 7.1: Histogram for the number of students' preference of subtitles in language learning



Considering students in the control group were not exposed to subtitles in the experiment, their perspectives might be different from the overall results. Figure 7.2 showed a specific histogram of students' perspectives in the control group. Interestingly, the general trend of students' preferences were the same as the overall results. That is, 23 out of 24 students prefer bilingual subtitles for their video understanding; 13 out of 24 students chose L2 subtitles and 9 out of 24 students chose bilingual subtitles for their listening comprehension and 21 out of 24 students tended to use bilingual subtitles for their vocabulary learning.

Figure 7.2: Histogram for the number of students' in the control group preference of subtitles in language learning



According to the histogram above, it is interesting to notice at the beginning that no students chose videos without subtitles for their video understanding, listening comprehension improvement as well as vocabulary learning. This appears to confirm the findings from previous studies regarding the advantages of subtitles in specific language skills including content comprehension (Markham, 2001; Grgurvoić & Hegelheimer, 2007; Etemadi, 2012), listening comprehension improvement (Vanderplank, 1988; Markham, 1989; Guillory, 1998; Danan, 2004; Tsai, 2010; Winke et al., 2010), and vocabulary acquisition (Huffman, 1986; Neuman & Koskinen, 1992; Koskinen et al., 1996; Markham, 1999; Markham & Peter, 2003; Stewart & Pertusa, 2004; Zarei, 2009; Harji, Woods & Alavi, 2010; Etemadi, 2012). The following sections will go into detail on the advantages of the specific types of subtitles in language skills improvement.

7.3 Students' Perspectives on the Three Types of Subtitles as regards Video Understanding

The first research sub-question concerns students' perceptions towards subtitles as regards video understanding. They were asked to choose the best subtitles for their video understanding and how watching the subtitles helped them. A majority of students (65 out of 91) chose bilingual subtitles as the best ones for video understanding. Table 7.2 showed the top answers of using bilingual subtitles for video understanding. 29 answers revealed that getting a global picture of understanding was

the main reason for choosing bilingual; 12 answers for learning specific new words; 22 responses for getting the meaning easily and 5 answers for catching up with the speed. In addition, it is interesting to notice that students from the control group had the same opinions as the students from the experimental group. Although they were not exposed to videos with subtitles, they completed the questionnaire through their experiences with subtitles before. Apart from the perspectives below, students showed their detailed explanations regarding the ways of using two types of subtitles and the order of looking at them.

Table 7.2: Students’ perspectives of using bilingual subtitles for video understanding

Students’ perspectives	Number of answers (experimental/control group)
Get a global picture of understanding	29(18/11)
Learn specific new words	12 (9/3)
Convenient and easy to get the meaning	22(15/7)
Catch up with the speed	5 (4/1)

Specifically, students’ reasons for choosing the bilingual subtitles included getting a global picture of understanding, and learning some specific new words in order to understand the video. The following comments reveal the indications of students’ opinion:

‘I can learn more vocabularies through L2 subtitles. If I cannot understand the words, I can refer to L1 subtitles (S1).’

‘Because the speaker speaks L2 which contains some words that I do not know, L1 subtitles help me for a global understanding of the video (S2).’

Students' perceptions above were interesting as they regarded the two types of subtitles as different ways to service their video understanding, through which they could get the main idea and learn new words at the same time. L1 was regarded as an alternative way for understanding when students came up with the difficulties with L2 subtitles. Comparing with the L2 input information, their brains would be more familiar with L1 input, which means that they would be more receptive for L1 input and processing. In this case, with the L1 subtitles as a reference, it is easier for the students to get a global view of the video content when they glance at L1 subtitles than L2 subtitles.

Although the majority of students advocated using bilingual subtitles for understanding the video episodes, their ways of using the two types of subtitles were different. For example, one student used L1 subtitles for learning the new words and used L2 subtitles for getting the main idea of the video. However, another student revealed that L1 subtitles helped in understanding and L2 subtitles helped in translating a particular word. Their opinions can be found in the following comments:

'I prefer bilingual subtitles for understanding. I used L1 subtitles for a specific new words understanding in the video context, and L2 for getting a global understanding (S3).'

'I think L1 helps in the understanding aspect and L2 helps in translation of a particular word's meaning (S4).'

In addition to the different ways of using the two languages in bilingual subtitles, the order of seeing the two languages is another interesting aspect to look at. To be specific, some of the students prioritised L2 subtitles when they were listening. L1 subtitles were referred to only when he/she didn't understand the video's content. Meanwhile, a student revealed that the order of referring to the two languages was the opposite when he/she was a beginner of English learning. As the following comments show:

'With bilingual subtitles, I could first look at the L2 subtitles when I am listening. And when I meet some word which I cannot understand, there is the L1 subtitles that help

me grasp the main idea of the video. But when I was a beginner, I see subtitles vice versa (S5).'

The above findings show that, within bilingual subtitles, students could automatically turn into looking at L1 or L2 subtitles for their best needs. In addition, they could choose the order of looking at differential subtitles for understanding. Bilingual subtitles, providing the gist of understanding, undoubtedly assist video materials to play a major role in multimedia (De Bot, 1986; Rost, 2002). The advantage of having L1 subtitles also lies in giving students instant confirmation of their understanding of what was heard (Grimmer, 1992; Vanderplank, 1988).

Students' perspectives above also partially offered a solution for the discussion of reading and listening issue in subtitles from previous studies (Borrás & Lafayette, 1994). In terms of the cognitive reading overload, students' perceptions appeared to show that bilingual subtitles, whether L1 or L2, will not cause a cognitive overload or will not be attributed to the limits of working memory (Baddeley, 1986; Chandler & Sweller, 1991; Sweller, 1999). The findings probably reveal that bilingual subtitles are a way to facilitate students' L2 acquisition (Baltova, 1999; Sydorenko, 2001; Vulchanova et al. 2015; Zanón, 2006), and might not be considered as redundant information for understanding; on the other hand, students' management for balancing ways of using bilingual subtitles shows that bilingual subtitles facilitate the speed of video understanding.

The different usage and different order of the two types of subtitles in videos is an interesting issue. Findings from my previous study (Li, 2012) indicate that the different use and different order of subtitles change according to students' English proficiency level and the difficulty of the video. When they are at an advanced learning level, they first look at L2 subtitles for the global understanding, and then L1 subtitles for getting a specific word meaning or usage. When watching the video, the advanced learners have an intention for their language improvement in L2, and they already have a language foundation which is likely to enable them to understand most of the content in the video with L2 subtitles. In this case, they choose L2 subtitles as a priority for understanding and then L1 subtitles for gaining some new words. On the other hand,

when students are at the beginner learning level, their proficiency level is not enough for getting the main point of video through L2 subtitles. Therefore, they first look at L1 subtitles to catch the gist, and then L2 subtitles for specific word learning. An explanation for this could be that, with less vocabulary knowledge, students have to rely on the L1 subtitles to understand the video content, and select some words which are interesting for them to refer to L2 subtitles and then acquire some new words.

Meanwhile, most students chose bilingual subtitles for understanding because it was convenient and easy to get the meaning. That is, if they cannot understand the subtitles in L2, they could quickly move their eyes onto the L1 subtitles for help. This made them feel free to switch languages for their needs. Comments are as following:

'The bilingual subtitles make the meaning easier (S6).'

'Because when I cannot understand the L2, I can go to L1 subtitles for help. It is very convenient and easy for us to understand (S7).'

'There is no obstruction for us to understand the video with bilingual subtitles (S8).'

Students' opinions above showed that they managed to switch languages in order to get the meaning. This echoes Duchowski's (2002) statement, that is, eye movements are heavily influenced by textual and typographical variations presented in the text. Students could automatically change their eye fixation between the two subtitles. The flexibility of eye movement appears to be the first step to gain video understanding and learn the vocabulary knowledge.

Some other students mentioned that the speed of the speaker meant it was impossible to keep up in the authentic videos, which made them feel a need for L1 subtitles to find 'the way' in combination of the L2 subtitles and the L2 speech. As their comments show:

'As the speed of the speaker is so fast that I cannot catch up with, I need L1 subtitles within the subtitles to give me the details when I lost in the L2 (S9).'

The above findings support the notion that L1 use in vocabulary learning helps language processing (Schmitt, 2010; Nation, 2013). That is, when the words come up in reading and listening, students need quick help in order not to interrupt their video watching. There are a number of ways conveying unfamiliar word meaning, L1 translation is the most effective way for quickly giving attention to words (Nation, 2013). It is, therefore, an effective way for students during the video showing, as it only requires a little time to focus on the L1 subtitles and get the main idea of the video.

Also, the minority of students who chose L1 subtitles as the best for their video understanding revealed that L1 subtitles presented a direct version of their mother tongue for easy understanding. With the L1 subtitles, they could pay attention to the plots and stories in the video.

Because it gives me a clear Chinese version and it's easy for me to understand it. I can focus on the plots and stories of the video. (S10)

Mother tongue gives a direct way for understanding the video. (Translation) (S11)

Students who favoured L1 subtitles for video understanding echo the advocates of L1 subtitles in L2 teaching videos. There is debate around the effectiveness of L1 subtitles and L2 subtitles in previous studies. The main function of the L1 subtitles lies in providing a direct way for understanding. For instance, Markham et al. (2001) indicated that students under L1 subtitles condition outperformed those under L2 subtitles condition and under no subtitles in summary written and multiple-choice test after the video showing. This reveals that L1 subtitles, as the subtitles of the learners' mother tongue, play an important role in getting the main idea in the video.

To summarise, a majority of students chose bilingual subtitles as the best ones for video understanding and gaining a global picture of understanding, and learning some specific new words in order to understand the video. They chose them for understanding because they were convenient and made it easy to get the meaning. With bilingual subtitles, students revealed that they could automatically turn into looking at L1 or L2 subtitles for their best needs. In addition, they could choose the order of

looking at differential subtitles for understanding. In addition, L1 subtitles were a need to find 'the way' in combination of the L2 subtitles and the L2 speech to facilitate them to keep up with authentic videos. Also, the minority of students who chose L1 subtitles as the best for their video understanding revealed that L1 subtitles presented a direct version of their mother tongue for easy understanding.

7.4 Students' Perspectives on the Three Types of Subtitles as regards Listening Comprehension

The second research sub-question focuses on students' perspectives on the three types of subtitles as regards listening comprehension. Students were asked to give reasons why they chose the certain type of subtitles for improving their listening comprehension. L2 subtitles were the favourite option (47 out of 91) among the three types of subtitles. There were 26 students' perspectives showing that L2 subtitles assisted them to focusing on listening; 11 answers for raising their motivation for listening and thinking; 9 answers of L2 subtitles for practising listening for a certain word and 10 answers for guessing the meaning. In addition to the above reasons, the interesting point such as L2 subtitles could provide a simple and authentic way of listening practise was also reflected in the end of this section. It was very apparent that students preferred L2 subtitles for the sake of listening practise and listening improvement instead of listening comprehension.

Table 7.3: Students' perspectives on using L2 subtitles for listening improvement

Students' perspectives	Number of answers (experimental/control group)
Paying attention to listening	26 (21/5)
Raising students' motivation for listening and thinking	11 (8/3)
Practising listening for a certain word (pronunciation and spelling)	9 (8/1)
Guessing the meaning	10 (9/1)

As seen from table 7.3, most of the students, who chose L2 subtitles as their tool for improving listening comprehension, thought they could pay attention to listening and ignore the interference from their mother tongue. With L1 subtitles or bilingual subtitles, students showed that they would focus on looking at L1 subtitles and ignore the sound of video.

The following comments give an indication of students' opinions:

'Because if I listen to the video without L1 subtitles, I would be more focus on it (S12).'

'Videos with L1 subtitles or bilingual subtitles make my attention to Chinese subtitles, which would make me ignore the sound of the video (S13).'

