EFL/ESL Vocabulary Teaching Strategies: The Effects of Bottom-Up and Top-Down Approaches on the Acquisition of EFL/ESL Vocabulary by Chinese University Students

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MA (Applied Linguistics)

Thesis submitted for the degree of Doctor of Philosophy in Applied Linguistics

The University of Newcastle, Australia

October, 2013
I hereby certify that this thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my thesis, when deposited in the Library of the University of Newcastle, being made available for loan and photocopying subject to the provisions of the Copyright Act 1968.

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Acknowledgements

This thesis was undertaken with a University of Newcastle International Postgraduate Research Scholarship (UNIPRS).

The journey of completing my PhD at The University of Newcastle, Australia, has been a precious, meaningful and rewarding time in my life. I would like to give my thanks in an official form to those great people to whom I am indebted to for completing this work. I have borne their kindness in mind throughout the journey of my study and will remember them forever. I have to admit that the number of those people is much greater than the scope of the following few lines and, I apologise to all those who deserve my heartfelt thankfulness.

First and foremost, I owe my principal supervisor and mentor, Dr Christo Moskovsky, a profound intellectual and academic debt. I am extremely grateful for his eternal support, expertise, full commitment, and persistent encouragement without which it would have been impossible for this work to be accomplished. His supervision and influence is evident in each line of this thesis, and will extend to shape my academic career and even my entire life. Based on Chinese traditional culture, it is considered that “一日为师，终生为父” (once a real teacher, an intellectual father for life). He definitely deserves this cultural title from the bottom of my heart.

My sincere gratitude also goes to other two co-supervisors, — Dr Alan Libert and Associate Professor Seamus Fagan, for their assistance in many different aspects, including design, origination, and presentation of the thesis. I have benefited
tremendously from Dr Alan Libert’s academic writing course, which he developed during my PhD candidature.

Particularly, I extend my heartfelt thanks to Dr Jean Harkins for her precious advice with regard to the early stages of my study. Many congenial discussions on the field of language teaching triggered my motivation and inspiration to undertake research in this field. She also provided very valuable suggestions for both the ethics application of this study and the application of research scholarship, which ensured my project progressed so smoothly.

I am also deeply indebted to Dr Silvia Ratcheva for her strong support in analysing the research data. She contributed more than what I can express in words with her thorough statistical knowledge and unique humour and kindness. Without her precious suggestions and input, completion of the data analysis would have been a nightmare.

I have also benefited immensely from other colleagues in the Linguistics Department, The University of Newcastle, during my study period. In particular, I wish to thank Dr Catriona Malau for her friendship, support and assistance in many other ways.

In addition, I have to express my appreciation to many top figures in the area of L2 vocabulary research, such as Paul Nation, Averil Coxhead, Norbert Chmitt, Nan Jiang, Qing Ma, etc., whose previous research and theories have shaped and inspired my current research design.

My special thanks and gratitude also go to Associate Professor Zhang Ji Meng, who was a visiting scholar from China during my studies. Her academic insight gave me the inspiration to refine the discussion and concluding chapters.

I am also grateful to many of my friends in Australia, including Jim Yip who invited me to his Wingchun Clinic, which helps both my body and mind tremendously; Dr Ken
Taylor who taught me how to play a keyboard; Rob Lewis who advised me how to drive in Australia, and many others. Without them my life in Australia would not have been so colourful.

Finally, I wish to thank all my family members, my father and mother, my younger brother, and my wife, for their eternal love, patience, and blessings. Particularly, I wish to say thank you to my little angel daughter, who was born in the final stage of my PhD study, which made my productivity more meaningful.
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Abstract

While there has been some research on the role of bottom-up and top-down processing in the learning of a second/foreign language, very little attention has been given to bottom-up and top-down instructional approaches to English academic vocabulary teaching. This dissertation presents a quasi-experimental study designed to assess the relative effectiveness of two modes of academic English vocabulary instruction, bottom-up and top-down, for Chinese university students (N = 120).

For the purposes of the research, the participants were divided into two groups (bottom-up and top-down) and were exposed to 48 hours of explicit vocabulary instruction over eight weeks. The groups differed in that each was only exposed to one method of vocabulary teaching, either bottom-up or top-down. Two dimensions of the participants’ academic English vocabulary development (reception and controlled production) were measured quantitatively with two different vocabulary tests, Academic Vocabulary Size Test (AVST) and Controlled-Productive Knowledge Test (CPKT), administered at the start (T1) and at the end (T2) of the treatment.

The analyses of the test results revealed that both groups made significant gains in the attainment of English academic vocabulary, both in terms of vocabulary size and controlled-productive vocabulary knowledge. However, the study’s findings indicate that the bottom-up group slightly outperformed the top-down one at T2, on both vocabulary size and controlled-productive knowledge, for this population of English as a Second Foreign Language (EFL) learners.

A range of factors are likely to have been responsible for this outcome, including the nature of L2 lexical acquisition, learners’ proficiency levels, and the specifics of the Chinese cultural and educational tradition. Additionally, it appears that the innovative
EFL academic vocabulary course that was specifically constructed for the purposes of the study was quite effective in achieving good learning outcomes, in both the two instructional approaches. These findings also reinforce the argument for the effectiveness of explicit vocabulary teaching, as has been reported in relevant literature.
Chapter 1: Background

1.1 Introduction

Second Language (SL) vocabulary acquisition is a critical part of the process of attaining a new language, and it is not surprising that SL researchers have given it a considerable amount of attention, as evidenced by a range of influential publications devoted specifically to this issue (e.g. Bogaards & Laufer, 2004; Nation, 2008; Schimitt & McCarthy, 2004; Singleton, 1999).

Bogaards and Laufer (2004) categorise the relevant research by theme, as follows:

a. the pattern of vocabulary learning development;
b. the definition of vocabulary knowledge, such as receptive and productive vocabulary knowledge;
c. the distinction between vocabulary knowledge and use;
d. the relationship between vocabulary knowledge and language proficiency;
e. the role of word frequency in vocabulary learning;
f. the learning strategies and teaching strategies employed in vocabulary learning; and
g. the techniques of vocabulary learning.

According to Nation and Coxhead (2013), in the last ten years there has been remarkable progress in research on vocabulary. The current trends in vocabulary studies cover areas such as multiword units, computer-assisted vocabulary learning, vocabulary learning activities and vocabulary testing. Undeniably, previous research has considered a number of important dimensions of L2 vocabulary acquisition, including some issues regarding Chinese English learners (e.g. Ma, 2009; Wang, 2010). Surprisingly, there is
still very limited experimental research on what vocabulary approaches are efficient for Chinese university students learning English for academic purposes. It is estimated that there are more than 300 million learners of English in the People’s Republic of China. Without sound research to address this target population, both the theory and practice of vocabulary acquisition will not be complete.

The current study goes beyond the previous research on vocabulary by testing experimentally the effectiveness of two new vocabulary courses (bottom-up and top-down approaches). It focused on two dimensions of academic vocabulary knowledge: receptive knowledge and controlled-productive ability. The course design used in the current research was inspired by a range of recent scholarship as well as a range of online resources. It seeks to find an answer to the question of which teaching approach is more effective in this particular population when the original course design is applied.

The current chapter introduces the field of L2 vocabulary instruction and provides background information on vocabulary teaching in China. It also discusses the significance of conducting this research. In particular, it outlines the research objectives and research questions.

The second chapter provides a review of the previous literature on L2 vocabulary and explains how existing scholarship informed and inspired the current research. It involves a brief outline of the methodology and approaches in language teaching and vocabulary teaching; vocabulary knowledge and development; the components of a vocabulary course and bottom-up and top-down processing in vocabulary teaching. This chapter also provides a comprehensive review of previous research on both vocabulary teaching and the bottom-up and top-down approaches. It concludes with a discussion of
the implications for vocabulary teaching and research by drawing together the previous scholarship.

The third chapter provides a detailed description of the research design and methodology. It first describes how participants were recruited and how they were allocated to the two research groups in this quasi-experimental design. Then the research instruments (such as the pre and post test) are presented and the data collection process is detailed. Finally, the chapter describes the syllabus and the teaching methodologies deployed for vocabulary instruction in the research groups.

Chapter 4 analyses the research data from the pre and post tests of the bottom-up and top-down groups. The test scores collected based on the current design were analysed using SPSS (Statistical Package for the Social Sciences, version 2.0, 2012) in order to answer the research questions and hypotheses introduced in Chapter 1. Both the preliminary and main analytical procedures are provided in details next and finally, the research findings are reported and compared to the research questions.

Chapter 5 provides a comprehensive interpretation and discussion of the research results reported in Chapter 4, in relation to both the theory and research findings on vocabulary teaching. It addresses the differences between the bottom-up and top-down approaches before commenting on the role of the new vocabulary course design.

The concluding chapter summarises the findings of the current study and provides some of the contributions and implications of the thesis for both vocabulary teaching and research. Some unavoidable limitations which occurred during this study are also discussed before future considerations are provided. In particular, this chapter proposes an L2 teaching model titled *Eclectic Dynamic Language Acquisition Model: A Bottom-up and Top-down Approach* by pulling together the advantages of previous scholarship
and the findings of the current research. The Model is presented to assist in providing guidance to both L2 teachers and researchers.

1.2 Statement of the Problem

For the past two decades there has been increasing debate on the relative merits of bottom-up and top-down approaches to the teaching and learning of non-primary languages. According to Anderson and Lynch (1988), Lynch (2010), and Rost (1990), the discussion has dealt mainly with reading comprehension and it has been significant in the literature on listening comprehension as well. However, the effects of the bottom-up and top-down approaches on the acquisition of receptive and productive vocabulary knowledge have received limited attention. It is worth emphasising that this approach has not been studied experimentally in relation to Chinese learners of English as a Second/Foreign Language (EFL). The question of which of the two approaches works better for vocabulary acquisition is clearly significant for language pedagogy and has obvious implications for teaching and learning strategies (Chaudron & Richards, 1986). There is an ongoing debate on which of the two approaches is more effective for SL teaching and learning, with strong proponents of both approaches. In light of this, it seems that there is a clear need for a research study designed to experimentally compare the relative effectiveness of the two teaching approaches. Chapter 2 will provide a comprehensive review in relation to the concept of bottom-up and top-down processing and the relevant research findings.

1.3 Research Objectives

The aim of the proposed research was to investigate the effects of the bottom-up and top-down teaching approaches to the acquisition of English academic vocabulary by Chinese university students. The research attempted to critically review and evaluate existing vocabulary teaching theories and approaches, design a specific innovative
syllabus that addresses the two approaches, collect data to test their impacts and finally provide insights on vocabulary teaching and research for the future.

To realise the research objectives, the research attempted to answer the following two questions:

1. What is the effect of the bottom-up approach on Chinese learners’ acquisition of English academic vocabulary?
2. What is the effect of the top-down approach on Chinese learners’ acquisition of English academic vocabulary?

These two research questions were formulated as three hypotheses:

1. **Hypothesis one:** A top-down approach produces a larger increase in learners’ receptive academic vocabulary knowledge than a bottom-up approach.
2. **Hypothesis two:** A top-down approach produces a larger increase in learners’ productive academic vocabulary knowledge than a bottom-up approach.
3. **Hypothesis three:** The growth of productive vocabulary knowledge is larger than that of receptive academic vocabulary knowledge when a top-down approach is employed.

1.4 **Significance of the Study**

The current study investigated experimentally which instructional approaches (bottom-up and top-down) were more effective in inducing a substantial increase in the participants’ academic English vocabulary knowledge and the value of a new course design. The research is significant in a number of ways.
Firstly, it can be expected to make a substantial contribution to L2 vocabulary teaching in China and elsewhere. This study is an original approach to the study of L2 vocabulary teaching, therefore it expected to provide valuable new theoretical and practical findings in relation to processing management, the nature of L2 development stages, course design, etc.

Secondly, it is worth emphasising that the current innovative course design will facilitate both course development and teaching practices in the future, particularly in the Chinese educational context. It will function as an example or guidance to future L2 teachers and material designers.

Additionally, although the current study was specifically designed to address issues of L2 vocabulary instruction, it is also expected to shed some light on L2 teaching in general, such as in instruction in the other major language skills (reading, listening, writing, speaking and translating). The future development of ELT in China, and globally, will be served with a more holistic teaching model in The Eclectic Dynamic Language Acquisition Model: a Bottom-up and Top-down Approach as proposed in Chapter 6.

It is also significant to emphasise that the current study is, to the best of my knowledge, the first to consider the relative effectiveness of these two approaches in relation to vocabulary instruction. Notably, it is also the first one to examine this issue within the Chinese context.
1.5 Vocabulary Teaching in China

1.5.1 English as a Second Language in China

English has become the dominant language of international trade (Davies, 2003) and is used by over two billion people around the world (Graddol, 2006). China is one of the significant global trading partners of Western countries within the world market (Hu, 2002a), and houses the largest population of EFL learners, possibly as many as 300 million, or even more (Crystal, 2008; Yong & Campbell, 1995). With the Chinese people’s growing commitment to learning English, ELT has come to play a paramount role in the commercial and socio-cultural development of China. One reason for this is that by augmenting the level of English proficiency among the Chinese public, China has in essence transformed conversancy in English into a national resource in its own right (Hu 2002a; 2005c).

English education is now regarded by the Chinese government as a vital component of the development and modernisation of the country (Aadmson & Morris, 1997; Ross, 1992). From another perspective, the acquisition of English should undoubtedly be acknowledged as a potential and, in most cases, a real benefit at a personal level. The larger and more widespread the population of fluent Chinese speakers of English, the more secure English speaking tourists from around the globe feel in visiting China for the first time and in making return visits. The revenue from increased tourism affords the general public greater “access to both material resources and ‘symbolic capital’ for the betterment of personal well-being” (Hu, 2004, p. 26). Chinese people’s fluency in English is in essence a passport to better education, a kind of intellectual credit card to access better professional and social opportunities, and ultimately, a higher standard of living (Hu, 2002a; 2003; 2004; Jiang, 2003). Being able to communicate more easily
with visitors provides an environment within which Chinese citizens can develop business opportunities, research collaborations and lifelong friendships.

1.5.2 The Role of Vocabulary Knowledge

The importance of vocabulary acquisition, as part of the overall attainment of the target language, cannot be overestimated. As Gass (1988) points out, vocabulary errors constitute a major problem for learners, much more so than grammatical errors, since vocabulary errors can cause miscommunication. Hatch (1983, p. 74) states: “when our first goal is communication, when we have little of the new language at our command, it is the lexicon that is crucial … the words … will make basic communication possible.” Many also emphasise the significance of vocabulary knowledge. Insufficient vocabulary size is a sudden shock experienced by a large number of L2 learners (Keller, 1975; Twaddell, 1973). Hirsh and Coxhead (2009, p. 5) state, “vocabulary is central to understanding and using language at any level”. Nation (1990) claims that vocabulary size, particularly academic vocabulary size, is an important indicator of the ability of SL learners to achieve academic success. According to Anderson and Freebody (1981), vocabulary is of paramount significance, because lexical development and academic reading comprehension are linked together. Vocabulary size is also a strong predictor of academic achievement and success in language ability (Laufer, 1997; Saville-Torike, 1984; Laufer & Goldstein, 2004).

The issue of vocabulary competence in EFL seems to be of particular relevance in the Chinese educational context. The Chinese College English Syllabus (2013) specifies 4,200 English words as the minimum operational vocabulary knowledge which university students must have, although some experts (e.g. Huang, 2004; Nation, 2006) have suggested that this number may be too low. In reality, very few Chinese students
achieve even this relatively modest level of competence in EFL vocabulary (Frederic, 1997).

1.5.3 The Current Situation of Vocabulary Teaching in China

According to Ma (2009), the primary task for university students in China is to develop their vocabulary proficiency in English. This is because most English grammatical knowledge has been gained in secondary school. Ma (p. 276) reviews the typical procedures of English lessons in China:

1. Students are required to preview each lesson before attending each English class. This includes familiarising themselves with the vocabulary list of the lesson, listening to recordings of the text and reading the text.

2. During the class, students may be asked to read each word. Teachers may explain their meanings, usage and provide some example sentences. Students may need to read or recite example sentences aloud to make sure that they pronounce the sentences correctly.

3. After that, teachers start explaining the text in both Chinese and English and ask comprehension questions related to the text. The teacher will pay specific attention to the so-called ‘language points’ in China, such as usage and grammar.

4. Finally, the teacher will lead the students through related exercises e.g. vocabulary usage, grammar and translation.

According to Ma, English teachers will dominate the majority of each class, without many interactive activities, since English teachers have to meet the syllabus requirements within the course calendar.
Ma (2009) conducted a survey on vocabulary teaching and learning at China Three Gorges University. The survey found that most English teachers in China believe that vocabulary knowledge is developed by extensive reading, regarding explicit teaching and learning as only a complement. Furthermore, they felt that learning vocabulary is the students’ own responsibility. Most of the teachers preferred traditional approaches such as repetition and vocabulary exercises to communicative approaches or computer assisted vocabulary learning (CAVL). Ma states that the students lack a systematic approach to learning vocabulary. They encounter new lexical items mainly in textbooks and find their meaning in a bilingual dictionary, but they do not review and use words productively in interactive activities. Additionally, according to Ma (2009) and Gan et al. (2004), rote learning is the most valued learning strategy for both successful and unsuccessful English learners in Chinese universities, although the former combine other strategies like reviewing, reading and using words productively, while the latter do rote learning only. Therefore, an innovative vocabulary course to fit this population is essential.
Chapter 2: Literature Review

2.1 Introduction

Second language teaching has over the past 100 years become a global industry which nowadays involves hundreds of millions of learners. The vast majority of these have naturally been keen to attain substantial knowledge in the SL relatively quickly, and this has driven research and innovation in the field of language teaching, with a special focus on what are effective modes of SL instruction. In recent years there has been an increased recognition that vocabulary teaching is an essential part of instruction, and now there is already a solid body of literature on issues of vocabulary teaching (Nation 2001; Schmitt, 2000; Sonbul & Schmitt 2010, among many others). This review provides a comprehensive summary of the literature dealing with vocabulary teaching, including the question of how language learners process new language input, with special reference to the two principal types of processing, bottom-up and top-down.

The review has been divided into five sections, based on the following literature map:

1. Methodology and approaches in language and vocabulary teaching
   - Methodology and approaches in language teaching
   - Methodology and approaches in vocabulary teaching
2. Vocabulary knowledge and development
   - Vocabulary knowledge
   - Vocabulary development
3. The components of a vocabulary course
4. Language processing
   - Levelt’s model (1989) of language process
• Bottom-up and top-down processing in vocabulary teaching

5. Relevant research

• Research on vocabulary teaching

• Research on bottom-up and top-down approaches

6. Implications for vocabulary teaching and research

The section on methodology and approaches deals with the historical understanding of these terms in the profession, the pedagogical options for language teaching, and how vocabulary teaching has advanced in an era when language teaching involves a vast number of teaching contexts, purposes, students’ needs, learning styles and affective traits (Brown, 2008). The section on vocabulary knowledge and development considers the dimensions of vocabulary knowledge and how it is acquired. The next section presents Nation’s (2008) idea of the essential components of a vocabulary course, and examines issues such as teaching goals, needs analyses, environment analysis, teaching principles, teaching content and sequence, format and presentation, monitoring and assessment, and course evaluation. The section on language process first introduces Levelt’s (1989) model of speech production as a theoretical framework, then considers the conceptualisation of bottom-up and top-down processing, and finally discusses the rationale for implementing such approaches in academic vocabulary teaching. The review concludes with the implications that this body of literature holds for future research.

2.2 Approaches and Methods in Language Teaching

The concept of method is central to the teaching of non-primary languages (as it is to teaching generally). A method can be described as a general plan for a systematic presentation of language in the classroom, providing a set of detailed prescriptions in relation to what is to be taught and in what order, including clearly defined teaching
techniques, learning tasks and activities (Anthony, 1963; Brown, 2008; Richards & Rodgers, 2010). Methods are typically rooted in a more general approach to language teaching, one which is essentially a set of general suppositions about the nature of language, teaching and learning. The past century saw the emergence of a variety of different approaches, such as:

- Communicative language teaching
- Competency-based language teaching
- Content-based language teaching
- Cooperative learning
- Lexical approaches
- Multiple intelligences
- The natural approach
- Neurolinguistic approaches
- Task-based language teaching
- Whole language

Informally, an *approach* can be seen as a form of teaching philosophy comprising fundamental beliefs about what is *good* and what is *bad* in relation to teaching, a set of basic principles of teaching (Richards & Rodgers, 2010). The concept of *approach* therefore, seems to be broader than *method*; an approach does not by itself specify a precise set of teaching or learning procedures to be applied in actual teaching. As a consequence, *approaches* are often characterised by different interpretations as to how teaching principles should be applied, and allow for a considerable degree of individual variation in actual teaching practices.
Methods, on the other hand, as a rule, involve a very clearly defined set of teaching procedures which are typically based on a specific theory of language and language learning. As Richards and Rodgers (2010, p. 245) state, a method contains “detailed specifications of content, roles of teachers and learners, and teaching procedures and techniques … it has generally little scope for individual interpretation”. Over the course of the previous century, SL experts devoted a considerable amount of time and energy to developing new methodologies for teaching second/foreign languages, such as the following:

- Audiolingualism
- Counselling–learning
- Situational language teaching
- The silent way
- Suggestopedia
- Total physical response

In each case the construction of a new method was driven by the desire to enable learners to attain a high level of competence in a new language relatively quickly and easily. It would be fair to say, that while some of these methods may have been marginally more successful than others, in terms of the outcomes they have produced, none has been able to achieve the breakthrough results that had been hoped for.

There is little doubt that a wide range of factors is responsible for the relative lack of achievement in the field of SL learning. As far as teaching methods are concerned, experts have pointed out that methods are often too over-generalised to provide effective solutions to all classroom contexts, and that while they can be very distinctive in the initial stages of instruction they often become indistinguishable in the end.
Furthermore, many methods are based on assumptions which have not been verified via research, and it is recognised that methods are sometimes promoted because of vested interests, not because they have produced outstanding results (Kumaravadivelu, 2009; Richards & Renandya, 2008).

This has led SL researchers and language experts to re-evaluate their understanding of the role that highly specialised methodologies play in the teaching of non-primary languages. There is a growing conviction that specialised methodology does not have the capacity, of and in itself, to guarantee high learning outcomes for all learners, and that language teaching needs to go “beyond approaches and methods” (Richards & Rodgers, 2010, p. 244). This view is aptly captured by Nunan’s (1991, p. 228) assertion:

It has been realised that there never was and probably never will be a method for all, and the focus in recent years has been on the development of classroom tasks and activities which are consonant with what we know about second language acquisition, and which are also in keeping with the dynamics of the classroom itself.

In line with this, Brown (2008, p. 9) has argued that methods are not as relevant to language teaching as they used to be, suggesting that we are now in what he calls the “post-method era”. Brown also argues that contemporary language teaching should involve “principled approaches”, and proposes the twelve teaching principles below, in addition to a sophisticated process of diagnosis, treatment and assessment of learners:
Table 1: Twelve principles (Brown, 2008, p. 12)

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automaticity</td>
<td>No over-analysing language form, rules, etc.</td>
</tr>
<tr>
<td>Meaningful learning</td>
<td>Meaningful learning has a better long-term retention than rote learning</td>
</tr>
<tr>
<td>The anticipation of reward</td>
<td>Rewards can keep learning exiting and interesting</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>One’s needs, wants and desires have the potential to be self-rewarding</td>
</tr>
<tr>
<td>Strategic investment</td>
<td>Learners’ time, effort and attention paid to learning</td>
</tr>
<tr>
<td>Language ego</td>
<td>Developing a new model of thinking, feeling and acting</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>Self-esteem lies in achievement</td>
</tr>
<tr>
<td>Risk taking</td>
<td>Going beyond learners’ absolute certainty</td>
</tr>
<tr>
<td>The language-culture connection</td>
<td>The system of culture, values, thinking etc.</td>
</tr>
<tr>
<td>The native language effect</td>
<td>Utilising positive transfer First language facilitates L2 learning</td>
</tr>
<tr>
<td>Inter-language</td>
<td>Successful inter-language development needs feedback from both teachers and others outside the classroom</td>
</tr>
<tr>
<td>Communicative competence</td>
<td>The competence to use the language in the real word</td>
</tr>
</tbody>
</table>

According to Brown, a principled approach enables teachers to take the communicative and situational needs of specific learners into consideration. It also assists instructors to identify suitable curricular treatment for learners in a particular context, to design effective pedagogy and to realise teaching objectives. In addition, it enables teachers to systematically assess lesson contents and structure, and to revise courses as needed.

2.3 Approaches to Vocabulary Teaching

Historically, vocabulary teaching has been treated in line with the currently favoured language pedagogy (Celce-Murcia & Olshtain, 2006). In the grammar-translation approach, vocabulary teaching maintains the mother tongue of the students as the reference (Kelly, 1969), while the reading approach uses the key words list as the core element of a language course. The audio-lingual approach, in contrast, purposefully suppresses the teaching of vocabulary in order to teach pronunciation and grammar. More recently, the naturalistic and communicative approaches have been based on the
view that vocabulary will be acquired incidentally and explicit instruction is not necessary. However, research has shown that teaching vocabulary is a significant contributor, not only to a learner’s acquisition of vocabulary but also for learning success more generally (Nation, 2008; Gu & Johnson, 1996). Coady (1993) comes to the conclusion that successful vocabulary teaching is multi-dimensional and involves a combination of various approaches.

2.3.1 Incidental Approach

The terms *incidental approach* and *intentional approach* are commonly used in relation to vocabulary acquisition. The *incidental approach* emphasises the type of vocabulary acquisition that takes place when a learners’ focus is on message or meaning, rather than the explicit purpose of learning new lexemes (Wesche & Paribakht, 1996). This type of learning is typically supported by top-down processing of language input.

The key to an *incidental approach* is to ensure that students get as much exposure to language as possible. That is, “learning is a by-product of something else” such as reading (Gass, 2001, p. 379). According to Alemi and Tayebi (2011), an *incidental approach* refers to the process of acquiring vocabulary by meaning-focused communicative activities, for example, real life communication. The most effective way to implement this is to transplant learners into a native-speaking environment (Milton & Meara, 1995; Schmitt, 2000). Unfortunately, this approach is not widely available to all learners around the world. Therefore, it is suggested that learners be “encouraged by exposure to large amounts of reading and listening material” (Nation, 1982, p. 15).

Most words in both L1 and L2 are probably acquired incidentally through extensive reading and listening input (Nagy, Herman, & Anderson, 1985). According to many (Chun & Plass, 1996; Knight 1994; Zimmerman, 1997; Woodinsky & Nation, 1988,
and others), incidental learning does facilitate vocabulary knowledge. Webb (2008) also advocates that providing learners with opportunities for incidental learning of vocabulary be made compulsory.

Sökmen (2004) has raised a number of arguments against incidental approaches to vocabulary teaching which typically involve inferring the meanings of words from context. First and foremost, learning vocabulary by guessing words’ meanings from their context is a very slow process. Sökmen argues that most L2 learners do not have enough time to learn a large number of words that way. Secondly, guessing the correct meaning is difficult for learners, especially those with low-level target language proficiency, because inferring the words’ meaning is an “error-prone process” (p. 328). Thirdly, even those learners who are able to use flexible strategies for inferring the meaning of words may still have low levels of comprehension due to insufficient vocabulary knowledge. In addition, individual students have different styles for learning unfamiliar words. Some learners are probably not that good at guessing. Last but not least, research shows that inferring word meaning from context does not necessarily result in long-term retention. Sökmen concludes that although contextual guessing may be helpful to advanced learners, explicit instruction in vocabulary is essential. Others (e.g. Haynes, 1993; Coady, 1993) support this view, claiming that using the implicit approach to teaching vocabulary is ineffective and a much stronger word level focus involving bottom-up processing is needed alongside the incidental approach. The concepts of ‘top-down’ and ‘bottom-up’ processing of language input are examined in Section 2.5.
2.3.2 Intentional Approach

The *intentional approach* is described as the process of deliberately teaching or learning vocabulary items. As Alemi and Tayebi (2011) explain, in *intentional approaches*, the learners are aware of the particular learning items that will be tested. According to Nation (1982, p. 15), “a conscious effort is made to learn vocabulary either in context or in isolation”, and teaching/learning lists of words, doing vocabulary exercises or studying word formation (affixes and roots) are all in the category of the *intentional approach*. According to Nation (1990) and Zimmerman (1997), this approach can facilitate vocabulary development significantly. Sökmen (2004), for example, suggests that explicit vocabulary instruction should be included in the L2 classroom and that a short and clear explanation of the lexemes being taught is necessary. Nation (2008) also concludes that explicit vocabulary instruction, therefore, should be a compulsory part of all approaches to vocabulary teaching in L2.

In line with Nation’s idea, Sökmen (2004) surveys explicit vocabulary instruction and underlines a number of key teaching principles to implement this approach in the classroom. First and foremost, L2 learners need to build a large sight vocabulary, which would enable them to automatically access word meaning without hesitation. This vocabulary should include both high frequency words and difficult words. Secondly, learners ought to be encouraged to associate new words with old ones, because lexico-semantic theory suggests that when the number of words increases in the human mind, the mind will set up a system to keep the words well-organised for retrieval (Lado, 1990). Learners need to be provided with a number of encounters with a word. This is because when students meet a word through various activities in diverse contexts, a more accurate and deeper understanding of the meaning and usage will be developed. Fourthly, promoting a deep level of processing is necessary. A deeper level of semantic
processing is required for a better learning outcome, since the words are encoded with elaborations (Craik & Lockhart, 1972). For example, learners are asked to relate words to other words and to their own experiences, to manipulate them and then to justify their own selections of processing. Other techniques to implement this processing in vocabulary instruction are as follows:

1. **What is it? technique**

   A stirrup is silver. A stirrup is strong. A stirrup is made of iron. A stirrup has a flat bottom. We can find a stirrup on a horse. A stirrup is used to put your foot into when you ride a horse (Nation, 1990, p. 67).

2. **Describing techniques (cross out the word in each series which does not belong)**

   a. **Order** command advise demand
   b. **Order** tell instruct suggest
   c. **Order** ask obey

   (Sökmen, 2004, p. 243)

3. **Meaning techniques (words in context)**

   a. If people or things saturate a place or object, they fill it so completely that no more can be added.

   b. If someone or something is saturated, they are extremely wet


Fifthly, learning can be facilitated through both imaging and concreteness (Sökmen, 2004). Therefore, an instructor needs to make illustrations, show pictures and draw diagrams, as well as giving personal examples, relating words to previous, current or future events, etc. Additionally, a variety of other techniques are encouraged. Sökmen
(2004) lists a large number of instructional activities such as dictionary work, word unit analysis, mnemonic devices, semantic elaboration, collocations, lexical phrases and oral productions.

Finally, encouraging independent learning strategies is compulsory. Students should be encouraged to learn how to continue learning vocabulary by themselves outside of the classroom. For example, students are advised to evaluate their own learning techniques via self-assessment questionnaires, including questions like the following (Sökmen, 2004, p. 256):

- Do I learn vocabulary more easily doing speaking activities with my classmates?
- Am I comfortable analysing word parts? Do I like learning word roots? Does it work better for me to collect words on index cards or to make a word list? Do games help me learn? Do I remember words better when I illustrate them?

Many scholars argue that both the *incidental approach* and the *intentional approach* are important for language teaching. As Nation (2008) argues, a well-designed language programme has an appropriate balance of opportunities to learn, from message-focused activities to explicit instruction in vocabulary (and in other levels of language). He states that a well-balanced vocabulary course should have four major strands: meaning-focused input, meaning-focused output, fluency development and language-focused instruction (Nation, 2008, p. 390). Research by Long (1988) and Ellis (1990) shows that language courses that have these four strands are likely to result in much better learning outcomes than those that do not involve all of them. In the table below, Nation lists the four strands and their applications to vocabulary teaching.
Table 2: The four strands and their application with a focus on vocabulary  
(Nation, 2008, p. 391)

<table>
<thead>
<tr>
<th>Strands</th>
<th>General condition</th>
<th>Activities and techniques</th>
</tr>
</thead>
</table>
| **Meaning-focused input** | Focus on the message  
Some unfamiliar items  
Understanding  
Noticing | Extensive graded reading  
Listening to stories  
Communication activities |
| **Language-focused learning** | Focus on language items | Direct teaching of vocabulary  
Direct learning  
Intensive reading  
Training in vocabulary strategies |
| **Meaning-focused output** | Focus on the message  
Include small number of new items | Communication activities with written input  
Prepared writing  
Linked skills |
| **Fluency development** | Focus on the message  
Work with completely familiar material  
Work at higher than normal speed  
Do a large quantity of language use | Reading easy graded readers  
Repeated reading  
Listening to easy input  
10 minute writing  
Linked skills |

Huckin and Coady (1999) also advocate a mixed approach and argue that in relation to incidental and intentional learning of vocabulary the following key points should be borne in mind. Firstly, incidental learning does not mean entirely *incidental*, because learners must pay at least some attention to individual words, and incidental learning requires a fundamental sight-recognition vocabulary of at least 3,000 word families. For university level texts, recognition of 5,000-10,000 word families is compulsory. Secondly, there is no clear evidence of how many and what kinds of exposure are required for successful acquisition, although research shows that incidental acquisition takes place incrementally over a period of time (Beglar, 2005). Thirdly, effective word learning requires the flexible application of various processing strategies, ranging from bottom-up ones such as graphemic identification to top-down ones such as the use of contextual meaning, and some strategies arise naturally but others need to be taught.
Fourthly, learners generally benefit from explicit vocabulary instruction in conjunction with extensive reading, and some kinds of texts, in particular those that are personally interesting to learners, are more conducive to incidental learning than others. In addition, input modification, including glossing of specific words, is generally effective, especially if it involves the learner interactively. Lastly, incidental learning depends on guessing words, which can result in inaccuracy and misrecognition. Therefore, to overcome these problems, learners have to have a well-developed core vocabulary, a series of good reading strategies and some prior familiarity with the subject matter.