The above preference for using L2 subtitles can be found in V. Cook's (1991) argument for exclusive use of L2. He indicates that use of L1 could inevitably cut down on exposure to the L2. This argument is probably debatable. To some extent, the use of L1 might be an obstacle for students' listening practise because students might pay attention to the L1 subtitles and ignore the sound of the video. This would fail to provide a second language learning atmosphere for listening practise. On the other hand, listening comprehension relates to the understanding of the overall content of

the video and the understanding of specific words, which contains the particular word pronunciation recognition and understanding, and the specific video content understanding. In terms of the specific understanding aspect, the use of L1 might be considered as a useful tool for students' listening comprehension.

In addition, students' preference for using L2 subtitles for their listening comprehension echoes Guillory's (1998) and Tsai's (2010) findings. They confirm a better performance with L2 subtitles than with L1 or no subtitles in students' listening comprehension. In this case, students' preference of L2 subtitles in listening is consistent with their performance in the experiment test.

The second positive aspect for L2 subtitles in listening comprehension improvement was that it raised their motivation for listening and thinking. Students may feel tired after several minutes of listening, and they probably rely on the L1 subtitles and totally ignore the sound. If they only had L2 subtitles, it is impossible for them to get a direct meaning. This in turn stimulates their brain for listening carefully through the whole process. Typical students comment:

'The way of L2 subtitles raises my initiative and makes me keep thinking (S14).'

'With L2 subtitles, I will listening very carefully and try to figure out the meaning of the sentences (S15).'

Interestingly, Winke et al. (2010) interviewed the students who are exposed to L2 subtitles and without subtitles. Students reflect that understanding subtitle-supported videos is advantageous in increasing their attention. The finding in this confirms that L2 subtitled videos help to attract students' attention and raise their initiatives for learning.

From the cognitive perspective, the advantage of subtitles in the affective filter could be explained with the L2 motivational self system (Dörnyei, 2009). According to Dörnyei (2009), the L2 motivational self system composes of ideal L2 self, ought-to L2 self and L2 learning experience. The ideal L2 self is the attractor basin centred on the internal desire of the learner. If a person would like to speak L2, the ideal L2 self is a powerful motivator for learning. This is the desire which could reduce the

discrepancy between our actual and ideal selves (Dörnyei, 2009, p.217). The ought-to L2 self refers to the motivational regulations of social pressures exercised by significant people in the learners' environment. This is one who believes he/she ought to meet the expectations and avoid possible negative outcomes. The L2 learning experience is the 'executive' motivation which relates to the immediate learning environment and experience (i.e. the impact of the peer group, the teacher, the curriculum or the experience of success). This is the actual experience of being engaged in the learning process. As Dörnyei (2009, p.218) puts it, students' initial motivation is successfully engaged with the actual language learning process. The above findings appear to echo Dörnyei's opinion, when learners are listening with L2 subtitles, they have their L2 learning experience motivation, that is, the input of L2 subtitles giving them a positive push in the listening process.

The other interesting perspective was about practising listening for a certain word. Students reflected that L2 subtitles helped them to learn the pronunciation and the spelling of a word directly from the sound of the video and subtitles. This is a quick way for them to learn words. However, without a way of learning the meaning of the word, students' vocabulary knowledge remains at a lower stage in VKS (Wesche & Paribakht, 1996) (stage 2: *I have seen this word before, but I don't know what it means*). With L2 subtitles, they revealed the possibility to practise listening skills:

'L2 subtitles help me to correct my pronunciation and practise listening skills (S16).'

'With the spelling of the words and the sound, I can learn the word quickly (S17).'

Regarding those new words that they were unfamiliar with, they reflected that they could guess the meaning. The following comments give the indications of this:

'I can find out the unfamiliar words quickly and guess their meaning (S18).'

If students managed to guess the word, their vocabulary knowledge would belong to stage 3 (*I have seen this word before, and I think it means...*). Whether the students' guessing of the word is right or wrong, the usefulness of L2 subtitles is put into a debatable place.

The other students who favoured L2 subtitles for listening improvement revealed that it provided a simple and authentic way for listening. Without L1 subtitles, videos were totally shown in L2 atmosphere. Comments as follows:

'I think only L2 subtitles provide a simple picture for improving my listening comprehension skills (S19).'

Students' opinions of the L2 exclusive use in videos for listening improvement, to some extent, reflect the views of advocates of the exclusive use of L2 in classrooms (V. Cook, 1991; Macdonald, 1993; Krashen, 1982). The students' explanation reveals that the L2 subtitles provide a real L2 language environment for developing learners' own in-built language system (Macdonald, 1993).

On the other hand, the minority of students who preferred L1 subtitles revealed that it was not a pure listening atmosphere (the pure listening atmosphere here means that students watch the videos without subtitles and they could only watch the images and listening to the sounds) with L2 subtitles as a reference. And they were not interested in the video if there were no subtitles. Therefore, they chose L1 subtitles as a way to improve their listening comprehension. Their comments can be found in the following:

If there were English subtitles, it won't be so called "listening", if without subtitles, it was boring. So I think L1 would be good for listening comprehension. (Translation) (S20)

For choosing the best subtitles for listening, some students think that it would not be a complete atmosphere for L2 listening if they could see the L2 subtitles on the screen. And some of them think it would be boring under no subtitles condition. Therefore, students chose L1 subtitles for their listening comprehension. However, this was debatable when concerning those students listening with L2 sound and watching with the L1 subtitles. Due to the two languages switching between eyes and ears, the L1 subtitles would easily to slow students' tempo of language processing.

Students who preferred bilingual subtitles paid attention to listening comprehension instead of listening skill improvement. In this study, listening comprehension refers to the specific video content understanding through listening, and listening skill

improvement refers to particular word pronunciation recognition and developing the skills that are used in the listening material. They revealed that bilingual subtitles helped them to check what they had listened to, which was better for further understanding. Also, they indicated that L1 subtitles assisted them in understanding the content and L2 subtitles helped them to link to the word meaning. Relevant comments include the following:

It helps me know what I am listening to, and it's better for understanding. (Translation)
(S21)

L1 helps me understand the content, while L2 helps me connect the English words with Chinese meanings. (S22)

Students' preference towards L2 subtitles and bilingual subtitles in listening comprehension has been discussed in Li's (2012) findings. That is, students at the advanced level prefer L2 subtitles, while students at the intermediate level prefer bilingual subtitles for their listening comprehension. Regarding this study, year-3 English major students were advanced level learners, and numbers of them favoured L2 subtitles for listening comprehension, which echoed Li's (2012) findings. In terms of different preferences by students with different levels of language proficiency in listening comprehension, this was due to their different language demands when listening. Precisely, for advanced learners, they could understand most of the video by listening and use L2 subtitles for checking the unfamiliar words. On the other hand, for intermediate learners, they need L1 subtitles to get the gist and they read the L2 subtitles while they are listening. There are similar responses in the "video understanding" section regarding the reasons for choosing bilingual subtitles.

A further question is whether subtitles (in general) make it easy for listening. As seen in table 7.4, 74 students thought subtitles were easy for their listening: 57 students from experimental group and 17 students from the control group. 12 students reflected that subtitles could distract their attention of listening and the rest of 5 students demonstrated that it depended on the purpose of listening and students' proficiency level.

Table 7.4: Students perspectives towards the easiness of subtitles for listening improvement

Whether subtitles are easy for listening	Number of students (experimental/control group)
Yes	74 (57/17)
No	12 (9/3)
It depends	5 (2/3)

The above table showed that a considerable number of students (74 out of 91) confirmed that subtitles made their listening easy and enjoyable. The reason for this was because subtitles helped to avoid many problems while listening, such as the unfamiliarity of words, pictures and scenes during the video showing. Their comments can be found in the following indications:

‘With subtitles, we can avoid many problems when listening, such as unfamiliar words, unfamiliar pictures and scenes. It makes easier to understand the meaning (S23).’

‘It’s easy to focus on when we are listening, and we can enjoy the video (S24).’

Also, students used subtitles as a clue to the videos’ content. From this perspective, subtitles in videos were necessities for students’ understanding. Their comments can be found in the following indications:

‘Subtitles help with the content (S25).’

‘Because having subtitles gives me some references (S26).’

This perceived necessity of subtitles in videos is a common thing in China. Students expressed that they were used to watching videos with subtitles including those videos in their mother tongue.

‘I used to refer to subtitles while watching videos, including watching L1 videos with subtitles (S27).’

The students' opinions above confirmed that their way of reading subtitles did not prevent the processing of the soundtrack, which echoes the findings of De Bot et al. (1986) and d'Ydewalle and Pavakanun (1997). They found that students' attention can be divided between subtitles and sound according to their understanding needs. This means that students could automatically balance their time spent watching subtitles and listening, which could be a supportive method of listening comprehension. In addition, this positive aspect appears to echo previous experimental studies through the eye-tracking method. Students could read subtitles automatically (d'Ydewalle & Van de Poel, 1999) and the auditory and the verbal textual information probably could be processed in parallel. Therefore, the above findings are likely to suggest that subtitles do not distract audiences' processing of auditory information input (d'Ydewalle & Gielen, 1992).

On the other hand, a few students (12 out of 91) commented that subtitles did not make their listening easy. These disadvantages focused on its distraction of listening. Specifically, students reflected that they hardly paid attention to the sound with subtitles and they used their eyes more than their ears. Relevant comments include the following:

'Subtitles draw most of my attention instead of the sound. I don't think having subtitles is good for listening (S28).'

'Where there are subtitles on the screen, I usually pay much attention to the subtitles. I use my eyes more than ears for understanding (S29).'

There were other students who revealed that the effectiveness of subtitles for listening depends on the difficulty of videos. The student below revealed that the rate of speech made it difficult from him to catch up with the video without subtitles.

'In the video, speaker always speaks fast which makes us have to see the subtitles to catch up with (S30).'

The explanation of students' feedback on subtitles as a solution for the fast speech rate can be found in Buck's (2001, p.32) work. He indicates the dimensions of the complexity of video, which includes phonological modifications, accent, prosodic

features and speech rate. In order to simplify the video understanding, speech rate is a dimension to be considered in this study. Although it is impossible to slow down the speech rate in the video, inserting subtitles helps with catching up the process of the video showing as well as helping with difficulties in following an unfamiliar accent.

According to students' opinion, the relationship between subtitles and listening also relates to their English proficiency level. They reflected that subtitles would hinder listening when they could understand most parts of the video themselves. This means that subtitles would be an obstacle if their English proficiency was high to understand the video and subtitles help if their English proficiency was not enough to understand the video:

'I think if we can understand most part of the video, having subtitles makes it difficult to listen. If we can understand little about the video, having subtitles makes it easier. It's up to the English level (S31).'

This point was interesting because, according to their perceptions, the higher the students' English level, the more subtitles distract from their listening, and the less understanding of the video, the more helpful the subtitles. Part of the explanation for this can be found in d'Ydewalle and Pavakanun's (1997) findings. They demonstrate that students spend more time on subtitles when the videos are relatively complex. Meanwhile, as mentioning the dimensions of 'complexity of the video' above, the English proficiency level of a student links with the complexity of a video, that is, an advanced learner will find it easier to gain understanding of the same video than a beginner. And in most cases, advanced learners do not have to rely on the subtitles for understanding. On the contrary, the subtitles may hinder their understanding.

To summarise, regarding listening comprehension, most of the students chose L2 subtitles as their best tool for improving listening practise because they could pay attention to listening and ignore the interference from their mother tongue. The reasons for L2 subtitles also include raising students' motivation for listening and thinking and providing a simple and authentic way for listening. Regarding assisting practising a certain word in listening with L2 subtitles, the vocabulary knowledge stages of learning might be debatable without a way of learning the meaning of the word.

Students who preferred bilingual subtitles paid attention to listening comprehension instead of listening skill improvement. It is difficult to provide a definitive answer to the issue of subtitles and listening, as the issue could also include the issue of difficulty of the videos as well as the students' English proficiency level.

7.5 Students' Perspectives on the Three Types of Subtitles as regards Vocabulary Learning

This section presents students' perspectives on bilingual subtitles (section 7.5.1) and monolingual subtitles (7.5.2) for their vocabulary learning. It also discusses their interesting opinions with previous studies' findings.