It seems clear that a balanced teaching approach should contain both incidental and intentional teaching activities. As Nation (2011, p. 535) states:

I see both kinds of learning, incidental and deliberate, as essential parts of a well-balanced program; another is that they promote different aspects of vocabulary learning. Explicit deliberate learning is probably best for learning the more salient aspects of word knowledge, particularly the form-meaning link. It is quite hard to acquire the contextual aspects of word knowledge from this kind of learning, such as collocations and frequency intuitions. Conversely, these are exactly the kinds of word knowledge that are enhanced by widespread exposure and the incidental learning that comes from it, even though the rate and efficiency of learning is much less.

2.3.3 Word Association Approach and the Contextualised Approach

In addition to the incidental approach and intentional approach, Jiang (2000) discusses the advantages and flaws of the word association approach and the contextualised approach (p. 70). The former, for example, also known as the key words approach (Hogben and Lawson, 1994), is often applied by means of providing learners with an L2
equivalent translation to facilitate their understanding. This is proven to be effective in key words learning, particularly in word retention (Nation, 2008; Read, 2004; Schmitt, 2008).

In contrast to the *key words approach*, Jiang argues that the key words method neglects the contextualised input which may lead to learners’ reliance on their L1 translation too much. Given the disadvantages to L2 learners, in relation to their L1 reliance and their insufficiency of context-based input, the contextualised approach seems more advantageous in terms of providing richer exposure for lexical development. However, Sökmen (2004), among others, has argued convincingly in favour of explicit vocabulary teaching, suggesting that implicit (spontaneous) vocabulary learning is by its nature a very slow process, and that it may only be suitable for advanced learners. Sökmen also refers to research evidence showing that inferring word meaning from context does not necessarily result in long-term retention.

It would be wrong, however, to uncritically embrace the contextualised approach and completely exclude the association approach. For example, L2 learners may sometimes find it difficult to learn a word from its context without bottom-up assistance. Jiang asks (2000, p. 71) rhetorically, “if the activation of and reliance on L1 translation are inevitable or beneficial, should teachers still try to avoid using L1 translation?”

In line with the approaches described above, Hunt and Beglar (2005, p. 27) propose the following principles for vocabulary instruction:

1. Provide students with chances for the incidental acquiring of vocabulary.
2. Diagnose which words students need to learn.
3. Provide opportunities for intentional learning of vocabulary.
4. Provide students with opportunities for elaborating word knowledge.
5. Provide students with opportunities for fluency development.

6. Experiment with inferring word meaning from context.

7. Examine different dictionaries and teach students how to use them.

These principles seem to combine all of the four approaches mentioned above: *incidental approach*, *intentional approach*, *key words approach*, and *contextualised approach*. How much emphasis each of these principles is given should strictly be determined on the basis of learner needs analysis and the teaching/learning objectives of the program.

2.4 Vocabulary Knowledge and Development

There have been a remarkable number of descriptions of vocabulary knowledge and its development. It is generally agreed that vocabulary knowledge comprises a number of aspects, including frequency, register, derivation, association, meaning and contextual use, etc. (Ma, 2009; Meara, 1996; Nation, 2008; Richards, 1976). For this reason, several models and proposals have been made for the purpose of distinguishing the various features of vocabulary knowledge. For instance, Meara (1996, p. 6) proposes three questions to define learners’ vocabulary knowledge: (1) How many lexicons does a learner recognise? (2) How rich a lexicon is associated with other words and the language system? (3) How automatically the lexical items can be accessed? Similarly, Henriksen (1999) uses three dimensions to describe vocabulary knowledge: the partial-to-precise dimension; the depth dimension; and the receptive-productive dimension. After reviewing these models and the proposals raised, Ma (2009) concludes that three aspects of vocabulary knowledge and its development should be taken into consideration: (1) descriptive knowledge framework, for example “vocabulary size” (Chapelle, 1998; Meara, 1996; Qian, 2002; Nation & Waring, 2004), and “what is
involved in knowing a word” (Richards, 1976; Nation, 2001); (2) the distinction between receptive and productive knowledge (Melka, 1997; Nation, 2008); and (3) vocabulary knowledge presented by theoretical models to describe the process of learning and knowledge development (Jiang, 2000). The following review is based on Ma’s categorisations.

2.4.1 Vocabulary Size

Vocabulary size refers to the number of words a person is familiar with or knows how to use in a particular language. As Nation (2004, p. 6) states, before we define a long-term vocabulary learning goal, we need to know three kinds of information:

1. How many words there are in the language?
2. How many words do native speakers know?
3. How many words need to be learned to use the language effectively?

To answer these questions, he has suggested four ways of counting words: tokens, types, lemmas and word families (Nation, 2008, pp. 7-8). The tokens count each occurrence of words in a spoken or written form, including repeating words. It is used to answer questions like “How many words are there on a page?” or “How fast can you read?” The term running words is also used. The difference between tokens and types is that type does not count the repeating words. According to Nation, type can be used to answer questions like: “How many words does an English dictionary cover?” Lemmas involve a headword, its inflections and reduced forms (‘ve) (Nation, 2008). Generally, the items under a lemma are the same part of speech (Francis & Kucera, 1982). That is, talk as a noun and talk as a verb are different lemmas. Word family includes a root word,
its inflections and its derivations. For example, *teach* (head word), *teacher* (derivation) and *teaches* (inflections) are members of a *word family*.

The Webster’s Third New International Dictionary contains about 114,000 *word families* (Goulden, Nation, and Read, 1990). This is obviously a huge number of words which is even beyond native speakers’ vocabulary range.

### 2.4.1.1 How Many Words do English Native Speakers Know?

According to research (Goulden, Nation & Read, 1990; Zechmeister, et al., 1995, cited in Nation 2008), an educated native speaker of English knows approximately about 20,000 word families. It is suggested that this estimate is lower than the actual situation, since some derivational words and proper nouns are not included. No distinction is made between productive and perceptive vocabulary knowledge; the former is much smaller than the latter, even with native speakers.

### 2.4.1.2 How Many English Words do L2 Learners Need to Know?

According to Nation (2001) and Hirsh and Nation (1992), a learner needs to know 8,000 word families in order to be able to read for pleasure. Other related research has also shown that 5,000 word families is the minimum to understand 95% of the lexical items in a news text (Schouten-van Parreren, 1996; Ostyn & Godin, 1985; Laufer & Nation, 1999). 8,000 to 9,000 word families are required to understand newspapers and novels, and 6,000 to 7,000 to understand lectures and films (Nation, 2006). Rodgers (2009) advises that 5,000 to 9,000 word families are needed to be able to understand television programmes.

How many English words should Chinese university students know? Based on the fundamental requirements of the Chinese College English Syllabus (2011), the students need to know at least 4,200 English words (this number does not refer to word families).
Is this vocabulary size sufficient? Francis and Kucera (1982) provide a relationship table between vocabulary size and text coverage. The vocabulary size in the following table refers to individual lexemes selected by frequency (Waring & Nation, 1997).

Table 3: The relationship between vocabulary size and text coverage

<table>
<thead>
<tr>
<th>Vocabulary size</th>
<th>Text coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000</td>
<td>72.0%</td>
</tr>
<tr>
<td>2,000</td>
<td>79.7%</td>
</tr>
<tr>
<td>3,000</td>
<td>84.0%</td>
</tr>
<tr>
<td>4,000</td>
<td>86.8%</td>
</tr>
<tr>
<td>5,000</td>
<td>88.7%</td>
</tr>
<tr>
<td>6,000</td>
<td>89.9%</td>
</tr>
<tr>
<td>15,851</td>
<td>97.8%</td>
</tr>
</tbody>
</table>

Laufer (1989) suggests that reasonable comprehension requires up to 95% of word coverage in a text. Clearly, the Chinese university students’ vocabulary size is much lower than the suggested level. Du (2004, p. 572) agrees: “Chinese university students’ vocabulary size of 4,200 words is too small”. What is worse, the majority of Chinese students do not reach the basic requirement. Du (2004) suggests that around 12,000 word families need to be added, although it seems to be “an astronomical and completely unrealistic number” (p. 576). According to Nation and Gu (2007), students would approximately need 6,000 words to complete undergraduate degree and 9,000 words to do a doctoral degree. If we take Nation’s suggestion, a total of approximately 2,000 words should be added for Chinese university students.
2.4.2 What is Involved in Knowing a Word?

Besides quantitative aspects, such as vocabulary size, other dimensions of vocabulary knowledge are also important in vocabulary acquisition. According to many (e.g. Laufer 1990; Nation 2008; Richards 1976), vocabulary knowledge has been considered as “multi-dimensional”.

Meara (1996, p. 5) suggests that apart from a size dimension, both lexical structure and lexical access are significant parts of vocabulary acquisition. He states that: “we would need to be able to specify how automatically the items in a lexicon could be accessed; and we would need to find a simple measure of how to reach a lexical structure linked the words in lexicon.” Qian (2002) proposes a conceptual framework to describe vocabulary knowledge which contains four categories: (1) size dimension; (2) depth of knowledge including the knowledge of word features (e.g. word register, syntactic and semantic features, inflectional and derivational features); (3) word organisation (e.g. synonymy and collocation); (4) how words are accessed both receptively and productively (reception and production will be discussed in the next section). Ma (2009) reviews this framework, along with Chapelle’s (1998) and Richards’ (1976) frameworks of vocabulary knowledge, and states that there are some overlaps and similarities between these proposals. This is because Chapelle’s framework also contains four dimensions: (1) vocabulary size; (2) vocabulary characteristics; (3) words organisation; (4) the access of lexicon, while Richards’ seven assumptions to describe vocabulary knowledge involve “frequency, register, syntax, derivation, association, semantic values and polysemy” (Ma, 2009, p. 27). Ma claims that especially item (2) “vocabulary characteristics” in Chapelles’ framework is similar to the seven assumptions above. Existing theories on vocabulary knowledge suggest that vocabulary teaching should include essential aspects of word knowledge (Richards, 1976; Coxhead, Byrd, Reid, &
Schuemann, 2005; Ma, 2009). In line with this, Nation (2008) proposes a framework called “What is involved in knowing a word” to suggest what aspects of vocabulary knowledge should be included when learning or teaching vocabulary. This framework contains three categories: word form, word meaning and word use, as illustrated in the table on next page.
According to Nation (2008), knowing a word includes both item knowledge (the knowledge of the individual words), and system knowledge (its diverse characteristics and relationship with other words). The following section provides a definition of both receptive and productive knowledge before the distinction between them is explained.
2.4.3 Receptive Knowledge versus Productive Knowledge

Generally, *receptive* knowledge refers to the notion that learners receive language input and comprehend it, while *productive* knowledge carries the idea that learners produce language forms to express ideas or convey information to others. Receptive vocabulary knowledge refers to the superficial familiarity with a word such as initial recognition of its basic meaning. Controlled productive skill means producing a word when given some clues such as definition or other hints, while free productive skill is the ability to use vocabulary spontaneously in writing and speaking (Laufer & Paribakht, 1998; Laufer & Goldstein, 2004). There are four main types of language skills: listening, reading, speaking, and writing. Listening and reading are considered *receptive* skills, while speaking and writing are known as *productive* skills. Nation (2008) provides a specific definition of receptive and productive vocabulary knowledge, by relating the terminology to the four language skills above. According to Nation (2008, p. 23), “receptive vocabulary use involves perceiving the form of a word while listening or reading and retrieving its meaning; productive vocabulary use involves wanting to express a meaning though speaking or writing and retrieving and producing the appropriate spoken and or written word form”.

Meara (1990) and Corson (1995) use *passive* and *active* to distinguish the lexical knowledge instead of *receptive* and *productive*. Meara’s notions of *passive* and *active* vary from Corson’s definitions of these terminologies. Meara claims that *passive* and *active* represent different knowledges of association. He presents a Hypothetical Association Network (Meara, 1990. p. 152) to distinguish active vocabulary from passive vocabulary. He states that active words have incoming and outgoing associations with other words, so they can be activated by one’s internal knowledge or the associated words; by contrast, passive words can only be activated by external
stimuli such as hearing and seeing their forms. Nation (2008) has criticised Meara, claiming that naming an object actively in a second language can also be triggered by external stimuli, like seeing an object, but this does not involve the association of other internal words. Corson’s (1995) conceptualisation of active and passive is based on the use of a word rather than the knowledge of a word. The terms passive and active are often used as substitutes for receptive and productive (Meara, 1990; Corson, 1995; Laufer, 1998, among others).

A majority of researchers agree with the division between receptive vocabulary and productive vocabulary, but the boundary between these two is never clear (Ma, 2009; Melka, 1998). Some researchers hold the view that reception and production can be treated as a dichotomy. For example, Meara (1990) states that the distinction between receptive knowledge and productive knowledge is marked rather than gradual, because receptive knowledge can only be accessed by proper external stimuli. However, many others believe that it is a continuum. Melka (1998, p. 87), for example, claims that “Knowing a word is not an all-or-nothing proposition; some aspects may have become productive, while others remain at the receptive level.”

Melka-Teichoroew (1982) holds a similar viewpoint, arguing that there is a substantial difference in how well different lexical items are mastered in relation to the ability to use the words in comprehension and production. Henriksen (1999) echoes this, stating that productive vocabulary can also be treated as a continuum which is determined by how familiar the vocabulary is. Laufer (1998) suggests that vocabulary knowledge can be viewed as a continuum including two dimensions: receptive vocabulary knowledge and productive (controlled and free) vocabulary knowledge.
It is worth noting that the two aspects of vocabulary knowledge should not be ignored and more focus should be paid to productive knowledge. According to Clark (1993, p. 246), the two types of lexical knowledge have two different representations in the mind: “C- (comprehension) representations and P- (production) representations”. The former refers to receptive knowledge, while the latter refers to productive knowledge. Clark’s experimental research findings explain the development from the C-representation (receptive) to the P-representation (productive) and demonstrates the latter involves richer and more complex information than the former. In other words, productive knowledge is harder to develop than receptive knowledge. In her report, she explains how children set up “C-representation of words” they hear from external input. She explains that C-representation involves identifying if the word that the children are hearing is the same as the previous one on a successive occasion. The two example words that she gives are *frog* and *builder*. Firstly, the children’s’ C-representation contains the auditory information of a word *frog* or *builder*; eventually, the children link the meaning of either *frog* or *builder* with the form or structure of these two words. She also notes that the C-representation must enclose auditory information about a word, and may also involve whatever meaning the children have linked to the word, no matter how unsure.

P-representation is a much harder and more complicated procedure than the C-presentation. According to Melka (1998), after the first input, some traces of the word the children have heard may remain in their brain, but the amount of traces are not sufficient to be active without the repetition of the same external input. Melka (1998, p. 86) states that “only after several occurrences can a word be considered to be part of the child’s lexicon, though reproduction of the item would still be quite impossible”. Before the P-representation is possible, the children’s C-presentation must be stored in
their memory and further information (including the internal structure, e.g. build-er or frog-man) must be added, and more information from the contexts in which the word is used must be further supplied (Kuhl, et al., 1992). Clark claims that P-representation will be set up by long time practice after the C-representation has been memorised in the children’s brains. This is because, according to her, productive skills lag far behind receptive skills. C-representations include the phonological form of the word (i.e. its sound composition) and its meaning. P-representations include, in addition to the phonological form of the word and the meaning, a set of articulatory procedures (these in effect govern the operation of the speaker’s organs of articulation). That is, in order to produce a word, the children must be first familiar with the articulation details of a word, its morphological structure, and its collocations. She illustrates this (p. 247): “for example, for a word like frog, the P-representation must specify that the initial sound is articulated with the lower lip against the upper teeth, with outgoing breath but with no vibration of the glottis.”

From her statements, it becomes clear that P-representation is only available on the base of the C-presentation. So the notion of the two different representations is very important in a number of ways. Firstly, it supports the idea that productive knowledge is richer and more complex than receptive knowledge. Secondly, it also explains (among other things) why knowing a word productively means that you also know it receptively. Therefore, it is generally agreed that receptive vocabulary knowledge precedes productive vocabulary knowledge, receptive vocabulary size is larger than productive vocabulary size, and productive knowledge is much more difficult than receptive knowledge (Nation, 2008; Melka, 1998; Ma, 2009). However, Zhong and Hirsh (2009), in their recent study, reveal that productive vocabulary knowledge may
grow quicker than receptive vocabulary if instruction is only focused on production during a period of time.

While neither type of knowledge should be ignored, in reality classroom teaching/learning activities often favour receptive skills, not least because they are much easier to develop. There are, however, very good reasons to advocate for an increased focus on productive skills (Celce-Murcia & Olshtain, 2006). On the one hand, the development of receptive skills does not, in and by itself, ensure the development of productive skills. In fact, the only way to develop the latter is to engage learners in activities which specifically target these skills (i.e. writing and speaking tasks). On the other hand, lexical items (and language structures, generally) which are known productively are also known receptively. In other words, by developing productive knowledge one also necessarily develops receptive knowledge (Melka, 1998). In the next sub-section, the development of receptive and productive vocabulary knowledge will be discussed.

2.4.4 The Development of Vocabulary Knowledge

Both quantitative changes in vocabulary size and qualitative changes in vocabulary knowledge of each word need to be considered in vocabulary development. According to Read (2004), the knowledge of vocabulary can be classified into two approaches: “the developmental approach and the dimensional approach” (Read, 1997; cited in Ellis, 2008, p. 101). The former refers to the developmental stages based on the learners’ ability to correctly recognise, define, and produce a word; the latter describes the degree of acquiring various dimensions of vocabulary knowledge. In addition to the two approaches above, Ellis (2008) also emphasises the significance of the psycholinguistic approach, which is interested in the learning procedure and evolvement of a particular word. This section will discuss these three approaches.
Paribakht and Wesches (1997) and Henriksen (1999) advocate the developmental approaches. According to Henriksen, there are three continuums to vocabulary knowledge which are required to be investigated in the development of the qualitative aspects. They are:

1. The continuum from partial to precise comprehension for a word (i.e. is the word vaguely understood or precisely understood?)
2. The continuum of the depth of word knowledge (i.e. have properties such as the syntactical function and collocations of a word been acquired?)
3. The continuum of reception and production (i.e. is the learner able to comprehend and produce the known word?)

Meara (1997 p. 119) states that it is necessary to clarify how the relations between newly learned words and those already known are built, because vocabulary acquisition is a cumulative activity rather than “an all-or-nothing affair”. According to Meara, known words are connected to other lexica and the numbers of the connections vary from word to word, depending on the degree of knowing it. Ellis (2008) also agrees that the qualitative aspects of vocabulary knowledge are acquired accumulatively, but points out that it is hard to define the intermediate stages of development.

Paribakht and Wesches (1997, p. 181), as another two proponents of the developmental approach, provide a “vocabulary knowledge scale” which contains five levels of vocabulary familiarity, as follows:

1. the word is completely unfamiliar;
2. the word looks familiar but its meaning is not sure;
3. the word’s translation or synonym is known;
4. the word can be used semantically appropriately; and

5. the word can be used accurately in both semantic and grammatical aspects.

This scale, however, is criticised by many (e.g. Schimitt, 1998, Meara, 1990). Ellis (2008) evaluates Schmitt’s viewpoint and states: firstly, there are no clear boundaries between stages; secondly, the early stage of lexical development only involves the receptive information; in addition, the links between reception and production of vocabulary knowledge are uncertain; and lastly, the numbering of the stages is also arbitrary.

The dimensional approach, however, attracts more attention. According to Read (2004, p. 315), this approach refers to what will “characterise full knowledge of a word”, including different dimensions of its meaning and use. Cronbach (1942), for example, is a pioneer of this approach, who identified five aspects of behaviours contained in fully knowing a word:

1. Generalisation (define a word).
2. Application (use it properly).
3. Breadth of meaning (know different meanings).
4. Precision of meaning (use it correctly in various situations).
5. Availability (be able to use it productively).

Schmitt (1998) is also an advocate of this approach. He is interested in describing the degree of vocabulary knowledge from different aspects, such as form, meaning and usage, which is similar to Richards’ (1976) and Nation’s (2008) idea of “What is involved in knowing a word?”, as mentioned previously (see p. 43). This approach holds the view that the components of vocabulary knowledge have no hierarchical
relationship. Schmitt’s longitudinal study demonstrated that this approach is more appropriate than the developmental approach. According to his report, Japanese EFL beginners experienced spelling difficulties in the early stages. Gradually the learners’ word association ability nearly reached that of native speakers, in line with their acquisition of semantic knowledge, but their grammatical knowledge was unsure due to the gaps in morphological knowledge. He states that their acquisition of meaning developed from unfamiliar to receptive and finally to productive, but he found no interrelationship between the acquisition of form, association and meaning. In other words, there is no hierarchy of lexical knowledge development (e.g. that one dimension of vocabulary knowledge is certainly developed before another).

Jiang (2000) provides an L2 acquisition model from a psycholinguistic perspective by describing the learning process and evolvement of a specific word. According to him, there are three phases in L2 vocabulary acquisition:

1. Initial entrance for a word (referring to separate mental storage of formal semantic, syntactic, and morphological information).
2. “L2 lemma mediation stage” (p. 51) (the L2 entrance of words is mediated by the translation of L1).
3. Free access to the L2 lexicon (exactly the same entrance to the L1 lexicon).

To illustrate these three stages, he first provides a graph to describe the lexical entry in L1, because ideally the lexical entry in L1 is supposed to be very similar to the lexical entry in L2 in the final stage (Jiang, 2000).
The lemma and lexeme are considered to be two main components in each single lexical entry (Levelt, 1989), as presented in Figure 1. The former is comprised of both semantic and syntactic information such as the meaning of a word and the part of speech, while the latter contains the form of a word and phonological/orthographic information (i.e. the spelling of a word and its pronunciation). According to Jiang, all these four types of information are integrated within the L1 lexical entry. Whenever an entry is accessed, all the information above will become available automatically. He defines this as lexical competence, rather than lexical knowledge, which is stored in memory but does not have a lexical entry. Ma (2009) claims that Jiang’s concept of lexical competence has some similarity to procedural knowledge, while the concept of lexical knowledge resembles declarative knowledge.

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1 “Procedural knowledge refers to skills and how to perform various activities” (Ma, 2009, p. 31).
2 “Declarative knowledge comprises what we know about the world and all factual knowledge” (Ma, 2009, p. 31).
After providing this description of the lexical entry in L1, Jiang identifies two practical constraints of vocabulary development in the L2 educational situation: (1) The language input is insufficient and/or inadequate quantitatively and/or qualitatively; (2) the presence of an L1 conceptual/semantic system with its lexical system. Due to the insufficiency of contextualised input in the L2 classroom setting, it is very hard for L2 learners to integrate the whole complex of semantic, syntactic or morphological information into an L2 lexical entry as L1 learners do. In addition, L2 learners’ tendency to use L1 equivalent translation is inevitable in the process of learning L2 words. Therefore, during L2 learning, the lexical development differs significantly from that of L1.

Under the unique conditions outlined above, Jiang (2000) proposes three stages of L2 development so as to distinguish it from that of L1. The three stages are provided below, from the first to the third, respectively.

![Figure 2: Lexical representation (a) and processing (b) at the initial stage of lexical development in L2 (Jiang, 2000, p. 50)](Image)
According to Jiang, in the initial stage an L2 learner’s lexical entry involves very little phonological or orthographic information without lemmas (Figure 2a). At this stage, L2 learners can only relate the L2 lexica to their existing concepts of L1 equivalent translation or definition in their minds, while other lemma information such as semantic and grammatical features is still absent from their mental lexicon. In his words (p. 52), “in this sense, it is part of one’s lexical knowledge, not one’s lexical competence”. He also explains the processing of receptive and productive use of the language, as illustrated in the Figure 2b. In word reception, the L2 learners’ recognition of L2 words activates the equivalent L1 translation at first, and then the semantic, syntactic and morphological specification of L1 will be accessible to facilitate L2 comprehension. In word production, the learners’ pre-verbal information first activates the words in L1 and its semantic specification. Then the learner’s L1 words activate the L2 words which match the L1 semantic features via the lexical connexion between L1 and L2 lexica. Through the lexical link, other lexical information can be available. Jiang states that a repeated simultaneous activation of the L2 lexeme of a word and its related L1 lemma may result in gradual knowledge development of L2 words. In other words, L1 lemmas may be transmitted to L2 lexical forms to create lexical entries which have L2 lexemes but L1 lemmas. Jiang (p. 52) claims that “a word may be considered to have reached the second stage of development when L1 lemma information is copied into its entry”, he describes this as the lemma mediation stage.
In the second stage, as shown in the Figure 3a, the L1 lemma information is attached to the L2 words, and at the same time the semantics and syntax information of L1 mediate the processing of the L2 word (Figure 3b). At this stage, the morphological specification still remains empty, and the connection of L2 words and conceptual representations are relatively weak. Firstly, this is because the L1 morphological information differs from that of L2, which is unlikely to facilitate the usage of L2 words. Secondly, the copied lemma information from L1 is strong enough to integrate with the L2 lemmas. In addition, some information might be lost in the process of transportation from L1 to L2.

The last stage is known as the integration stage and involves the activation of both lexeme and lemma L2 information via repeated use and exposure. In this way, all the four types of lexical information in Figure 4a are integrated into the lexical entry which is very similar to that in L1 in both the representation and processing, as illustrated in Figure 4b below.

*Figure 3: Lexical representation (a) and processing (b) in L2 at the second stage*  
*(Jiang, 2000, p. 53)*
This three stage development framework in L2 should not be considered as clear-cut, from one stage to another, according to Jiang. For example, some learners may only use L1 translation for the comprehension of L2 words, but not for production. As Ellis (2008, p. 102) points out, “whether it is possible to identify a clearly defined sequence of an acquisition either in terms of developmental stage or a hierarchy of components remains uncertain”. However, one thing is certain, the acquisition of all aspects of vocabulary knowledge is a process of incremental learning. As Gass (2001, p. 466) also points out, “it is not a one-time affair”.

In order to implement the theories on vocabulary development in actual learning practices, Jenni (2011) provides a framework of vocabulary development. In the framework, vocabulary activities are organised within three phases of learning, which can be summarised as: (1) Noticing, (2) Experimenting, and (3) Producing. These three phases trace the development of vocabulary knowledge from input, through to acquisition and ultimately to access and output. See Table 5 for a summary of the knowledge and skills within these three phases of vocabulary learning.
Table 5: Framework for vocabulary development (Jenni, 2011, p. 211)

<table>
<thead>
<tr>
<th>Phases of learning</th>
<th>Knowledge and skill</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Noticing</strong></td>
<td>Etymology</td>
</tr>
<tr>
<td>Input</td>
<td>Collocation</td>
</tr>
<tr>
<td>Intake</td>
<td>Discover new words</td>
</tr>
<tr>
<td>Explicit instruction</td>
<td>Record words</td>
</tr>
<tr>
<td>Implicit instruction</td>
<td></td>
</tr>
<tr>
<td>Consciousness raising</td>
<td></td>
</tr>
<tr>
<td><strong>Experimenting</strong></td>
<td>Syntactic structure</td>
</tr>
<tr>
<td>Acquisition</td>
<td>Contextual clues</td>
</tr>
<tr>
<td>Reasoning</td>
<td>Make associations</td>
</tr>
<tr>
<td>Hypothesising</td>
<td>Organise words into groups</td>
</tr>
<tr>
<td>Organising</td>
<td>Lexical inferencing</td>
</tr>
<tr>
<td><strong>Producing</strong></td>
<td>Productive vocabulary in a meaningful social context for a particular audience</td>
</tr>
<tr>
<td>Access</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td></td>
</tr>
<tr>
<td>Automatising</td>
<td></td>
</tr>
</tbody>
</table>

According to Jenni, the framework for vocabulary development brings theories into teaching practices. This framework assists language teachers to select or design appropriate syllabuses for students based on their current vocabulary knowledge, their stage of development, and their particular educational context. In addition, it assists teachers and course designers to critically assess a vocabulary lesson including teaching contents and sequences, to revise courses as needed and ultimately to achieve teaching objectives.

**2.4.5 Vocabulary Teaching and Learning Burden**

As reviewed in section 2.4.2, it is generally agreed that knowing a word involves the knowledge of several of its properties, which contains its form (both spoken and written); morphological structure (root, derivations and inflections); syntactic structure (word in phrases or sentences); meaning (e.g. connotations and denotations); word relations (e.g. synonyms and antonyms); and its collocation (Laufer, 1990). According to Nation (1990; 2008), these aspects of vocabulary knowledge are reflected in the
teaching/learning burden. Likewise, Laufer (1990) points out that the multifaceted features of the word increases learning difficulties, because problems may arise from some aspects, which can only be handled with effort. As Nation (2008, p. 23) states: “the learning burden of a word is the amount of effort required to learn it”. In other words, if a word has less learning burdens, the teaching of the word will be easier, and vice versa.

Laufer (1990) states that the knowledge of a word means familiarity with the diverse dimensions of its features. Some of them may ease the teaching or learning burdens, while others may raise them. She identifies some intra-lexical factors affecting the learnability of SL lexica, including pronunciation (e.g. phonological and supra-segmental features); orthography; word length; morphological features (e.g. inflectional and derivational complexity); lexical forms (e.g. synonyms and homonyms); categorical features (e.g. part of speech); and semantic features (e.g. abstractness and multiple meaning). According to Laufer, there are three categories of intra-lexical factors affecting the acquisition of new vocabulary.

Table 6: Intra-lexical factors that affect vocabulary learning (Laufer, 1997, p. 154)
Generally, the more a lexicon represents features and knowledge that a L2 learner is previously familiar with, the easier the learnability. These include L1 knowledge and the knowledge of other languages. For example, if a word is a loan word from a learner’s first language, the word is not difficult to acquire.

In relation to the above factors which affect the learnability of words, Laufer (1999) presents some implications regarding vocabulary teaching practice. The first question that she answers is how many lexical items should be introduced per lesson. She claims that although Gairns and Redman (1986) suggest a number of 8-12 words should be taught for productive use in a 60-minute lesson, this proposal is not sensible enough without taking into consideration what kind of lexical items that are to be taught. Laufer argues that words that are easier to learn can be taught in greater numbers than more complicated ones, because lexical items with more learnability require less effort to acquire them.

Secondly, Laufer (1999, p. 153) claims that teachers should bear in mind that similar word items (e.g. cancel/conceal/council) may create confusion when learning them together. She suggests that these kinds of words should be introduced separately and special and additional exercises are required to distinguish between such items with form familiarity.

In addition, when teaching words in context, teachers should remind students not to depend on the morphological structure and the meaning of the individual words to understand the word in the whole context. This is because some of the words may have similar appearance but they are not the same, which is so described as “pseudo-familiar” (p. 153).
Finally, some mnemonic techniques may facilitate L2 vocabulary learning (e.g. Ellis, 2004), but they may not be effective with learning similar forms. She states that in some cases L1 core lexical items may fail to contribute to learning acquisition. For example, Hebrew ‘morab’ is linked to both ‘moral’ and ‘morale’.

Nation (2008, p. 26) suggests ways how learners can overcome their learning burden. He states that “the way to work out the learning burden systematically is to consider each aspect of what is involved in knowing a word” (see p. 43). Therefore, teachers should have an awareness of the teaching burden of words when applying vocabulary presentation and teaching practice.

2.5 Language Processing and the Conceptualisation of Bottom-up and Top-down

Sub-section 2.4 lists the multifaceted aspects of vocabulary knowledge and their development. This section considers how vocabulary knowledge processes work in both language reception and production. It first introduces Levelt’s (1989) processing model of speech production and Nation’s (2008) interpretation of this model in vocabulary use. It then presents the operational concept of bottom-up and top-down approaches in vocabulary teaching before discussing the rationale for implementing such approaches in academic vocabulary courses.