7.5.1 Students' perspectives on bilingual subtitles as regards vocabulary learning

The third research sub-question of students' perspectives to subtitles investigated vocabulary learning, which is the focus of the main, quasi-experimental study. Like the results for the first research sub-question item asking the best subtitles for video understanding, the majority of students (70 out of 91) tended to choose bilingual subtitles to assist their vocabulary learning. Their perspectives on the advantage of bilingual subtitles for vocabulary learning were linked to depth of vocabulary, the width of vocabulary and other learning aspects. As seen from table 7.5, from the depth of vocabulary, assisting learning the meaning of the word (40 students' answers) was the major advantage of bilingual subtitles for vocabulary learning from the students' perspective. In addition, there were 15 answers for the advantage of remembering the word more easily through bilingual subtitles than through monolingual subtitles. The advantages of learning the word spelling (7 answers), pronunciation (5 answers), usage (4 answers) were also listed from students' perspectives. 2 answers showed the advantage of subtitles in vocabulary from the point of view of capturing students' attention and 1 response for helping students to become familiar with the word. From the breadth of vocabulary, there were 13 answers for the advantage of building a connection between the two languages and 5 answers for enlarging the vocabulary size. Students in the control group also reflected that bilingual subtitles could be a vocabulary learning method. Other learning aspects such as encouraging fast reading skills (1 answer) and learning idioms and authentic expressions (3 answers) were also mentioned by students.

Table 7.5: Students perspectives of the advantage of bilingual subtitles for vocabulary learning

Students' perspectives	Number of students' answers (experimental/control group)
<i>Depth of vocabulary</i>	
Pick out the strange words/capture attention	2 (2/0)
Familiar with the word	1 (1/0)
Spelling	7 (5/2)
Pronunciation	5 (5/0)
Meaning	40 (31/9)
Usage	4 (3/1)
Remember the word easier	15 (10/5)
<i>Breadth of vocabulary</i>	
Enlarge word size	5 (4/1)
Learning method (watch more than once)	2 (0/2)
Building a connection between the two languages (A comparison between bilingual and monolingual subtitles)	13 (6/7)
<i>Other learning aspect</i>	
Fast reading skills	1 (1/0)
Learning idioms and authentic expressions	3 (3/0)

Depth of vocabulary

Students reflected that bilingual subtitles assisted them to pick out the strange words in videos, which could draw their attention to the word and then help them learn the word meaning. Some of their comments were as follows:

When it comes to the two subtitles, it can capture my attention so that I can understand it in an easier way. (S20)

It is easy for me to pick out the strange words and know the meaning of them. (S32)

Students' preference of bilingual subtitles above echoes Nation's (2005) work. That is, L1 translation is the quickest way for giving students' attention to words including the meaning of the word, the form of the word as well as the use of the word. When students are watching videos with bilingual subtitles, it was assumed that they could immediately pick out the strange words through English subtitles and get the concept through Chinese subtitles. Considering Chinese and English belong to different language systems and their word forms are totally different and their attention time for each word might be quite short, capturing the knowledge of the word might be limited in Nation's work.

In addition to paying attention to the strange words at first hand, students revealed that bilingual subtitles further assisted them to get familiar with the word:

Bilingual subtitles help me get familiar with the vocabulary. (S33)

Although students did not give detailed information in terms of to what extent they were familiar with the words, the familiarity of the word probably means that students could acquire receptive vocabulary knowledge (Nation, 2001) through bilingual subtitles. The receptive knowledge was likely to include students' knowledge of the word form in spoken language (what does the word sound like?), the word form in written language (what does the word look like?), as well as the word form in words parts (what parts are recognisable in this word?). They may not acquire all the word knowledge, but they were likely to get some of it through English subtitles and the video sound. Students could also grasp the concept of the word through Chinese subtitles.

Students who favoured bilingual subtitles thought it was an easy way to remember a certain word's meaning and spelling. They explained that they use L1 subtitles for catching the words' meaning and L2 subtitles for catching the words' spelling. Some comments show indications as follows:

'I can get both meaning and spelling of some English words. And the video leave me deep impression with bilingual subtitles (S26).'

'I can compare with the two lines of languages. I use L1 subtitles for getting the meaning and L2 subtitles for getting the words' spelling (S34).'

Students' comments above are interesting in terms of the deep impression of bilingual subtitles on students. Their deep impression here may refer to a quick way to remember the word spelling, pronunciation, meaning and the exact word use in the video under bilingual subtitles condition. Deep impression is also regarded as an important factor for vocabulary learning under bilingual subtitles condition from previous study (Li, 2012). With bilingual subtitles, it is easy for students to remember the words from L1 subtitles for the meaning and from L2 subtitles for spelling and pronunciation. These particular help when authentic expressions or idioms (e.g. it rains cats and dogs) appears (these are detailed in the following paragraphs). With videos' images and bilingual subtitles, students could quickly acquire the words' meaning and usage.

The benefits of bilingual subtitles not only helped students' knowledge of word meaning and spelling, it helped them to get the pronunciation as well:

'Bilingual subtitles help me remember the new words' meaning and pronunciation easily (S28).'

Students' preferences quoted above reveal that they could remember the word meaning and pronunciation through bilingual subtitles at the same time. This appears to reflect they not only managed to balance listening and reading issues, but acquired the new word's meaning at the same time. Students' opinions in turn demonstrated that bilingual subtitles would not cause cognitive overload problem (Borrás & Lafayette, 1994). On the other hand, they were likely to show that the three input information

channels could work well in second language processing (Baltova, 1999; Sydorenko, 2010; Vulchanova et al., 2015; Zanon, 2006).

Meanwhile, students showed that they could learn the word use in videos with the help of bilingual subtitles:

'We can combine what we heard with subtitles to understand the word and learn how to use it (S35).'

Apart from Nation's opinions above, using L1 subtitles in L2 videos also echoes Chen's (2006) work about the benefits of incidental vocabulary learning. That is, learners are more engaged in learning a new word in the context of reading or listening rather than simply providing word lists with meanings (Chen, 2006, p.19).

Students reflected that bilingual subtitles helped them to remember the words easily. They explained that bilingual subtitles could be an ideal assistant to remember the words which they have seen or heard before. Some comments show indications as follows:

I will know both Chinese and English version with the bilingual subtitles. This helps me to remember the words in an easier way. (S36)

There are a lot of English words that I have seen before or heard before. If I can see both English and Chinese subtitles, they definitely will help me to memorise the words. (S37)

Students' comments above not only showed that the word frequency in a language influences the most basic processing of the word, namely, its speed of recognition (Cattell, 1886), but they indicated that they were likely to acquire the word knowledge in their long-term memory through bilingual subtitles. That is, students appear to acquire and remember the word that they have seen or heard before easily through bilingual subtitles. Taking into account the same situation with monolingual subtitles, the vocabulary knowledge that students acquired might not seem as easy as bilingual subtitles because monolingual subtitles appear to fail to provide the full image of the word knowledge. Although the word attrition is a natural aspect of learning (Schmitt, 2010), the vocabulary knowledge that students acquired, especially those words that

students have seen or heard before, under bilingual subtitles condition is likely to be mastered or fixed in the students' memory.

Breadth of vocabulary

In terms of the breadth of vocabulary, students indicated that they preferred bilingual subtitles in order to enlarge their word size. They explained that they referred to the Chinese subtitles for understanding and then further looked at both subtitles to enlarge vocabulary. In addition, they reflected that bilingual subtitles kept them enthusiastic to learn more words from the video.

I could refer to the Chinese subtitles when I cannot understand the videos by listening. I could enlarge my vocabulary by bilingual subtitles. (Translation) (S38)

Bilingual subtitles help me keep enthusiastic and increase the vocabulary. (S39)

Students' comments above indicated the other dimension of vocabulary knowledge: the breath (size) of vocabulary (Qian, 1999). It is interesting to find that students mentioned the L1 subtitles in the process of enlarging vocabulary. This demonstrated that L1 is not only effective in learning the meaning of vocabulary, but also as a way to increase vocabulary size (Folse, 2004; Lotto & de Groot, 1998; Oxford & Crookall, 1990). When combining L1 subtitles with the L2 subtitles and L2 sound in videos for the initial learning of vocabulary, it appears to be a quick way to speed up learners' vocabulary growth. In addition, from the affective filter aspect, bilingual subtitles are likely to provide quick help without interrupting students' watching too much in the areas of language processing, which helps lighten their learning burden at the same time (Nation, 2001). This could be a positive cycle in increasing the vocabulary size in videos through bilingual subtitles.

Regarding enlarging the word size, 2 students from the control group revealed that they could acquire more vocabulary if the videos were showed more than once. They demonstrated that this could be one of the learning methods to remember the meaning of the words. Their comments show indications as follows:

Because both Chinese and English subtitles are there. We can know the meaning of a word quickly, then have an impression. What's more, we can watch a video more than once. I think this method is very useful. (S40)

I think I could remember the words through subtitles if I watch the videos more than once. (Translation) (S33)

Although students from the control group were not exposed to any subtitles in the experiment, their comments above not only revealed that their preference for bilingual subtitles, but they suggested they could acquire more word knowledge by watching the repeated video with bilingual subtitles. Students' perspectives echoed the importance of frequency in the input for acquiring and processing the vocabulary in the video input (Schmitt et al., 2001; De Groot. 1992; N. Ellis, 2002). That is, students normally acquire more frequent vocabulary than low-frequent words among both L1 and L2. This effort is no doubt likely to assist them to enlarge vocabulary size.

Students also revealed that the advantage of bilingual subtitles for vocabulary learning lies in building a connection between two languages:

It is easier to combine the two languages and built a connection between them by bilingual subtitles. (Translation) (S5)

As Chinese and English belong to different language systems, it appears to be difficult to build a direct connection of the word spelling or pronunciation within the two languages. However, there is no doubt that L1 subtitles assist students in acquiring concepts in a straightforward way. This echoes the RHM theory (Kroll & Stewart, 1994), which states that the L2 is assumed to more likely depend on mediation via the L1 translation equivalent until the students have acquired sufficient skill in the L2 to access meaning (concept) directly. From the students' perspective, this is also an easy and quick way to grasp the concept of L2 in videos, which is not only a way to catch up with the video speed and understand the video content, but a way to assist language processing to acquire specific vocabulary knowledge. Additionally, there could another possible connection between L1 and L2 through dual coding theory (Paivio & Desrocher, 1980). That is, the concrete words that are linked to the imagen system could be connected the L2 through images on the screen. Those abstract words are

likely to be connected to the concept through referential images. Of course, the abstract words appear to need more language processing time than the content words, which resulted in the fact that students might acquire more content words than abstract words.

Interestingly, in addition to reveal the connection between two languages, students gave a comparison of bilingual subtitles and monolingual subtitles. They revealed that L1 subtitles helped them know the meaning but not gain the words' spelling. And it made the students forget to listen. L2 subtitles alone showed spelling together with pronunciation but they cannot know the meaning of the words. Their comments are shown as follows:

'When I watch videos with L1 subtitles, I only know some new words' vague pronunciation and its Chinese meaning, but I cannot catch the meaning to memorise them. And the problem is similar with L2 subtitles. But bilingual subtitles do solve this problem. It helps me know both the English word and its Chinese meaning (S41).'

'For L1, Chinese is much easier to follow. I'll focus on the lines and forget to hear the words. For L2, it's better than L1, I can guess the meanings of the lines but I don't know if I am right. Bilingual subtitles help for all of the problems (S42).'

The similar results can be found in teachers' perceptions on the explanation of the use of the two languages in bilingual subtitles in Li's (2012) findings, which confirm that students normally use L1 for understanding and L2 for remembering a particular word, such as spelling. In addition, this echoes Cummins' (2007) perspective on bilingual teaching. That is, learners are likely to benefit from paying attention to the similarities and differences in the two languages (for example, focusing on cognates or working on dual language projects). He reflects that bilingual learners could develop their metalinguistic awareness as a result of processing two languages. In other words, bilingual subtitles are likely to be more efficient if learners could pay attention to the L1 and L2's similarities and differences to further coordinate and reinforce their learning strategies across languages.

Other language learning aspect

When students explained their perspective of bilingual subtitles in vocabulary learning, they also mentioned other language learning aspects as well. They expressed that bilingual subtitles helped them to learn idioms (authentic expressions) as well as to practise their fast reading skills:

'We will know some local expressions with bilingual subtitles (S43).'

'Bilingual subtitles not only enlarge my vocabulary, but practise my skills for fast reading (S33).'

The idioms or authentic expressions, to some extent, are likely to be the quickest and easiest language to acquire the meaning of through bilingual subtitles. This is because students are probably familiar with those specific words in the expression before so that they could quickly grasp the meaning and the recombination of language in the expression through bilingual subtitles. This finding also echoes the results from a previous study (Li, 2012). With the help of bilingual subtitles, students also practise their fast reading skills. This appears to be an associated skill that is acquired when students are learning words. We can see the benefits of incidental vocabulary from the pedagogical aspect: incidental learning, serving as a double-edged sword, promotes simultaneously both vocabulary acquisition and reading comprehension (Chen, 2006, p. 19).

To summarise, students' perspectives on bilingual subtitles for their vocabulary learning can be seen from various aspects of vocabulary knowledge: the breadth of vocabulary and the width of vocabulary. The students also reflected from other learning aspects when acquiring vocabulary, such as practising fast reading skills and learning authentic expressions.

7.5.2 Students' perspectives on monolingual subtitles as regards vocabulary learning

In addition to students' preferences for bilingual subtitles, the minorities (19 out of 91) preferred L2 subtitles for vocabulary learning. As seen from table 7.6, there were 6 responses for the reason for looking up the dictionary to get the meaning of L2 from videos, of which 5 responses reflected that students could guess the new word meaning

with L2 subtitles. 3 students also stated that L2 subtitles assist them to concentrate on the word. There were 2 students who reflected that L2 subtitles helped them to pick out the strange words and 2 students indicated that L2 subtitles assisted them to acquire rich vocabulary knowledge. One student mentioned that L2 subtitles leave them with a deep impression of the words. The following paragraphs will focus on discussing students' perspectives on the advantage of L2 subtitles in terms of guessing the word meaning, looking up dictionaries and their concentration on the L2.

Table 7.6: Students perspectives of the advantage of L2 subtitles for vocabulary learning

Students' perspectives	Number of students' answers (experimental/control group)
Pick out the strange words/capture attention	2 (2/0)
Concentrate on L2	3 (3/0)
Guess the meaning	5 (3/2)
Look up dictionary	6 (5/1)
Get rich vocabulary knowledge	2 (1/1)
leave a deep impression	1 (1/0)

Six students mentioned that they could look up the dictionary when they come up with the unknown word. As the following comment shows:

'When I read an unknown word, I have the impulse to know the meaning by looking up the dictionary.' (S44)

Although looking up the dictionary is a good way for acquiring new vocabulary in some situations (Nation, 2002), it is impossible to do this in this situation because it will interrupt the video showing process. Looking up the dictionary to acquire vocabulary therefore is not recommended during the video showing.

In addition to students' preferences for looking up the dictionary, 5 students who preferred L2 subtitles for vocabulary learning mentioned that they could guess the word meaning according to the image and the plot in the video. They also commented that this way could leave a deep impression of the word on them.

'It will leave me a deep impression if I guess the word meaning according to the image on the screen and the plots of the video.' (S45)

'I prefer English subtitles, because I can guess and work out the meaning through the context, even though those words are totally new to me.' (S30)

The above comments sound reasonable for acquiring a word in the video. However, only a few words could have their corresponding images on the screen, also, the numbers of meanings of words which could be referred from the plot are relatively small. In this case, students' vocabulary acquisition using this method will be very limited, which is not the most effective way for vocabulary learning.

Students who prefer L2 subtitles revealed that they would choose L2 subtitles under the condition that they could understand 70% of the video content. Only in this way, can they guess the meaning of the strange words that they came across in the video. They also pointed out that they have to transfer their thinking between traditional culture and western culture if they look at L1 subtitles, which would affect their overall understanding of the video. Students' comments are as follows:

'I prefer L2 subtitles under the condition that I could understand 70% of the video content, because I could guess the meaning of the word according to the context. When looking at L1 subtitles we need to transfer our thinking between traditional culture and western culture, which could affect the understanding of the video.' (Translation) (S46)

Students' perspectives are interesting as their preference to L2 subtitles is on the basis of their ability to understand of 70% video content beforehand. This refers that students are required to reach a relatively high proficiency level to understand the overall video content, which echoes teachers' perspectives in Li's (2012) findings. In addition, students reflected that L1 subtitles would affect their video understanding because they

have to transfer their thinking between traditional culture and western culture. This appears to link with Van der Walt's (1997) perspective on the exclusivity of L2 with linguistic imperialism and culture, namely, exclusive use of L2 may result in the entire loss of home cultures. However, students who preferred L2 subtitles did not show this negative point of the loss of home culture, on the contrary, they demonstrated that the exclusive use of L2 subtitles could avoid them having to continuously transfer their thinking between the two cultures.

Students who prefer L2 subtitles for their vocabulary learning reflected that their attention would concentrate on L1 subtitles and ignore the L2 subtitles. Relevant comments include the following:

'If there were L1 subtitles, I would pay my attention entirely to the L1 subtitles and ignore the L2 subtitles.' (Translation) (S47)

Comparing the students' perspectives above which demonstrated their management of their attention on both subtitles for vocabulary learning, there were a number of students who showed that they would rely on L1 subtitles for understanding the word meaning. Students' attention on subtitles is likely to be relative to their level of proficiency. Students might benefit more in acquiring more word knowledge with bilingual subtitles at intermediate or advanced level than if they are at beginners level (Li, 2012). Although previous studies (Guillory, 1998; Markham, 1993) reflected that students benefit from subtitles at all levels of proficiency, the benefits derived might be different according to proficiency levels. For example, students at beginner level might benefit from the word meaning to get the video content through L1 subtitles and students at intermediate or advanced level might find bilingual subtitles are helpful for word use or to help remember the words in the long-term.

To summarise, the majority of students tended to choose bilingual subtitles to assist their vocabulary learning. Their preference for bilingual subtitles is because use of bilingual subtitles was for them an easy way to remember a certain word's meaning, spelling, pronunciation, and learning idioms (authentic expressions). In addition, bilingual subtitles are likely to provide richer vocabulary knowledge information than monolingual subtitles. Students who preferred L2 subtitles for their vocabulary

learning were focused on the possibilities of guessing the word meaning, looking up the dictionary and their concentration on the L2.

7.6 Students' Perspectives on Differential Subtitles for Different Aspects of Language Learning.

The final research sub-question explored their opinions towards differential subtitles for aspects of language learning. These questions, to some extent, relate to the first and second research questions, but they are in a broader sense — not limited to the effectiveness of subtitles on the aspect of vocabulary. However, students' answers covered a number of learning aspects, which might overlap a few perspectives in the previous listening comprehension and vocabulary learning section. This section will be structured by types of subtitles (no subtitles, L1 subtitles, L2 subtitles and bilingual subtitles) for students' language learning aspects.

7.6.1 Students' perspectives for their language learning under no subtitles condition

The first research question investigates whether students under subtitles condition performed better than they did without subtitles. When it comes to students' perceptions, they preferred with subtitles than without subtitles, but videos without subtitles are used by students for their listening practise and English level testing. Perspectives from students towards no subtitles were mainly focused on practising their listening skills. Without subtitles, students showed that they have to pay attention to the sound, which could be a helpful way for practising their listening skills. Relevant comments include the following:

'I think no subtitles can improve my listening skills. I need to put all my attention on the video and try my best to follow them and listen to them carefully, so it's a good tool practise to my listening.' (S35)

'It's a good way to practise listening. When there are no subtitles, we will try our best to get every sentence. Watching it again and again, thus we could improve our listening skills.' (S46)

The students also revealed that videos without subtitles were a way to test their English proficiency level. However, videos without subtitles were not favoured by some students, because students lost interest for videos without subtitles.

'Watching videos without subtitles is a good way to test our English proficiency level.'(S47)

'I have no interest of watching videos without subtitles.'(S48)

Students' opinions above focused on listening practise and tests without subtitles and they reflected that they would lose interest without subtitles. There is no doubt that videos without subtitles could be a tool for testing listening and for practise because students could focus on using their ears instead of their eyes. However, they reflected that videos without subtitles would make them lose their interest in watching. This appears to conflict with the purpose of listening tests and practise, in which students are required to concentrate on the video (or other test material) if they are to be successful. On the contrary, students' opinions towards videos without subtitles reflected the advantage of subtitles in video for increasing motivation, reducing anxiety as well as increasing their attention from the previous study (Burger, 1989; Grimmer, 1992; Vanderplank, 1988).

7.6.2 Students' perspectives for their language learning under monolingual subtitles condition

As seen from the previous sections, students' responses were positive to the bilingual subtitles from which they claimed to gain the most benefit in learning. However, monolingual subtitles were also favoured from some advantages of learning aspects but the learning aspects were very limited.

In particular, for L1 subtitles, a number of students revealed that they could benefit by getting the main idea of the video and gain overall background information about the video. They also showed their reactions for choosing L1 subtitles: just for fun. The following comments give an indication of students' opinion:

'I think L1 subtitles will not do much help for me. But it's easy for me to understand the context of video. Maybe when I watch the video for the first time, I will use L1 subtitles to help me understand the overall video information.'(S49)

'The L1 subtitles can be used to develop the ability of understanding the contents or the main idea of the video.'(S50)

'I will watch videos with L1 subtitles for fun.' (S51)

Students' perspectives above echoes previous studies that favoured L1 subtitles for acquiring understanding of the video content (Katchen, 1997; Markham et al., 2001). In addition, students showed that L1 subtitles are a tool for entertainment instead of a tool for second language learning. This is probably because they hardly acquire any new words without looking at the L2 subtitles as a comparison with L1 subtitles.

Regarding L2 subtitles, the function for students include knowing the specific aspect of a word including the word spelling and pronunciation, practising listening and getting some writing skills. As they revealed from the following comments:

'This type of subtitle can improve my listening skills and my pronunciation. The most significant part is pronunciation. I can follow the video to practise pronouncing.' (S52)

'L2 subtitles can be used to practise listening comprehension. Listen to and watch the video, and try to focus on every sentence.' (S53)

'With L2 subtitles, I would improve some writing skills.' (S54)

Students demonstrated that they would use L2 subtitles to get to know the word like the word spelling and pronunciation. L2 subtitles appear to allow students to map phonology directly onto written words. Those written words in L2 subtitles are not affected by intonation, accents or background noise and further enhance word segmentation making processing and comprehension of the auditory material much easier (Mitterer & McQueen, 2009). Additionally, the benefits of acquiring writing skills through the subtitles also echoes a previous study result (Guichon & McLornan, 2008), which presented less mistakes in written report summary with L2 subtitles than with L1 subtitles.

7.6.3 Students' perspectives for their language learning under bilingual subtitles condition

According to students' comments towards bilingual subtitles, they are popular for language learning in many aspects. They revealed that they benefit from bilingual subtitles through the combination of the advantages of having the subtitles in both languages.

'Bilingual subtitles can combine the advantages of both L1 subtitles and L2 subtitles.'(S55)

The students' comments above echoed Li's (2012) findings. She indicates that the advantages of bilingual subtitles combine the benefits of L1 subtitles with L2 subtitles. That is, the advantage of bilingual subtitles over L1 subtitles lies in providing L2 improvement; and the advantage of bilingual subtitles over L2 subtitles lies in offering a L1 translation for the general understanding of the video.