According to Nation (2008), it is of great value for vocabulary teaching to understand how different dimensions of vocabulary knowledge are embedded in the process of normal language use. He uses Levelt’s model of speech production (see Figure 5) to illustrate the process of lexicon production.
In order to understand this model, it is of great importance to distinguish the two types of knowledge, declarative knowledge and procedural knowledge, because of the different roles they play in models of language acquisition (Ellis, 1990). Levelts (1989, p. 9) claims, “in order to encode a message, the speaker must have access to (these) two kinds of knowledge”. According to Nation (2008), procedural knowledge cannot be accessed by conscious reflection, but declarative knowledge can be examined through introspection. In this model, the square boxes in the model represent the components of language processing which involve the use of procedural knowledge, while the rounded boxes represent the processing components which use declarative knowledge.

The spoken information starts from the conceptualiser. This phase involves the intention of speaking something, the selection of message, information order and its relationship with previous utterances etc. The information generated from the conceptualiser then processes to the formulator through which the “preverbal information” is converted into
a “phonetic plan” (Levelt, 1989, p. 9). During this process the preverbal message is encoded both grammatically and phonologically. In the grammatical aspect, the lemmas are accessed and encoded. This procedure is defined as “lexically driven” (p. 181), because it is the particular words that determine their morphological, grammatical and phonological features. Phonologically, the lexical form (lexeme) is accessed by a “phonological encoder” which results in a “phonetic or articulatory plan” (p. 91). In other words, it is a representation in the mind before the actual overt speech. Levelt describes this representation as “internal speech” (p. 12). The articulation then transfers this internal representation into overt utterance. The rest of the process in this model deals with self-monitoring, which takes place in the whole “Speech-Comprehension System” (p. 13). This process contains a number of sub-components such as the evaluation of what is being said, the retrieval of its meaning and the adjustment of further utterance.

Levelt (1989; 1999) makes three distinctions between representation levels in his model above: the concepts, the lemmas and lexemes (form). In relation to vocabulary use, Nation (2008, p. 38) explains a typical sequence of the oral production of any particular word as follows:

1. The conceptualiser generates a preverbal concept containing the message that the speaker wants to express.
2. The particular lexicon will be accessed by the formulator and the appropriate semantics components are selected.
3. Lemma (including meaning components and other grammatical components) will be stimulated.
4. The semantics and grammatical features of the lemma will be connected to the morphological and phonological components of the particular word.
5. The suitable morphological form (lexeme) is selected to encode the word both semantically and grammatically.

6. The phonological components (lexeme) of the words are chosen to fit the morphological aspects of the lexeme.

7. The articulator utters the particular word.

De Bot, Paribakht and Wesche (1997) provide an adapted model of lexical processing in both reception and production, as below.

![Figure 6: Lexical comprehension and production model for oral and written modalities](De Bot, Paribakht and Wesche (1997, p. 315)

From Leveit’s (1989) model of speech production and De Bot, Paribakht and Wesche’s (1997) adaptation model of lexical processing, it is clear that the language processing involved in reception and production works quite differently. Reception involves perceiving speech sounds (or graphemic symbols, in reading) and then assigning grammatical (morphosyntactic and semantic) structure to them, ultimately linking this
to conceptual content. Production starts from the conceptual content, which is then assigned grammatical and phonological structure, and is then linked to a set of articulatory procedures. According to De Bot, Paribakht and Wesche (1997, p. 316), a significant aspect in which reception is different from production is related to the processing:

Whereas in production all information is basically top-down, in comprehension there is an interaction between bottom-up information (letters or sounds, morphemes, etc.) and top-down information (knowledge of world, the discourse setting, the text, the sentences, etc.).

Their assertion explains the difference between the language processing involved in reception and production. The section below will discuss the concept of both bottom-up and top-down processing in language and vocabulary teaching.

The concept of bottom-up and top-down processing comes from cognitive psychology. As Chaudron and Richard (1986) explain, the bottom-up approach starts from the individual sounds, then moves on to words, clauses and finally to the whole message, while the top-down approach begins with the overall message and text structure. Mathews’ (2007) understanding of the two types of processing is similar: bottom-up is the procedure that determines the structure of a sentence by working from smaller units to larger ones; conversely, top-down is the procedure that determines the structure of a sentence by working from larger units to smaller ones. According to Jay (2003), bottom-up processing involves analysing the available clues to make a judgement or decision, so hearing the phoneme /l/ after /pu/ tells us that the word is pull rather than push. The top-down approach works in the opposite way, it starts from a general concept and then proceeds to match it to the receptive data. As Jay (2003, p. 83) points
out, “when you hear a person saying ‘apples grow on . . . ’, you have expectations about what the word is going to be before you hear it. Hearing the word ‘trees’ will confirm your expectations.

In relation to vocabulary teaching, Celce-Murcia and Olshetain provide a framework for bottom-up and top-down processing of vocabulary and language knowledge:

The top-down processing starts from pragmatic aspects such as the learners’ background knowledge, while the bottom-up processing begins with individual
vocabulary, then moves on to the contexts in which the word occurs. Celce-Murcia and Olshtain (2006, pp. 234-5) define bottom-up processing as composed of the following two characteristics:

- Interpreting the lowest-level units first, then proceeding to an interpretation of the rank above, and so on upward.
- A way of language processing that makes use principally of information on the linguistic features that are already present in the data (e.g. spelling patterns, word order, grammatical inflections, word choices, and so forth).

The top-down approach works the opposite way (p. 242):

- Interprets discourse by reference to the high-level units first, and then moving downward through the ranks below.
- The type of processing strategy for interpreting and producing discourse that makes use of contextual features and prior knowledge to process new information.

For the past decade, practical educational textbooks on language teacher’s education have been emphasising the significance of both bottom-up and top-down approaches (e.g. Celce-Murcia, 2006; Adger, Snow & Christian, 2002; Brown, 2007; Carter & Nunan, 2001; Larsen-Freeman, 2000). According to Celce-Murcia and Olshtain (2006), it is recommended that vocabulary teaching should take these two processes into consideration. Nation supports Celce-Murcia and Olshtain’s idea and claims that both bottom-up strategies, like pure teaching of word lists, and top-down strategies, like
guiding students in guessing words’ meanings from their context, have excellent learning outcomes.

Ideally, a sound teaching approach, as discussed in the previous chapters, should permeate vocabulary teaching at different levels and in different aspects, including the individual word, its collocation, its context, the text type in which it fits and its communicative goals, or what Nation calls the “item-system knowledge” (Nation, 2008, p. 58). The idea of *item knowledge* and *system knowledge* outlined by Nation (2008, p.58) refers to a similar issue to bottom-up and top-down processing. The former refers to the aspects of knowing about a particular word, while the latter means different degrees of knowing it. That is, *system knowledge* is more discourse-driven and the process from *system knowledge* to *item knowledge* is more likely to be top-down processing and vice versa.

As mentioned in Sub-section 2.2, a balanced teaching approach should involve more multi-faceted teaching methods, techniques and classroom activities based on effective teaching principles. According to many experts (e.g. Nation, 2008; Coxhead, 2000) vocabulary teaching activities need to include: guessing unknown words from context, learning the meaning of unknown words and the study of word parts and mnemonic devices. To realise these, Celce-Murcia and Olshtain (2006) suggest that instructional practices that can improve vocabulary learning should be focused on the following practices:

1. Using informative texts.
2. Using vocabulary cards.
5. Using dictionaries.

6. Using cognates and avoiding false cognates.

Obviously, some of these strategies belong to a top-down approach (e.g. using informative text), and some may fit in to bottom-up approaches (e.g. using cartoons, using dictionaries). The remaining question is which processing system is the more effective of these two approaches?

### 2.6 The Components of a Vocabulary Course

How a language course is designed, and what components it involves, will depend on a wide range of factors, including the course objectives, learners’ current knowledge and weaknesses, availability of time and other resources, teachers’ skills, and the principles of language teaching.

![Figure 8: A model of the parts of the course design process](Nation & Macalister’s 2010, p. 3)
Nation and Macalister’s (2010, p. 3) influential curriculum design model presented in Figure 8 provides a solid framework for the construction of a language course, including a vocabulary course. The model comprises three outer circles and a subdivided inner circle. The three external circles (principles, environment, needs) contain both theoretical and practical aspects that have a great impact on the exact progression and production of a language course.

The goals in the inner circle reflect the significance of having clear overall objectives for a language course. The content and sequencing section of the internal ring represents the learning items in a language course, and the sequences in which they follow. The section on format and presentation in the inner circle embodies the plan of the lessons or components of the course, containing the techniques and activities used in teaching practices. Language instruction is guided by the best available principles of language teaching (Nation, 2009). The section of monitoring and assessment in the inner circle stands for the need to monitor learners’ progress, assess their performance and continuously provide them with substantial amounts of constructive feedback. The large external circle represents evaluation. Evaluation involves checking all aspects of a course to evaluate whether the course is satisfactory and where it requires improvement. Nation (2010) states that the last aspect is generally neglected by most course designers. It is crucial to draw all the components together to design a vocabulary course.

2.6.1 The Goals of Vocabulary Teaching

Generally, the objective of a vocabulary course is to focus on the improvement of learners’ usable vocabulary size (both reception and production) and their abilities to control the learning strategies. In other words, a vocabulary course needs to enable learners to increase their vocabulary size, to recognise and develop their skills to use the learned words, both receptively and productively, in the five essential language skills:
listening, speaking, reading, writing and translating (Nation, 2008, Wang, 2010). Likewise, the control of learning strategies indicates that a vocabulary course can enable learners to implement the learning strategies taught with confidence.

Nation (2008, p. 1) claims that although vocabulary teaching/learning is only a “sub-goal” of language instruction, it is of great importance to let it fit in with the goals of EFL teaching in general. According to Nation and Macalister (2010, p. 71), the goals of an EFL course can focus on one or more of four aspects: Language, Ideas, Skills or Text (Discourse). Language refers to language items, including spoken forms (e.g. pronunciation), vocabulary items, and the rules or patterns of grammar. Ideas mean the knowledge of a particular subject or culture. Skills involve language proficiency such as accuracy and fluency as well as processing skills in language use, while text (discourse) indicates the rules, patterns or types of conversational discourse. In Table 7 below, he uses a mnemonic list to facilitate the remembering of these goals in language teaching and learning.

Table 7: Goals for language learning (Nation, 2008, p. 1)

<table>
<thead>
<tr>
<th>General goals</th>
<th>Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Language Items</strong></td>
<td>pronunciation, vocabulary, grammatical construction</td>
</tr>
<tr>
<td><strong>Ideas (content)</strong></td>
<td>subject matter knowledge, cultural knowledge</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td>accuracy, fluency, strategies, process skills or sub-skills</td>
</tr>
</tbody>
</table>
The teaching/learning of English vocabulary, as a part of language learning, should be placed in an appropriate perspective with a range of other EFL teaching goals, as listed in Table 7. According to Nation, it is possible to plan or evaluate the content of vocabulary courses by involving all of these four areas. Based on each of these four aspects, consideration has to be made regarding the course design and its evaluation. For example, in the area of language, the course units may be focused on academic vocabulary, as listed in Academic Words Lists (Coxhead, 2000). The course content may involve vocabulary knowledge, as in Nation’s (2008, p. 27), “what should be involved by knowing a word?” with particular attention to receptive and productive vocabulary skills and processing skills (bottom-up and top-down). The text may be centred on academic English discourse, as in teaching an IELTS (academic module). According to Nation (2008), generally a combination of all of these areas is used to guarantee an excellent teaching and learning outcome, in return for teaching and learning effort. Therefore, the way how these teaching goals are detailed is crucial in determining the effectiveness of a vocabulary course.

2.6.2 Needs Analysis of a Vocabulary Course

A needs analysis of a vocabulary course is used to discover and decide what needs to be taught or what the students want to learn. According to Nation and Macalister (2010), needs analysis in a language or vocabulary course is determined mainly by the teaching goals, as discussed in Sub-section 2.6.1. It examines learners’ existing vocabulary knowledge and what they need to learn.
A good analysis of students’ needs can make sure that the vocabulary course will contain relevant and useful knowledge. This being so, a good instructor should be aware of the students learning needs by addressing the following questions (Nation & Macalister, 2010, p. 78):

a) What kind of vocabulary needs to be taught first (high-frequency words, academic words, technical words, or low-frequency words)?

b) Approximately how many of these types of words need to be taught?

c) What strategies need to be employed?

d) Which specialised areas need particular attention?

e) What are the students’ current strengths and weaknesses in vocabulary knowledge and their control of strategies?

Since the current study focuses strictly on the teaching/learning of academic vocabulary, point (d) above will not be given any further consideration. Point (e) has been discussed in Chapter 1, in relation to the current context of Chinese university students.

To answer questions (a) and (b), it is important for the instructor to be cognisant of the types of English vocabulary. According to Nation (2008), different kinds of words require different kinds of attention at different times. Nation and Gu (2007, p. 2) distinguish four types of vocabulary:

1. High-frequency vocabulary

2. Academic vocabulary

3. Technical vocabulary

4. Low-frequency vocabulary
The first type of vocabulary refers to the most commonly used and wide-ranging words in the language. According to Nation and Gu (2007), these high-frequency words consist of about 2000 words, including 175 function words (articles, propositions, conjunctions, pronouns, numbers, auxiliary verbs and adverbial particles) and 1825 content words (nouns, verbs, adjectives and adverbs). Michael West (1953) provides a list of high-frequency words called *A General Service List of English Words I*. Typically, these 2000 words cover 80% to 90% of running words in a text (Nation, 2008; Nation & Gu, 2007).

The next most important kind of vocabulary is academic vocabulary, which regularly occurs in different academic texts. Coxhead’s (2000) *Academic Word List* is considered the best list of academic words (Nation, 2008). This list contains 570 academic headwords which make up about 9% of running words in academic contexts. Similarly, Xue and Nation (1984) provide a *University Word List*. The *Academic Word List* has been employed in the current research and 474 out of the 570 headwords have been taught.

The third type of vocabulary is technical words, which are used in the text of a specific topic or subject. These words vary from subject field to subject field and are common within a specific area but not so common across all areas. Nation (2008) states that technical vocabulary covers about 5% of the running words in its field.

All the rest of the vocabulary can be considered as low-frequency words. These words are rarely used. Therefore, according to Nation (2008), it is not essential for learners to attain them, because they might be able to guess their meaning from context or, as a last resort, look them up in a dictionary.
In relation to the point (e), instructors need to consider what vocabulary teaching strategies are necessary. It is quite difficult to give an exact definition of what vocabulary strategies are. According to Gu (2003), a vocabulary teaching strategy involves the analysis of learning tasks and planning, monitoring etc., so as to teach L2 vocabulary more effectively. Nation (2008, p. 129), more specifically, lists four aspects which deserve a teacher’s attention:

- What strategies should be used in a vocabulary course?
- How many teaching stages should be involved in the classroom?
- What kinds of knowledge are required as a teacher?
- How to improve the effectiveness of teaching in both vocabulary acquisition and production?

In addition, teachers are required to understand learning strategies in order to apply the teaching strategies effectively. Nation (1990, p. 174) emphasises the significance of vocabulary learning strategies:

Strategies which learners can use independently of a teacher are the most important of all ways of learning vocabulary. For this reason it is worthwhile ensuring that learners are able to apply the strategies and that get plenty of help and encouragement in doing so. By mastering a few strategies learners can cope with thousands of words.

items. This taxonomy contains two major categories: discovering and consolidating. Ma (2009) reviews it in the following Table 8.
Table 8: Vocabulary learning strategies (Ma 2009, p. 162)

<table>
<thead>
<tr>
<th>Vocabulary Learning Strategies</th>
<th>Determination strategies (9 items)</th>
<th>Social strategies (3 items)</th>
<th>Memory strategies (27 items)</th>
<th>Cognitive strategies (9 items)</th>
<th>Metacognitive strategies (5 items)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovering a new word’s meaning</td>
<td>e.g. strategies for discovering the meaning on one’s own, e.g. guess from textual context.</td>
<td>e.g. strategies for discovering the meaning by working with others, e.g. ask classmates for the meaning.</td>
<td>e.g. imaginary and key words method.</td>
<td>e.g. strategies concerning organising lexical information and using mechanical means to memorise words, e.g. keep a vocabulary notebook, verbal repetition.</td>
<td>e.g. using English-language media and spaced word practice.</td>
</tr>
<tr>
<td>Consolidating a word after being encountered</td>
<td>Social strategies (3 items)</td>
<td>Social strategies (3 items)</td>
<td>Memory strategies (27 items)</td>
<td>Memory strategies (27 items)</td>
<td>Memory strategies (27 items)</td>
</tr>
<tr>
<td></td>
<td>e.g. interact with native speakers.</td>
<td>e.g. interact with native speakers.</td>
<td>e.g. imaginary and key words method.</td>
<td>e.g. using English-language media and spaced word practice.</td>
<td>e.g. using English-language media and spaced word practice.</td>
</tr>
</tbody>
</table>

Nation (2008) provides a more practical taxonomy of vocabulary learning strategies, which consists of three main dimensions: planning, source, and processes. The first category of these strategies involves making decisions on where to focus, how to learn, and the frequency of attention to the item. The second category is about word information, like what is involved in knowing a word, while the processing category refers to how to remember and use the vocabulary. The types of strategies in each category are listed in the table below.
Table 9: Taxonomy of vocabulary learning strategies (Nation, 2008, p. 218)

<table>
<thead>
<tr>
<th>General class of strategies</th>
<th>Types of strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning:</td>
<td>Choosing words</td>
</tr>
<tr>
<td>choosing what to focus on and</td>
<td>Choosing the aspects of word knowledge</td>
</tr>
<tr>
<td>when to focus on it</td>
<td>Choosing strategies</td>
</tr>
<tr>
<td>Planning repetition</td>
<td>Planning repetition</td>
</tr>
<tr>
<td>Source:</td>
<td>Analysing the word</td>
</tr>
<tr>
<td>finding information about</td>
<td>Using context</td>
</tr>
<tr>
<td>words</td>
<td>Consulting a reference source in L1 or L2</td>
</tr>
<tr>
<td>Processes:</td>
<td>Using parallels in L1 and L2</td>
</tr>
<tr>
<td>establishing knowledge</td>
<td>Noticing</td>
</tr>
<tr>
<td></td>
<td>Retrieving</td>
</tr>
<tr>
<td></td>
<td>Generating</td>
</tr>
</tbody>
</table>

According to Gu, teachers not only need to know about vocabulary teaching and learning strategies which have the above features, but also need the skill to apply them. Inspired by Nation’s taxonomy, the researcher attempted to put these strategies into consideration when planning and implementing the actual vocabulary course.

2.6.3 Environment Analysis

The aim of environment analysis is to discover the situational factors that will strongly influence the teaching/learning of vocabulary. It is also called situation analysis or constraints analysis (Richards, 2001). According to Tessmer (1990), environment analysis refers to considering the factors that influence the teaching goals of a vocabulary course: the course content, the way to teach, and how to assess it. These factors include the learners, the teachers, and the teaching and learning conditions. Nation (2008) provides some examples of environmental analysis.
Table 10: Some environment factors and their effects on vocabulary course design

Nation (2008, p. 384)

<table>
<thead>
<tr>
<th>Environment factor</th>
<th>The effect on the course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners</td>
<td></td>
</tr>
<tr>
<td>• The learners share the same L1</td>
<td>• Use translation to define words and to test vocabulary knowledge</td>
</tr>
<tr>
<td>• The learners will do homework</td>
<td>• Set graded reading and direct vocabulary learning tasks</td>
</tr>
<tr>
<td>Teachers</td>
<td></td>
</tr>
<tr>
<td>• The teachers do not have much time for marking</td>
<td>• Use vocabulary exercises with answer keys</td>
</tr>
<tr>
<td>Situation</td>
<td></td>
</tr>
<tr>
<td>• L1 and L2 share cognate vocabulary</td>
<td>• Introduce cognate forms early in the course to get quick vocabulary growth</td>
</tr>
<tr>
<td>• Computers are available</td>
<td>• Use CALL activities</td>
</tr>
</tbody>
</table>

Environmental analysis played an important role in relation to the design of the vocabulary course that was constructed for the purposes of the current research, and determined a range of aspects of the course, including using translation to define word meaning, testing vocabulary knowledge, and using CALL (Computer Assisted Language Learning) activities.

2.6.4 Teaching Principles

A teaching principle refers to a set of teaching rules based on the nature of language, learning, and culture which would facilitate teaching outcomes (Nation & Macalister, 2010). Vocabulary courses should be justified by a set of teaching principles, but this does not always happen in practice: “Very few teachers or researchers now follow any particular method or approach in their language teaching” (Nation & Macalister, 2010,
A set of well-justified principles should be followed when designing the components of a vocabulary course (Nation, 2008), and these principles should guide the content and sequence, format and presentation, as well as the monitoring and assessing of the vocabulary course. According to Nation and Macalister (2010), each principle should be supported by research findings and theory in fields like first or second language acquisition, psychology and education. Nation (2008) lists the principles for vocabulary teaching which, in his view, should guide pedagogy, curriculum design and teacher training.

*Table 11: Principles of vocabulary teaching (Nation, 2008, p. 385)*

| Content and sequencing | 1. Use frequency and range of occurrence as ways of deciding what vocabulary to teach and the order in which to teach it.  
2. Give adequate training in essential vocabulary learning strategies.  
3. Give attention to each vocabulary item according to the learning burden of that item.  
4. Provide opportunities to learn the various aspects of what is involved in knowing a word (see p. 43).  
5. Avoid interference by presenting vocabulary in normal use rather than in groupings of synonyms, opposites, free associates or lexical sets.  
6. Deal with high-frequency vocabulary by focusing on the words themselves, and low-frequency vocabulary by focusing on the control of strategies. |
| Format and presentation | 1. Make sure that high-frequency target vocabulary occurs in all the strands of meaning focused input, language focused learning, meaning focused output, and fluency development.  
2. Provide opportunity for spaced, repeated, generative retrieval of words to ensure cumulative growth.  
3. Use depth-of-processing actives. |
| Monitoring and assessment | 1. Test learners to see what vocabulary they need to focus on.  
2. Use monitoring and assessment to keep learners motivated.  
3. Encourage and help learners to reflect on their learning. |
According to Nation, language teachers and course designers should follow these principles which are flexibly based on research evidence. It is worth noting that some teachers fail to use a number of principles which are proven to be very effective, including the using of L1 as a reference to facilitate learning, the importance of learning words in word lists and context, and using a bilingual dictionary rather than a monolingual one. These teaching principles will be considered when designing the current vocabulary course.

2.6.5 Teaching Content and Sequence

The goal of this section of a vocabulary course is to make a list of teaching items and the order in which they will be taught. Nation and Macalister (2010, p. 70) state “content and sequencing must take account of the environment in which the course will be used, the needs of the learners, and principles of teaching and learning”. The table below, provided by Nation and Macalister, lists the critical factors which need to be considered in determining the content and the sequencing of a vocabulary course.
Table 12: Content and sequencing guidelines (Nation & Macalister, 2010, p. 70)

<table>
<thead>
<tr>
<th>Environment</th>
<th>Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The ideas in the course should help learning in the classroom.</td>
</tr>
<tr>
<td></td>
<td>The ideas in the course should suit the age of the learners.</td>
</tr>
<tr>
<td></td>
<td>The content should take account of what learners expect to see in an English course.</td>
</tr>
<tr>
<td></td>
<td>The sequencing of the content should allow for some learners being absent from some classes.</td>
</tr>
<tr>
<td>Teacher</td>
<td>The language in the course should be able to be modelled and comprehended by the teacher.</td>
</tr>
<tr>
<td>Situation</td>
<td>The number of lessons in the course should suit the school term or year.</td>
</tr>
<tr>
<td></td>
<td>The ideas in the course should increase the acceptability and usefulness of the course outside the classroom.</td>
</tr>
<tr>
<td>Needs</td>
<td>Lacks</td>
</tr>
<tr>
<td></td>
<td>The content should suit the proficiency level of the learners.</td>
</tr>
<tr>
<td></td>
<td>Wants</td>
</tr>
<tr>
<td></td>
<td>The content should take account of what learners want.</td>
</tr>
<tr>
<td></td>
<td>Necessities</td>
</tr>
<tr>
<td></td>
<td>The content should be what learners need.</td>
</tr>
<tr>
<td>Principles</td>
<td>See Table 11 above</td>
</tr>
</tbody>
</table>

They also suggest that the teaching principles in Table 11 should give guidance on aspects of:

1. What vocabulary to concentrate on at particular stages of the course.

2. What to focus on (teaching words, teaching strategies, or both).

3. How the teaching is ordered.
A good teacher and course designer should provide a clear content and sequence of the course which guarantee a more effective teaching outcome.

2.6.6 Format and Presentation

The aim of format and presentation is to design the detailed teaching techniques and the course syllabus (Nation & Macalister, 2010). According to these two authors, in format and presentation, the information collected from the needs and environment analysis, and the principles of teaching could be applied in teaching practices: “most of the decisions made regarding constraints, needs, principles, content and sequencing will only be indirectly observable through the format and presentation of the lessons” (Nation & Macalister 2010, p. 88). According to Nation (2008), format and presentation involves the approach to the teaching of vocabulary, the choosing of teaching techniques, and the lesson arrangement. He argues that the basic idea in vocabulary teaching should take the following aspects into consideration.

*Table 13: Format guidelines based on environment and needs*

*(Nation & Macalister, p. 89)*

<table>
<thead>
<tr>
<th>ENVIRONMENT</th>
<th>Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners</td>
<td>The layout of the content should attract the learners.</td>
</tr>
<tr>
<td></td>
<td>The learners should have the skills to do the activities.</td>
</tr>
<tr>
<td></td>
<td>The activities should take account of whether the learners share the same first language.</td>
</tr>
<tr>
<td></td>
<td>The activities should be suitable for a range of levels of proficiency in a class.</td>
</tr>
<tr>
<td></td>
<td>The activities should suit the size of the class.</td>
</tr>
<tr>
<td></td>
<td>The activities should fit the learning styles of the learners.</td>
</tr>
</tbody>
</table>
Teachers

The activities should be able to be presented and managed by the teacher (e.g. the teacher should be able to organise group work).

Situation

The course book should be easy to carry.
The material in the course or the course book should not be too expensive.
The amount of material in a lesson should suit the length of a class.
The activities should suit the physical features of the classroom (e.g. move desks for group work; sound proof for oral work).

NEEDS

Lacks

The learners should be able successfully to complete the activities.

Wants

The activities should take account of what the learners expect to do in a language learning course.

Necessities

The kinds of activities should be useful to the learners in their future use or future learning of the language (e.g. knowing how to rank; knowing how to negotiate).

PRINCIPLES

1 Motivation: As much as possible, the learners should be interested and excited about learning the language and they should come to value this learning.

2 Four strands: A course should include a roughly even balance of meaning-focused input, language-focused learning, meaning-focused output and fluency activities (see Table 2 on p. 35).

3 Comprehensible input: There should be substantial quantities of interesting comprehensible receptive activity in both listening and reading.

4 Fluency: A language course should provide activities aimed at increasing the fluency with which learners can use the language they already know, both receptively and productively.

5 Output: The learners should be pushed to produce the
language in both speaking and writing over a range of discourses.

6 **Deliberate learning:** The course should include language-focused learning on the sound system, spelling, vocabulary, grammar and discourse areas.

7 **Time on task:** As much time as possible should be spent using and focusing on the second language.

8 **Depth of processing:** Learners should process the items to be learned as deeply and as thoughtfully as possible.

9 **Integrative motivation:** A course should be presented so that the learners have the most favourable attitudes to the language, to users of the language, to the teacher’s skill in teaching the language, and to their chance of success in learning the language.

10 **Learning style:** There should be opportunity for learners to work with the learning material in ways that most suit their individual learning style.

In format and presentation, the instructor should use this framework to evaluate the content, techniques, quantity, and quality of the course. For example, does the course involve retrieval and repetition activities? Does it contain the four strands, as discussed in Sub-section 2.3.2 (see p. 35)? Is the format and presentation in line with the teaching principles?

2.6.7 Monitoring and Assessment

Monitoring and assessment in a vocabulary course should concentrate on what aspects to test and how to do so. According to Nation (2008), a sound vocabulary course monitors students’ learning progress and the quality of learning. Assessment can be used as a tool to check the learning progress and to encourage the learners as well. Nation (2008) outlines the main kinds of assessment options for a vocabulary course,
including: diagnostic, short-term achievement, long-term achievement and proficiency test, as listed in the table below.

*Table 14: Options for the assessment of vocabulary in a course (Nation, 2008, p. 392)*

<table>
<thead>
<tr>
<th>Type of assessment</th>
<th>Aims of assessment</th>
<th>Available tests, test formats (length of the test)</th>
<th>How often and when administered</th>
<th>Content of the test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnostic</strong></td>
<td>To determine the appropriate vocabulary level to work on</td>
<td>Vocabulary level test (20-30 minutes)</td>
<td>Once at the beginning of the course</td>
<td>Vocabulary sampled from frequency levels</td>
</tr>
<tr>
<td></td>
<td>To place students in an appropriate group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Short-term achievement</strong></td>
<td>To monitor progress</td>
<td>A wide variety of easily prepared formats testing a range of aspects of vocabulary knowledge (10 minutes)</td>
<td>Every week or fortnight throughout the course</td>
<td>Vocabulary chosen from course materials or by learners</td>
</tr>
<tr>
<td></td>
<td>To motivate students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>To guide changes to the course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Long-term achievement</strong></td>
<td>To determine how well and how much vocabulary has been learned</td>
<td>Multiple-choice Matching Yes or No (30-40 minutes)</td>
<td>Twice: at the beginning and at the end</td>
<td>Vocabulary chosen from course materials</td>
</tr>
<tr>
<td></td>
<td>To help plan the next course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proficiency</strong></td>
<td>To determine vocabulary size</td>
<td>Eurocentres vocabulary size test (30-40 minutes)</td>
<td>Once or twice: at the end and beginning</td>
<td>Vocabulary sampled from a dictionary or a frequency count</td>
</tr>
<tr>
<td></td>
<td>To place students in an appropriate group</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
According to Nation and Macalister (2010), long-term achievement assessment can be used to measure both the achievement of learners during a vocabulary course as well the teaching effectiveness. It has, therefore been employed in the current study and more detailed information is provided in Section 3.5 (Research Instruments).

**2.6.8 Course Evaluation**

As shown in the outer circle of the vocabulary course model (Figure 8), course evaluation includes all of the various sections of the curriculum design process. That is, course evaluation checks all aspects of a vocabulary curriculum to see if it is successful and where it needs to be enhanced. Nation (2008) provides a framework for evaluating a vocabulary course.

*Table 15: Evaluation of the vocabulary components of a vocabulary course  
(Nation, 2008, p. 393)*

<table>
<thead>
<tr>
<th>What to look for</th>
<th>How to look for</th>
<th>How to include it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the teacher know what the learners’ vocabulary level and needs are?</td>
<td>Ask the teacher</td>
<td>Use vocabulary level test. Interview the learners</td>
</tr>
<tr>
<td>Is the programme focusing appropriately on the most suitable level of vocabulary?</td>
<td>Look at what vocabulary or strategies are being taught</td>
<td>Decide whether the focus is high-frequency, academic, or low-frequency vocabulary</td>
</tr>
<tr>
<td>Is the vocabulary helpfully sequenced?</td>
<td>Check that opposites, near synonyms or lexical sets are not being presented in the same lesson</td>
<td>Use texts and discourses to sequence the vocabulary</td>
</tr>
<tr>
<td>Are the skills activities designed to help vocabulary learning?</td>
<td>Look at the written input to the activities. Ask the teacher</td>
<td>Include and monitor wanted vocabulary in the written input</td>
</tr>
</tbody>
</table>
Is there a suitable proportion of opportunities to develop fluency with known vocabulary?

Look at the amount of graded reading, listening to stories, free writing and message based speaking

Use techniques that develop well-beaten paths and rich maps

Does the presentation of vocabulary help learning?

Look for deliberate repetition and spacing. Rate the activities for depth of processing

Develop teaching and revision cycles. Chose a few deep-processing techniques to use

Are the learners excited about their progress?

Watch the learners doing tasks

Set goals

Give feedback on progress

Ask the learner

Keep records

Nation and Macalister (2010) claim that curriculum design is a continuing process, therefore adaption and improvements can be made at any time in the process. An attempt should be made to use the eight part model: goals, needs, environment, principles, content and sequencing, format and presentation, monitoring and assessment, and evaluation.

2.7 Previous Research

2.7.1 Research on Bottom-up and Top-down Approaches

Previous studies into the bottom-up and top-down approaches, as mentioned in the introductory chapter, have mainly dealt with listening and reading comprehension. As Tusui and Fullilove (1998) summarised, many researchers have indicated that the processing strategies underlying effective listening and reading comprehension share many similarities (e.g. Jensen & Hansen 1995, Rost 1990), although one is focused on aural and the other is on visual. According to Goodman (1967) and Smith (1971), both listeners and readers need to access their pre-existing knowledge to decode the text and to create reasonable anticipations of what they are going to hear or read. This kind of
processing has been referred to as “knowledge-based or top-down processing” (Tusui & Fullilove, 1998, p. 433). Listeners and readers also need to decode the input of a linguistic message quickly and correctly, to link the linguistic input against their expectations to check whether it remains consistent or not, and to correct implausible compression. This has been known as “text-based or bottom-up processing” (Carrell, 1988; Carrell & Eisterhold 1983; Rost 1990). Previous studies in reading and listening comprehension have examined the processing approaches used by L2 readers or listeners. Tsui and Fullitove (1998) and Field (2004), in their literature review, categorise the related research on both reading comprehension and listening comprehension, as is briefly reviewed below.