Also, the most popular of these benefits from bilingual subtitles, cited by students from the four classes, was to expand their vocabulary and remember the words easily. They enjoyed learning the new words in the video and finding them in the dictionary afterwards. Typical student comments include:

'Bilingual subtitles can be used to learn vocabulary. When we meet new words, we may look for the meaning from the L1 subtitles. Besides, copy it from the video and search more meanings from dictionary.'(S4)

'Bilingual subtitles are for learners who want to expand their vocabulary.'(S15)

'It can help me remember words and build up my vocabulary. The video with bilingual subtitles make words more enjoyable.to memorise' (S56)

From the affective reaction, students reflected an enjoyable and stress-free emotion when they were exposed to bilingual subtitles:

'I always have a problem when watching the video: if there were something (the plot or strange words) bothering me, I'll give up showing much interest on it. I'd rather choose to see a video without any pressure. That is to say, I like bilingual subtitles.'(S57)

The bilingual subtitles can ease students' learning and memorising of new words, also they enjoyed learning them. These findings exactly explain Nation's (2001) opinion about the word knowledge that can be obtained from the first language to lighten learners 'learning burden'. Their happiness in learning new words through bilingual subtitles reflects the fact that their learning burden is at a very low level. This is a

positive encouragement aspect for their vocabulary learning. Interestingly, there is an interaction between emotion and cognition systems. Phelps (2005) indicates that emotions via the amygdala influence cognition through modulating attention and perception. The effect (e.g. enjoyable or sad) can bias or constrain our thinking, planning, and it even influences the memories we retrieve at a particular point of time. In this case, the positive attitude towards bilingual subtitles results in active thinking and the implicit memory of the vocabulary learning.

Meanwhile, students showed that they could practise listening while they learnt the words and they could improve their reading skills as well:

'I like bilingual subtitles for practising listening and learning words at the same time.'(S58)

'It not only helps me with the meaning of some new words, but helps me improve my reading skills.'(S24)

Apart from the learning skills above, students also showed that bilingual subtitles helped them to gain translation skills and learn some local expressions:

'Bilingual subtitles help me in translation, which I would see the two lines of language and compare them. ' (S59)

'I could learn some local expressions with bilingual subtitles.'(S60)

The above findings were reflected in advanced students' perceptions in Li's (2012) conclusion. Specially, advanced students showed that bilingual subtitles helped them to learn the way of translation and to learn some local expression at the same time.

7.7 Chapter Summary

Students' open-ended questionnaire showed a dimensional picture emerging. The data revealed generally positive attitudes among students towards subtitles on their language learning. Students expressed particular desire to different types of subtitles for their language learning purposes. On the one hand, students favoured bilingual subtitles for the video understanding and the vocabulary learning. On the other hand, students preferred L2 subtitles for practising their listening skills.

Of particular preference, in the light of the data gathered by the questionnaire, was the fact that bilingual subtitles were overwhelmingly favoured by the students regarding to the video understanding (section 7.3). They reflected that bilingual subtitles were the best option for getting a global picture of the video content (De Bot, 1986; Rost, 2002) and learning specific new words at the same time. From the affective aspect, students chose bilingual subtitles for video understanding because it was convenient and easy to feel free to switch languages to get the meaning (Schmitt, 2010; Nation, 2013). It is interesting that whilst most students favoured bilingual subtitles regard to video understanding, less preference was expressed with regard to L1 subtitles or L2 subtitles. L1 subtitles were viewed as a direct way of easy understanding, which is possible for the students to focus on video plots.

In fact students did not only express an interest in bilingual subtitles regarding video understanding, but also showed their preference of bilingual subtitles regarding vocabulary learning (section 7.5). Vocabulary learning is also the focus of the main, quasi-experimental study. Students' perspectives reflected diverse levels of vocabulary knowledge, from the depth of vocabulary to the breadth of vocabulary. Regarding the depth of vocabulary, students revealed different stages of vocabulary knowledge through bilingual subtitles and some of the qualitative findings could enhance understanding and explain the quantitative findings. For example, quantitative results showed the clear advantage in post-test scores in vocabulary recognition and recall with bilingual subtitles rather than with monolingual subtitles. In terms of word recognition, students showed that they could learn the word use with the help of bilingual subtitles and they explained that bilingual subtitles facilitate them to compare the two languages to acquire the meaning and understand the content as the same time. Students' opinion not only echo Li's (2012) findings, but reflect the benefits of incidental vocabulary learning for learning a new word in the context of reading and listening (Chen, 2006). In terms of word recall, the majority of students showed that their reason for choosing bilingual subtitles was from the benefits of acquiring the meaning of the word. They further explained that bilingual subtitles could leave them with a deep impression to remember the word spelling, pronunciation, meaning and the exact word use in the video, which echoes previous study results (Li, 2012). From the quantitative findings, the advantage of bilingual subtitles was maintained in the

delayed post-test, which showed the benefits of long-term effects on vocabulary acquisition. These findings were also expressed through students' perspectives. They explained that bilingual subtitles could be an ideal assistant to help them remember the words easily, especially those words that they have seen or heard but did not know the meaning before. Although the target words in the experimental vocabulary test were new words to the students, we could refer from their perceptions towards the comparison between bilingual subtitles and monolingual subtitles that bilingual subtitles did facilitate them to remember the word in the long-term and retarded the word attrition (Schmitt, 2010).

Apart from those key elements given as the reasons for bilingual subtitles above, the benefits such as assisting students to expand word knowledge in pronunciation and spelling, to pick out the strange words and familiar ones with the word (Nation, 2001, 2005) were also reflected from the depth of vocabulary aspect. From the breadth of vocabulary, students also expressed that bilingual subtitles help them to enlarge word size (Folse, 2004; Lotto & de Groot, 1998; Qian, 1999; Oxford & Crookall, 1990) and build a connection between the two languages (Kroll & Stewart, 1994; Paivio & Desrocher, 1980). Learning local expressions (Li, 2012) and, to some extent, practise their fast reading skills (Chen, 2006) can be found in their opinions as well.

Listening comprehension improvement (section 7.4) would be a more complex language learning aspect for subtitles. On the one hand, the majority preferred L2 subtitles for improving listening skills. They revealed that, under L2 subtitles condition, they could pay attention to listening and ignore the interference from their mother tongue (V. Cook, 1991; Guillory, 1998; Tsai, 2010). Also, it is possible to raise their motivation for listening and thinking (Winke et al., 2010; Dörnyei, 2009). On the other hand, they prefer bilingual subtitles for listening comprehension for the reason that bilingual subtitles helped them to check what they had listened to, which was better for further understanding (Li, 2012). The further discussion is expanded to a discussion about whether subtitles make it easy for listening. A considerable number of students appeared to show that subtitles made their listening easy and enjoyable because subtitles helped to avoid many problems while listening, such as the unfamiliarity of words, pictures and scenes (De Bot et al., 1986; d'Ydewalle & Gielen, 1992;

d'Ydewalle & Pavakanun, 1997). Other students revealed that the effectiveness of subtitles for listening depends on the difficulty of videos, and learners' English proficiency level (Li, 2012).

In conclusion, students expressed their different perspectives towards subtitles according to their learning purposes. It might be difficult to draw an overall conclusion of types of subtitles for the language learning aspects due to the uncertainty of video complexity and learners' English proficiency level. However, from the affective filter aspect, students appear to reflect an enjoyable and stress-free emotion when they were exposed to bilingual subtitles.

Chapter 8: Conclusion

8.1 Introduction

This chapter first reviews this study in terms of the purpose of the study and contributions as well as giving the main findings and discussions. Following that, it suggests the implications for teachers in the L2 classroom. Finally, it provides limitation and future directions.

8.2 Review of the Research

This section will review the research by two aspects: the purpose of the study and contributions as well as the main findings and discussions.

8.2.1 Purpose of the study and contributions

This thesis focuses on the study of the differential effects of subtitles on second language vocabulary acquisition. The main purposes of this study were to identify the impact of differential subtitles by comparing the effects of L1 subtitles, L2 subtitles and bilingual subtitles on learners' receptive vocabulary knowledge. It intends to contribute to the literature theoretically and pedagogically. From the theoretical perspective, previous studies (Atkinson, 1993; V. Cook, 2002; Lee & Van Patten, 2003; Macaro, 2009; Macdonald, 1993; Omaggio, 2001; Scott & Fuente, 2015; Van der Walt, 1997) have critical perspectives of L1 in the L2 learning. Despite previous discussions (e.g. Duff & Polio, 1990; Macaro, 2001; Oga-Baldwin & Nakata, 2014; Nakatsukasa & Loewen, 2015) not showing a general conclusion regarding the quantity of L1 use by teachers and learners in their L2 classroom, the effectiveness of judicious use of L1 cannot be ignored in language teaching and learning settings (e.g. Hennebry et al., 2013; Hosoda, 2000; Kern, 1994; Moore, 2002; Storch & Wigglesworth, 2003). This study further demonstrated that L1 is likely to be an effective aid in L2 videos for students' receptive vocabulary recognition and vocabulary recall. However, the effectiveness of L1 in videos seemed only helpful in the foreign videos under bilingual subtitles condition rather than under L1 subtitles condition. The possible reason for this lies in that bilingual subtitles provide L2 for students' reading and listening as well as providing L1 for reading. Students receive the two channels of language from

reading which enables them to compare the two languages at the same time. Although students might spend some time reading the bilingual subtitles during their video watching, this does not distract them from the overall video understanding and on the other hand, it is possibly beneficial for their vocabulary improvement. Moreover, the qualitative findings showed that students could manage how best to focus their attention on videos and bilingual subtitles. The fact that bilingual subtitles were welcomed for students' vocabulary learning further demonstrated the effectiveness of the bilingual subtitles in vocabulary acquisition.

Of equal importance is the potential pedagogical contribution of the study. There has been an increasing emphasis on L1 as a tool for communication, and technology has played an essential role in promoting authentic communication (Crinon & Legros, 2002; Guichon & McLornan, 2008; Rost, 2002). Videos, as a normal technology in the L2 classroom, have been widely used in the L2 class for the purposes of increasing students' motivation, building confidence for students' understanding as well as providing vivid information about a foreign culture (De Bot, 1986; Tomalin & Stempleski, 1993). This study tried to find ways to facilitate teachers' teaching outcomes in receptive vocabulary acquisition. The fact that students performed better with subtitles than without in vocabulary recognition and recall is due to the positive impact of subtitles on students' language learning processing (Winke et al., 2010). Although acquiring vocabulary through subtitles is a way of incidental learning, using subtitles is likely to offer a solution to the difficulty of understanding the authentic videos for L2 beginners and intermediate level students. Bilingual subtitles are suggested to be applied in the authentic videos for the purpose of vocabulary recognition and recall acquisition. In addition to bilingual subtitles, this study provides possible principles to guide the integration of types of subtitles into teaching purposes from the findings of the experiment in terms of vocabulary acquisition. Also, this study sheds some light on the suggestions of using types of subtitles in language learning, including listening comprehension, vocabulary acquisition, as well as the combination of reading and listening in videos.

8.2.2 The main findings and discussions

This section summarises the main findings and discussions according to the research questions. It also integrates the quantitative and qualitative findings in terms of vocabulary acquisition under bilingual subtitles condition in RQ3.

RQ1: *Do subtitles (L1, L2 and bilingual) have an effect on students' receptive vocabulary knowledge recognition and recall?*

- Students showed an obvious advantage at post-test in vocabulary recognition and recall with subtitles than without. This advantage was maintained in the delayed post-test.

These findings provide powerful support for the advantages of using subtitles in the L2 classroom. Previous research (e.g. Koolstra & Beentjes, 1999; Markham et al., 2001; Bird & Williams, 2002; Guichon & McLornan, 2008; Mitterer & McQueen, 2009; Gunderson et al., 2011; Hayati & Mohmedi, 2011; Zarei & Rashvand, 2011) on this issue has been rather contrasting. However, it is clear in this study that advanced learners were likely to use a variety of strategies to take advantage of subtitles for vocabulary acquisition and they seemed to be able to balance their attention on the L2 listening and the bilingual reading in the videos. This study also appears to show that automatic reading of subtitles does not prevent the processing of the soundtrack (De Bot et al, 1986; d'Ydewalle & Pavakanun, 1997). The positive impact of subtitles on students' language learning processing can be seen from the word recognition and word recall. It is clear that videos with subtitles maintained their advantages three weeks later. Moreover, from the VKS (Wesche & Paribakht, 1996) perspective, this study appears to support Meara's (1996) suggestion which is, word knowledge could more volatile than the consecutive stages during students' vocabulary acquisition. That is, the possibility of the direct movement from stage 1 to stage 4 in this study is due to the use of subtitles in videos. This in turn probably further confirms the effectiveness of subtitles on the development of students' vocabulary knowledge. As a form of incidental learning, watching videos with subtitles appears to show that incidental learning could turn into a conscious and cognitive level when learners themselves actively engaged in and took responsibility for their own learning (Çetin & Flamand,

2012, p.3). I am not claiming that all the incidental learning leads to an explicit level of knowledge. However, watching videos with subtitles sometimes is likely to raise students' awareness to acquire new words, especially those concrete words with images or those key words that contain the key clue in the video content. In this case, to some extent, watching videos with subtitles is likely to lead to a more explicit level of knowledge.