In L2 reading comprehension, there are three schools of thought: top-down processing, bottom-up processing, and both bottom-up and top-down processing. Earlier research mainly emphasises the significance of the top-down processing while the bottom-up approach is regarded as not important (Eskey, 1988). According to Tusui and Fullilove (1998), these ideas were influenced by Goodman’s (1967, 1971) research on L1 reading comprehension and other researchers (Anderson et al. (1977), for instance), and claim that “the background knowledge structures that the reader brings to a text, referred to as ‘schemata’ are much more important than linguistic structures in the text” (Tusui & Fullilove, 1998, p. 434). Therefore, based on these viewpoints, those who are using top-down processing are posited to be more skillful readers than those who are using bottom-up processing. However, others (e.g. Perfett, 1985; Esley, 1988) argue that poor readers can use top-down processing as well as good readers do and poor readers actually rely too much on top-down information due to their insufficient bottom-up skills, such as word recognition. It has been postulated that it is bottom-up skills which are basic to being a good reader (Eskey, 1988; Grabe, 1997). Yet the third viewpoint is
that skilled readers are able to access both bottom-up and top-down processing and shift between the two based on their reading text (Stanovich, 1980; Carrell, 1988, cited in Tusui & Fullilove, 1998). According to Carrell (1988), over-reliance on either bottom-up or top-down processing can lead to poor reading comprehension.

Similarly, some researchers in listening comprehension noted that more skilled listeners are those who can better implement top-down processing, while others hold a different opinion. Hildyard and Olson (1982) found that good listeners apply top-down information from the listening text while poor listeners attend mainly to bottom-up details. In line with this, Shohamy and Inbar (1991, p. 29) report that less proficient listeners showed poor performance on “global questions”, which involved input synthesising or concluding. On the contrary, they performed very well on “local questions”, which required detail identification. However, other researchers have shown that proficient listeners can monitor the ongoing information of the listening input though constantly examining it against the previous cues to evaluate their understanding accordingly. For example, according to Tyler and Warren (1987), only when listeners successfully decode the audio information and integrate it into their existing knowledge, can listening understanding take place. Likewise, Buck (2001) claims that listeners need to monitor their comprehension on progress and its background knowledge to judge whether their understanding is plausible or not. If listeners failed to relate the developing understanding with the input information, they can have severe problems in listening comprehension (Buck, 2001). In other words, similar to reading, listening also involves both top-down and bottom-up processing and how to use these two approaches depends on the goal of listening (Mendelsohn, 2001). As Vandergrift (2004, p. 4) states, “learners need to learn how to use both processes to their advantage, depending on their purpose for listening.”
Tsui and Fullitove’s (1998) study investigates the type of processing skill that is crucial in determining the performance of L2 learners in listening test items in wide-ranging public examinations in Hong Kong over a seven year period. In the study, they investigated two types of variables: schema type and question type. There were two schema types of listening texts. The first type of schema is identified as the “non-matching” schema type (p. 439). That is, the initial information is not matching the subsequent linguistic input. Listeners need to be able to process the received linguistic clues rapidly and correctly, and to revise and correct their schema accordingly, in order to get the right answers. The second type is defined as the “matching” schema type (p. 439). This schema type is activated by the original language input which fits in with the rest of the linguistic input. In other words, listeners could depend on top-down processing to identify the correct answer.

The two kinds of schema type were tested through two types of questions. The first type of question is defined as “global” questions (p. 440), which require participants to know the entire text and then to make deductions. Therefore, participants need to process the entire information or linguistic clues to get the correct answer. The second type is “local” questions (p. 440), which target specific details. The participants are only required to get specific information and therefore overall understanding is not necessary. The research found out that “non-matching” items scored significantly higher than “matching” items regardless of question type. Tsui and Fullitove (1998) suggested that bottom-up processing was more significant than top-down processing in determining the test performance of L2 learning skills on test items. This result is in line with Wilson’s (2003) idea of “bottom-up primacy”, which suggests that bottom-up processing results in better listening comprehension and even facilitates top-down skills.
Chaudron and Richards’ (1986) research produced different results as it examined the ways in which different kinds of discourse markers affect how well foreign university students comprehend university lectures. In particular, the effects of macro markers (those indicating general information and organisation of a text) and micro markers (those functioning as fillers, indicating connections between segmentations, sentences and sections). In the study, four versions of a lecture on American history were designed: a baseline version without specific signals of discourse markers; one with micro markers; one with macro markers; and a version combining both micro and macro markers. The four versions of the lecture were assigned randomly to different classes of pre-university as well as university level groups of English L2 students. The study found that macro markers result in more successful recall of the lecture than micro markers. They claim that this is in agreement with the top-down concept of comprehension, which hints that explicit signals on the organisation of texts will facilitate listeners’ understanding. Additional findings are that the micro signals, which have more bottom-up ingredients, did not assist listening comprehension. They explained that micro markers did not contain additional information to make the lecture more comprehensible, and probably even distracted the listeners. Surprisingly, the combined micro and macro version was inferior to the macro version alone. According to the two researchers, additional micro signals may increase the listening load without adding information that might assist overall comprehension. They conclude that more emphasis should be placed on macro markers in L2 classroom instruction and materials design.

From the review above, it is clear that both top-down and bottom-up processing types are involved in L2 reading and listening alike. Some argue that more skilled readers or listeners favour top-down processing skills, while others believe the opposite. In
addition, more recent research (e.g. Vandergrift, 2004) suggests both processing types are significant in L2 learning or reading comprehension. The question regarding which approach is more or less effective remains negotiable, and further experimental research is needed.

According to Celce-Murcia and Olshtain (2006), bringing a processing dimension into L2 instruction cannot neglect the teaching of vocabulary. For the past decade, practical educational textbooks on language teacher’s education have been emphasising the significance of both bottom-up and top-down approaches (e.g. Celce-Murcia, 2006; Adger, Snow & Christian, 2002; Brown, 2008; Carter & Nunan, 2001; Larsen-Freeman, 2004; Nunan, 2003). However, in previous literature, experimental research findings on the effectiveness of the bottom-up and top-down processing on vocabulary teaching is not available. Such a study to address this question is essential.

2.7.2 Research on Vocabulary Teaching

The significance of vocabulary in L2 teaching can never be over-emphasised. It is recognised as the most important component for learning any language (Gass & Selinker 2001; Al-Jarf 2007). Laufer (1990) affirms that vocabulary is currently considered as central to both native and non-native language acquisition. According to her, a solid knowledge of vocabulary is crucial in all stages of L2 acquisition, and without vocabulary proficiency learners cannot use the language to communicate properly. McCarthy has a similar view, that regardless of how well the learners know the grammar and phonology of a language, they cannot communicate meaningfully if they cannot use a wider range of vocabulary to express their meaning. As Vermeer (2001, p. 28) states “knowing words is the key to understanding and being understood”.
This section has reviewed previous research on vocabulary and vocabulary teaching in order to identify some existing problems, justify sound research findings and to suggest practical implications for both current and future research on vocabulary teaching. This section also identifies some negative factors which have affected the quality of language teaching.

Research on L2 vocabulary learning and instruction has been a growing area of interest in the field of applied linguistics and TESOL (Teaching English to Speakers of Other Languages). Recent studies have addressed a wide range of themes, such as aspects of vocabulary knowledge (Brown, 2008; Zimmerman, 2009; Schmitt & Meara, 1997); vocabulary teaching methods, principles, and classroom activities (Brown, 2008; Schmitt, 2008; Nation, 2008); vocabulary frequency, vocabulary size, and text coverage (Coxhead, 2000, Nation, 2008; Zimmerman, 2004); incidental and intentional vocabulary learning (Read, 2004; Laufer, 2005); and the strategies of vocabulary acquisition (Walters & Bozkurt, 2009). Due to the booming state of L2 vocabulary studies, the current review only focuses on issues directly related to vocabulary instruction in the L2 classroom.

### 2.7.2.1 Sound Research

Given the significant role of teaching English for Academic Purposes (EAP) in tertiary education around the world, specific attention has been paid to research into academic vocabulary (Read, 2004, Nation, 2008, 2011). As mentioned in Sub-section 2.6.2, the *Academic Word List* (AWL) that was compiled by Coxhead (2000) is considered as a major contribution to vocabulary teaching and has been well applied by both teachers and course designers (Nation, 2008; 2011; Read, 2004).
The AWL contains 570 word families, which were chosen according to a careful analysis of a large academic corpus (3.5 million words) which covers 28 academic subject areas. The AWL is representative of academic contexts because it is selected according to the following principles, in order of importance. Firstly, according to Coxhead (2000), the 570 family words were chosen based on range. That is, the family words had to occur in the texts for a majority of subject areas of the academic corpus such as arts, commerce, law, science etc. This selection principle ensures that words in the AWL are useful for all students at the tertiary level regardless of their area of studies and the subjects they take in universities. Secondly, frequency is another consideration in selecting the words. The family words of the AWL had to occur over 100 times in the 3,500,000 word academic corpus in order to be selected for the list. This selection principle guarantees that chosen words will be encountered a reasonable number of times in academic texts. The last selecting principle was the uniformity of frequency. The family words in the AWL had to occur a minimum of 10 times in each university faculty of the academic corpus in order to be included in the list in order to ensure that the vocabulary is equally practical for all areas of students. According to Coxhead (2000), her analysis reports that this word list covers ten percent of the total running words in the academic corpus.

The probable reasons for the widespread use of the AWL can be attributed to the following three aspects: firstly, according to Nation (2011), the accessibility of the free resources offered by Coxhead. Secondly, most tertiary teachers are well-informed about the concept of AWL. Additionally, Coxhead (2006) also provides instructional guidelines on how to teach the AWL:

- Students should be exposed to academic contexts, including reading academic texts and listening to academic lectures and academic discussions. It is suggested
that the written and spoken discourses should not be too difficult to understand, with no more than approximately 5% of the running words in the context being unknown words for the student.

- Students should have the opportunity to be involved in academic discussion and academic writing using academic vocabulary.
- Students should use word cards and study short academic texts intensively in order to learn the words from the list.
- The learning should be started from high frequency words to low frequency words. For example, begin with sub-list 1, then move on to sub-list 2, and finally learn sub-list 10.
- Do not start with words with the letter 'A' and work down alphabetically, but choose words that are not close or related in both meaning and form, because words which share similar meanings or form are easy to confuse and make learning less effective.
- If a word is neither in the AWL nor in the most frequently used 2000 words in English, the word may not be worth learning.
- Pay more attention to retrieving the words instead of recognising them, since retrieving results in a stronger connection between meaning and form. For example, using word cards with the words on one side and the L1 translations on the other side.
- Space the time of repetition of the learned words so as to result in longer lasting memory.
- Process the words thoughtfully in order to acquire the depth of the words learned. For example, imagine the language contexts and situational contexts in which the words are used.
Read (2004) claimed that this list does not involve the semantic information of the words and teachers should depend on dictionaries or available corpora as well as their own knowledge to teach accordingly.

There are very few criticisms of this list. Nation (2008), for example, claims that academic words used in academic discourse may be used differently in another situation, in terms of denotations and connotations. However, Wang and Nation (2004) proved that the words in the AWL have very few homonymies. Others have tried to use the list for purposes that it was not designed for. For example, Hyland and Tse (2007) aimed at turning the list into something beyond the original purpose of the AWL.

2.7.2.2 Existing Problems

The review above provides a positive aspect in relation to vocabulary research and teaching; however, there are some unavoidable problems in this field, as identified by some experts. According to Nation (2011), vocabulary teaching, vocabulary exercises and vocabulary testing have been over-applied in language teaching. Nation claims that vocabulary acquisition involves too much vocabulary instruction and teacher dominated classroom activities. Although, there can be little doubt that deliberate attention to words facilitates vocabulary acquisition, as reviewed in Section 2.3, Walters and Bozkurt (2009) claims that it is of great importance to distinguish vocabulary teaching from vocabulary learning because research evidence shows that teaching does not necessarily result in learning. Nation (2011, p. 536) claims “Applying the research on deliberate learning is misguided if it is done largely through teaching rather than learning”. However, according to Wang (2010), only a small proportion of vocabulary knowledge is acquired through incidental learning. Instruction and vocabulary teaching plays a significant role to improve learning efficiency. As pointed out in the
introductory section of Chapter 1, in the particular Chinese educational context, teachers play a dominant role in gaining any knowledge (Hu, 2002a; Ma, 2009).

In addition, according to many theorists and researchers (Hulstijn & Laufer 2001; Folse 2006; Webb 2007; Kim 2008; Keating, 2008), vocabulary-focused activities only yield a small proportion of the vocabulary studied. Even Folse’s (2006) so called “best activity” (Nation, 2011, p. 536), using the same word to complete three sentences, only yields approximately fifty per cent of words being acquired. On the contrary, related research in China by Wang (2010), for example, reports that output tasks (blank filling, e.g. we grow ____ in the field) actually facilitates vocabulary learning regardless of the student’s language proficiency.

Another problem in this field is that although several vocabulary tests are available for both teachers and researchers to use, they are often employed inappropriately. For example, the Vocabulary Size Test designed by Nation and Beglar (2007), which is originally for a diagnostic test, is often misused as a proficiency measure by some teachers and researchers.

2.7.2.3 Factors that Impact on Teaching Quality

Nation (2008, 2011) also points out several factors that have been found to have a negative impact on the quality of teaching, including poor awareness of scientific findings, insufficient financial resources, insufficient teaching/learning time and lack of a detailed plan.

Firstly, language teachers fail to take scientific research findings into vocabulary courses. For example, previous research demonstrates that deliberately rote learning vocabulary is very valuable and a large number of words can be learned this way
(Thorndike 1908; Griffin & Harley 1996). Quite recently, Elgort’s (2011) research also
indicates that rote learning results in all aspects of vocabulary knowledge development.
In addition, if rote learning is combined with using spaced retrieval techniques or
mnemonic techniques like the key words method, then it will result in quick learning
and a long retained vocabulary knowledge (McDaniel, Pressley & Dunay 1987). It is
worth noting that teachers should treat deliberate rote learning as one part of a well-
balanced teaching program with the proportion of rote learning being about a quarter or
a third of the whole program (Nation, 2007). Teachers are encouraged to use spaced
retrieval and mnemonic techniques when appropriate to employ repetition, but to avoid
serial learning and interfering items (TinkHam, 1989; Waring, 1997). This is in
accordance with Coxhead’s suggestion, as discussed in Sub-section 2.7.2.

Another neglected aspect in vocabulary teaching is extensive reading, which is mainly
focused on learning or teaching vocabulary in context (Nation, 2008; Hu, 2004). This
has proved to have a very positive effects on vocabulary acquisition (Elly &
Mangubhai, 1981; Wang 2010). However, very few teachers apply such strategies in
their vocabulary programs. According to Nation (2011, 2008), most teachers overlook
these research suggestions and hold some subjective viewpoints, such as that a
communicative approach is much more effective than rote learning, which often ignores
some educational contexts, as in China (Hu, 2002a, 2005a).

Secondly, some places may lack the financial support to teach vocabulary. This is
particularly true in the Chinese educational context (Hu, 2002a, 2004, 2005b). Liao
(2004), for example, argues that communicative language teaching is the best approach
for EFL in China, because it is convenient to adopt and it is a student-centered and
innovative method. Although many language teachers might be aware of its advantages
and effectiveness, Hu (2002b) reports that Communicative Language Teaching was first
received with very little attention in China, even being resisted. The financial weakness of the Chinese educational context is one main reason. Gradually, it was adopted or combined with the Grammar Translation Method or Audio-lingual Language Teaching, and finally accepted by some schools and universities in the big cities. Only recently has more attention been paid to the development of this approach.

Thirdly, the lack of time in a language program is the most important reason. As Nation (2011) points out, teachers may feel guilty if most of their language class is occupied by the students’ own activities. This is very true in the Chinese educational context, in which teachers dominate most of the classes (Hu, 2002b; 2004; Ma, 2009; Wang, 2010). However, Nation suggests that student-centered classroom activities should be commonly applied in language courses.

Fourthly, vocabulary courses often lack a detailed plan based on the concept of high-frequency and low-frequency words. As reviewed in Sub-section 2.6.2, there are high frequency and low frequency words in the English language. Nation (2011, 2006) suggests that teachers should deal with high-frequency words distinctly from low-frequency words. The high-frequency words should be learned as quickly as possible, while the low-frequency words should be treated by using key words techniques or guessing from context (Nation, 2009). However, according to Nation, although most language teachers may be aware of this concept, they are generally reluctant to control and select the words according to this principle, because they have to follow the curriculum assigned (Ma, 2009; Hu, 2002a, 2004). In fact, according to McNeill (1994), teachers are not sure about what vocabulary their students need to learn. In addition, they think that it is the course book that will deal with it, but this is rarely the case (Nation, 2011, p. 532).
Last, but most importantly, vocabulary teaching is lacking in the implementation of course plans. As Nation (2011, p. 530) states, “The most important job of the vocabulary teacher is to plan”. According to him, a good vocabulary course plan contains the choice of the most appropriate words for a specific learning group and ensuring that there are balanced learning opportunities.

2.8 Chinese Culture and the Role of Culture in EFL Teaching

Culture is a central concept in almost every field, including politics, economics, organizational management, and educational practices. Generally speaking, cultural tradition refers to a unique lifestyle and beliefs of a particular group of people. According to Zhang and Chen (1990), culture is a particular mode through which people interact with the world mentally, spiritually, and physically. Culture is usually developed by its particular ethnicities and nationalities and the unique characteristics of the races or nations can be represented in their culture.

2.8.1 The Fundamental Features of Chinese Culture

Over five thousand years of development, Chinese culture, as a treasure to the world’s civilisation, contains both traditional and modern features. There are different elements within Chinese cultural groups, but the fundamental characteristics of Chinese culture can be summarised as five general aspects: Creativity, Inclusiveness, Integration, Multiplicity, and Secularity (Gu, 2013, pp. 40-44).

Creativity has been shaped by the reputation and uniqueness of ancient Chinese culture. Historical and archaeological research proved that traditional Chinese culture is full of creativeness. For example, the four ancient inventions (the compass, gunpowder, paper-making, and printing) have contributed tremendously to technology and civilization.
The imperial testing method for selecting intellectuals was also a pioneering examination system which influences testing on both national and international level nowadays. Although the whole society of China was under depression during the Qing dynasty, the Chinese people revitalized their culture and their creativeness as demonstrated in economics, technology, and agriculture, etc. (Gu, 2013).

Inclusiveness refers to the ethos that Chinese people are good at absorbing outside cultures and integrating them into their own. In ancient China, the import of Buddhism from India was a good example. Buddhism was introduced and adapted in accordance with Chinese cultural setting, which became wide-spread and influential to the whole nation, even if it conflicts with Chinese culture. According to Gu (2013), the philosophy of Buddhism actually goes against the traditional Chinese philosophy, since the Chinese people focus on present life while the Buddhism believes in the next life. He (p. 41) also quotes Liang Qichao’s words, a well-known scholar, as follows:

> Whenever China takes anything from the outside, it has the capacity to absorb all the essence as its own nutrition, and it changes the nature and utilises the application to make them into new elements of our civilization, similar to the way that black comes out of blue yet is darker than blue, and ice comes out of water yet is cooler than water.

The third element, Integration, refers to the fact that Chinese culture united the multi-faceted components of the entire fifty-six minority groups regardless of other foreign entities involved. It is a combination of different races, ethnicities, and even nationalities. The unique characteristic is the integration of its diversity. No matter where Chinese citizens are located or where they originated, they shared similar values
(Hu, 2002a; 2005a; 2005b). This is because China has been a united nation for a long period of history and almost each region is governed by the same system in terms of education, community and so on. For instance, although various dialects exist, there is one national language, Mandarin Chinese, used as the main official language everywhere around the country (Gu, 2013).

As mentioned above, thanks to the diversified minority groups, Multiplicity is the fourth feature of Chinese culture. This does not conflict with the nature of Integration; rather, it is a supplement. As mentioned, the People’s Republic of China is comprised of fifty-six ethnicities; apart from the main Han people, there are still fifty-five minorities groups each of which possess its own uniqueness in almost every aspect, such as traditions, community, and language. Even the Han group, which comprises ninety-five percent of entire population, differs from region to region. Each of the four main areas of Qi Lu, Jing Chu, Wu Yue, and Ling Nan has its own uniqueness (Gu, 2013). For example, the north Qi Lu culture is very distinctive from the south Ling Nan culture in term of all aspects, including life styles, linguistic differences, and customs etc.

Lastly, Secularity, as an important component of Chinese culture, means that the Chinese people are realistic human beings, with their focus more on real society and practical activities than on unrealistic or supernatural beliefs, including religion. As Confucius stated, “if I cannot serve the secular society, how can I server the religious one” (cited in Gu, 2013, p. 43). In terms of education, the Chinese culture emphasises that one should cultivate oneself, manage one’s family, administer the county, and finally bring peace to the world. That is to say, a realistic, applicable and practical approach is of more importance than idealistic ones.
2.8.2 The Role of Culture in EFL Teaching

The cultural fundamentals discussed above have significant impact on many aspects of educational practices, including teachers’ beliefs, students’ expectations, and learning environments. Fundamentally, the orientation of cultural values determines the teachers’ beliefs in teaching a course, what students expected from the course, and how the course is appropriately delivered in its education setting (Atkinson, 1999; Hu, 2002c; Ma, 2009; Nation, 2008). For example, the most fundamental value in Chinese culture (Creativity, Inclusiveness, Integration, Multiplicity, and Secularity) informs that an effective EFL course should contain these five basic elements. A course should be innovative and take advantage of new knowledge and advances in technology. The course should include multiple learning components and integrate each component logically and appropriately. Most importantly, the course should be practical and useful in its educational setting. These are the general expectations of Chinese students (Gu, 2013). It is the teachers’ responsibility to take cultural elements into consideration in relation to the course design.

There is some literature on the role of culture in EFL teaching and vocabulary acquisition. Hall’s (1976, p. 42) early idea of hidden culture continues to provide illumination to research and educational practitioners:

Everything man is and does is modified by learning and is therefore malleable. But once learned, these behaviour patterns, these habitual responses, these ways of interacting gradually sink below the surface of the mind and, like the admiral of a submerged submarine fleet, control from the depths. The hidden controls are usually experienced as though they were innate simply because they are not only ubiquitous but habitual as well. What makes it doubly hard to differentiate the
innate from the acquired is the fact that, as people grow up, everyone around them shares.

According to Gu and Schweisfurth (2006) teaching approaches which are effective and commonly used in one culture could be ineffective when they are applied to people from different cultural groups; being aware of this impact of hidden cultures establishes a practical starting point for this study.

Gu (2003), for instance, asserts that successful learning may be partially due to the use of cultural conceptions of learning which are used in traditional schooling and literacy acquisition. Those who are better at using them would presumably to produce better learning outcomes. Gu and Schweisfurth (2006) also found that cultural factors such as the identities of the teachers and learners, the educational context, and the power distance between teachers and students can be significant factors in the adaptations of teaching or learning strategies for Chinese learners. In addition, Hu (2005a) states that if Communicative Language Teaching (CLT) is not adapted to fit Chinese culture, it would be ineffective when applied in China, because it is in conflict with Chinese Culture in several dimensions, including philosophical expectations, the concepts of language, and the ideas of the teachers and students responsibilities etc.

Therefore, research into educational practices must involve the understanding of its cultural fundamentals. Gu (2013, p. 18) states, “the study of education must pay attention to the cultural background of educational practices, rather than isolating the field of education from its cultural contexts”. He also points out that cultural elements such as the characteristics of a country and its historical background can play a significant role on educational studies. In other words, if a study is conducted within a
particular educational system, it is compulsory to understand the cultural foundation on which the educational practices were shaped and originated.

Similarly, educational practices such as EFL teaching are also the products of cultural traditions. It is impossible to effectively implement a new methodology or ideology without a comprehensive knowledge of their cultural traditions (Gu & Schweifurth, 2006; Hu, 2005b). As a Chinese educator and researcher, it is necessary to fully understand one’s own culture, to absorb the excellence of foreign educational practices, to integrate them accordingly, and finally to create realistic, practical and innovative EFL teaching approaches.

2.9 Summary and Implications

Various theoretical issues and research findings related to EFL/ESL vocabulary teaching were reviewed in this chapter. The above review of relevant theory and research findings on L2 vocabulary teaching sheds light on the current research and provides the rationale for why the present research is worth conducting.

The review of methodology and approaches in language teaching shows that when language teaching comes to the post-method era, language teachers should implement teaching approaches, methods and techniques in a more flexible and creative way based on actual educational conditions. Therefore, there is much more to language instruction than just mastering how to apply the teaching approaches or methods in the L2 classroom. While the previous theories of language function as the foundation of practical knowledge, it is the teachers’ responsibility to explore, innovate and develop new ways of teaching based on their own beliefs, principles, and teaching practices. Richards (2008) states that instructors’ development can be viewed as a continuum, which is an ongoing process moving from a research and theory-based conception to a
more values and craft-based conception. As a result, this teaching goes beyond the historical routine, “creating both challenges and rewards for teaching” (p. 25). Vocabulary teaching, as a sub-goal of language teaching, therefore, should be in line with this trend.

The discussion of the *incidental approach* and *the intentional approach* demonstrates that both approaches are important in vocabulary teaching. Therefore, a well-balanced vocabulary program should contain both the intentional approach and the incidental one as well. To clarify, the current research mainly focuses on the deliberate teaching of academic vocabulary in the classroom. Due to time limitations and the educational context in China, teachers cannot let the students learn by themselves during the classes. The incidental aspects are treated through encouraging students to learn independently outside of class time (Ma, 2009; Hu, 2004).

A balanced vocabulary course should take the aspects of vocabulary knowledge and knowledge development into consideration. It is the responsibility of researchers and teachers to decide how to make vocabulary available for both receptive and productive use. It is generally agreed that knowing a word refers to mastering its various aspects and natures, such as its form, meaning and use. Additionally, the development of vocabulary knowledge is an incremental process.

A well-balanced vocabulary course should contain the components that draws together the points discussed above, when undertaking course and syllabus design. The processes of a vocabulary course usually involve needs analysis, goal setting, syllabus planning, selecting teaching approaches, choosing teaching materials, lesson planning, actual teaching and course evaluation. Nation’s (2008) components of a vocabulary course outline the relevant issues.
Although there is some existing research addressing the bottom-up and top-down approaches, such as L2 reading and listening, to the researcher’s best knowledge there has not been a single research project into the bottom-up and top-down approaches to teaching academic English vocabulary, and particularly for university students in Chinese cultural and educational context. In addition, there are a relatively limited number of studies to report on presenting vocabulary teaching approaches and classroom practices. The gap between vocabulary research findings and teaching application remains unfilled. According to Nation (2011), current vocabulary courses have insufficient implementation of previous research findings. He suggests that teaching principles, approaches, and innovation should be based on research findings: “It seems important for researchers to suggest clear principles that teachers can apply, and that are supported by research” (Nation, 2011, p. 537).

It is apparent that existing literature on vocabulary teaching indicates that a well-balanced vocabulary course should draw on all the issues discussed above. Such experimental research, combining both balanced vocabulary course components and vigorous research findings, is of great significance.
Chapter 3: Methodology and Design

3.1 Introduction
This chapter provides a detailed consideration of the methodological aspects of the research conducted here. Firstly, the chapter offers an overview of the study’s design, and then it describes how participants were recruited and how they were allocated to the two research groups (bottom-up and top-down). Then the research instruments are presented and the data collection process is detailed. Finally, the chapter describes the syllabus and the teaching methodologies deployed for vocabulary instruction in the two research groups.

3.2 Overview of the Research Project
The current study was designed to test the effectiveness of two essentially different types of vocabulary teaching methods: bottom-up approach and top-down. For that purpose the study recruited 120 Chinese learners of English as a Foreign Language (EFL) who were first-year university students at Hebei Normal University in China. The study participants were allocated to two research groups. Treatment in both groups involved 48 hours of exposure to EFL academic vocabulary instruction over eight weeks (six hours per week), but one of the groups was strictly exposed to bottom-up vocabulary teaching, while the second one was strictly exposed to top-down vocabulary teaching. Two different vocabulary tests, the Academic Vocabulary Size Test (AVST) and the Controlled-Productive Knowledge Test (CPKT), were administered to participants at the beginning and at the end of the treatment. The study was designed in a way to ensure that all conditions in the two groups (including instructor, syllabus,
teaching materials, venues, and technology used) were as identical as possible, with the exception of the specific teaching approach. In addition, the allocation of participants to the two research groups involved matching of the two groups along a range of variables, such as gender, age, education, and socio-economic status. In essence, considerable effort was made to ensure that the sole relevant variable that was different across the two groups was the teaching approach. Additional non-parametric tests (chi-square) were conducted and as a result there is a reasonable degree of certainty that any post-treatment differences in outcomes between the two groups are due to the different teaching approach (bottom-up or top-down).

3.3 Research Design

The current research used a quasi-experimental design. According to Crewell (2008, p. 313), “quasi-experiments include assignment, but not random assignment of participants to groups”. This design was employed because it has the advantage of matching the existing educational context (Crewell, 2008; Nunan, 2007; Seliger & Shohamy, 2003). That is, for language teachers, quasi-experimental research can be conducted under teaching conditions which can be generally found in a real education context. It is “more likely to have external validity” (Seliger & Shohamy, 2003, p. 149). In addition, it is more convenient to recruit the research participants and it is an ideal design for research conducted by language teachers (Seliger & Shohamy, 2003).

The procedure for conducting the current research is presented in Figure 9, in terms of the research activities from the very beginning of the research to the end, which is adopted with the reference to “Between-Group Designs” (Creswell 2008, p. 314), and “Pre-test/Post-test Design” (Seliger & Shohamy, 2003, p. 143).
Firstly, the research participants were selected (see Sub-section 3.4.1 below), and then their background information was collected before the pre-tests. The participants were arbitrarily allocated into two different experimental groups (teaching group 1 and teaching group 2). After teaching the two experimental groups by the bottom-up and top-down approaches, respectively, the post-test and the course evaluation were administrated. Finally, the data collected from the research procedures were statistically analysed to compare learning outcomes across the two learning groups.

3.4 Participants

3.4.1 Research Sample

The research pool in this study involved all the first year university students enrolled in semester 1, 2011, in Hebei Normal University in China. The selected participants were 120 male and female students. The target number of participants was set at 100, but 20 more participants were added to compensate for anticipated withdrawals from the course during the research period (there was no single absence during the entire research period). According to Groom and Littlemore (2011, p. 95):

Normally, for a quantitative study that aims to make comparisons between two groups of people, one would expect to have a minimum of 30 participants in each
group, giving a total of 60 participants. If however, we wanted to investigate statistical relationships between a large numbers of variables, we would need a much larger group.

Therefore, the number of student participants was sufficiently large to enable generalisation over the wider population of Chinese university students in relation to ESL learning.

The participants targeted were first year university students who enrolled in their first semester at the same university. This guaranteed that they shared similar English proficiency, similar age and educational background, based on the selection criteria of the University Entrance Exam of this university. Hebei Normal University was selected as a recruitment site because of the availability of suitable participants there. In addition, this is a medium-ranked Chinese university located in Shijiazhuang, the capital city of Hebei province. As the name suggests, Hebei Normal University is a teacher-training institution. In terms of its structure and operation, Hebei Normal University is a very typical representative of tertiary institutions in China.

3.4.2 Recruitment

The recruitment of participants was aimed at introducing a sample which is typical of this population. Firstly, an invitation letter was extended to the Head of the Foreign Language Department of Hebei Normal University. In addition, the researcher made an appointment with the Head of the Department. All aspects of the proposed research were explained thoroughly.

After obtaining the permission to recruit students from the institution, the researcher extended invitations to the potential participants, including an information sheet which
offered a thorough explanation of the research goals, its outcomes, and the way the research would be conducted. Potential participants were initially informed about the project and invited to consider the Information Statement provided by the researcher in the presence of the class teacher. Participants were informed that the research was in relation to the effects of bottom-up and top-down approaches on the acquisition of ESL vocabulary for Chinese university students. A general outline of the research procedure was provided to the participants, but no detailed information about the bottom-up and top-down approaches were offered to them.

It was emphasised that participation was strictly voluntary, and a decision to participate did not entail any material benefits or disadvantages for the students. Potential participants were advised that their participation in the research would involve 48 hours of teaching that was additional to their current language program and therefore required extra time and effort on their part. These additional vocabulary classes were, however, an opportunity for students to gain extra knowledge of ESL academic vocabulary that would significantly contribute to their ESL competence at no extra cost. Potential participants were given enough time to make their decision and were only recruited if they agreed to sign the designated consent form. A selection of the first 120 students who agreed to participate was made, and those not selected were thanked for their interest.

3.4.3 Allocation of Participants

After recruitment, participants were given an opportunity to self-allocate to one of two learning groups, Group A and Group B. This was done to enable them to be together in the same learning group with their friends or classmates. As mentioned, it is important that participants did not know in advance which instructional design (bottom-up or top-down) would be used in which group—in other words, their choice of group could not
have been made on that basis. Each of the two learning groups was further subdivided into two classes in order to achieve a manageable class size.

*Table 16: Allocation of participants into groups*

<table>
<thead>
<tr>
<th>Classes</th>
<th>Group A (bottom-up approach)</th>
<th>Group B (top-down approach)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Class 2</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

To ensure that the two groups were matched along a range of parameters, such as gender, age, socio-economic background, including current English proficiency etc., participants’ background information was collected before the teaching began to minimise the influence of any pre-existing variations between the two groups. The student’s background information is summarised in Table 17 below.

*Table 17: Students’ background information*

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Variables</th>
<th>Bottom-Up (N = 60)</th>
<th>Top-Down (N = 60)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36.7</td>
<td>38.3</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>38</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>63.3</td>
<td>61.7</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19-21</td>
<td>57</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>95.0</td>
<td>89.3</td>
</tr>
<tr>
<td></td>
<td>22-25</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Country</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100.0</td>
<td>100</td>
</tr>
<tr>
<td>City</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Capital</td>
<td>6</td>
<td>10.0</td>
<td>4</td>
</tr>
<tr>
<td>Medium</td>
<td>19</td>
<td>31.7</td>
<td>19</td>
</tr>
<tr>
<td>Small</td>
<td>20</td>
<td>33.3</td>
<td>19</td>
</tr>
<tr>
<td>Rural</td>
<td>15</td>
<td>25.0</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Han</td>
<td>53</td>
<td>88.3</td>
<td>51</td>
</tr>
<tr>
<td>Others</td>
<td>7</td>
<td>11.7</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Home Language</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>60</td>
<td>100.0</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mother’s Year of Education</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 12 or equivalent</td>
<td>25</td>
<td>41.7</td>
<td>25</td>
</tr>
<tr>
<td>Year 11 or equivalent</td>
<td>3</td>
<td>5.0</td>
<td>4</td>
</tr>
<tr>
<td>Year 10 or equivalent</td>
<td>3</td>
<td>5.0</td>
<td>6</td>
</tr>
<tr>
<td>Year 9 or equivalent</td>
<td>29</td>
<td>48.3</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Father’s Year of Education</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 12 or equivalent</td>
<td>35</td>
<td>58.3</td>
<td>36</td>
</tr>
<tr>
<td>Year 11 or equivalent</td>
<td>7</td>
<td>11.7</td>
<td>10</td>
</tr>
<tr>
<td>Year 10 or equivalent</td>
<td>4</td>
<td>6.7</td>
<td>3</td>
</tr>
<tr>
<td>Year 9 or equivalent</td>
<td>14</td>
<td>23.3</td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mother’s Degree</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor or above</td>
<td>7</td>
<td>11.7</td>
<td>14</td>
</tr>
<tr>
<td>Diploma</td>
<td>6</td>
<td>10.0</td>
<td>4</td>
</tr>
<tr>
<td>Certificate</td>
<td>8</td>
<td>13.3</td>
<td>10</td>
</tr>
<tr>
<td>No qualification</td>
<td>39</td>
<td>65.0</td>
<td>32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Father’s Degree</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor or above</td>
<td>4</td>
<td>6.7</td>
<td>16</td>
</tr>
<tr>
<td>Diploma</td>
<td>11</td>
<td>18.3</td>
<td>8</td>
</tr>
<tr>
<td>Certificate</td>
<td>14</td>
<td>23.3</td>
<td>10</td>
</tr>
<tr>
<td>No qualification</td>
<td>31</td>
<td>51.7</td>
<td>26</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mother’s Job</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>7</td>
<td>11.7</td>
<td>14</td>
</tr>
<tr>
<td>Group 2</td>
<td>7</td>
<td>11.7</td>
<td>5</td>
</tr>
<tr>
<td>Group 3</td>
<td>6</td>
<td>10.0</td>
<td>10</td>
</tr>
<tr>
<td>Group 4</td>
<td>40</td>
<td>66.7</td>
<td>31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Father’s Job</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>7</td>
<td>11.7</td>
<td>16</td>
</tr>
<tr>
<td>Group 2</td>
<td>7</td>
<td>11.7</td>
<td>9</td>
</tr>
<tr>
<td>Group 3</td>
<td>13</td>
<td>21.7</td>
<td>10</td>
</tr>
<tr>
<td>Group 4</td>
<td>33</td>
<td>55.0</td>
<td>16</td>
</tr>
</tbody>
</table>

Note: the classification of the parents job (Group 1, 2, 3, and 4) is provided in Appendix E
3.5 Instruments

For the purpose of this research, three types of investigating instruments were employed to yield relevant research data: a Background Information Questionnaire, Academic Vocabulary Knowledge Tests (AVST and CPKT), and a Course Evaluation Questionnaire. The Background Information Questionnaire was used to ensure that all the research participants were evenly distributed in the two teaching groups. The AVST and CPKT were used to collect scores for the main analysis (described in the next chapter) in order to answer the research questions, while the Course Evaluation Questionnaire was employed to assess whether the teaching processes were conducted similarly in the two groups. In other words, both the Background Information Questionnaire and the Course Evaluation Questionnaire were used as supplementary instruments and the data collected from them is used in a qualitative manner.

The two tests were the main instruments and the scores from them are systematically analysed in order to answer the research question, namely: which approach is more effective? All the research instruments were provided in an English version because the participants had a level of English proficiency that was sufficient to enable them to understand the instrument. In addition, the research also provided some oral translation for the participant when needed, which is more practical in a Chinese educational context. A detailed description of each instrument is provided below.

3.5.1 Background Information Questionnaire

The background information questions were adapted from an Australian nationally agreed questionnaire for collecting students’ background information ("Data Standards Manual Student Background Characteristics", 2010). The original questionnaire covers students’ background information in relation to:
• Sex
• Indigenous status
• Language background
• Main language other than English spoken in the home
• Country of birth
• Parental education
• Parental occupation

In order to cater for the special needs of the Chinese educational context, the item of Indigenous status was removed, the item of Main language other than English spoken in the home was changed into Main language other than Chinese spoken in the home, and the item of Country of birth was modified into the City of birth.

In order to fit the target research population, a few minor adjustments were also made. A new item of Ethnic group status was added. Additionally, the item about guardian’s language and educational background was removed because there are not many guardians in China as we only have parents or close relatives in most of our homes.

In the revised questionnaire, the variables of each individual participant (e.g. gender, ethnic group, parents’ education) were categorised into 10 categories. Each category was further narrowed to specific sub-classes, as detailed below:

1. In what type of city did you grow up?

   1. Capital city.........................
   2. Medium city (over 2 million people)................................
   3. Small city (less than 2 million people)................................
   4. Rural area.........................
2. Are you of the Han ethnic group or another minority ethnic group?

1. Han ethnic group

2. Other - please specify

A complete version of the questionnaire is attached in Appendix E

3.5.2 Vocabulary Knowledge Tests

To assess the teaching outcomes of the two teaching approaches, two sets of vocabulary knowledge tests were used. The testing items for the pre-tests and post-tests are not the same, but both involved tokens randomly selected from the AWL (Coxhead, 2008).

1. Academic Vocabulary Size Test (pre-test and post-test)

The Academic Vocabulary Size Test (AVST) was constructed in line with Nation’s Vocabulary Level Test (academic vocabulary section) and Paribakht and Wesche’s (1997) original scoring scale for vocabulary knowledge skill. The original version of Nation’s (2008) academic vocabulary size test asks for the match of the academic words with their correct definition, as in the examples below:

1. area ______ written agreement
2. contract ______ way of doing something
3. definition ______ reason for believing something is or is not true

(Nation, 2008, p. 421)
In order to measure the vocabulary size knowledge more accurately, the VKS scoring procedure (Paribakht & Wesche, 1997, p. 181) was added in order to research the maximum effect. In Paribakht and Wesche’s VKS scoring procedure, the participants are expected to indicate their knowledge of the test word based on the scale in the following figure.

Due to the complexity of the scoring procedure in the original version, a more user-friendly version was constructed so as to suit the current research purposes, as is shown in the following examples:

1. Please put a (√) after it, if you recognise the word (write down at least one equivalent Chinese Translation).

2. Please put a (?) after it, if you are not sure.
3. Please put a (×) after it, if you don't know the word.

1. terminate
2. ignorance
3. text
4. illustrate
5. theme
6. image

In this revised version, the matching test of ‘key words and their definition’ in Nation’s model was changed into ‘write down Chinese translation’.

The scoring procedure of the AVST follows the listed rules:

1. If a participant marked “√” for a target work and wrote a correct equivalent Chinese translation, he/she was given a score of 1 point.
2. If he/she marked as “√”, but the Chinese translation was wrong, the score would 0.5 point, because it indicates uncertainty.
3. If he/she marked as “?” , the score would 0.5 point.
4. If he/she marked as “×”, the score would 0.

A full version of the AVST is attached in Appendix E.

2. Controlled-productive test (pre-test and post-test)

The controlled-productive test is Nation’s (2008, p. 427) Productive Level Test (university word list level). This test has been widely employed and recognised (see Schmitt & Clapham, 2001; Laufer & Nation, 1999). In the test, the participants are expected to complete the blank with reference to the provided lexical clue, as detailed below:

• The Far East is one of the most populated reg______ of the world.
• The afflu______ of the western world contrasts with the poverty in other parts.
• The book covers a series of isolated epis______ from history.
The full versions of the pre and post-tests can be viewed in Appendix E.

As an added measure of reliability, the test scores were subjected to correlational analyses. The bivariate correlation coefficients between the T1 and T2 test scores for the whole sample, and for each treatment group, were found to be significant at 0.01. This suggests that the tests were reliable measures of the participants’ vocabulary acquisition.

3.5.3 Course Evaluation Questionnaire

The course evaluation questionnaire aimed to collect student’s feedback on the quality of teaching, in relation to the bottom-up and top-down approaches. According to Morgan (2008, p. 6), there are “three major types of student feedback for teaching which can be collected in quantitative and qualitative forms: (a) numerical questionnaire scores, (b) open-ended questions and (c) focus group interviews”. In the current research, both the numerical questionnaire score and open-ended questions were used.

The numerical questionnaire aimed to collect data on a range of teaching attributes, including the vocabulary course, teaching material, classes in the course, instruction, and students’ views of the teaching outcomes, etc. All the items were designed in accordance with Nation’s (2008) “what to look for?” in his evaluation of vocabulary course components (p. 393). To match the specific purposes of the current course, six items were added to evaluate the six steps used in the bottom-up and top-down teaching approaches. The scale used in the questionnaire was the most commonly used one in questionnaire research, the Likert Scale, (see Groom & Littlemore, 2011, p. 103; Nation & Macalister, 2010, p. 130).

The responses were numbered 1-5 with lower scores indicating a higher endorsement:

1) Strongly agree
2) Agree to some extent
3) Neither disagree nor agree
4) Disagree to some extent
5) Strongly disagree

In addition, open-ended questions were added and were aimed at gathering information on students' opinions of the vocabulary course, using questions like “What are the best things about the course?” and “How could the course be improved?” These are the most commonly used questions in course evaluation. By collecting open-ended feedback, valuable measures were obtained regarding students' perceptions of, and satisfaction with, the vocabulary course. As Morgan (2008, p. 6) states, “these questions may enrich quantitative data and allow students an opportunity to list positive and negative aspects of the course … these comments may help explain numeric results from SET (Student Evaluation of Teaching) and/or complement mean scores.”

The course evaluation form for both approaches is provided:

1. The version for the bottom-up approach:

   5. I found that the different phases listed below were relevant and of good quality:

   - a. Gaining and consolidating the word knowledge of spoken form, written form and word parts.
   - b. Gaining and consolidating the pronunciation, spelling, and formation of other family forms.
   - c. Learning the basic definition and meaning of the target words.
   - d. Learning the phrases and collocations of the target words.
   - e. Learning the receptive and productive knowledge of the target words at sentence level.
   - f. Learning to use the target words both receptively and productively in an academic context.
2. The version for the top-down approach:

5. I found that the different phases listed below were relevant and of good quality:

<table>
<thead>
<tr>
<th>a.</th>
<th>Learning to use the target words both receptively and productively in an academic context.</th>
</tr>
</thead>
<tbody>
<tr>
<td>b.</td>
<td>Learning the receptive and productive knowledge of the target words at sentence level.</td>
</tr>
<tr>
<td>c.</td>
<td>Learning the phrases and collocations of the target words.</td>
</tr>
<tr>
<td>d.</td>
<td>Learning the basic definition and meaning of the target words.</td>
</tr>
<tr>
<td>e.</td>
<td>Gaining and consolidating the pronunciation, spelling, and formation of other family forms.</td>
</tr>
<tr>
<td>f.</td>
<td>Gaining and consolidating the word knowledge of spoken form, written form and word parts.</td>
</tr>
</tbody>
</table>

A full version of this questionnaire is attached in Appendix E.

3.6 Research Procedure

After the allocation of the participants, the research was conducted over five main phases in order to collect research data:

**Stage 1: Collecting background information**

Prior to commencing to collect the main research data (pre and post-tests), a Background Information Questionnaire was administered to all the 120 participants in each class. As stated, the questionnaire aimed at collecting information like gender, age, socio-economic background, etc. so as to ensure that two groups were matched along a range of variables.

Participants’ background information collected from the questionnaire was statistically analysed by using SPSS. The data was run through a series of Chi-square tests from Crosstabs SPSS reports that indicated the students’ background information (e.g. gender, age, education) in the two teaching groups was not significantly different (p> .36). The
only minor difference between the two teaching groups was their father’s education (p= .026). This ensured that the two groups were properly matched along a range of relevant
variables (see Appendix E).

**Stage 2: Pre-test**

After collecting the background information, two academic vocabulary pre-tests (AVST and CPKT) were administered. Each test took about 10 minutes. These tests were used
to test the students’ pre-existing vocabulary knowledge. The test results are reported and
analysed, along with the post-test results, in Chapter 5.

**Stage 3: Teaching**

Following the two pre-tests, 48 hours of instruction were offered to each group. Each
group was taught vocabulary using a particular strategy for 6 hours per week over 8
weeks. The learners in Group A received EFL vocabulary instruction through a bottom-
up approach, while learners in Group B received EFL vocabulary instruction through a
top-down approach. The additional division of participants within each group was
mandated by the need to have class sizes which are manageable for language
instruction, but otherwise their treatment was identical, e.g. Class 1 of Group A received
exactly the same instruction as Class 2 of Group A. To ensure this, the researcher
himself conducted the teaching of each group to avoid any possible variance caused by
different teachers. Detailed information about the teaching procedure and materials is
reported in Section 3.7.

**Stage 4: Post-test**

After eight weeks of teaching, two post-tests (AVST and CPKT) were administered.
The test results obtained from the post-tests were compared with the scores in the pre-
tests, which are provided in the main analysis part in Chapter 5.
Stage 5: Course evaluation

Finally, a Course Evaluation Form (see Appendix E) was distributed to every student in each class, in order to collect qualitative feedback from the participants’ point of view to show whether the two teaching groups were treated equally. The feedback from the course evaluation was also positive in both groups: 30 items out of 34 in the questionnaire were not statistically different between the two research groups (p > .48). That indicated, in general, that the researcher taught both groups equally without a priori preference for either of the two instructional approaches.

In summary, this matching procedural design (the five steps above) was implemented with the purpose of ensuring that any single variation between the two teaching groups was the implementation of the different teaching approaches. In other words, individual variations that might impact on learning outcomes were controlled to the largest extent possible.

3.7 Instruction

The key objective of the instruction was to teach receptive and productive vocabulary knowledge. It was an implementation of the bottom-up and top-down approaches to teaching English academic vocabulary. These two teaching approaches were reflected and detailed in the teaching syllabi and the lesson plans attached (see Appendix B). The vocabulary syllabi and lesson plans were to a large degree an adaptation of Nation’s (2008) and Coxhead’s (2005) ideas of vocabulary teaching, plus the concept of the bottom-up and top-down teaching approaches. A comprehensive review on the components of a vocabulary course, along with the two teaching approaches, has been already provided in the previous chapter. In this section, I present detailed information on how the actual teaching was applied in the two groups.
3.7.1 Teaching Procedure

As mentioned in the literature review chapter, language processing works in two different ways, bottom-up and top-down, which is also reflected in language teaching. For this reason, the current research employed these two approaches to teaching academic vocabulary to university students in China, and then tested the impact of the two approaches on English vocabulary acquisition. The teaching procedure of these two approaches to teaching vocabulary can be illustrated in the Figure 11 below.

![Figure 11: Teaching English vocabulary (bottom-up approach versus top-down approach)](image)

In the figure above, it is clear that there are six steps in either the bottom-up or top-down approach. The only difference between these two approaches is the instructional sequence, or the order in which these steps are applied. The teaching sequence can be divided into two categories. The first 3 steps from the bottom to the top were mainly focused on individual forms, definitions of the target words and the family words, while
the next 3 steps paid more attention to the words’ meaning and usage in relation to their collocations, sentences and context.

The bottom-up approach starts from segments of words, then moves on to individual words, sentences and finally the whole context, whilst the top-down approach works in reverse. It starts teaching words in the contexts in which the target teaching words occur, then moves on to smaller units of vocabulary knowledge.

The teaching sequences for the word interpret are illustrated in Table 18 (bottom-up) and 19 (top-down), respectively.

Table 18: The teaching sequence of the bottom-up approach

<table>
<thead>
<tr>
<th>Teaching sequence</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 1</strong> (From the shortest form to the longest form)</td>
<td></td>
</tr>
<tr>
<td>Event 1: word parts</td>
<td>teaching the prefix ‘inter’ and the root ‘pret’ before teaching ‘interpret’</td>
</tr>
<tr>
<td>Event 2: individual words</td>
<td>teaching the basic definition in English ‘to translate spoken words from one language into another’ and equivalent Chinese translation ‘口译’</td>
</tr>
<tr>
<td>Event 3: family types</td>
<td>teaching from the shortest ‘interpret’ to the longest ‘misinterpretations’: interpret interpreted misinterpret interpretation reinterpretation</td>
</tr>
</tbody>
</table>

**Phase 2** (From phrase level to context level)

Event 4: words in teaching its phrases and collocations like ‘interpret
phrases something as something’

*Event 5: words in sentences* teaching example sentences like ‘They spoke good English, and promised to interpret for me’

*Event 6: words in contexts* teaching the word through the context in which it occurs e.g. ‘I'm first going to focus on the *interpretation* of rock art in Namibia. We are very fortunate to be going to an area where you can find some of the most important sites in the entire world. And I hope to show you how easy it is for everyone to make mistakes in looking at cultures which are different from our own.’ *(IELTS 5, 2008, p. 22)*

**Table 19: The teaching sequence of the top-down approach**

<table>
<thead>
<tr>
<th>Teaching sequence</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 1</strong> (from context level to phrase level)</td>
<td></td>
</tr>
<tr>
<td><em>Event 1: words in contexts</em></td>
<td>as Event 6 above</td>
</tr>
<tr>
<td><em>Event 2: words in sentences</em></td>
<td>as Event 5 above</td>
</tr>
<tr>
<td><em>Event 3: words in phrase</em></td>
<td>as Event 4 above</td>
</tr>
</tbody>
</table>

| **Phase 2** (from the longest form to the shortest ones) | |
| *Event 4: family types* | as Event 3 above |
| *Event 5: individual words* | as Event 2 above |
| *Event 6: word parts* | as Event 1 above |
A detailed teaching procedure and activities for these two approaches is provided in the teaching syllabi and lesson plans attached (see Appendix A and B).

### 3.7.2 Teaching Materials and Resources

As illustrated above, except for the teaching sequence, the other parts of the teaching in both the bottom-up and top-down approaches were exactly the same. Tables 20 and 21 below provide comprehensive and detailed information on the teaching materials, equipment and resources used in the two teaching approaches.

**Table 20: Teaching materials and equipment**

<table>
<thead>
<tr>
<th>Items</th>
<th>Name</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AWL  (Academic Words List) (Coxhead, 2000)</td>
<td>The AWL contains 570 high-frequency head words in academic context with frequency reports of each word. This list is considered as the best list of academic words (Nation, 2008).</td>
<td>Used as a reference to guarantee that the target teaching words (Item 4 below) were in this list, and to inform the students how frequently the target words occurred in academic context.</td>
</tr>
<tr>
<td>2</td>
<td>Sub-lists of the Academic Word List (Coxhead, 2000)</td>
<td>This sub-list offers all the family words of the academic words from the AWL.</td>
<td>Used to define other family types of the target teaching words (Item 4 below).</td>
</tr>
<tr>
<td>3</td>
<td>IELTS 5 (2008) and IELTS 7 (2009)</td>
<td>These 2 IELTS preparing books (academic module) are authentic academic discourse with a high representation of tokens from AWL and its sub-list (Items 1 and 2). The lists of teaching words (Item 4 below) are tokens from the IELTS context. This is in accord with a widely held view that vocabulary teaching should involve authentic materials and informative texts (Nation, 2008; Celce-Murcia &amp; Olshtain, 2001; Mccarthy, 1991; Hirsh, 2010).</td>
<td>Used to show where and how the target teaching words was used in academic context. The <em>find</em> function of Adobe Reader (Item 8 below) were used to locate the target teaching words (Item 4) in this context.</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>The lists of target teaching words</td>
<td>There are 474 academic words out of 570 words from AWL. These 474 words are also tokens from the sub-list and IELTS preparing books (IELTS 5 and 7). In another words, these 474 words occur in the above 3 items at the same time.</td>
<td>Used as the target teaching words.</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Range</td>
<td>A computer program (available without charge on Paul Nation’s web page: <a href="http://www.victoria.ac.nz/lals/staff/paul-nation.aspx">http://www.victoria.ac.nz/lals/staff/paul-nation.aspx</a>). This software, widely used in vocabulary study and teaching, provided a range or distribution figure of target words. For each token from AWL, RANGE provided information on how many texts the word occurs in, the frequency of each token in the text, the total number of times the actual token and its family words (including its derivational and inflexional words) occur in the texts.</td>
<td>It was employed to select the target teaching words to make the lists of target teaching words (Item 4 above).</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>Academic vocabulary exercises</td>
<td>These academic vocabulary exercises are adopted from Zimmerman (2009). Each exercise has a special purpose for the teaching phases (see teaching syllabus and lesson plan Appendix A and B).</td>
<td>Used as note taking forms and exercises for students when listening to the teacher or working in a small group.</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>Computer with internet connection and overhead projector</td>
<td>Teaching device</td>
<td>Used to demonstrate the teaching process and strategies.</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td>Adobe Reader 9.0 (or above)</td>
<td>Teaching software</td>
<td>The <em>find</em> function of Adobe Reader was used to locate the teaching words in AWL, the family words lists and IELTS context. That is, it was used to find where the target teaching words in Item 4 occur in the text of Items 1, 2 and 3 above (see Appendix A).</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>Microphone</td>
<td>Teaching device</td>
<td>Amplified teacher’s voice.</td>
</tr>
<tr>
<td>Items</td>
<td>Name</td>
<td>Description</td>
<td>Function</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>-------------</td>
<td>----------</td>
</tr>
<tr>
<td>1</td>
<td>Word Formation (<em>English Word Information: Word Info about English Vocabulary, 2003</em>)</td>
<td>A dictionary of English vocabulary words derived primarily from Latin and Greek word families, presented individually and in family units, plus vocabulary quizzes. Available at: <a href="http://wordinfo.info">http://wordinfo.info</a>.</td>
<td>Used to define the morphemes of the target teaching words.</td>
</tr>
<tr>
<td>2</td>
<td>WordNet Search 3.0 (Fellbaum et al., 2005)</td>
<td>WordNet is a large lexical database of English. Nouns, verbs, adjectives and adverbs which are grouped into sets of cognitive synonyms (synsets), each expressing a distinct concept. Synsets are interlinked by means of conceptual-semantic and lexical relations. The resulting network of meaningfully related words and concepts can be navigated with the browser. Available at: <a href="http://wordnetweb.princeton.edu/perl/webwn">http://wordnetweb.princeton.edu/perl/webwn</a>.</td>
<td>Used to define other related words of the target words like synonyms and antonyms.</td>
</tr>
<tr>
<td>3</td>
<td>Visual Thesaurus</td>
<td>The Visual Thesaurus is an interactive dictionary and thesaurus that allows students to discover the connections between words in a visually captivating display. Available at: <a href="http://www.visualthesaurus.com/trialover/">http://www.visualthesaurus.com/trialover/</a>.</td>
<td>This is used interchangeably with Item 2 above.</td>
</tr>
<tr>
<td>5</td>
<td>Bilingual online dictionary</td>
<td>Online bilingual dictionary available at: <a href="http://www.iciba.com/">http://www.iciba.com/</a>.</td>
<td>Used as a reference for bilingual definition</td>
</tr>
<tr>
<td>6</td>
<td>Academic vocabulary exercises</td>
<td>Online academic vocabulary exercises available at: <a href="http://www.englishvocabularyexercises.com/AWL">http://www.englishvocabularyexercises.com/AWL</a>.</td>
<td>Used as exercises in the 6 teaching phases.</td>
</tr>
</tbody>
</table>
In the lesson plan (Appendix B), detailed explanations and examples are provided to demonstrate how the teaching materials and resources listed above were used in both the bottom-up and top-down teaching approaches.

3.7.3 Teaching Activities

The research teaching activities in the lesson plan are designed with reference to two reliable resources: the Four Strands and Their Application with a Focus on Vocabulary (Nation, 2008, p. 391) and A Range of Activities for Vocabulary learning by (Nation, 2008, p. 99). The former is presented in the previous chapter, while the latter is reported in Table 22 below.

Table 22: A range of activities for vocabulary learning

<table>
<thead>
<tr>
<th>Goal</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td></td>
</tr>
<tr>
<td>Spoken form</td>
<td>Pronouncing and reading the words.</td>
</tr>
<tr>
<td>Written form</td>
<td>Doing spelling and dictation.</td>
</tr>
<tr>
<td>Word parts</td>
<td>Filling in word part table and building complex words and choosing a correct form.</td>
</tr>
<tr>
<td>Meaning</td>
<td></td>
</tr>
<tr>
<td>Form-meaning connection</td>
<td>Matching word and definitions, discussing the phrase meaning, peer teaching, riddles, drawing and labelling pictures.</td>
</tr>
<tr>
<td>Concept and reference</td>
<td>Finding common meanings, choosing the right meaning, semantic feature analysis, answering questions, and word detective.</td>
</tr>
<tr>
<td>Associations</td>
<td>Finding substitutes, explaining connections, making word maps, classifying words, find opposites, suggesting causes or effects, suggesting associations, finding examples.</td>
</tr>
<tr>
<td>Use</td>
<td></td>
</tr>
<tr>
<td>Grammar</td>
<td>Matching sentence halves, arranging words in order to make sentences.</td>
</tr>
<tr>
<td>Collocates</td>
<td>Matching and finding collocation.</td>
</tr>
<tr>
<td>Constraints on use</td>
<td>Identifying and classifying constraints.</td>
</tr>
</tbody>
</table>


In Table 22 above, Nation classifies the activities of vocabulary learning according to a wide range of aspects regarding what is included in knowing words. He also encourages the idea that vocabulary instruction needs to pay consideration to the several dimensions of each target word. Taking this knowledge into consideration, a detailed syllabus is designed to particularly draw together these ideas by providing specific class activities for both the bottom-up and top-down approaches (see Appendix A).

3.8 Data Analysis

As mentioned previously, the current study only analysed the data from the pre and post-tests of the bottom-up and top-down groups. Other data was used as a reference for checking the qualitative manner of the vocabulary course and were not statistically analysed. The test scores collected, based on the above design, were analysed using SPSS in order to test the research questions and the hypotheses introduced in Chapter 1.

To address the research questions, I employed two kinds of statistics, descriptive statistics and inferential statistics. While the former provides us with primary numerical description about the research data, the latter shows us how significant this information is. For example, in order to test the significance of the mean differences between pre-test and post-test, inferential statistics were employed to calculate the p value (probability). If the values of p < 0.01 it means the differences were statistically significant, whereas if the value of p < 0.05, it was treated as simply significant (Groom & Littlemore, 2011).

In the preliminary analysis, the pre and post AVST and CPKT scores were checked for outliers and normality of distribution. Descriptive statistics were employed to describe the students’ test scores yielded in both pre-test and post-test. The means were used to show the test performances in the pre-test and post-test of both Group A and Group B.
The standard deviation was calculated to indicate how the scores are spread across the students in each group.

Secondly, Paired-samples T-Test were used to make a ‘within group comparison’ between T1 (pre-test) and T2 (post-test) so as to demonstrate the progress which had been made in each group individually in order to address the two research questions:

1. What is the effect of the bottom-up approach on Chinese learners’ acquisition of English academic vocabulary?

2. What is the effect of the top-down approach on Chinese learners’ acquisition of English academic vocabulary?

Finally, I also employed an Independent-samples T-Test to make a ‘between group comparison’ in order to demonstrate which approach was more effective (bottom-up or top-down) and test the three research hypotheses:

1. **Hypothesis one:** A top-down approach produces a larger increase in learners’ receptive academic vocabulary knowledge than a bottom-up approach.

2. **Hypothesis two:** A top-down approach produces a larger increase in learners’ productive academic vocabulary knowledge than a bottom-up approach.

3. **Hypothesis three:** The growth of productive vocabulary knowledge is larger than that of receptive academic vocabulary knowledge when a top-down approach is employed.

The results of the two sets of vocabulary tests were statistically analysed using the SPSS package to establish whether there is a difference in performance between Time 1 (= the pre-tests) and Time 2 (= the post-tests), with the larger the gap between the two, the
better the performance. Any differences that the analyses found between the performances of the two groups were attributed to the difference in treatment and were interpreted as demonstrating the superiority of one approach over the other. Further detailed analytical procedure is presented in the next chapter.

3.9 Summary

This chapter reports on a wide range of aspects related to the current research. It covers the issues of the research design and method, information on participants, instructional procedure, and instrumentations. The investigation used a quasi-experiment between group design and the participants were assigned by controlling as many of the variables as possible. In the main research, after collecting the background information, the researcher first administrated the two pre-tests (AVST and CPKT) to each group. Then he conducted 48 hours of vocabulary teaching based on the teaching syllabus and lesson plan. Finally, the post-tests and course evaluation were administered. The research data collected from the pre-tests and post-tests were statistically analysed to answer the research question proposed. The analytical procedures and the test results were briefly overviewed. More detailed data analysis and the research findings are provided in Chapter 5.
Chapter 4: Data Analysis

4.1 Overview

The aim of the present investigation is to examine the effects of two essentially different vocabulary teaching approaches on students’ levels of vocabulary acquisition, as measured by scores on the Academic Vocabulary Size Test (AVST) and the Controlled-Productive Knowledge Test (CPKT). As previously mentioned, students were divided into two groups, one group was exposed to bottom-up instruction and the other to top-down instruction. The vocabulary tests were administered to the students in each group twice – once at the beginning (Time 1; T1) and once at the end (Time 2; T2) over an eight-week treatment period. The terms pre-test and T1, as well as the terms post-test and T2, will be used interchangeably in this chapter. The key objective of the data analysis was to establish whether there was a difference in performance between T1 (the pre-tests) and T2 (the post-tests) within each group, with the larger the gap between the two and in favour of T2, the better the performance. Any differences that the analyses found between the performances of the two groups at T2 were attributed to the different treatment and were interpreted as demonstrating the superiority of one approach over the other. To address the research questions, two kinds of approaches were employed, descriptive and inferential. While the former provided the research with primary numerical descriptions about the research data, the latter showed us how significant this information was.

4.2 Preliminary (Descriptive) Analysis

The pre and post AVST and CPKT scores were checked for outliers and normality of distribution. The boxplots for the four sets of test scores revealed four outliers among the post-AVST scores and one among the post- CPKT scores. These scores were outside
the low-score boundary of the distributions. The lowest outlying post-AVST score was 30 whereas the lowest score within the normal distribution for that test was 35. The outlying score on the post-CPK test was 8, whereas the lowest score within the normal distribution was 9. Considering that the outliers were of an acceptable magnitude, at about three standard deviations from the respective means for the whole sample, these scores were left unchanged. One of the possible ways of dealing with outliers would have been to substitute them with the lowest score within the normal distribution. Table 23 summarises the descriptive statistics for the four sets of scores.