RQ2: *Is bilingual subtitles more or less effective for developing vocabulary learning than monolingual subtitles?*

- Students showed a clear advantage in post-test score in vocabulary recognition and recall with bilingual subtitles than with monolingual subtitles. This advantage was maintained in the delayed post-test.

On the word recognition section, students performed better under L2 subtitles condition than L1 subtitles in the delayed post-test. There was no difference among monolingual subtitles at post-test. In word recall, students' score under L1 subtitles condition were higher than under the L2 subtitles condition at post-test word recall section. There was no difference among monolingual subtitles in the delayed post-test.

This study provided evidence of the advantage of bilingual subtitles in terms of the use of L1 in the L2 classroom. These advantages of students' performance under bilingual subtitles condition in word recall section appears to offer evidence to explain whether students could automatically look at both subtitles when the new words occurred (Li, 2012). That is, only looking at both subtitles at the same time can students know the word spelling and meaning in the video.

It is helpful when considering these findings to shift the bilingual subtitles itself to its impact on students' vocabulary acquisition. The results of bilingual subtitles further appeared to show that adding L1 subtitles in L2 videos could be effective for the meaning and the form of the word. Also, these findings are likely to reveal that the L1 translations are a clear and familiar shortcut for the learners (Nation, 2005), which are crucial aspects in effective definition for a word (McKeown, 1993). On the other hand, these findings reflected that L1 subtitles were less likely to improve students'

acquisition than bilingual subtitles. The reason for this is probably that only L1 subtitles cannot compare with the L2, which cannot further provide the full vocabulary information through the students' reading process. I am not claiming here that by using L1 subtitles learners cannot make gains - learners did make gains under monolingual subtitles- but the gains of vocabulary receptive knowledge with monolingual subtitles were likely less than the gains with bilingual subtitles in this study.

These findings are relevant to students' listening and reading skills when they read the subtitles (Baltova, 1999; Sweller, 1999; Zanon, 2006; Sydorenko, 2010; Vulchanova et al., 2015). With a combination of listening and reading, bilingual subtitles appear to show the positive impact on students' word recognition and recall. This appears to show that students appear to enable to balance listening and reading at the same time when they watch videos with two subtitles.

This study also provides findings to reflect the L2 lexical processing through RHM (Sunderman & Kroll, 2006) and dual coding theory (Paivio, 1980). The results appear to show that the L1 translation equivalent plays a crucial role in the process of learning L2 lexis. Additionally, with the two channels of language processing and image system channel, students could shape the bilingual memory to acquire the new words (Sydorenko, 2010). Therefore, the channels of L1 and the image system are perhaps not considered as the redundant information which would slow down students' L2 information processing and learning (Vulchanova et al., 2015). On the other hand, subtitles are likely to facilitate the speed of video understanding if students balance the three channels well.

RQ3: What are learners' perspectives on the three types (L1, L2 and bilingual) of subtitles?

Bilingual subtitles were preferred by a majority of students in respect of video understanding and vocabulary learning. L2 subtitles were favoured by more students for improving their listening comprehension. The following paragraphs will be described sorting by no subtitle, L1 subtitles, L2 subtitles and bilingual subtitles.

Videos without subtitles were used by students for their listening practise and English level testing. However, videos without subtitles were not favoured by some students, because students would lose interest.

L1 subtitles were viewed as a direct way of easy understanding, which made it possible for the students to focus on video plots. Students showed that L1 subtitles could be a form of entertainment.

The majority of students preferred L2 subtitles for improving listening skills with the reason for paying attention to listening and ignoring the interference from students' mother tongue and raising their motivation for listening and thinking.

Bilingual subtitles, to some extent, were preferred for listening comprehension for the reason that they helped the students to check what they had listened to, which was better for further understanding (Li, 2012). Bilingual subtitles were overwhelmingly favoured by the students regarding video understanding as it was convenient and easy to get the meaning. According to students' perceptions, bilingual subtitles were the best option for getting a global picture of the video content and learning specific new words at the same time.

Students also showed their preference for bilingual subtitles regarding vocabulary learning. Those benefits of bilingual subtitles are reflected in terms of remembering the word meaning and spelling; expanding word knowledge in pronunciation; practising their fast reading skills and learning the word usage and local expressions. Students' preference towards bilingual subtitles for their vocabulary acquisition was in accordance with the experimental results. The quantitative findings showed that students performed better under bilingual subtitles condition in word recognition and recall. This could be a result of their preferences. On the other hand, students' perspectives in turn, could be a reference to explain their better performance in the experiment. For example, they think bilingual subtitles made it easy for them to remember words and built up vocabulary and this makes word learning more enjoyable than monolingual subtitles.

In addition to the above findings and discussions from the research questions, there is one more key issue that needs to be discussed based on both quantitative and qualitative findings:

How do learners divide their attention on the three channels in subtitled videos?

Looking at subtitles in videos requires learners to divide their focus between three types of channels: visual images, written text and audio. It is difficult and complicated to draw a certain conclusion. I decided to make a comparison between the channels under different learning situations: visual images vs. written text, written text vs. audio, visual images vs. audio. As this study does not contain a listening test after the video showing to investigate learners' language acquisition through soundtrack, the role of the audio channel could be inferred from students' perspectives in the questionnaire.

Written text vs. Audio

The students' opinions in the qualitative data appeared to confirm that their way of reading of subtitles did not prevent the processing of the soundtrack (De Bot et al., 1986; d'Ydewalle & Pavakanun, 1997). The findings showed that students' attention can be divided between subtitles and sound according to their understanding needs. This means that students could balance their time when watching subtitles and listening automatically, which could be a supportive way of listening comprehension. In addition, this positive aspect appears to echo previous experimental studies using the eye-tracking method. Students could read subtitles automatically (d'Ydewalle & Van de Poel, 1999) and the auditory and the verbal textual information probably could be processed in parallel. Therefore, the above findings are likely to suggest that subtitles do not distract audiences' processing of auditory information input (d'Ydewalle & Gielen, 1992). A considerable number of students who completed the questionnaire appeared to confirm that subtitles made their listening easy and enjoyable because subtitles helped to avoid many problems while listening, such as the unfamiliarity of words, pictures and scenes during the video showing. Also, students used subtitles as a clue for videos' content. This perceived necessity of subtitles in videos is a daily thing in China. Students expressed that they were used to watching videos with subtitles including those videos in their mother tongue. In this

case, subtitles (such as L1 subtitles) are a necessary tool for assisting students' understanding of their L2 listening. This might not be considered as redundant information in the listening processing, which would not slow down their L2 information processing and learning. On the other hand, subtitles could facilitate the speed of video understanding if students balanced the three channels well.

Taking into account the significant advantage of bilingual subtitles for students' vocabulary knowledge acquisition, their attention while looking at the written text would be separated into two extra language channels: L1 channel and L2 channel. The qualitative findings showed that, within bilingual subtitles, students could automatically turn to looking at L1 or L2 subtitles to best suit their needs. In addition, they could choose the order of looking at differential subtitles for understanding. The advantage of having L1 subtitles also lies in giving students instant confirmation of their understanding of what was heard (Vanderplank, 1988; Grimmer, 1992). In terms of the cognitive reading overload, students' perceptions appear to show that bilingual subtitles, whether L1 or L2, will not cause cognitive overload nor will they be attributed to the limits of working memory (Baddeley, 1986; Chandler & Sweller, 1991; Sweller, 1999). The findings probably reveal that bilingual subtitles as a way to facilitate students L2 acquisition (Baltova, 1999; Sydorenko, 2001; Zanon, 2006; Vulchanova et al., 2015), might not be considered as redundant information for understanding; on the other hand, students' management of balancing ways of using bilingual subtitles shows that bilingual subtitles facilitate the speed of video understanding. In addition, the bilingual dual coding theory is likely to present a clear picture of the processing of the languages and the quantitative findings further back up the students' management in dealing with subtitles within two language channels and the audio channels.

However, according to students' perspectives for specific subtitles, there is a situation where students might have problems between listening and subtitles. In terms of listening practise, some students did mention that they preferred L2 subtitles because they were afraid that L1 subtitles or bilingual subtitles would pay their more attention on looking at L1 subtitles for getting the meaning and then ignore the sound of the video. Taking into account the purpose of listening practise, students' focuses are

probably on the auditory channel instead of visual channel to get the meaning. In this case, subtitles containing L1 (L1 subtitles or bilingual subtitles) appears to be an obstacle for their listening practise.

Visual images vs. Written text

From the quantitative findings, it is interesting to notice that the visual images are placed into the same important role as subtitles for the sake of acquiring certain content words. Students performed much better in vocabulary acquisition on the content word with its image in the video than they acquire the content word without image. This illustrates that the visual images of the content words presumably are an essential channel for acquiring second language vocabulary in an easy and quick way. A previous eye-tracking study (Bisson et al., 2014) indicates that reading subtitles still allows for the processing of image. The soundtrack did not take students' more time to process than time spent reading subtitles. Therefore, audiences appear to manage the balancing of the three channels at the same time.

In addition, the outperformance of those content words with their images on the screen is not only found under bilingual subtitles condition, but under monolingual or no subtitles condition as well. Although students under bilingual subtitles condition are found to have a better performance, students in the control group who did not have subtitles could acquire the content word with its image. This in turn shows that students' attention might rely on the images when there was a connection between the written text and images. Sometimes, it is also possible for students to acquire word knowledge through images without written text to acquire the word meaning.

Visual images vs. Audio

The Dual Coding Theory (Paivio, 1983) has demonstrated that audio and visual images belong to verbal (logogens) and nonverbal (imagens) stimuli system. A study (Paivio, 1983) has shown the activation of both systems results in better recall. In the second language learning aspect, studies (Graza, 1991; Zanon, 2006; Winke et al., 2010; Etemadi, 2012) have revealed that different channel sources were more likely to activate the two coding systems to process information than only words or only images. The two systems activation in the brain demonstrate that learners could divide their

attention to look at both of them and they are able to deal the two stimuli systems for a better second language learning.

To summarise, the above quantitative and qualitative findings demonstrated that the three input information channel could work well in second language processing. There seems not to be a certain percentage separation to measure how much attention occupied in each channel. However, from some certain circumstances, one channel or two channels could play the main role in the second language processing. For example, students might pay more attention to images and subtitles to get the content word knowledge, but this does not claim that they ignore their listening process. Students might focus on audio but switch between images and subtitles. Also, there could be another situation that students might concentrate on subtitles and audio instead of images when the images do not carry useful information. It is also possible that learners do not pay attention to audio as much as they do to subtitles.

8.3 Pedagogical Implications

Combining students' perspectives and their performance in the experiment, teachers are generally recommended to use videos with subtitles in the L2 classroom. Videos without subtitles are only likely to be considered for listening practise and language testing (Li, 2012). Specific to choose types of subtitles, it appears difficult to draw an overall conclusion of types of subtitles for the language learning aspects due to the uncertainty of video complexity and learners' English proficiency level. However, some suggestions from this study might be a consideration for university teachers. L1 subtitles could be an easy way for understanding and entertainment. L2 subtitles is suggested to be used as a way of improving listening skills. Compared to monolingual subtitles, bilingual subtitles seem to cover more aspects in language learning skills. They could be applied for listening comprehension, vocabulary acquisition as well as getting overall understanding of the video.