Table 23: Descriptive statistics for the AVST (pre and post) and CPKT (pre and post) scores by groups and the whole sample

<table>
<thead>
<tr>
<th>Test</th>
<th>Group</th>
<th>M (SD)</th>
<th>Skewness (SEskew)</th>
<th>Kurtosis (SEkurt)</th>
<th>M (SD)</th>
<th>Skewness (SEskew)</th>
<th>Kurtosis (SEkurt)</th>
<th>M (SD)</th>
<th>Skewness (SEskew)</th>
<th>Kurtosis (SEkurt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-AVST</td>
<td>Bottom-up</td>
<td>29.65</td>
<td>.07</td>
<td>-.25</td>
<td>27.67</td>
<td>.29</td>
<td>-.49</td>
<td>28.66</td>
<td>.08</td>
<td>-.38</td>
</tr>
<tr>
<td></td>
<td>Top-down</td>
<td>(4.88)</td>
<td>(.31)</td>
<td>(.61)</td>
<td>(6.38)</td>
<td>(.31)</td>
<td>(.61)</td>
<td>(5.74)</td>
<td>(.22)</td>
<td>(.44)</td>
</tr>
<tr>
<td>Post-AVST</td>
<td>Whole sample</td>
<td>42.70</td>
<td>-.54</td>
<td>1.02</td>
<td>43.78</td>
<td>-.68</td>
<td>.88</td>
<td>(3.96)</td>
<td>(.22)</td>
<td>(.44)</td>
</tr>
<tr>
<td></td>
<td>Bottom-up</td>
<td>44.87</td>
<td>.68</td>
<td>.34</td>
<td>(4.20)</td>
<td>(.31)</td>
<td>(.61)</td>
<td>(3.40)</td>
<td>(.31)</td>
<td>(.61)</td>
</tr>
<tr>
<td></td>
<td>Top-down</td>
<td>(3.31)</td>
<td>(.61)</td>
<td></td>
<td>(4.20)</td>
<td>(.31)</td>
<td>(.61)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-CPKT</td>
<td>Whole sample</td>
<td>9.58</td>
<td>-.43</td>
<td>-.72</td>
<td>9.05</td>
<td>-.12</td>
<td>-.53</td>
<td>(3.07)</td>
<td>(.22)</td>
<td>(.44)</td>
</tr>
<tr>
<td></td>
<td>Bottom-up</td>
<td>8.52</td>
<td>.11</td>
<td>-.54</td>
<td>(3.63)</td>
<td>(.31)</td>
<td>(.61)</td>
<td>(2.30)</td>
<td>(.31)</td>
<td>(.61)</td>
</tr>
<tr>
<td></td>
<td>Top-down</td>
<td>(3.07)</td>
<td>(.22)</td>
<td>(.44)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-CPKT</td>
<td>Whole sample</td>
<td>13.85</td>
<td>-.42</td>
<td>-.19</td>
<td>14.26</td>
<td>-.40</td>
<td>-.54</td>
<td>(2.48)</td>
<td>(.22)</td>
<td>(.44)</td>
</tr>
<tr>
<td></td>
<td>Bottom-up</td>
<td>14.67</td>
<td>-.55</td>
<td>-.65</td>
<td>(2.28)</td>
<td>(.31)</td>
<td>(.61)</td>
<td>(2.62)</td>
<td>(.31)</td>
<td>(.61)</td>
</tr>
<tr>
<td></td>
<td>Top-down</td>
<td>(2.48)</td>
<td>(.22)</td>
<td>(.44)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: (SEskew) = Standard Error of Skewness; (SEkurt) = Standard Error of Kurtosis

Visual inspection of the histograms of the test scores suggested a normal bell curve distribution. Normality of distribution is further confirmed by the fact that all values for skewness displayed in Table 23 are well below 1.0. The ratio between skewness and its standard error, and between kurtosis and its standard error, is less than 3.00 (post-AVST...
skewness-standard error of skewness ratio for the whole sample is the only exception, at a tolerable 3.6). Inspection of the means in Table 23 reveals the expected improvement in participants’ performance at T2. The inferential analysis in the following section tested how significant this improvement was. As a measure of reliability, the scores were also subjected to correlational analysis. The bivariate correlations between pre and post-tests are presented in Table 24.

Table 24: Bivariate correlation coefficients between T1 and T2 test scores for the whole sample and each treatment group

<table>
<thead>
<tr>
<th>Test</th>
<th>Bottom-up</th>
<th>Top-down</th>
<th>Whole sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVST</td>
<td>.47**</td>
<td>.47**</td>
<td>.49**</td>
</tr>
<tr>
<td>CPKT</td>
<td>.85**</td>
<td>.54**</td>
<td>.60**</td>
</tr>
</tbody>
</table>

Note: ** Correlation is significant at the 0.01 level

The size of the correlations suggests that the tests were reliable measures of the participants’ vocabulary acquisition.

4.3 Main Analysis

The analyses were conducted in the order presented in Table 25 in the next page.
Table 25: Research questions and data analysis

<table>
<thead>
<tr>
<th>Research questions</th>
<th>Main statistical technique</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the effect of the two teaching approaches on the acquisition of academic vocabulary size?</td>
<td>1. Mixed model 2 (group: bottom-up versus top-down) x 2 (time: T1 vs. T2) ANOVA</td>
<td>Paired-samples T-Test</td>
</tr>
<tr>
<td></td>
<td>2. Within Group comparison on AVST</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Between Groups comparison on AVST</td>
<td>Independent-samples T-Test</td>
</tr>
<tr>
<td></td>
<td>4. Analysis of Covariance (ANCOVA) with pre-AVST scores as covariate</td>
<td></td>
</tr>
<tr>
<td>2. What is the effect of the two teaching approaches on the acquisition of controlled productive knowledge?</td>
<td>1. Mixed model 2 (group: bottom-up versus top-down) x 2 (time: T1 vs. T2) ANOVA</td>
<td>Paired-samples T-Test</td>
</tr>
<tr>
<td></td>
<td>2. Within Group comparison on CPKT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Between Groups comparison on CPKT</td>
<td>Independent-samples T-Test</td>
</tr>
<tr>
<td></td>
<td>4. ANCOVA with pre-CPKT scores as covariate</td>
<td></td>
</tr>
</tbody>
</table>

Notes: AVST = Academic Vocabulary Size Test; CPKT = Controlled-Productive Knowledge Test
As a first step, a Mixed Model (between-within subjects) 2 (group: bottom-up versus top-down) x 2 (time: T1 versus T2) ANOVA was conducted separately on the AVST and the CPKT scores in order to identify whether length of treatment had a significant effect on the scores and whether there was a significant Time* versus Group interaction. The latter was of particular interest since it indicated that the change over time in one group was significantly different from the change over time in the other group, in other words, whether the gains in vocabulary acquisition were unequally distributed between the two groups. In order to gain insight into the specifics of the differences, the general significance effects and interactions in the ANOVAs were followed up with within group (paired-samples) and between group (independent samples) t-tests. Finally, the test scores were subjected to analysis of covariance (ANCOVA), which was used to establish whether the differences at T2 between the top-down and bottom-up groups remained when controlling for pre-existing variation in the scores at T1.

4.3.1 The Results of Academic Vocabulary Size Tests (AVST)

The Mixed Model 2 (group: bottom-up versus top-down) x 2 (time: T1 versus T2) ANOVA conducted on the AVST scores revealed that there was a significant effect over time, $F_{(1,118)} = 1030.94, p = .000$, partial $\eta^2 = .90$. In other words, the pre and post AVST scores differed significantly between T1 and T2. It should be noted that, as revealed by the size of the partial eta squared statistic (.90), the effect of time (= length of exposure to instruction) seems to be rather large. There was a significant effect of group, $F_{(1.118)} = 7.70, p = .006$, partial $\eta^2 = .06$. The partial eta squared statistic suggests that the effect of group (= type of instruction) seems to be rather weak. There was no significant Time* Group interaction ($p = .85$) suggesting that both groups gained equally in academic vocabulary size.
The significant main effect of time was followed up with within and between group comparisons using t-tests. The within group comparisons showed that the group exposed to bottom-up instruction scored significantly higher on the post-AVST ($M = 44.82$) than on the pre-AVST ($M = 29.65$), $t(59) = -26.49$, $p = .000$. Similarly, the group exposed to top-down instruction also scored significantly higher on the post-AVST ($M = 42.70$) than on the pre-AVST ($M = 27.67$), $t(59) = -20.13$, $p = .000$. These results suggest that both groups, regardless of the type of instruction they were exposed to, made significant gains in the acquisition of academic vocabulary size over the instruction period.

Between group comparisons on the pre-AVST scores revealed that the existing differences between the two groups at T1 were marginal rather than significant, unequal variance $t(110.39) = 1.9$, $p = .058$, with the bottom-up group scoring marginally higher ($M = 29.65$) than the top-down group ($M = 27.67$). At T2, however, the differences between the two groups on the AVS test were statistically significant, $t(118) = 3.10$, $p = .002$, with the bottom-up group ($M = 44.87$) outperforming the top-down group ($M = 42.70$). In order to test whether the marginally significant difference between the groups at T1 was responsible for the statistically significant one at T2, analysis of covariance (ANCOVA) was conducted with the post-AVST scores as a dependent variable and the pre-AVST scores as a covariate. The results revealed that even after controlling for the marginal pre-existing difference between groups at T1, the difference in scores on the post-AVST remained statistically significant, $F(2,117) = 6.01$, $p = .02$, $\eta^2 = .05$. The size of the eta squared statistic (.05) suggests that the effect of the type of instruction on the acquisition of academic vocabulary size is rather weak (versus .90 for time).
4.3.2 The Results of Controlled Productive Knowledge Tests (CPKT)

A similar analytical procedure was conducted to analyse the CPKT score. Firstly, the Mixed Model 2 (group: bottom-up versus top-down) x 2 (time: T1 versus T2) ANOVA was run again on the CPKT scores. The results revealed that there was also a significant effect of time as well, \( F(1,118) = 577.28, p = .000, \) partial \( \eta^2 = .83. \) Likewise, the pre and post-CPKT scores showed a significant difference between T1 and T2. It is also worth noting that the effect of time (= length of exposure to instruction) is nearly as large as that for AVST, as reflected in the size of the partial eta squared statistic (.83). There was no significant effect of group, \( p = .78, \) in the controlled productive vocabulary knowledge test, however, there was a significant Time* Group interaction, \( F(1,118) = 18.87, p = .000, \) partial \( \eta^2 = .14, \) suggesting that one of the groups improved significantly more than the other.

Secondly, the within and between group comparisons was conducted by using a series of t-tests. The results from the within group comparisons revealed that both the bottom-up and the top-down groups scored significantly higher on the post-CPKT than the pre-CPKT. The scores gained from the bottom-up group were: post-CPKT (\( M = 14.67 \)) versus pre-CPKT (\( M = 8.52 \)), \( t(59) = -.34.94, p = .000. \) Similarly, the test score from the top-down group were: post- CPKT (\( M = 13.85 \)) versus pre-CPKT (\( M = 9.58 \)), \( t(59) = -.10.77, p = .000. \) These results indicated that both groups made significant progress in the acquisition of controlled productive vocabulary knowledge after the instruction period, no matter which type of the instruction they were exposed to.

Thirdly, between group comparisons on the pre-CPKT scores were conducted. Similarly to the results for the pre-AVST scores, the Independent samples t-tests showed that the difference between the two groups at T1 was marginal, unequal variance \( t(99.72) = -1.9, \)
\( p = .057 \), although the top-down group scored slightly higher \((M = 9.58)\) than the bottom-up one \((M = 8.52)\). Unlike the results for the post-AVST scores, however, the differences between the two groups on the post-CPKT scores did not reach the conventional level of statistical significance \((p = .071)\), with the bottom-up group \((M = 14.67)\) slightly outperforming the top-down group \((M = 13.85)\).

Since the bottom-up and top-down groups performed equally well on the CPK post-test, there was no need to conduct ANCOVA. Instead, as a follow-up to the significant Time* Group interaction, the group means of the pre and post-CPKT scores were cross-examined. This procedure revealed that although the bottom-up group started at a lower level than the top-down group \((M = 8.52 \text{ versus } M = 9.58)\), they finished higher than their counterparts \((M = 14.67 \text{ versus } M = 13.85)\). In other words, the gain in controlled productive knowledge among the bottom-up group was significantly greater than the gain among the top-down group. Since the two groups did not differ in their performance in statistically significant ways, either at T1 or at T2, the difference in gain between them cannot be attributed to the type of instruction the learners were exposed to without taking into consideration the maturation (time) factor.

**4.4 Conclusion**

Based on the research findings, both groups made significant gains in the attainment of English academic vocabulary, both in terms of vocabulary size and in terms of controlled productive vocabulary knowledge. The bottom-up group, however, slightly outperformed the top-down group at T2 on both vocabulary size and controlled productive vocabulary knowledge. The bottom-up group’s superiority on vocabulary size was found to be statistically significant after controlling for marginal pre-existing differences between the two groups at T1, although the effect size was relatively small. The differences in the two groups’ performance on the controlled productive vocabulary
knowledge test at T2 did not reach statistical significance. However, the bottom-up group was found to have undergone a larger growth in controlled productive vocabulary knowledge from T1 to T2. This difference in growth at T2 between the two groups was found to be statistically significant. These findings indicate that the bottom-up approach worked marginally better for this population of EFL learners.
Chapter 5: Discussion

5.1 Overview

This chapter provides a comprehensive interpretation and discussion of the research results reported in Chapter 4, in the light of relevant existing literature and research. As mentioned previously, the principal objective of the study was to establish which instructional approach to vocabulary teaching, either bottom-up or top-down, produces better learning outcomes in relation to EFL academic vocabulary competence. A secondary goal of the present research was to contribute to the debate on issues of explicit vocabulary instruction in order to enhance students’ academic vocabulary knowledge, both receptively and productively.

To realise the research objective, the study examined experimentally the effectiveness of two teaching approaches to academic vocabulary teaching. Two dimensions of academic English vocabulary development (reception and controlled production) were measured quantitatively across two groups of university students in China. A range of statistical analyses were conducted to establish the effectiveness of these two approaches regarding: 1) the acquisition of Academic Vocabulary Size (AVS); and 2) the acquisition of Controlled Productive Knowledge (CPK).

The most important findings of the study can be summarised as follows. Both groups made significant gains in the attainment of English academic vocabulary, both in terms of vocabulary size and controlled productive vocabulary knowledge. It would seem that the EFL academic vocabulary course that was specifically constructed for the purposes of the current study was quite effective in achieving very good learning outcomes, in either of the two instructional approaches.
The two groups’ high achievement notwithstanding, the bottom-up group slightly outperformed the top-down group at T2 on both vocabulary size and controlled productive vocabulary knowledge. The bottom-up group’s superiority on vocabulary size was found to be statistically significant after controlling for marginal pre-existing differences between the two groups at T1, although the effect size was relatively small. The differences in the two groups’ performance on the controlled productive vocabulary knowledge test at T2 did not reach conventional statistical significance. However, the bottom-up group was found to have undergone a larger growth in controlled productive vocabulary knowledge as a result of the treatment. This difference in growth between the two groups was found to be statistically significant.

The study’s findings clearly indicate that among the two instructional approaches the bottom-up worked marginally better for this population of EFL learners (i.e. first-year university students in China). Put simply, the learners seemed to favour bottom-up over top-down processing.

To my best knowledge, this study is the first to examine the bottom-up and top-down approach aligned with vocabulary instruction; it is also the first to investigate these issues in the Chinese educational context. This chapter will further discuss and interpret the research findings in relation to both theory and practice. With regard to the theoretical aspects, the discussion will focus on various core concepts, including Jiang’s (2000) theory of lexical representation and development, and the bottom-up and top-down input processing in language learning. In relation to the practical dimensions, the discussion will consider the findings in reference to what relevant literature describes as effective teaching principles and methods, as well as to the specifics of the Chinese cultural and educational context.
This chapter will be organised in the following order: Section 5.2 will consider possible explanations for the different effects on achievement of the bottom-up and top-down approaches. Section 5.3 will discuss the vocabulary course that was specifically designed for the purposes of the study, and will consider the role that this design played in relation to the participants’ achievements.

5.2 The Different Effect between Bottom-up and Top-down Approaches

To address this research objective, the research question was subdivided into three research hypotheses as stated in Chapter 1 (see p. 18).

The current research findings rejected all three preliminary research hypotheses. The main findings indicate that by the end of the treatment the bottom-up approach slightly outperformed the top-down one on both vocabulary size and controlled productive vocabulary knowledge.

Previous research into bottom-up and top-down language processing, as reviewed in Chapter 2, has mainly focused on L2 listening and reading comprehension with, to our best knowledge, little or no attention paid to vocabulary instruction. It indicates that low-proficiency learners favour bottom-up processing while high-proficiency learners favour top-down. Related literature typically favours the top-down over the bottom-up approach, associating higher achievement with the former. For example, according to Eskey (1988), earlier research in L2 reading skills mainly emphasises the significance of the top-down processing while the bottom-up one is regarded as unimportant. Chaudron and Richard (1986) also report that the top-down comprehension of academic lecture discourse leads to a better recall of a listening text than the bottom-up one. In line with this, Tsui and Fullilove (1998) suggest that those who are using top-down processing are more skillful readers than those who are using the bottom-up one. Similarly, Hildyard and Olson (1982) found that good listeners use top-down processing,
while poor listeners mainly attend to lower-level textual details. Shohamy and Inbar (1991, p. 29) confirmed that less proficient listeners showed poor performance on “global questions”, which involved input synthesising or concluding skills based on overall information.

The current research findings appear to go against the advantages that previous research has found in the top-down approach. However, they do support the notion that the L2 learners’ proficiency level is an indicator of their preferred way of language processing (bottom-up or top-down), with low proficiency learners tending to favour bottom-up processing. The following sections will discuss three possible reasons why, in this study, the bottom-up group outperformed the top-down one: 1) The alignment of the bottom-up approach with the developmental stages of Jiang’s (2000) L2 lexical acquisition model; 2) learners’ L2 proficiency level; and 3) the socio-cultural and educational specifics of the Chinese context.
5.2.1 Nature of L2 Lexical Acquisition and its Alignment with Bottom-up Processing

The current findings indicate clearly that the bottom-up instructional approaches worked slightly better for this population of EFL learners. It may be the case that by its nature second language (L2) lexical development is better aligned with bottom-up instruction.

According to Jiang’s (2000) theory, L2 lexical acquisition involves three distinct stages. An initial stage only involves phonological and orthographic features for the L2 lexical entry. With the increase of learners’ exposure to the L2, the L2 lexical entry is linked to a first language (L1) translation equivalent. Notably, at this stage the L2 entry involves L2 phonological and orthographic features, but L1 syntactic and semantic features. After more exposure to, and experience with, the L2, the L1 syntactic and semantic features are gradually replaced by L2 syntactic and semantic features. This constitutes the third and final stage of L2 lexical development. Jiang’s model of L2 lexical development is schematically presented in Figure 12 below.
The actual sequencing of vocabulary instruction used in the bottom-up approach seems reasonably well aligned with these three stages. In the bottom-up instruction, the first step involved presenting the phonological, morphological and graphemic features of the target word. Then the word’s definition and its Chinese translation were introduced, followed by instruction in related forms. These first three steps seem to correspond quite closely to the first two stages of Jiang’s model, while steps 4-6 of the bottom-up approach, which were concerned with the word’s use in higher ranked linguistic structures (e.g. collocations, clauses, discourse), appear to correspond well to Jiang’s stage 3. As pointed out earlier, the top-down approach involved the reverse sequence of instructional steps.
5.2.2 Learner’s Low Proficiency Level Favours Bottom-up Processing

Another factor which is quite likely to have played a role in relation to this study’s results is the learners’ L2 proficiency level. There is generally an agreement in relevant literature that top-down processing is more common among high-proficiency learners, while lower proficiency learners tend to favour bottom-up processing (Eskey, 1988; Tsui & Fullilove, 1998). This pattern is probably, at least in part, due to the different modes of processing associated with language perception and language production.

As reviewed in Chapter 2, language perception is essentially (though not exclusively) bottom-up, while the opposite seems to be the case with language production. Levelt et al.’s (1999) model of speech production presented earlier is a good illustration of that. According to the authors, “the production of words is conceived as a staged process, leading from conceptual preparation to the initiation of articulation” (p. 2). Firstly, the
lexical concepts are activated and then followed by the lemma selection. Next, the morphological and phonological information of a lexicon is encoded in its prosodic context. At the last stage, the phonetic encoding is processed during articulation. According to Levelt’s model, lexical production is mainly a top-down based processing.

In most natural circumstances the initial phases of (second) language acquisition are predominantly receptive (and therefore bottom-up). As L2 teaching professionals know quite well, the productive skills often lag considerably behind, and in some situations (especially in foreign language contexts) may not evolve to any substantial degree. In the case of the current participants, the test scores at T1 (as reported in Chapter 4) clearly indicate that their proficiency levels in English were relatively low, at least as far as their L2 lexical competence was concerned, with a natural tendency for bottom-up processing.

5.2.3 Socio-cultural and Traditional Factors in the Chinese Context

These two factors, proficiency level and nature of L2 lexical development, together go a long way towards explaining the advantages of the bottom-up instructional approach found in the current study. Our participants’ preference for bottom-up processing may have additionally been reinforced by cultural and traditional factors specific to the Chinese context. It would appear that the notion of ‘bottom-up’, as a mode of information processing and knowledge formation, is very deeply rooted in the socio-cultural and educational traditions of China. The concept of gradual evolution from smaller and more basic elements to complex and elaborate structures seems to have been a continuous theme in Chinese thought and philosophy over a very long time, and remains a distinct characteristic feature of the contemporary Chinese mentality. It is also a matter of fact that most education in the Chinese context (including first language
literacy and second language teaching) involves bottom-up instruction. In light of that, it should not be surprising that Chinese learners favour bottom-up processing.

In order to discuss how these factors may have shaped the Chinese preferred way of learning, this section will consider two principal questions: (1) What is the Chinese concept of “bottom-up”?: and (2) How does the unique Chinese social and cultural traditions influence Chinese people’s preferred way of learning and teaching?

To answer the first question, some commentary on the Chinese philosophy of “bottom-up” will be provided, which involves a brief review of the prominent school of thought in ‘Xici’ 《系辞》 by Confucius, as well as some common Chinese values and beliefs in learning/teaching represented in classical literature, sayings, and proverbs. In addressing the second question, the next section will reveal the Chinese educational practices in L1 and L2 teaching/learning, and their possible relevance to the findings of the current study. The following review of some quotes from ‘Yiching. Xici’ 《易经.系辞》 and other evidence such as Chinese classics, sayings and proverbs will provide some idea of the common strategies in the Chinese people’s preferred way of learning.

An ancient Chinese classic, known as The Book of Changes (Yi Jing), is considered to have influenced Chinese and, more generally, Asian culture and values more than any other classic (Fung, 1952). ‘Yiching Xici’ 《易经.系辞》 by Confucius and his students is its extended version, with more detailed explanation in relation to its practice in the lives of Chinese people. This philosophy has played a dominant role in shaping the ways of thinking, values and customs of Chinese people (Secter, 1998), as evidenced in the following quotes:
[Quote 1] “易有太极，是生两仪，两仪生四象，四象生八卦” (Yang & Zhang 1997, p. 1)

[English]

Yi (zero/naught/cosmos) possesses Taichi (the entire world/universe), which generates Yinyang (positive and negative). Yinyang then creates four natural manifestations (e.g. spring, summer, autumn, and winter), which further create the Eight Diagrams (including heaven, thunder, river, mountain, earth, wind, flame, ocean).

Figure 14 illustrates graphically the notion that the creation of everything is a process of generation which evolves from bottom to top. The existence of everything in the entire universe is produced by two opposite, but correlated, elements Yinyang (positive and negative), through bottom-up processing. This thought, originating from Yiching, is considered as one of the centrepieces of Chinese philosophy and culture, and has strongly influenced Chinese people’s thinking and behaviour (Swetz, 2003; Secter, 1998).
Another two very famous quotes from *Tao Te Ching* by Laozi (Laozi & Chen, 1989) go as follows:

[Quote 2] “合抱之木，生于毫末；九层之台，起于累土；千里之行，始于足下”

[English] Great oaks grow from little acorns; skyscrapers build up from their very basement; the longest journey begins with a single step/little by little one goes far.

[Quote 3] “道生一，一生二，二生三，三生万物.”

[English] Dao (the principle of Nature) generates one; one grows two; two produces three; and three creates everything.

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3 The *Tao Te Ching* (道德经: 道 dào "way"; 德 dé "virtue"; 经 "classic" or "book") also refers to its author Laozi, who is an ancient Chinese philosopher (around the 6th century BC). It is a Chinese classic and the text is considered as the foundation to both Chinese philosophical and religious beliefs and strongly influenced other schools, such as Legalism, Confucianism and Chinese Buddhism.
According to Laozi, the world creation rule is based on the *nothing-to-everything* principle. A new creation is built up on the foundation or the base of an existing one through ‘bottom-up’ processing.

These principles are also reflected in a number of common Chinese everyday sayings, for example:

[Quote 4] “故不积跬步，無以至千里，不積小流，無以成江海。” 荀況《勸學篇》

[English] No starting point, no accomplishment; no stream, no ocean.

[Quote 5] “積簿而為厚，聚少而為多” 《战国策·秦策四》 “聚少成多，積小致巨” 《汉书·董仲舒传》

[English] Many a little make a mickle; from small increments comes abundance; many a pickle makes a muckle.


[English] High buildings rise from the ground.

From the above examples, ranging from original Chinese philosophy to daily sayings, it is obvious that the value of “bottom-up” processing is deeply rooted in Chinese people’s consciousness. The following subsections will consider some evidence about how educational practices in the Chinese context predominantly rely on bottom-up instruction.
5.2.3.1 “Bottom-up” and Chinese Literacy Learning/Teaching

This section presents evidence that most teaching and learning of literacy within the Chinese educational system is typically based on bottom-up processing. Such evidence comes from the specific teaching/learning methods and textbook materials involved in the development of L1 literacy in China, as well as related research findings.

It is widely recognised that Chinese literacy is taught and acquired via a bottom-up approach. According to Jin (2010), an accumulative knowledge from word to text level is significant for achieving proficiency in Chinese literacy. He also provides a guideline to assist both Chinese teachers and learners to acquire their Chinese literacy more effectively. This involves “字 [zi] (words)、词 [ci] (phrases)、句 [ju] (sentences)、段 [duan] (paragraphs)、篇 [pian] (texts)”, as illustrated in the Figure 15 below:

![Figure 15: Chinese learning order versus bottom-up vocabulary teaching approach](image)

Jin (2010) claims that these five steps provide a strong foundation for Chinese literacy (Jin, 2010; Tong et al., 2009). Generally, Chinese people learn their Mandarin words through this building-up process (Sun, 2006). For example, the Chinese character script, in terms of its design and use, predominantly requires bottom-up processing. The following figure of Chinese character stroke order may well illustrate this process.
Character stroke is a compulsory teaching and learning task for the acquisition of Chinese literacy. The stroke order, and accounting for the stroke numbers, has always been a traditional and effective approach to learning how to write in Chinese. It has been widely applied in all primary schools in China (Peng, 1997). For example, anyone who has experienced primary school in China cannot fail to be very familiar with the following exercise of Chinese handwriting.

This approach has now been used in the field of Teaching Chinese as a Foreign Language and is a compulsory and time-honored exercise in Chinese learning (Peng, 1997). There are also a number of practical reasons for Chinese people to learn Chinese characters by their stroke order. According to Sun (2006), one main reason for Chinese
learners to know the stroke is that the index systems of many Chinese dictionaries are based on the rules of stroke order. The exact entry of Chinese characters relies on their sequence and number of strokes. For example, Modern Chinese Dictionary, the most influential dictionary in China, uses the stroke system. The index system is divided into two parts: 部首 (initial radical) and 检字表 (radical’s index). More than 56,000 words in this dictionary can be accessed with reference to approximately 200 initial radicals through their stoke orders and numbers. Therefore, it is essential for dictionary users to be very familiar with the stoke orders and numbers of each given character.

If, for example, we are going to look up the word 妈 (mother) in which the initial radical is 女 (female), we first need to count the stroke number of 女 based on its stroke order (see the first three strokes in Figure 16). Then we turn to the page of the initial radical section to locate all the initial radicals which contain three strokes to find 女. The 女 will guide us to the page in the radical’s index section which lists all the characters with the 女 as their initial radical. This list, similarly, is organised by stroke numbers. The next step is to count the second part of the word 马 (horse), which contains three strokes as well (see the last three strokes in Figure 16 above). Finally, in the three strokes section of 女 as its initial radicals, we can locate the exact page number of the word 妈 in the dictionary. Although the Romanised spelling system was adopted as an alternative index system for Chinese dictionaries, the stroke index system still plays a dominate role for Chinese dictionary users, particularly for those who are not familiar with the Romanised spelling.
Additionally, even the Chinese input method used in modern technology (e.g. computer keyboard and smartphone input method) is typically based on the bottom-up stroke order.

![Diagram](image)

*Figure 18: Four symbol designs (a-d) representing strokes on key 1 to 9 (digits and letters are omitted for clarity). Three keys in current phones having all three items on them are shown as an example (e) (Lin & Sears, 2005, p. 1594).*

As shown in Figure 18, the input method of all Chinese characters is typed by stroke because, as explained previously, Chinese characters are depicted by a set of strokes. This smartphone keyboard is obviously designed based on the decomposed Chinese character, which is similar to the stroke used in Chinese handwriting. The principle is that each keystroke will trigger the stroke library (similar to the Chinese dictionary mentioned above) which is built into the computer system. Therefore, anyone who is competent in stroke-based Chinese handwriting will master this input method effortlessly. According to Lin and Sears (2005), this stroke method is more efficient than the Pinyin method which is based on the Romanised spelling system.

Obviously, the bottom-up stroke order is deeply rooted in Chinese people’s minds, not only in terms of the processes of learning Chinese characters, but in terms of daily practices as well.
Examples of the dominance of the bottom-up approach can easily be found in the textbooks and other teaching and learning materials for Chinese literacy. For example, many bottom-up based exercises can be found in a set of Chinese literacy textbooks called *Xiao Xue Yu Wen (Chinese Literacy Primary School)* (The National Education Ministry of China, 2011), which has been used as a compulsory textbook for all primary schools in China. The following two examples illustrate how new vocabulary is taught and learnt. The first example is from the textbook of Chinese literacy for Primary School (Primary School Writing Textbook, 2011):

- 白（white, pronounced [bai] with first tone）
- 木（wood, pronounced [mu] with fourth tone）
- 柏=木+白（cypress = wood + white）
- 柏树 = 柏 + 树(cypress tree = cypress + tree)

In this example, learners are recommended to learn the word “白 white” first, and then learn another related word “柏 cypress” which is constructed of “木 wood” and “白 white”. So the new word “柏 cypress” and the previous word “白 white” share very similar pronunciation [bai], while the meaning of “柏 cypress” is related to “木 wood”. The new vocabulary “柏树 cypress tree” is comprised of “柏 cypress” and “树 tree”.

ShaoLan (TED talks, 2013), an innovative Chinese teacher, designed a simple lesson in recognising the ideas behind the characters and their meaning. Her teaching methodology, named *Chineasy*, focuses on building from a few simple forms to more complex concepts. She has identified the top one hundred “components” to construct nearly two thousand of the most frequently used Chinese characters. To create more
characters, you just need to combine two or three (and sometimes four or five) of these components together, as exemplified below.

- 人(person) → 从(follow) → 众(crowd)
- 木(tree) → 林(woods) → 森(forest)
- 火(fire) → 炎(hot) → 焚(flame)

According to Li (2006), Chinese perspectives on literacy learning can be summarised as follows:

- Literacy learning contains a particular learning sequence.
- The basic elements of words should be learnt or taught first before starting to read.
- Learners will be able to use their learned words and sentences to build up new words and sentences.
- Knowing the basic lexical, grammatical, and syntactical rules is fundamental for composition.
- Memorising words and sentences is crucial to improve ability in composition.

In Li’s study about Chinese parents’ perspectives on literacy attainment in both reading and writing, their views of their children’s L2 learning were in alignment with their own L1 learning experience, which was dominantly bottom-up. He claims that Chinese parents’ perceptions of both the reading and writing process were consistent with a bottom-up approach. This is in line with Hu’s (2002a, p. 38) Four M’s of Chinese cultural learning: Meticulousity, Memorisation, Mental activeness, and Mastery. He states that Meticulousity refers to concentration on the smallest units or details of
knowledge, and ambiguity is not tolerated. In this model, Meticulousity provides the foundation for the other components, suggesting an essentially bottom-up process (Cortazzi & Jin, 1996). Hu (2002a p. 38, my emphasis) claims:

[The] four M’s of learning are largely incompatible with pedagogical practices that advocate a holistic approach to learning, downplay the importance of memorization, stress verbal interaction at the expense of inner activity, and encourage speculation (e.g. guesswork) and tolerance for ambiguity.

5.2.3.2 “Bottom-up” and English Language Teaching (ELT)

Apart from Chinese literacy acquisition, English Language Teaching (ELT) in China also has a long history which is largely bottom-up dominated. It is a fact that most English teaching and learning within the Chinese educational system is also based on bottom-up processing.

Over the years, a variety of ELT approaches have been imported, reformed and/or adapted in accordance with the long history of ELT in China (Burnaby & Sun, 1989; Chen, 1989; Ross; 1993; J. Su, Liu & Liu, 1994, quoted in Hu, 2002a). However, the majority of these approaches, including the Direct Method, Situational Language Teaching and the Silent Way, have failed to have a far-reaching impact, and only three main approaches have been truly embraced by teachers and learners: the Grammar Translation Method (GTM); the Audio-Lingual Method (ALM); and Communicative Language Teaching (CLT) (Hu, 2002a, p. 28). The following section reviews these three main methodologies, their actual application in English classrooms, and their relationship with bottom-up processing.
GTM was initially used to teach Latin and Greek in Prussia and was originally called the “Prussian Method” in the United States (Richards & Rodgers, 2010, p. 5). The main technique used by teachers was an integration of both grammar and translation (Escher, 1928; Kelly, 1969, quoted in Hu, 2002a). According to Richards and Rodgers (2001), the main goal of this method is to train learners to read the literature of a target language in order to become competent in that language. The first language (L1) is always used as the reference template for learning; the second language (L2) is taught by introducing and practising its grammatical rules. Ability for accurate translation is the main criterion for measuring learning outcomes. According to Hu (2002a), the classic version of GTM in China can be represented in intensive reading classes, which are commonly used at virtually all levels of ELT. The teaching principles of this method in China, which are essentially bottom-up based, are described as follows:

- Both teachers and students are well prepared before the new lessons, including previewing the new words and phrases in the target text (about 400 words), grammatical points, and the meaning of the text.
- The teacher first reviews or summarises the key words, language points, and the grammatical structure in sentences previously learned and then either reads the new text her/himself or invites a student to read it.
- Following that the teacher explains the key words, and their related words (e.g. synonyms and antonyms) and their grammatical functions.
- Next, the teacher begins to explain the clause and sentence structure of the text with reference to both grammatical and semantic dimensions, and introduces some paraphrasing or translating techniques to render complicated sentences comprehensible.
• The teacher then moves on to teach comprehensively through reflective discussion of the contextual meaning. The teacher may nominate some students to rehearse the content of the text or he/she may guide students in language exercises designed to consolidate the grammatical or linguistic points learned from word to text level.

• Finally, the teacher summarises the key points of the lesson and assigns homework, including a preview of the next lesson which follows similar sequences.

The second among the more influential language teaching methods in China is the Audio Lingual Method (ALM). This approach originated in America and is known as the “Army Method”. The approach was firmly grounded in behavioural psychology (Richards & Rodgers, 2010, p. 51), with its most fundamental premise being that foreign languages are most effectively learnt through a process of “mechanical habit formation” (p. 57). This methodological process involves “acquiring a set of appropriate language stimulus-response chains” (p. 56). From the point of view of linguistic structure, this approach also involves a large proportion of “bottom-up” components. According to Hu (2002a) and Richards and Rodgers (2010), this supports the idea that language is a structural system in which elements are structurally related, and meaning is encoded through the elements from bottom to top, namely phonemes, morphemes, words, structures, and sentence types. In China this teaching method was received very favourably and was widely adopted for language teaching in schools and universities alike, not least because some of its teaching principles, including accuracy-focused imitation, and structure-based syllabus, are very similar to that of the GTM. These kinds of bottom-up embedded methods seem well suited to the Chinese educational context (Hu, 2002a). Audio Lingual Method’s teaching principles and techniques are still
widely used in current Chinese teaching materials and classroom practices, commonly involving the following elements (Cortazzi & Jin, 1996; Ma, 2009; Hu, 2002a):

- Learning materials are presented in performing patterns or dialogue forms to induce learners to mimic, from small units to text level (phonemes, lexicons, phrases, sentences, and texts), so as to establish a foundation for their verbal behavior in all linguistic levels.
- Great effort is made to ensure that students minimise errors from the bottom to the top, because it is believed that correct responses in all levels form the foundation of good linguistic habits, whereas mistaken responses lead to the opposite.
- Vocabulary and grammar are also taught and analysed similarly to the GTM, and learning is believed to be better grounded when all aspects of the linguistic system are taught.
- Contrastive analysis is used to distinguish the difference between L1 and L2 from the lexical to text levels in order to identify learning difficulties.
- Learners are encouraged to imitate, repeat, memorise, substitute and manipulate the language from word to text levels.
- Accurate pronunciation, intonation, and correct response patterns are emphasised.
- Spoken form is presented before written form, and aural-oral training is regarded as requisite for building a sound language foundation.

The more recent innovation in ELT is Communicative Language Teaching (CLT), which focuses on the development of Communicative Competence (CC) rather than competence in TL grammar and structure (Hu, 2002a). Communicative Competence is a
concept first proposed by Canale and Swain (1980). It involves four different components:

- grammatical competence: understanding of the L2 linguistic system;
- sociolinguistic competence: knowledge of the communicative dynamics of the L2 social context;
- discourse competence: understanding how an individual piece of discourse is related to the whole discourse; and
- strategic competence: ability to use diversified strategies to reach communication goals.

CLT is based on the premise that language is best taught within a social setting, where real life scenarios are the basis of effective language learning. Meaningful communicative goals serve as a process which itself facilitates language learning (Richards & Rodger, 2010). Generally, CLT’s principles and practices have the following features (Hu, 2002a; Richard & Rodger 2010):

- Language is learned through communication of ideas, therefore, teaching should be learner-focused and the teacher’s role is to facilitate communicative needs, such as organising resources and analysing the student’s needs.
- Fluent, authentic, and meaningful communication is the objective of a language class, while some trial failures and errors in the process are encouraged.
- L2 should be taught by contextualisation or at a discourse level based on the theme, function, and task of the communication.

From the above, it seems quite clear that CLT predominantly relies on top-down processing, from concepts and ideas through discourse to lower-ranked textual elements.
Because of its considerable popularity in the Western world, there were attempts to adopt CTL at some educational institutions in China, but it seems that both teachers and learners remained uncomfortable with it (Hu, 2002b; 2005d). As a consequence CLT in China underwent various adaptations and modifications, gradually incorporating many of the defining features of GTM and ALM.

According to Ma (2009), in the Chinese educational context language is in essence considered as acquisition of linguistic competence, therefore lexical and grammatical rules have always played a significant role in learning materials. She refers to *College English* – a very influential English teaching system which has been in use nationwide in China for over ten years. In it, teaching/learning is conceptualised and organised in an essentially bottom-up sequence. Each unit starts with a reading passage followed by two main sections: 1) a further information section and 2) an exercise section:

1) **Further information:**

1. A target vocabulary list. Each individual vocabulary item is also provided in a bottom-up order: 1) syllable, 2) sound structure, 3) part of speech, and 4) bilingual explanation of the word.
2. Phrases and common expressions.
3. Background information on the target learning text.
4. Classroom activities such as speaking out or analysing some representative key sentences from the text.
5. Text comprehension.

2) **Exercise section**

1. Affixation or word-formation exercises.
2. Vocabulary exercises including definition matching and blank filling.
3. Grammatical exercises focusing on phrasal and syntactic structures.
4. Translation exercises involving sentences or short paragraphs.
5. Cloze passages.

Additionally, the language lessons are also conducted in a bottom-up order. A typical language lesson in China can be summarised as follows (Ma 2009; Hu, 2005e, 2002a):

1. Before the class, students are usually required to preview the vocabulary list in the text, familiarise themselves with the target text, and mark some individual items which they cannot understand.
2. During the lesson students will be asked to read vocabulary items aloud. Their teacher will correct some pronunciation mistakes and then will provide further information in relation to the vocabulary items, e.g. related words, extended meaning, and sentence level usage.
3. Then the teacher will guide the students to understand the text from the lexical to the context level.
4. The teacher will guide the students to complete most or all of the exercises as explained above to make sure that all the students can do them correctly.

It is clear that both the organisation of the textbook design and the teaching practices contain a large proportion of bottom-up elements, which align closely with the GTM and ALM, as mentioned above. Although some classrooms in socio-economically advanced areas (e.g. Shanghai and Beijing) have started using some imported instructional methods, such as Communicative Language Teaching (CLT) and more
recently Task Based Language Teaching (TBLT), less developed regions are still dominated by traditional instructional approaches, namely GTM and ALM (Hu, 2005a).

Hu (2005b, p. 653) argues that a significant reason for this is what he calls the “Chinese culture of learning”. In his own words, “in the traditional Chinese culture of learning, education is conceived as a process of knowledge accumulation rather than as a process of using knowledge for immediate purposes”. In other words, learner’s beliefs, preferences, and expectations may be mainly bottom-up embedded.

5.3 About the Vocabulary Course

The differences in achievement between the bottom-up and the top-down group in my study, interesting as they may be, are nevertheless relatively small. Importantly, as a result of the treatment all of the participants in the study managed to increase substantially their competence in English academic vocabulary. In relation to this, the vocabulary course which was specifically constructed for the purposes of the current project seems to have been successful in achieving very good learning outcomes. The discussion of the study’s findings, therefore, would be incomplete without some commentary in relation to how the L2 academic vocabulary course was conceived and designed. As discussed in Chapters 2 and 3, the course’s design and implementation were inspired by up-to-date scholarship on issues of vocabulary instruction. A wide range of sources were drawn upon to inform various features of the course design. Among them, the ones which played the most important role in achieving the course’s outcomes include: the composition of the course (in terms of Nation’s four strands); the explicit/direct nature of the instruction; the input processing management; the targeting of both receptive and productive skills; the incorporation of elements of both the key words approach and the contextualised approach; and the integration of a wide range of online resources. In the following sections, each of these will be considered in turn.
5.3.1 Composition of the Course (in terms of Nation’s four strands)

Nation (2008) advocates that a well-rounded vocabulary course should contain the following four strands: meaning-focused input, meaning-focused output, language-focused instruction, and fluency development (see p. 36). In his view, the strand of meaning focused input represents a receptive use of language, such as listening and reading. In relation to vocabulary teaching, this strand should contain the following conditions:

1. Focusing on the message in which the vocabulary occurs.

2. Some unfamiliar vocabulary items in the text.

3. Understanding of both the items and the message that they carry.

4. Noticing of the target words.

Meaning focused output involves learning vocabulary through productive use of vocabulary items, including speaking and writing. Typical conditions applying in this strand are as follows:

1. Focusing on the text message in which the target vocabulary occurs.

2. Being familiar with the vocabulary items and their usage.

3. Understanding both vocabulary items and the text message in which vocabulary occurs.

4. Noticing of target words in context.

Language-focused learning means focusing on vocabulary forms, and explicit/direct vocabulary instruction as opposed to incidental learning and acquisition (Nation, 2007). This strand only exists when the following conditions are in place:
1. Focusing on vocabulary items.

2. Focusing on instruction.

3. Both teachers and learners giving deliberate attention to vocabulary features.

4. The teacher helping the learners to process the vocabulary features in terms of both depth and width.

The last strand is fluency development, which only exists if these conditions are presented:

1. Very little or no unfamiliar content to learners.

2. Involvement of both input and output activities.

3. Focusing on receiving and conveying information.

4. Pressure to perform well.

Research (Long, 1988; Ellis, 1990) shows that language courses that have these four strands are likely to result in much better learning outcomes than those that do not have them.

The current vocabulary course did contain the majority of the conditions defined by the four strands. The following table illustrates Nation’s four strands, with a focus on vocabulary, and how they were represented in the current vocabulary course.
Table 26: Nation’s four strands and their application with a focus on vocabulary
(Nation, 2008, p. 391) dealt with in the current vocabulary course

<table>
<thead>
<tr>
<th>Strands</th>
<th>General condition dealt with in the current vocabulary course (from Event 1 to Event 6 in Appendix B)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Meaning-focused input</strong></td>
<td>Event 6 includes the understanding of the whole text message and guessing some unfamiliar words in order to learn the target words in context.</td>
</tr>
<tr>
<td>Focus on the message</td>
<td>**</td>
</tr>
<tr>
<td>Some unfamiliar items</td>
<td>**</td>
</tr>
<tr>
<td>Understanding</td>
<td>**</td>
</tr>
<tr>
<td>Noticing</td>
<td>**</td>
</tr>
<tr>
<td><strong>Language-focused learning</strong></td>
<td>Each event focuses on a particular level of vocabulary knowledge.</td>
</tr>
<tr>
<td>Focus on language items</td>
<td>**</td>
</tr>
<tr>
<td><strong>Meaning-focused output</strong></td>
<td>Each event includes new learning items and the message in different levels (word to context).</td>
</tr>
<tr>
<td>Focus on the message</td>
<td>**</td>
</tr>
<tr>
<td>Include small number of new items</td>
<td>*</td>
</tr>
<tr>
<td><strong>Fluency development</strong></td>
<td>Each event focuses on a message in a different level. Event 5 and 6 focus on sentence and text messages. The exercises in each event involve language use under time pressure.</td>
</tr>
<tr>
<td>Focus on the message</td>
<td>**</td>
</tr>
<tr>
<td>Work with familiar material</td>
<td>**</td>
</tr>
<tr>
<td>Work at higher than normal speed</td>
<td>*</td>
</tr>
<tr>
<td>Do a large quantity of language use</td>
<td>**</td>
</tr>
</tbody>
</table>

Note: ** = well dealt with in the current vocabulary course; * = partly dealt with
5.3.2 The Role of Explicit/Direct Vocabulary Instruction

The research results revealed that both the bottom-up and top-down approaches produced significant gains in the acquisition of English academic vocabulary competence, both receptively and productively. The T2 mean test scores were significantly higher than the T1 scores. Although I did not administer a delayed post-test, the post-test itself was eight weeks after the time of initial exposure to vocabulary instruction and one week after its end. Our vocabulary course clearly contributed substantially to the acquisition of durable receptive and productive vocabulary knowledge.

It should be borne in mind that the course was designed for the purpose of testing the relative effectiveness of two instructional approaches to vocabulary teaching and, because of that my course was unlike any other vocabulary course that I am aware of. That said, the results from administering the course are consistent with relevant previous studies on the direct teaching of English vocabulary. For example, Sonbul and Schmitt (2010) reported that the time and effort spent on the direct instruction of English vocabulary is worthwhile in terms of the improvement of vocabulary size, although their study was mainly on the teaching of vocabulary through reading activities. In a related study, conducted by Lesaux et al. (2010), also involving explicit vocabulary instruction, an academic vocabulary program resulted in significant learning outcomes on several dimensions of vocabulary knowledge. However, unlike the current study, their participants were students from linguistically diverse L1 backgrounds in urban middle schools in America.

Sonbul and Schmitt (2010) conducted an experimental study and evaluation of the effect of direct instruction of new words by reading. Their study compared vocabulary
acquisition through a reading activity assisted by direct teaching of word meanings. Several aspects of vocabulary knowledge (including CPK) were measured, such as word completion, equivalent L1 translation, and multiple choices. Some of them are similar to the tests used in the current research (e.g. ‘word completion’ is very similar to the ‘controlled productive test’ used in the current study). Their research findings report that the combination of both incidental learning plus explicit instruction was much more effective than incidental learning by reading activities only. Particularly, the results reveal that direct teaching of vocabulary is especially effective in terms of acquiring the deepest level of vocabulary knowledge, for example, productive knowledge.

Likewise, Wang’s (2010) research on vocabulary learning through English reading also reports that only a small proportion of vocabulary knowledge is acquired through incidental learning without instruction. His research was conducted among first year university students in Shanghai, China, which is relatively close to the current study in terms of participants and educational setting. He employed glossing, blank-filling tasks and vocabulary knowledge scale tests to assess different levels of vocabulary knowledge, including CPK. The finding indicates that explicit/direct vocabulary teaching plays a significant role in improving learning efficiency at all levels of vocabulary knowledge.

Tang and Nesi (2003) and Sonbul and Schimittm (2010) also state that the time and effort spent on direct instruction of English vocabulary is quite rewarding in terms of facilitating productive knowledge of academic vocabulary. These studies’ findings add strength to the view that explicit vocabulary instruction can produce very good learning outcomes (Nation, 2008).
5.3.3 Input Processing Management

Input processing refers to the presentation and processing of input in pedagogy: “It deals with the conversion of input to intake and specifically focuses on form-meaning relationships” (Gass, 2001, p. 315). Gass further explains that in traditional grammar instruction “input is practiced as a form of output manipulation” (p. 315), as illustrated in Figure 19 below.

![Focused Practice](Image)

*Figure 19: Traditional instruction in foreign language learning (Gass, 2001, p. 315)*

This type of instruction involves focused practice taking place after various form-function relationships have already been formed in the learner’s inter-language. According to Gass, there are good reasons to try and manipulate the input before it has been internalised. As she puts it (p. 315), “rather than allow an internalised system to (begin to) develop, the attempt is to influence the way that input is processed and hence the way the system develops”. This type of instruction involves focused practice at the point in which the input is being processed by the learner.
The merits of these two teaching models were examined by VanPatten (1995) and Sanz (1995). In a series of experimental studies, they provided a model of instructional intervention mainly based on the concept of “form-focused” instruction and its significant role in learners’ learning procedure, namely, the development from input to intake and ultimately to output as shown in Figures 19 and 20 above. A comparison of these two models reveals that the processing instruction model yields more positive learning outcomes at both the sentence and discourse levels of language skills. Learners who received processing instruction outperformed those with traditional instruction in understanding and producing direct object pronouns in Spanish (VanPatten & Cadierno, 1993; VanPatten & Sanz, 1995, cited in Gass, 2001). However, their studies also indicate that for those who were exposed to the traditional instruction, significant gains were made in productive language knowledge.

The current vocabulary course involved a combination of the traditional and the processing methods, as presented in Figure 21 (a detailed description of the course design is provided in Chapter 3).
Phase 1 involves focused processing instruction facilitating the conversion of input into intake. The second phase represents the integration of the intake and the developing L2 system. The final phase 3 deploys focused practice designed to facilitate the retrieval of the inter-language knowledge needed for the output. According to Wang (2010), although in the model it is presented as a linear development, the processing actually can also be retrieved backwards from phase 3 to phase 1 or even interwoven between the three phases. In other words, the output may facilitate the input and both the input and output might also influence the development of the inter-language system.

It could be argued that the current course drew together the advantages of both the traditional and processing instruction. The lexical instruction delivered in the course (bottom-up or top-down) predominantly followed the processing instruction model, while all the vocabulary exercises followed the traditional instruction model involving focused practice before the output, as illustrated in Figures 19 and 20 above. This mixed design including traditional and processing instruction is likely to have contributed significantly to learning outcomes (see Figure 21).
5.3.4 The Instruction Targeted both Receptive and Productive Skills

As noted earlier, the participants’ substantial growth in both receptive and productive L2 vocabulary knowledge can be attributed to the fact that instruction targeted both receptive and productive dimensions of lexical competence. This aspect of the course design was inspired by Nation’s (2001) classification of lexical knowledge, including the following nine components: (1) spoken form; (2) written form; (3) word parts; (4) form and meaning; (5) concept and referents; (6) associations; (7) grammatical functions; (8) collocations; and (9) constraints and use. Notably, each of these components has both a receptive and a productive dimension. In Nation’s framework, knowing the word ‘transport’ involves the following aspects of vocabulary knowledge (Nation, 2008):

1. Being able to recognise the pronunciation of the word *transport* and speak it with accurate pronunciation.

2. Being able to recognise its written form in context and spell it out correctly.

3. Understanding that *transport* is composed of two parts *trans* + *port* and the meaning of word parts; being able to use the appropriate form of the word parts to build up the word.

4. Knowing that *transport* relates to a particular meaning and being able to use its meaning productively.

5. Knowing its meaning in a particular context and being able to use *transport* in a particular context.

6. Being able to know its concept in various contexts and express a range of meanings of the word *transport*. 
7. Being able to identify its semantically related words, like *convey*, *carry* and *transfer*, and produce the synonyms and opposites for *transport* and its collocations, such as *use* / *arrange* / *provide* / *have access to public transport*.

8. Being able to recognise its usage in a sentence and produce correct usage in sentence level.

9. Being able to understand the degree of appropriateness of a particular situation and use it to suit the degree of formality, e.g. transfer is more formal than ‘carry’.

The actual course design, which contains six events, involved to a significant extent the nine aspects of vocabulary knowledge above, both receptively and productively. As clearly exemplified in the lesson plan in Appendix B, in each event the teacher presented vocabulary knowledge in a particular level (e.g. word part level) to assist receptive learning on that level, while the exercises provided students with the opportunity to use the vocabulary knowledge both receptively and productively. For example, in Event 1 learners were instructed to recognise the phonological, morphological, and graphemic structure of the target word *transport*. They were then asked to complete exercise 1 which was designed to consolidate their receptive knowledge of these aspects of the word and develop a corresponding productive knowledge. The following table illustrates Nation’s nine aspects of receptive and productive vocabulary knowledge, and how they were represented in the current vocabulary course.
Table 27: Nation’s (2008) nine aspects of receptive and productive vocabulary knowledge dealt with in the current vocabulary course (adapted from Nation 2008, p. 300)

<table>
<thead>
<tr>
<th>Nation’s nine aspects of vocabulary knowledge</th>
<th>Dealt with in the current vocabulary course (from Event 1 to Event 6 in Appendix B)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form</strong></td>
<td></td>
</tr>
<tr>
<td>Spoken</td>
<td>R ** P **</td>
</tr>
<tr>
<td>Written</td>
<td>R ** P **</td>
</tr>
<tr>
<td>Word parts</td>
<td>R ** P **</td>
</tr>
<tr>
<td><strong>Meaning</strong></td>
<td></td>
</tr>
<tr>
<td>Form and meaning</td>
<td>R ** P **</td>
</tr>
<tr>
<td>Concept and referents</td>
<td>R * P *</td>
</tr>
<tr>
<td>Associations</td>
<td>R ** P **</td>
</tr>
<tr>
<td><strong>Use</strong></td>
<td></td>
</tr>
<tr>
<td>Grammatical functions</td>
<td>R * P *</td>
</tr>
<tr>
<td>Collocations</td>
<td>R ** P **</td>
</tr>
<tr>
<td>Constraints on use (Register, frequency...)</td>
<td>R *</td>
</tr>
</tbody>
</table>

Note: R = receptive knowledge; P = productive knowledge; ** = well dealt with in the current vocabulary course; * = partly dealt with

It appears that the course was able to achieve an appropriate balance between receptive and productive skills, thus contributing to the positive learning outcomes.
5.3.5 Combination of both the Key Words Approach and the Contextualised Approach

In addition, the combination of the *key words approach* and the *contextualised approach* used in the vocabulary course may, in part, have been responsible for the course's success. As discussed in Chapter 2, it makes sense that well-balanced courses should contain approaches which involve intentional, incidental, keyword-based, as well as contextualised learning.

As demonstrated in the lesson plan in Appendix B, the vocabulary course generally followed the teaching principles advocated by Hunt and Beglar (2005, p. 27), which was reviewed in Section 2.3:

a. The course provided students with chances for the incidental learning of vocabulary as demonstrated in Event 6.

b. The course provided students with high-frequency key words which are most important to learn, based on the AWL (Coxhead, 2000).

c. It provided opportunities for intentional learning of each key word, as in Events 1 and 2.

d. It provided students with opportunities for elaborating word knowledge from word to context levels.

e. It provided students with opportunities for fluency development as demonstrated in the exercises from Events 4 to 6.

f. It allowed students to infer word meaning from context, as in Event 6.

g. It allowed students to examine different dictionaries and teach students how to use them, as demonstrated in Events 1 to 3.
It is noteworthy that the teaching principles mentioned above roughly resemble current vocabulary courses. The bottom-up and top-down approaches attempted to apply a more holistic and eclectic consideration to each dimension. In essence, the course drew together the advantages of the key approach and the contextualised approach with both intentional and incidental learning, and avoided the flaws that are commonly associated with them. In light of that, the sound learning outcomes of the current vocabulary course cannot be regarded as unexpected.

5.3.6 Use of Online Resources

It is likely that the course design also benefited from the integration of online resources. As illustrated in Appendix D, the wide range of online resources deployed in the course is well organised, based on different levels of vocabulary knowledge, and each item of the online resources was in accordance with the structured teaching steps (or events), focusing on a specific aspect of vocabulary knowledge from word to text levels.

In Event 1, the Word Information (http://wordinfo.info) provided morphological information to assist learning the spoken and written form of the target word, as well as the morphemic structure. The online bilingual dictionary (http://www.iciba.com) offered the definition and L1 translation of the target word, which reinforced the second stage of the vocabulary learning. In Event 3, both WordNet (http://wordnetweb.princeton.edu/perl/webwn) and the Visual Thesaurus (http://www.visualthesaurus.com/trialover) were employed to introduce related forms from the same lexical family, while the Oxford Collocation Dictionary Online was used as a tool to explore different phrases and collocations of the target word in Event 4. The Longman Dictionary of Contemporary English (http://www.ldoceonline.com) provided students with a wide range of example sentences using the target word to meet the teaching objective in Event 5. And finally, in Event 6, the online academic vocabulary
exercise (http://www.englishvocabularyexercises.com/AWL) allowed students to practise the controlled productive use of the target word at the level of the whole context.

Secondly, internet-based resources appeal to a population of learners who were born and raised since the advent of the internet. According to Cao and Su (2006), the percentage of internet users among adolescents in China was 88%, with 2.4% of them even addicted to it. It is quite certain that the number is larger now than in 2006.

It is worth emphasising that online resources, which are mainly used in Western countries, may increase students’ curiosity and interest in learning. Although the National Education Ministry advocates applying computer software and internet resources in language classrooms, both teachers and students are actually unfamiliar with, and have very limited access to, Western websites. The online resources used broadened students’ horizons, thus facilitating the course outcomes. In order to make a language course more effective, teachers must thus take a step forward and focus on implementing new technologies, such as the internet (Warschauer & Whittaker, 1997).

It seems quite reasonable to assume that the innovative design used in constructing the syllabus, and the use of a range of online vocabulary resources, were instrumental in producing these notable learning outcomes, although other factors may have also played a role (e.g. high learner motivation, as attested to by the lack of attrition).

5.4 Conclusion

In conclusion, as far as receptive vocabulary knowledge is concerned, the bottom-up group slightly outperformed the top-down group. As regards controlled productive vocabulary knowledge, no statistically significant difference was established. Overall, both the bottom-up and top-down groups showed great improvement after the
experimental teaching. The findings reinforce the significance of explicit and direct instruction of vocabulary knowledge in both reception and production.

The slight superiority of the bottom-up approach on academic vocabulary size can be attributed to several factors. In the first place, the bottom-up instructional sequence seems better aligned with the developmental stages of Jiang’s (2000) lexical acquisition theory. Also there appears to be at least some correlation between a learner’s current proficiency level in L2 and their preferred mode of processing. Generally, lower proficiency learners (as was the case with our participants) tend to prefer bottom-up processing, while high-proficiency learners appear to favour top-down processing (Eskey, 1988; Tsui & Fullilove, 1998). There is also evidence that the notion of bottom-up, as a mode of information processing and knowledge formation, is deeply embedded in China’s socio-cultural and educational context, and that most forms of instruction in the Chinese educational system, including first language literacy and second language teaching/learning, are predominantly bottom-up.

The overall good learning outcomes achieved by all of the study’s participants should largely be attributed to the course’s design and implementation. These outcomes reinforce the value of direct and explicit instruction of vocabulary for both receptive and productive knowledge development.

It is necessary to bear in mind that the study’s results were obtained within the socio-cultural context of a Chinese tertiary education institution. It is unclear to what extent the study’s findings are generalisable to different cultural and educational settings. The final chapter of the thesis will provide some theoretical, pedagogical, and methodological recommendations for the future.
Chapter 6: Conclusion

6.1 Project Summary

The current study was conducted in order to obtain a better understanding of the effectiveness of the two teaching approaches, bottom-up and top-down, in relation to academic vocabulary acquisition. The study was conducted experimentally across two groups of university students in China. Two dimensions of academic English vocabulary development (reception and controlled production) were measured in order to answer the two research questions:

1. What is the effect of the bottom-up approach on Chinese learners’ acquisition of English academic vocabulary?
2. What is the effect of the top-down approach on Chinese learners’ acquisition of English academic vocabulary?

Since the literature in relation to top-down and bottom-up processing (e.g. in L2 reading and listening) remain incomplete and divided, these two research questions were initially formulated in three hypotheses, as follows:

1. **Hypothesis one**: A top-down approach produces a larger increase in learners’ receptive academic vocabulary knowledge than a bottom-up approach.
2. **Hypothesis two**: A top-down approach produces a larger increase in learners’ productive academic vocabulary knowledge than a bottom-up approach.
3. **Hypothesis three**: The growth of productive vocabulary knowledge is larger than that of receptive academic vocabulary knowledge when a top-down approach is employed.

In order to achieve these objectives, the study used a quasi-experimental design to assess the relative effectiveness of two modes of academic English vocabulary instruction, bottom-up and top-down, to Chinese university students (N = 120). The
participants, divided into two groups, were exposed to 48 hours of explicit vocabulary instruction. Their achievement was measured with two vocabulary tests, Academic Vocabulary Size and Controlled-Productive Knowledge, administered at the start (T1) and at the end (T2) of the treatment. The detailed results from the analyses and the related discussion were presented in the previous two chapters. The most important findings of the study can be summarised as follows.

Analyses of the test scores revealed that at T2 the bottom-up group slightly outperformed the top-down one on both vocabulary size and controlled-productive knowledge. With respect to the latter, the bottom-up group’s superiority was found to be statistically significant, although with a relatively small effect size ($\eta^2 = .05$).

It appears that particular attention to vocabulary teaching, e.g. in a dedicated course (whatever approach is used), will lead to successful learning of this part of a second language. Further, the particular method of course development that I used, constructing a vocabulary course on the basis of recent scholarship and taking considerable advantage of resources available online, seems to have worked well. Of course, the main goal of the current study was to determine the relative effectiveness of the bottom-up and top-down approaches to vocabulary teaching, and the results showed a clear, albeit weak, advantage for the bottom-up approach, although this should be confirmed by further studies.

A range of factors are likely to have been responsible for this outcome. In relation to the small, but distinct, superiority of the bottom-up over the top-down group in practically all the measured aspects of vocabulary acquisition (vocabulary size, controlled productive knowledge, and growth), an explanation for this can be related in terms of the following. Firstly, the result was explained by linking it to the nature of L2 lexical
acquisition. It may be that the bottom-up instruction design is better aligned to the natural phases of lexical acquisition (e.g. with reference to Jiang’s (2002) theory). The second factor which is quite likely to have played a role in relation to this study’s results is the learners’ L2 proficiency level. Presumably, low proficiency learners favour receptive use of language which is more closely associated with bottom-up processing. Thirdly, Chinese culture and mentality may traditionally be oriented towards bottom-up processing (with reference to Chinese ancient thought and philosophy). As a consequence, the Chinese educational tradition strongly favours bottom-up processing, as exemplified in most teaching and teaching-related resources (e.g. textbooks and teaching methods in both L1 and L2 teaching in China), which are mainly based on bottom-up instruction.

On the other hand, it appears that the EFL academic vocabulary course that was specifically constructed for the purposes of the study was quite effective in achieving good learning outcomes, in either of the two instructional approaches. The high achievement of both groups can be explained with reference to the following aspects: the processing management which was involved in the course; the involvement of both receptive and productive skills; the innovative instructional design of the vocabulary course informed by recent scholarship and online resources; and the balanced treatment of both the key words approach and the contextualised approach.

6.2 Contribution of the Study

6.2.1 Contributions to Scholarship in the Field of L2 Research

While previous research has given some consideration to issues of bottom-up and top-down processing in L2 learning (mostly with regard to the receptive skills), the current study is, to my best knowledge, the first one to investigate L2 instructional dimensions of bottom-up and top-down processing, and in relation to this the study constitutes an
undeniable contribution to L2 research. The study’s key objective was to examine experimentally the relative effectiveness of two different instructional approaches bottom-up and top-down, on English academic vocabulary acquisition by Chinese university students. Comparing the effectiveness of different teaching techniques is a challenging endeavour, according to Schmitt (2010), because it requires substantial expertise in both research design and statistical analysis.

The study findings indicate that among the two instructional approaches the bottom-up one worked slightly better than the top-down one for this population of EFL learners (i.e. first-year university students in China), although this should be confirmed by further studies.

It cannot be claimed that these results are definitive; but at least they are indicative with respect to several points. Firstly, the learners’ proficiency level and the nature of L2 lexical development may have been in part responsible for the outcomes of this study. Further, it is suggested that the participants’ Chinese cultural and educational background may have also played a role in relation to the results. In this light, a new research direction in the field of L2 is established. It would be interesting to carry out similar studies in other cultural contexts where the bottom-up approach is not so deeply embedded. Should new studies produce similar results then it might mean that the effectiveness of this approach is not to be attributed to cultural factors, but rather to features of human processing.