In terms of vocabulary acquisition with subtitles, teachers do not need to be concerned about subtitles' distraction on students' attention. It is suggested to use the subtitles to meet their teaching goals. Additionally, teachers could consider applying subtitles for students to acquire different stages of vocabulary knowledge. This enables students to jump to a high stage of vocabulary knowledge through subtitles (Meara, 1996).

Additionally, teachers are highly recommended to use bilingual subtitles for students' vocabulary acquisition. Students who managed to look at both L1 and L2 subtitles at the same time appeared to acquire the word spelling and meaning in the video. Recommendations for bilingual subtitles also lie in specific receptive vocabulary acquisition: the word recognition and word recall. Considering teaching, it would be an ideal mode to reach the teaching purposes through incidental learning (Carlisle et al., 2000). This is not only favoured by students and raises their motivation for learning, but could also be an 'easy' mode of teaching to meet the vocabulary teaching goals. Considering the natural fact of word attrition (Schmitt, 2010), teachers are suggested to plan to repeat the target words that occurred in the video in order to get a long-term memory. On the other hand, I am not claiming that monolingual subtitles should not or need not be provided; there are a number of advantages to doing so depending on different learning outcomes.

Suggestions are also provided into some detailed aspects in terms of the effectiveness of differential subtitles on individual items. The target words in the video are likely to be acquired in the short-term memory as well as in the long-term memory. Frequency and word class are worth to being considered as a factor that may affect students' vocabulary acquisition. When teachers are choosing the target words for teaching, they probably could consider the word frequency and word class factor. Words with a high frequency occurring in video and in daily life are likely to be remembered by students. Additionally, those content words containing a picture in the video are most likely to be acquired by students in long-term memory. This might not always be useful in every lesson, but it could be considered as a factor especially in the selection of videos for the purpose of vocabulary teaching.

In conclusion, it might be difficult to draw an overall conclusion of types of subtitles regarding differential language learning aspects. Teachers are recommended to consider the video complexity, learners' English proficiency level as well as lesson variables (course type, content and aim) (Hans & Zhao, 2010) to create a better learning atmosphere to meet student learning outcomes.

8.4 Limitations and Further Directions

In this section limitations of this study are first addressed, and this is followed by further directions for the future research. The first one concerns the misunderstanding of one question item (*Which type of subtitles BEST help you improve your listening comprehension?*) in questionnaire. It would certainly have been better to have given students a notice of the difference between listening comprehension and listening practise before the questionnaire. According to students' answers, some of the students regarded listening comprehension as listening practise, which resulted in different subtitles' preferences. The questionnaire was piloted and students in the pilot study did not reflect any misunderstanding on this issue. Nevertheless, students' explanations for their answers enabled me to make a distinction between listening comprehension and listening practise. This did not cause a problem for the study result, but I believe it would have been easier to explain if students focused on one certain question.

The one thing which I would certainly do differently in a repeat of this study would be to analyse the data through parametric tests. It would have been useful to further explain the data if I had equivalent groups and tests without floor or ceiling effects. Within this ideal situation, I would probably conduct more tests, such as investigating if students' proficiency level affected their post-test and delayed post-test results through ANCOVA. It would have been perfect to have these results to strengthen my study results, but this would not affect me to explore the research questions. It would be ideal to have equivalence of groups, but these kinds of complications are often a problem when working with intact classes.

While the study is located in the Chinese context, it nevertheless constitutes an important step in paving the way to further and more extensive research in this area. The future research could conduct it in learning and teaching contexts where everyday exposure to bilingual subtitles is not the norm. The purpose for this is to see if bilingual subtitles remain its advantage in the other contexts. Also, similar studies could also consider to involve non-English major students.

This study has highlighted the importance of bilingual subtitles on students' vocabulary acquisition by providing the cognitive theories to explain the importance

of L1 in students' vocabulary learning. In addition to conduct vocabulary tests to illustrate the study result, another way for the quasi-experimental research could explore students' performance by eye-tracking method. The eye-tracking method enable to explain whether students' eyes fixation concentrate on L1 subtitles or L2 subtitles when they watching bilingual subtitles. This could further confirm and explain where students' vocabulary acquisition come from.

The second future direction relates to the study timescale. My study took seven weeks in total for the data collection, and three weeks on video watching and testing. The future research would possibly plan the study for the whole semester to see students' short-term and long-term performances. Such research would investigate the impact of bilingual subtitles on students' vocabulary acquisition for the long-term memory.

This study explored the effect of differential subtitles on students' receptive vocabulary acquisition (word recognition and word recall). As the use of L1 was investigated as a useful tool for improving language skills in the L2 classroom, undoubtedly, other language skills such as listening comprehension, productive vocabulary knowledge and translation could be an interesting area to build up for further exploration.

The last but not least consideration for future direction lies in the research design. My study provided participants with one viewing of each episode with each of the kind of subtitles, total of three viewings. However, some students revealed that they thought they could acquire more new words if the video could be played more than once with each kind of subtitles. In this case, a future study could consider the design of repeated measure experiment in order to investigate if the repeated playing of videos would help to enlarge their vocabulary size.

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Appendix 1: Vocabulary baseline test

Please tick “YES” or “NO” for showing whether you have seen the word before. What do these words mean *in Chinese*?

Buckingham Palace				Windsor Castle				<u>Holyroodhouse</u>			
	YES	NO	Meaning		YES	NO	Meaning		YES	NO	Meaning
1. Splendid				1. Monument				1. Spectacular			
2. Facade				2. Fortress				2. Extinct			
3. Retreat				3. Looming				3. Abbey			
4. Proclamation				4. Intimate				4. Vibrant			
5. Encapsulate				5. Chivalry				5. Catholic			
6. Raised dais				6. Stern				6. Fragile			
7. Consort				7. Sculpture				7. Embroidery			
8. Coronation				8. Masterpiece				8. Stitch			
9. Canopy				9. Fabrics				9. Imbue			
10. Medieval				10. Melancholy				10. Turbulent			
11. Arch				11. Siege				11. Alien			
12. Backwater				12. Prophecy				12. Vulnerable			
13. Sewer				13. Knight				13. Tribe			
14. Marshy				14. Calamity				14. Troops			
15. Chase				15. Unicorn				15. Moorland			
16. Courting				16. Legacy				16. Drizzly			
17. Mulberry				17. Executed				17. Staircase			
18. Silkworms				18. Abolished				18. Eccentric			
19. Exotic				19. Assets				19. Bristles			
20. Intrepid				20. Glittering				20. Grief			
21. Duke				21. Sumptuous				21. Thrilled			
22. Mansion				22. Lit				22. Tapestry			
23. Flamboyant				23. Exuberant				23. Drafts			
24. Priggish				24. Austerity				24. Lavish			
25. Court				25. Penetrate				25. Scruffy			
26. Claret				26. Levee				26. Boar			
27. Satirist				27. Instinctively				27. Dye			
28. Dowdy				28. Restoration				28. Smitten			
29. Noble				29. Transported				29. Catastrophe			
30. Doldrums				30. Gem				30. Brutal			

Appendix 2: Updated version of post-test

Vocabulary Test (Buckingham Palace)

Please choose one sentence in which the word is used correctly and give the meaning of the word. Please write the letter of the correct sentence. (请选择单词用法正确的一个句子并在后面写出它的意思。)

Example:

What is the word in Chinese

C	Pen	Pen	
	A. He likes to eat the pen as his breakfast with butter and coffee. B. The pen grows quickly with sunshine and spring water. C. This pen writes smoothly due to its good quality.	钢笔	

What is the word in Chinese

	1. Backwater	Backwater	
	A. King George III was the first monarch who lived in this great backwater. B. It's hard to imagine that this palace spot was a quite backwater. C. This is a very practical backwater for farming in the old dynasty.		

	2. Priggish	Priggish	
	A. When you go into the priggish building, you'll feel warm. B. The King is serious and reliable and even a little bit priggish. C. The priggish and bad weather is common in Britain.		

	3. Retreat	Retreat	
	A. This is a peaceful retreat for a holiday. B. The retreat is unhappy about the expensive travelling cost. C. I quite enjoyed the retreat that you cooked for me.		

	4. Coronation	Coronation	
	A. The city became peaceful after suffering coronation. B. The whole nation celebrated the King's coronation. C. The coronation used to be a serious punishment in western countries.		

	5. Marshy	Marshy	
	A. This river made the land around marshy. B. This marshy tool can make your hands dry. C. He speaks to me with a marshy smile on his face.		

	6. Encapsulate	Encapsulate	
	A. This room is representative to encapsulate the kings' sprite. B. The man is well-known for chasing after rich women. C. The King likes to encapsulate sugar in his coffee.		

	7. Mulberry	Mulberry	
	A. James decided to create a silk industry with the help of a mulberry tree. B. You will feel relaxed when you play with the mulberry. C. The movie star looks gorgeous after putting mulberry on her face.		

	8. Duke	Duke	
	A. The Duke is fed with grass. B. I stirred the Duke into my tea. C. The Duke was blessed with a rich wife.		

	9. Intrepid	Intrepid	
	A. He is an intrepid seafarer, soldier and politician. B. I am sick of his intrepid temper when emergency occurs. C. The intrepid dullness made the princess unhappy.		

	10. Claret	Claret	
	A. The British King likes this blue crystal in his big claret. B. The British King loves this glass of cheap claret with beef. C. This great claret became the home of the Indian princess.		

	11. Flamboyant	Flamboyant	
	A. The King was showy and flamboyant. B. The King died from his flamboyant heart. C. The King favoured the flamboyant apple.		

	12. Court	Court	
	A. In the 18 th century, the King wears a court for fun. B. She dislikes showing off her court life as a Queen. C. The King likes collecting courts when he was fourteen.		

Vocabulary Test (Windsor Castle)

Please choose one sentence in which the word is used correctly and give the meaning of the word. Please write the letter of the correct sentence. (请选择单词用法正确的一个句子并在后面写出它的意思。)

Example:

C

Pen

- A. He likes to eat the pen as his breakfast with butter and coffee.
 B. The pen grows quickly with sunshine and spring water.
 C. This pen writes smoothly due to its good quality.

Pen

钢笔

What is the word in Chinese

1. Fortress

- A. An ancient medieval fortress can still be found in Edinburgh.
 B. The fortress in Edinburgh is famous for its academic competency.
 C. The old King loves to eat the juicy and mouth-watering fortress.

Fortress

What is the word in Chinese

2. Melancholy

- A. He was captured his air of melancholy in this famous picture.
 B. He has to wear children's shoes because of his melancholy feet.
 C. This melancholy water is good for the health because of its vitamins.

Melancholy

3. Siege

- A. The castle is a home to medieval siege and romance.
 B. The castle's siege is collected in the museum now.
 C. The castle backdoor is the only way out under siege.

Siege

4. Stern

- A. The stern castle walls enclosed the princess.
 B. The King enjoyed the stern and tasty juice.
 C. The groups of tourists enjoyed the stern community.

Stern

5. Gem

- A. She likes listening to the gem when she is dancing.
 B. It is fun when we eat gems together at Christmas.
 C. She has a jewellery box which is full of gems.

Gem

6. Austerity

- A. The austerity of my grandpa lifestyle is not popular now.
 B. I use my electric austerity to brush my teeth every morning.
 C. The austerity is a useful tool in this modern kitchen.

Austerity

7. Exuberant

- A. This old picture is exuberant rather than restrained.
 B. You will have a exuberant experience when you are fishing.
 C. The celebrity looks sad after she wears the exuberant pearl.

Exuberant

8. Sumptuous

- A. The knight felt no fear in the sumptuous battle.
 B. The king created a sumptuous palace within the castle.
 C. The sumptuous neck ache was experienced by the youth.

Sumptuous

9. Lit

- A. He arrived at the airport in order to solve the lit problem.
 B. He has to wear children's shoes because of his lit feet.
 C. He changes the stones into glass to make the room extremely lit.

Lit

10. Levee

- A. The King would perform a levee in the morning in his private room.
 B. The King likes to live in the levee every night.
 C. This great levee founded in 1953 for the education of young women

Levee

11. Restoration

- A. The restoration of the tree in front of the castle makes the King happy.
 B. The restoration song is the Queen's favourite in her childhood.
 C. After two years, the King announced the restoration of the monarchy.

Restoration

12. Prophecy

- A. The prophecy used to live in this old castle in 19th century.
 B. The Queen looks beautiful when she wears the prophecy.
 C. The old castle prophecy would soon become a reality.

Prophecy

Vocabulary Test (Holywoodhouse)

Please choose one sentence in which the word is used correctly and give the meaning of the word. Please write the letter of the correct sentence. (请选择单词用法正确的一个句子并在后面写出它的意思。)

Example:

C

Pen

What is the word in Chinese

Pen

- A. He likes to eat the pen as his breakfast with butter and coffee.
 B. The pen grows quickly with sunshine and spring water.
 C. This pen writes smoothly due to its good quality.

钢笔

What is the word in Chinese

Abbey

1. Abbey

- A. This royal palace sits alongside the ancient abbey.
 B. The abbey is a political system in western countries governance.
 C. This abbey is famous for its ship building.

2. Scruffy

- A. This nation was rather a scruffy kingdom.
 B. She quite enjoyed the scruffy rice with the soup.
 C. She is a scruffy, clever woman among her friends.

Scruffy

3. Embroidery

- A. This is peaceful embroidery for holiday especially in winter.
 B. Embroidery was a handmade activity for women of a certain class
 C. In the ancient time, embroidery is normal people's favourite food.

Embroidery

4. Imbue

- A. The boy imbued his glasses and turned to the blackboard.
 B. The women imbued the designs in handcraft with meaning.
 C. She can't imbue to the next step until she finished the exam.

Imbue

5. Turbulent

- A. The bright sunshine made the land turbulent to grow crops.
 B. This picture is so turbulent that she buys it without change.
 C. Lucy had a turbulent life when her true name was exposed.

Turbulent

6. Smitten

- A. She was a foreigner in an smitten land.
 B. She was smitten with the good looking man.
 C. The dirty words came from his smitten mouth.

Smitten

7. Vulnerable

Vulnerable

- A. This old picture is exuberant rather than restrained.
 B. You will have a exuberant experience when you are fishing.
 C. The celebrity looks sad after she wears the exuberant pearl.

8. Moorland

Moorland

- A. The moorland is fed with grass and is hunted for its tusks (长牙).
 B. She was happy when she wears the comfortable moorland.
 C. The hills and moorlands make this picturesque setting.

9. Drizzly

Drizzly

- A. The climate in the north of England is rather drizzly.
 B. The drizzly building disappeared quickly.
 C. The castle became the home of the drizzly princess.

10. Lavish

Lavish

- A. The lavish and bad weather is common in Scotland.
 B. These rooms were far more lavish than in most castles in Scotland.
 C. The King favoured the lavish soldiers because of their loyalty.

11. Tapestry

Tapestry

- A. In the 19th century, the tapestry was independent.
 B. The queen lived a happy life in the tapestries.
 C. The thick tapestries on the wall is to keep out cold drafts.

12. Boar

Boar

- A. The shot wild boar was brought over from Britain.
 B. The boars suddenly made the window shiny.
 C. The soldiers use boars to get water in the ancient time.

Appendix 3: Questionnaire

An investigation of the impact of L1, L2 and L1+L2 subtitles on students' vocabulary acquisition in L2 classroom

Please circle one option with which you agree. (When this questionnaire refers to L1 subtitles, it means Chinese subtitles; L2 subtitles refers to English subtitles; L1+L2 subtitles refers to bilingual Chinese subtitles and English subtitles.)

1. Which type of subtitles BEST help you **understand** the video episodes? Why? / How do they help?

L1 L2 L1+L2

2. Which type of subtitles BEST help you improve your **listening comprehension**? (If different subtitles fulfill different functions, please explain.)

L1 L2 L1+L2

3. Does having subtitles make any difference to how easy or difficult it is to listen? Why?

4. Which type of subtitles is MOST useful for your **vocabulary learning**? Why? / How do they help?

(If different subtitles fulfill different functions, please explain.)

L1 L2 L1+L2

5. What will you use the different types of subtitles for developing different aspects of language learning?

L1 subtitles:

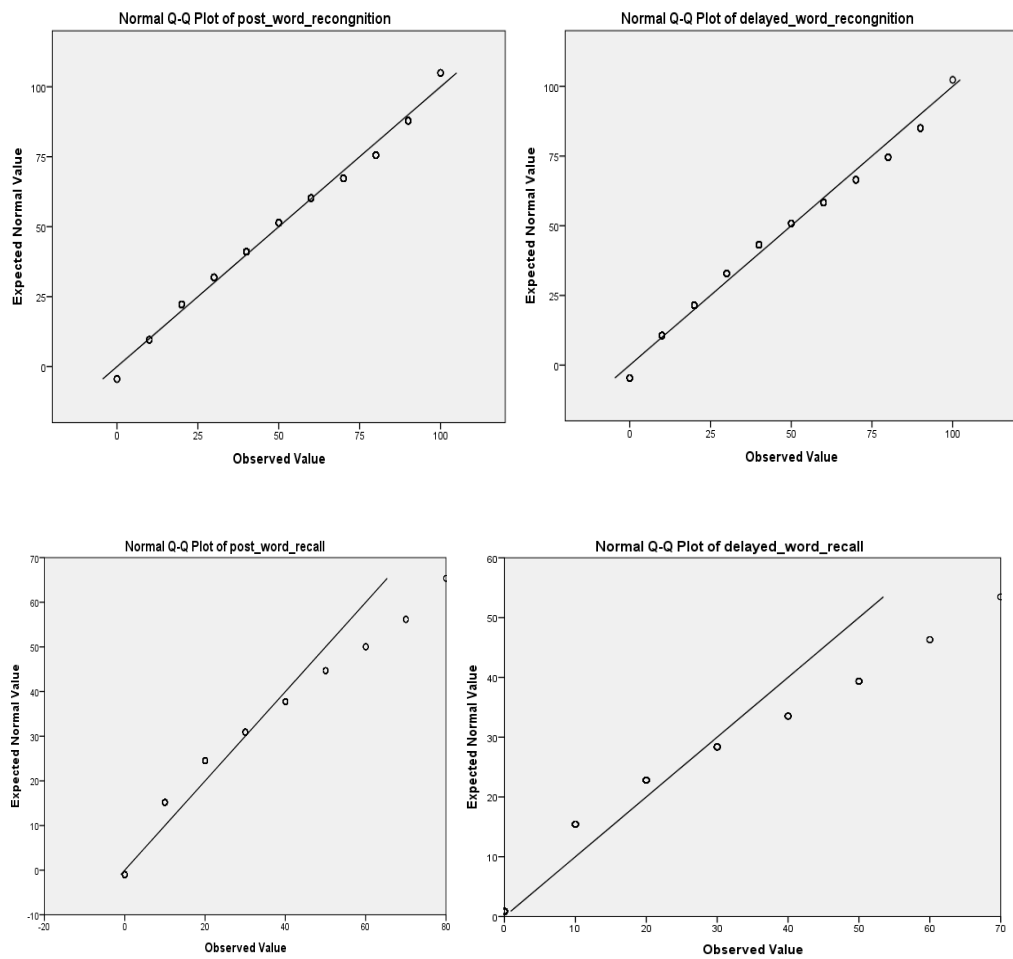
L2 subtitles:

L1+L2 subtitles:

No subtitles:

Thanks for your participation.

Appendix 4: Tests of normality for post-test and delayed post-test (Normal Q-Q plot)



Appendix 5: Test of homogeneity of variance

Test of homogeneity of variance grouping by subtitles and no subtitles at post-test and delayed post-test

					Variance ratio
	Levene Statistic	df1	df2	Sig.	
post_word_recognition	14.825	1	336	.000	2.08
post_word_recall	98.663	1	336	.000	18.55
delayed_word_recognition	36.346	1	336	.000	3.10
delayed_word_recall	116.231	1	336	.000	21.70

Test of homogeneity of variance grouping by L1 subtitles, L2 subtitles and bilingual

subtitles at post-test and delayed post-test

					Variance ratio
	Levene Statistic	df1	df2	Sig.	
post_word_recognition	5.419	2	245	.005	2.08
post_word_recall	10.979	2	245	.000	2.76
delayed_word_recognition	1.258	2	245	.286	1.29
delayed_word_recall	19.261	2	245	.000	3.32

Appendix 6: Consent form

Participants Consent Form

Researcher: MINGYUE LI

Supervisor: Dr. Cathy Benson; Dr. Mairin Hennebry

Institution: Moray House School of Education Ethics Committee, University of Edinburgh

Introduction

I am a postgraduate student from Moray House School of Education, University of Edinburgh. For my thesis, I am investigating the use of subtitles (L1, L2 and L1+L2) in videos in second language classroom. It would be deeply appreciated if you would be willing to participate. The information in this document aims at helping you decide whether or not to take part.

Purpose of the research

I attempt to investigate your performance in the vocabulary test after watching the videos with different types of subtitles and to have your attitudes towards different types of subtitles in terms of video understanding, listening comprehension and vocabulary learning etc. by questionnaire. Your teachers' purposes for using subtitles (L1, L2 and L1+L2) in videos in the second language classrooms will also be explored by interviews.

Procedures

Date	Procedure	Experimental group			Control group
		Class A	Class B	Class C	Class D
March 2013	Pre-test	TEM-4 Test			
Week 1 (Sept. 2013)		Vocabulary baseline test			
Week 2	Film 1+ vocabulary post-test 1	L1 subtitles	L2 subtitles	L1+L2 subtitles	No subtitles
Week 3	Film 2+ vocabulary post-test 2	L2 subtitles	L1+L2 subtitles	L1 subtitles	No subtitles
Week 4	Film 3+ vocabulary post-test3+questinnaire	L1+L2 subtitles	L1 subtitles	L2 subtitles	No subtitles
Week 5	Delayed vocabulary post-test for film 1				
Week 6	Delayed vocabulary post-test for film 2				
Week 7	Delayed vocabulary post-test for film 3				

Confidentiality and Anonymity

Your answers are confidential and will thus only be viewed by the research team (my supervisor Dr. Cathy Benson and Dr. Mairin Hennebry and me). And you will remain anonymous throughout the dissertation process. If you would like to ask question before deciding to take part, please email or telephone me according to the contact information below. Data documents will be protected in my study place. I will send a copy of findings to you after the research report is finished.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice as to whether to opt in or out. If you choose not to participate, it would not have any negative effects on you. You do not have to take part if the procedures involved in the research render you uncomfortable.

Risks

For the teachers: there is a risk that you may share some personal or confidential information by chance when you are recorded. If you feel uncomfortable at any point, you are welcome to withdraw at any time or to ask us not to use the recordings we have made.

For the students: There is a risk that your test scores will be compared with other anonymously, and might be picked up in the data analysis procedure anonymously, If you feel uncomfortable at any point, you are welcome to withdraw at any time or to ask us not to use your data we have made.

Dissemination of findings

Findings from my research will be used for my thesis. They might also be used in conference presentations and publications.

If you would like any further information do please get in touch.

Yours sincerely

MINGYUE LI

have read this form and accept to participate in the audio-recordings.

Researchers' signatures:

Participant's signature:

Researches' detailed information:

Name: MINGYUE LI

Title: postgraduate student

Department: Moray House

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Appendix 7: Table of Spearman's correlation

Spearman's correlation between English proficiency scores and post-test scores/delayed post-test under no subtitles condition

			Proficiency of total score
No subtitles	word recognition	Correlation Coefficient	-.150
	at post-test	Sig. (2-tailed)	.160
		N	89
	word recall	Correlation Coefficient	-.154
	at post-test	Sig. (2-tailed)	.151
		N	89
	word recognition	Correlation Coefficient	.014
	at delayed post-test	Sig. (2-tailed)	.895
		N	89
	word recall	Correlation Coefficient	.014
	at delayed post-test	Sig. (2-tailed)	.894
		N	89