6.2.2 Contributions to Second Language Pedagogy

It seems quite clear that the innovative design used in constructing the syllabus, as well as the use of a range of online vocabulary resources as an essential part of the instruction, were instrumental in producing very good learning outcomes. The current
research was inspired by previous research findings that direct or explicit teaching of vocabulary is quite effective (Sonbul & Schmitt, 2010, Wang, 2010). The study’s findings not only reinforce the value of direct instruction of lexical items but in addition also indicate that the following could contribute to more effective vocabulary teaching:

1. Teaching is more effective when the instruction is in line with the developmental stages of L2 lexical acquisition (e.g. Jiang, 2000).
2. Teaching is more effective if the mode of processing is managed in accordance to the level of learners’ language proficiency.
3. Teaching is more effective if the instruction reflects the specifics of the socio-cultural and educational context.
4. Teaching is more effective if the vocabulary courses have a balanced integration of processing management, receptive and productive skills, and a _key words approach_ and a _contextualised approach_.

### 6.3 Limitations of the Current Study and Recommendation for Future Research

While each individual study contributes, to one degree or another, to knowledge in a specific area, no research study is ever so exhaustive and comprehensive that it leaves no questions unanswered and, the present study is no exception in that regard. To ensure continuity in L2 vocabulary teaching and learning research and to enable further advancement of knowledge in this area, it is essential to clearly define not only the current study’s achievements, but also its limitations and on the basis of this, to provide directions for future research.

In the first place, the participant sample involved in the study requires some commentary. While its size (N = 120) was probably commensurate with the nature of the treatment (vocabulary instruction) and the study’s objectives (a comparative
examination of the effectiveness of two instructional approaches), the sample only included a very specific category of L2 learners (i.e., first-year university students in China) and because of that the research results may be not generalisable to learners from a different socio-cultural and demographic background. Future research trying to test the effectiveness of bottom-up and top-down vocabulary instruction would be recommended to involve more diverse learner samples. This is particularly important given that one of the study’s more interesting results – the slightly superior achievement of the bottom-up group – was attributed, at least in part, to the participants’ Chinese cultural and educational background. If this assumption is correct, one very important implication for language instruction is that learners’ preferred way of processing may be determined by socio-cultural and educational factors. It would therefore be interesting to carry out similar studies in other cultural contexts where the bottom-up approach is not as deeply embedded as in China. Should new studies produce similar results then it might mean that the effectiveness of this approach is not (at all) to be attributed to cultural factors, but rather to features of human processing.

It would also be very interesting to explore the effectiveness of bottom-up and top-down instruction in relation to other major language skills: reading, listening, writing and speaking.

Given the ever increasing use of new digital technologies in language teaching and learning, it would be worth examining the effectiveness of bottom-up and top-down L2 instruction via computer-assistant language learning (CALL), both in the Chinese context and elsewhere.

As discussed in previous parts of the thesis, the vocabulary course which was specifically constructed for the purposes of the current project was designed and
administered in line with a range of principles (as advocated in related literature), including explicit/direct instruction; a combination of output and input processing management; the targeting of both receptive and productive skills; the incorporation of elements of both the *key words* approach and the *contextualised* approach; and the integration of a wide range of online resources. As the post-treatment achievement of the study’s participants demonstrates, the course’s design as a whole was successful in achieving credible learning outcomes, but my findings are unrevealing in relation to the relative contribution to this achievement of the course’s individual components/aspects. Future research may try to evaluate the actual contributing role of each of these components.

The length of the treatment (48 hours) also deserves a brief note. Due to the fact that productive vocabulary usually takes longer to increase than the receptive one, it might be the case that a longer treatment would enable the generation of a more extensive and durable productive vocabulary knowledge.

It is also worth mentioning that the current research only examined two aspects of academic vocabulary knowledge, receptive and controlled-productive. Other aspects of vocabulary knowledge, such as free productive knowledge, were not examined. Since vocabulary knowledge is multidimensional and incremental in its nature, it is necessary to measure other aspects of vocabulary knowledge in future research. Lastly, the current research only yielded quantitative data. It may also be important to provide opportunities to receive detailed qualitative feedback from learners, teachers, and other stakeholders in relation to the course and its outcomes.
6.4 Recommendations for Second Language Pedagogy

Given the present state of ELT in China, as reviewed in Chapter 2, and the current research findings and discussion, it is suggested that the vocabulary component of a language course in general should be designed with a more plausible, heuristic and eclectic approach. The following section will attempt to propose such an approach by drawing on the results of the current research and by reference to the previous literature. It will firstly discuss why a vocabulary course would articulate rational approaches to ELT which coherently integrate the following strategies: Theoretical Plausibility, Contextual Acceptability, Innovative Creativity and Practical Flexibility, as presented in Figure 22 below. Following that, an Eclectic Dynamic Language Acquisition Model with bottom-up and top-down dimensions will be proposed.

![Figure 22: A plausible, heuristic and eclectic approach in ELT](adapted according to Hu, 2002a; 2005a; 2005b; Celce-Murcia, 2006; Kumaravadivelu, 2009; Richards & Rodgers, 2010)
6.4.1 A Plausible, Heuristic and Eclectic Approach in ELT

Theoretical Plausibility

*Theoretical Plausibility* means that ELT should be informed by research-based and clinically evidenced successful teaching approaches. As Richards and Rodgers (2010) state, understanding the theoretical issues surrounding language teaching by incorporating the study of past and present teaching methods should be regarded as an important dimension of language teachers’ education. Firstly, it can provide teachers with knowledge of the evolution of their own field. Secondly, it can function as a source of well-tested practices, which instructors can adapt or apply according to their own circumstances. Thirdly, by using various teaching approaches, teachers can gain teaching skills and enrich the teaching experience. Different scholars and teachers may interpret or adapt EFL teaching approaches in quite different teaching modalities, and these disparate interpretations can significantly affect the entire teaching process and consequent performance outcomes (Richards & Rodger, 2001). It is only by satisfactorily understanding the place of EFL teaching theory and practice in ELT that a plausible approach can be articulated to suit the general ELT conditions in China and thus be adapted to suit the specific needs of its many culturally diverse regions.

In China, the benefits associated with such an approach can be extremely important. According to Hu (2002a, 2005a, 2005b) and many others (e.g. Wang 2009; Yu, 2001), a majority of non-native English teachers in China do not possess sufficient knowledge and understanding of modern SLA theories (e.g. Input Processing) and teaching approaches, such as Communicative Language Teaching (CLT). Not infrequently, their assumptions and beliefs about how language works and how language should be learned or taught remain subjective rather than clinically tested for their objective value within
the classroom context. In order to achieve a sound teaching outcome, an understanding of well-used approaches and tested theories of ELT should be regarded as fundamental.

For example, the findings of the current experimental research can inform EFL educators in China. Firstly, teaching is definitely more efficient when it is aligned with the way that second language learners process language input. It is of great significance that both teachers and material designers be aware of the effectiveness of a course which was designed on the information processing model, as discussed in Chapter 5. In accordance with previous literature, the current research found that a mixed design (as discussed in chapter 5) is even more effective.

**Contextual Acceptability**

As mentioned in Chapter 2, Kumaravadivelu (2009) argues that specific approaches and methods should be designed to suit specific learners, taking into consideration their particular social, cultural, and educational context. Teaching/learning in a particular educational context can be defined as a Culture of Teaching/Learning (CT/L), which is in association with the cultural traditions, values, beliefs and attitudes towards teaching/learning (Ma, 2009). According to Ma, the CT/L is so fundamentally embedded in its socio-cultural and education traditions that the people in that culture take it for granted and are unaware of its presence. Cortazzi and Jin (1996, p. 169) call this the “hidden curriculum”. It is paramount in L2 pedagogy because it explains both educators’ and learners’ behaviour in their teaching and learning processes, and the outcomes of a teaching methodology (Ellis, 2008; Kumaravadivelu, 2009; Ma, 2009; Hu, 2004).

For example, CLT, which focuses more on communicative competence than on the grammar and structure of a language, is considered to be a more effective teaching approach than traditional approaches such as the Grammar Translation Method (GTM)
and the Audio-Lingual Method (ALM), because it is believed that language is best taught within a humanistic setting, where real life scenarios are the basis of effective language learning (Richards & Rodgers, 2010). However, a number of obstacles emerge with regard to the implementation of CLT in China. First and foremost, a large number of teachers, researchers, and experts in China remain doubtful about the effectiveness of CLT and tend to use traditional methods or a mix of both (Yu, 2001). Others are still not familiar with this approach, simply because the majority of English teachers were educated in the more traditional approaches (Hu, 2002b; Hui, 2004; Yu, 2001). In addition, this approach does not fit the particular educational context in China (Hu, 2002a; 2002b; 2003, 2005a; 2005b; 2005c; Yu, 2001). For example, English classes with 60 students or more, such as is common in China, makes it difficult, if not impossible, to implement the type of student-focused approach CLT requires. Apart from the above, the unique “Chinese culture of learning” resists such an approach (Hu, 2002a; 2005a; 2005d; Hu, 2003, p. 33), and still favours the Confucian idea that "teachers are viewed as knowledge holders" (Hui, 2004, p. 38). As Hui states, “[i]f teachers do not display their knowledge in lectures, or play games with students or ask students to role-play in class, then they are regarded as not doing their job.” There are also other aspects of resistance, according to Hu (2002a, 2003, 2005b), ranging from insufficient financial support, lack of qualified teachers, regional differences, to other cultural or individual factors such as learning styles.

In his critique of Liao’s paper titled ‘The need for Communicative Language Teaching in China’, Hu (2005b) urges that when a new approach such as CLT is introduced into China, it should suit or be adaptable enough to accommodate the demands of China’s unique cultural and educational conditions: “For such an approach to be maximally
effective, it is necessary to encourage and help teachers to heighten their awareness of contextual influences” (p. 67).

This has led ELT researchers and language experts to re-evaluate their understanding of the role that highly specialised methodologies play in the teaching of non-primary languages. When making ELT policy, or designing pedagogy and teaching approaches, we should be able to address and adapt the ELT model to social-cultural contexts, with their own particular and possibly peculiar infrastructural influences (Hu, 2002a, 2002b; 2003; 2005a; 2005b).

**Innovative Creativity**

According to Hu (2003; 2005a; 2005b), the construction of a new approach should be driven by the desire to enable learners to attain a high level of competence in a new language relatively quickly and easily. While some approaches may have been marginally more successful than others, in terms of the outcomes they have produced, none has been able to achieve the *magical* results that their proponents had anticipated. As Howatt and Widdowson (2004) point out, every approach to ELT has been developed and elaborated as a response to the problems/weaknesses of the foregoing ones, but will itself inevitably exhibit its own problems and weaknesses, particularly when used in different educational contexts.

Richards and Rodgers (2010) also claimed that a flawless approach does not exist. As far as specific teaching approaches are concerned, it has been observed that methods are often sufficiently over-generalised to be able to provide effective solutions to all classroom contexts, but that while they can be very distinctive in the initial stages of instruction, they often become indistinguishable in the end. In my view, only an innovative and creative approach in ELT, which represents integrated systems of
plausible, heuristic and eclectic approaches, will be able to address or adapt the ELT model to particular learning needs.

**Practical Flexibility**

There is a growing conviction that a specialised approach does not have the capacity, in and of itself, to guarantee high learning outcomes for all learners, and that language teaching needs to go “beyond approaches and methods” (Richards & Rodgers, 2010). According to Brown (2008), a principled approach means that teachers should take the communicative and situational needs of specific learners into consideration. It also assists instructors in identifying suitable curriculum materials and instructional techniques in a particular context, and is thereby better suited to realising teaching objectives. Moreover, it enables teachers to systematically assess lesson contents and their structure, while permitting evaluative assessment so that courses can be revised as required in rigorous but more flexible ways.

In China, for example, ELT should take advantage of the pre-existing approaches that have proved to be effective, and at the same time, adopt a more holistic approach in order to make revisions in the most fruitful ways. In other words, GTM, ALM, CLT or other approaches, no matter how conventional or innovative, can be used in language classes to provide the best possible explanation for a particular teaching situation at a particular time. Given the fact that in most cases Chinese learners of English have insufficient exposure to the target language in real life contexts, the task of providing learners with more opportunities to communicate, experience and practise the L2 is essential (Celce-Murcia, 2006, Hu, 2002a, 2005b). Teaching success is based partly on knowing when to adapt or not to adapt an existing approach (Celce-Murcia, 2006). According to some scholars, it is the educators’ beliefs, conceptions, and the implementation of ELT that make the difference (Widdowson, 1995).
6.4.2 Eclectic Dynamic Language Acquisition Model Integrating Bottom-up and Top-down Dimensions

Given that the ultimate success of a language program, to a large extent, depends on aligning both theories and practices with a particular educational context (Nation, 2008, Ellis, 2008), the vocabulary course designed for the purposes of the current experimental research combined both language processing theories and the essentials of a language course, as mentioned previously. As Nation (2007, p. 1) states, “innovation in language teaching needs to take account of research on language acquisition [and] one way of doing this is to make innovation within a framework that fits with research findings.” In this section, I will propose a model by drawing together the current research implications discussed above and Nation’s four strands of language learning, namely, meaning focused input, meaning focused output, language focused instruction, and fluency development (see p. 36).
Figure 23: Eclectic Dynamic Language Acquisition Model Integrating Bottom-up and Top-down Dimensions
The Eclectic Dynamic Language Acquisition Model in Figure 23 has been inspired by the current bottom-up and top-down teaching approaches and is considered to be an heuristic and eclectic model that can be implemented in the five language skills (listening, reading, speaking, writing, and translating). Hopefully, future innovative language courses can be designed with reference to this model, with a balanced proportion of bottom-up and top-down instruction. The following will explain each of these sub-models (a, b, c, d) and their justification.

**Justification of the model**

The sub-model (a) consists of four dimensions (instruction, reception, acquisition, and production) which combine both the four strategies outlined above (Theoretical Plausibility, Contextual Acceptability, Innovative Creativity, and Practical Flexibility) and Nation’s (2007) four strands of language teaching (language focused instruction, meaning focused input, fluency development, and meaning focused output). The core purpose of this sub-model to a language course is to implement the four dimensions or the four strands with reference to these four strategies. In other words, these four dimensions should be guided by plausible theories of EFL teaching, fit a particular educational context, and be innovative and flexible in their actual teaching practices.

The sub-model (b) proposes that, in addition to L2 vocabulary, each of the five major language skills (listening, speaking, reading, writing, and translating) can be taught by use of the current model. It emphasises the necessity of paying attention to the five basic skills, in terms of both bottom-up and top-down processing, so as to make sure that both the micro and macro features of the language can be accessed (Celce-Murcia & Olshtain 2006; Read 2004; Nation, 2008; Ellis, 2008).

Sub-model (c) emphasises that a well-balanced language program should involve the basic five training constituents: listening training; speaking training; reading training;
writing training; and translating training. Each constituent should have a reasonable proportion of training on each of the four strands, in terms of both quality and quantity.

The final part (d) of the model integrates the first three (a, b, and c) and incorporates the dimensions of innovation, implementation, and evaluation. That is, after the creation of an innovative language course, it will first be implemented in language classrooms and subsequently the quality of the course will be evaluated in order to accomplish future improvement.

There are a number of reasons why the current model is proposed and described in this way. The sub-model (a) is based on Nation’s (2007) statement that the teaching activities of a language program should be categorised into four strands and each of the strands should be treated equally in a language course. His four strands may be more effective if they combine the model in Figure 22. In addition, Ellis (2008) categorised language teaching as instruction, reception, acquisition and production. This classification is adopted in the sub-model (a). Similarly, Su (2009) also describes a four-dimension ELT in China which contains teaching and learning, in-class and after-class. The teaching and in-class dimensions focus on the instruction of language items such as grammatical points, while the learning and after-class refer to activities involved in developing the accuracy and fluency in EFL. These indicate the appropriateness of the sub-model (a).

The sub-model (b) proposes that the bottom-up and top-down mode of language instruction should not be restricted to vocabulary teaching only, because it is likely to be very effective with other aspects of language competence. Celce-Murcia and Olshtain (2006), for example, advocate a bottom-up and top-down language processing curriculum for all aspects of linguistic knowledge (phonology, grammar, and vocabulary), and language skills (listening, reading, writing, and speaking). A number
of researchers and writers have also included the processing mechanism in their language courses. For example, Vandergrift (2004) advocates both bottom-up and top-down processing in L2 reading, although the relative advantages of the two modes of processing for the different language skills remain unclear, as reviewed in Chapter 2.

Sub-model (c) highlights a balanced treatment of the basic five language skills: listening training; speaking training; reading training; writing training; and translating training. Nation (2007) provides a comprehensive justification of the four strands which emphasise both receptive learning through listening and reading, and productive learning by speaking and writing. He asks rhetorically: “How can you learn to do something if you don’t do that during learning? How can you learn to read if you don’t do reading? How can you learn to write without writing?” (Nation, 2007, p. 1)

Cook (2010) proposes that translation is important and should therefore be incorporated into teaching materials and curriculum design, as well as language teacher training. Hu (2002a) points out that the Grammar Translation Method (GTM) remains dominant in the language classrooms of China, as it fits the particular Chinese educational setting. According to many, translating skill is also significant for L2 learners, as it facilitates language knowledge and skills at all levels (Nation, 2008; Ellis, 2008; Hu, 2002a, etc.).

For practical reasons the five language skills are often considered separately, but they are actually closely interrelated. As Celce-Murcia and Olshtain (2006, p. 180) claim, “in real-life communication there is very rarely a separate and independent use of any of these skills”. According to them, in a communicative process all these skills are actually used simultaneously and interactively.

Finally, the sub-model (d) describes an instrument to inform not only the innovative and practical process, but also the evaluation of the outcomes. Producing and delivering a
language teaching program is essentially a dynamic process, which is subject to continuous revision and change (Morgan, 2008). This aspect of teaching is captured in this sub-model. To this end, the cycle in the sub-model (d) functions as a framework for the advancement of a language course, in terms of the three aspects below:

1. Innovation: creative innovation should be designed to suit the educational context and learning needs so as to achieve teaching goals.

2. Implementation: actual teaching practice should be based on innovative designs as well as planned arrangements with situational flexibility.

3. Evaluation: attribution to teaching outcomes should be identified in both positive and negative aspects; future advancement can be based on experience to refine existing components and determine alternative ones.

This sub-model is cyclical in nature and focuses on continuous improvement in the future. This is because no single approach is the best in itself. Only when we keep consistently innovating, evaluating and refining a language course can we claim that a particular course is temporarily appropriate or not for a particular population.

6.5 Final Comments

In recent years, there has been an explosion in the demand for EFL competence in all social and professional domains in China. This country has by far the largest population of both EFL learners and EFL teachers in the world. Due to China’s significant role as a global trading partner, ELT proficiency has come to play a paramount role in a wide range of social, educational, and professional areas. Higher fluency in the English language is associated with better achievement in education, with better social and professional opportunities, and – in the long run – with a superior standard of living (Hu, 2002a). In light of this, the fact that teaching/learning English has become an
integral part of all levels of the country’s educational system can hardly be regarded as surprising.

However, China’s ELT system is still hampered by a variety of problems which do not allow learners to achieve optimal competence. The primary flaws of ELT are related to outdated methodologies, poorly trained teachers, large classes, etc. For example, the traditional Grammar Translation Methods (GTM) is still popular in China (Ma, 2009, Hu 2002a). As discussed earlier in this chapter (see Sub-section 6.4.1), GTM’s popularity in China may in part be due to cultural and traditional features of the Chinese context, but its flaws have long been established. For example, by over-emphasising the teaching of grammatical rules it completely neglects communicative aspects of L2 competence (Richards & Rodgers, 2010) and diminishes the role of ‘real-context’ language learning (Hu, 2002a; Larsen-Freeman, 2004). Critics have, in fact, pointed out that this method is so teacher-centered, and L1-dependent that it produces deaf and mute grammarians (Raouf, 2010).

Lack of substantial achievement can also in part be attributed to the inadequate training that the majority of EFL instructors in China receive, mostly through lack of tradition and sufficient resources. The typical class sizes in China are also to blame. It is now unanimously recognised that effective language education would be hard to achieve with classes of more than a dozen learners. But the vast majority of language teaching institutions in China commonly involve classes of over 50 learners, which makes the implementation of true communicative teaching completely impossible. As a consequence, most language instruction (including vocabulary) is focused on grammar, reading and translation, and strongly relies on rote learning.
Given the present state of ELT in China, a large research effort is needed to address the flaws and inadequacies of EFL education in China, and the current study was conducted to contribute to this effort. The study’s findings clearly indicate that although the bottom-up instructional design worked marginally better for this population of EFL learners (i.e., first-year university students in China), Chinese learners can achieve almost as highly when instructed via the top-down approach. The study’s results strongly reinforce the value of a dedicated well-designed vocabulary course involving direct/explicit instruction of vocabulary.

Hopefully, the study and its findings will inspire further research, not only into issues of vocabulary teaching and learning, but also into the role of bottom-up and top-down language instruction more generally. In line with Schmitt’s (2010, p. 268) sentiment, a research of the kind presented in this thesis, challenging as it may be in terms of design and implementation, has the capacity to “give tangible answers concerning the [effectiveness of] teaching methodologies” and can thus contribute to improving language teaching and learning practices.
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Appendix A: Teaching Syllabus

[The University of Newcastle]
Academic Vocabulary Teaching Strategies: Bottom-up and Top-down approaches
Class time | Days | 2011

Instructor: Guowu Jiang
E-mail: Guowu.jiang@uon.edu.au

1. Course Description

In this course students will concentrate on the receptive and productive academic vocabulary that occur in IELTS listening and reading context. Two modules of instruction will be employed to class one and class two respectively. Diligent attention will be paid to the two different teaching processes using either a bottom-up or a top-down approach.

2. Course Objectives

Students successfully completing the course will be able to:

- Evidence knowledge with the word parts and formation of target words.
- Evidence knowledge with pronunciation, spelling and basic definition of target words and related words (synonyms or antonyms).
- Evidence knowledge with the pronunciation, spelling, and formation of other family forms.
- Demonstrate a command of phrase and collocation of the target words.
- Understand the word knowledge in sentence level and construct simple sentences using target words.
- Understand the learned words in context level and to use the word both receptively and productively in academic context.

3. Course Format and Presentation

Class sessions will be composed of lectures as well as group activities.

4. Academic Expectations

Attendance, Participation
Students are expected to punctually attend all classes, to positively participate in class activities.
5. Teaching Activities:

Activities for the **bottom-up** approach

<table>
<thead>
<tr>
<th>Event</th>
<th>Teacher’s activities</th>
<th>Students’ activities</th>
</tr>
</thead>
</table>
| Event 1 | **Goal:** Teaching the word parts of the target words.  
**Procedure:** Explaining what parts are recognisable in this word and what word parts are needed to compose the word. | **Goal:** Gaining and consolidating the knowledge of spoken form, written form and word parts.  
**Procedure:** Listening to the teacher, take notes and working in groups to divide each word into meaningful word parts in the target word list and identify their roots, prefixes and suffixes (words with two roots are compounds). |
| Event 2 | **Goal:** Teaching the definition and L1 translation of the target words  
**Procedure:** Providing basic English definition and equivalent L1 translation.  
Guiding students to use dictionary to find out other sense associated words such as synonyms, antonyms, hyponyms. | **Goal:** Learning the basic definition and meaning of the target words and practicing dictionary activities.  
**Procedure:** Listening to the teacher and working in pairs to do the exercise of definition, L1 translation and related words. |
| Event 3 | **Goal:** Teaching the knowledge with pronunciation, spelling, and formation of other family forms.  
**Procedure:** Providing information on other family words. | **Goal:** Consolidating the knowledge with pronunciation, spelling, and formation of other family forms.  
**Procedure:** Listening to the teacher, take notes and working in groups to identify family words (derivations or inflections). |
| Event 4 | **Goal:** Instructing the knowledge on phrase and collocation.  
**Procedure:** Identifying the phrase and collocation of the target words. | **Goal:** Learning the phrase and collocation of the target words.  
**Procedure:** Listening to the teacher, take notes and working in groups fill the column of phrase and collocation. |
| Event 5 | **Goal:** Teaching students to use the target words in sentence level.  
**Procedure:** Providing example sentences of | **Goal:** Learning the receptive and productive knowledge of the target words at sentence level.  
**Procedure:** |
target words and guiding students to use target words in sentence level.

Listening to the teacher, doing sentence dictation and working in groups to make up sentences using the target words.

**Event 6**

**Goal:**
Teaching students the usage of target words in academic context.

**Procedure:**
Illustrating where, when, and how often the target words occur in academic discourse.

Explaining where, when, and how to use the target words in academic context.

**Goal:**
Understanding the target words in context level and being able to use the target words both receptively and productively.

**Procedure:**
Listening to the teacher, take notes and working in groups to do academic vocabulary exercises in academic context.

### Activities for the **top-down** approach

<table>
<thead>
<tr>
<th></th>
<th>Teachers’ Activities</th>
<th>Students’ Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Event 1</strong></td>
<td>As event 6 in the bottom-up approach</td>
<td>As event 6 in the bottom-up approach</td>
</tr>
<tr>
<td><strong>Event 2</strong></td>
<td>As event 5 in the bottom-up approach</td>
<td>As event 5 in the bottom-up approach</td>
</tr>
<tr>
<td><strong>Event 3</strong></td>
<td>As event 4 in the bottom-up approach</td>
<td>As event 4 in the bottom-up approach</td>
</tr>
<tr>
<td><strong>Event 4</strong></td>
<td>As event 3 in the bottom-up approach</td>
<td>As event 3 in the bottom-up approach</td>
</tr>
<tr>
<td><strong>Event 5</strong></td>
<td>As event 2 in the bottom-up approach</td>
<td>As event 2 in the bottom-up approach</td>
</tr>
<tr>
<td><strong>Event 6</strong></td>
<td>As event 1 in the bottom-up approach</td>
<td>As event 1 in the bottom-up approach</td>
</tr>
</tbody>
</table>
Appendix B: Lesson Plan

Introduction
This lesson plan is an implementation of the syllabus on bottom-up and top-down approaches to teaching English academic vocabulary (Appendix A). Shum and Glisan’s (1994) Generic Components of a Lesson Plan are employed as a framework for this plan. The generic lesson plan has five phases:

1. Perspective or opening. The teacher offers a preview of a new lesson.
2. Stimulation. The teacher gives an attention grabber.
3. instruction/participation. The teacher presents the lesson and interacts with the students.
4. Closure. The teacher summarises or reinforces the lesson.
5. Follow-up. The teacher previews the next lesson.

Following the above model, two sets of activities and teaching procedures (bottom-up and top-down) are embedded in this model so as to teach English academic vocabulary by two different ways. Finally, the effectiveness of the two teaching approaches will be evaluated.

There will be 48 hours of teaching over eight weeks for the bottom-up and top-down approaches respectively, in which 474 words will be taught (see Appendix C). The teaching will be six hours per week and two hours for each lesson. Approximately 20 words will be taught in each lesson. The following module is a lesson plan for the first two hours. The rest of the lessons will follow exactly the same model and procedure.

Academic Vocabulary Teaching Strategies: a Bottom-up and Top-down Approaches
Lesson Plan | Time | Days | 2011

Instructor: Guowu Jiang
E-mail: Guowu.jiang@uon.edu.au

Time: 2 hours
Subject: English

Language Focus: English academic vocabulary

Objectives:
To teach students how to use 20 English academic words both receptively and productively

Prior Knowledge:
Students have completed a high school education and passed a university English entrance exam in China

Materials (attached):

1. Academic Words Lists (AWL) (Coxhead, 2000): including 570 high frequent academic words with frequency reports of each word.
2. Sub-lists of the AWL (Coxhead, 2000): other family words of AWL.
3. IELTS preparing book (IELTS 5 and 7): in which the 474 target teaching words occur.
4. The list of target teaching words: there are 474 academic words out of 570 words from AWL, and these 474 words are also tokens from IELTS preparing book (IELTS 5 and 7).
5. Academic vocabulary exercises.
6. Computer with Internet connection overhead projector.
7. Adobe Reader 9.0 (or above)
8. Microphone.

**Teaching Resources:**

## Bottom-up Approach

<table>
<thead>
<tr>
<th>Lesson Phase</th>
<th>Time</th>
<th>Tasks (teacher)</th>
<th>Tasks (students)</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perspective</td>
<td>3-5 mins</td>
<td>Guiding students to scan and pronounce the 20 target words loudly (the first 20 words from Material 2).</td>
<td>Listening to and repeating after the teacher. Scanning the target words.</td>
<td>Previewing the 20 new target words and warming-up.</td>
</tr>
<tr>
<td>2. Stimulation</td>
<td>3-5 mins</td>
<td>Introducing the importance of the 20 new words by providing them their frequency reports in academic context from the material item 1. Presenting the components and procedure of the bottom-up approach.</td>
<td>Relating their own learning to their needs and lives. E.g. they need to pass the CET (College English Test) or the IELTS test. Understanding the learning procedure of the bottom-up approach.</td>
<td>Arousing interests and motivation in learning. Activating schema for the bottom-up approach.</td>
</tr>
<tr>
<td>3. Instruction/interaction (6 events with example attached)</td>
<td>15-20 mins</td>
<td>Teaching the word parts of the 20 target words. Using the “wordinfo” (research item 1) to provides word parts information on the target words.</td>
<td>Looking at the projector screen for the information on word parts of the target words. Listening to the teacher’s explanation and completing exercise 1 (attached).</td>
<td>Gaining and consolidating the word formation knowledge of the 20 target words.</td>
</tr>
<tr>
<td>2</td>
<td>15-20 mins</td>
<td>Teaching the definition and L1 translation of the 20 target words. Using the online dictionary to define the definition and related words (resource item 2, 3, 4 and 5).</td>
<td>Looking at the screen, listening to the teacher’s explanation and completing exercise 2 (attached).</td>
<td>Learning the basic definition and meaning of the target words. Knowing the related words of the 20 target words by dictionaries.</td>
</tr>
<tr>
<td>3</td>
<td>15-20 mins</td>
<td>Teaching the pronunciation, spelling, and formation of their family words. Using the sub-list of the AWL (material item 2) to define family words of the 20 target words.</td>
<td>Listening to the teacher, reading aloud after the teacher and completing the exercise 3.</td>
<td>Gaining and consolidating the pronunciation, spelling, and formation of other family forms.</td>
</tr>
<tr>
<td>4</td>
<td>15-20 mins</td>
<td>Teaching the phrases and collocations of the 20 target words. Using the Longman Dictionary (resource item 4) to check the phrases and collocations of the target words.</td>
<td>Listening to the teacher, speaking out the phrases and collocations and completing exercise 3.</td>
<td>Learning the phrases and collocations of the target words.</td>
</tr>
<tr>
<td>5</td>
<td>15-20 mins</td>
<td>Teaching students to use the 20 target words at sentence level.</td>
<td>Listening to the teacher, speaking out the sentences with</td>
<td>Learning the receptive and productive</td>
</tr>
<tr>
<td>Time</td>
<td>Activity 1</td>
<td>Activity 2</td>
<td>Activity 3</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>15-20 mins</td>
<td>Teaching students the usage of the 20 target words in academic context by using IELTS preparing book (material item 3). The ‘Find’ function of Adobe Reader will be used to locate and highlight the target words in the contexts.</td>
<td>Listening to the teacher, discussing the meaning and usage with teacher and classmates in academic context.</td>
<td>Learning to use the target words both receptively and productively in academic context.</td>
</tr>
<tr>
<td>4. Closure</td>
<td>3-5 mins</td>
<td>Summarising the learning procure, the components and importance of the bottom-up approach.</td>
<td>Listing to the teacher and asking questions.</td>
<td>Reviewing and developing students’ awareness of using the bottom-up approach deliberately.</td>
</tr>
<tr>
<td>5. Follow-up</td>
<td>3-5 mins</td>
<td>Presenting information on next lesson.</td>
<td>Listening to the teacher and asking questions.</td>
<td>Giving input on future lessons</td>
</tr>
</tbody>
</table>
### Top-down Approach

<table>
<thead>
<tr>
<th>Lesson Phase</th>
<th>Time</th>
<th>Tasks (teacher)</th>
<th>Tasks (students)</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Perspective</strong></td>
<td>3-5 mins</td>
<td>Brief introduction to the different texts in which the 20 new target words are going to be taught in using material item 4.</td>
<td>Listening to the teacher, scanning the target texts and understanding the main idea of the context.</td>
<td>Previewing and warming-up.</td>
</tr>
<tr>
<td><strong>2. Stimulation</strong></td>
<td>3-5 mins</td>
<td>Introducing the representiveness of the contexts (material item 4) by using the ‘Find’ function of Adobe Reader show the times and places the 20 target words occur. Presenting the components and procedure of the top-down approach.</td>
<td>Relating their learning to the needs and lives.</td>
<td>Arousing interests and motivation.</td>
</tr>
<tr>
<td><strong>3. Instruction/Interaction (6 events)</strong></td>
<td>15-20 mins</td>
<td>Teaching students the usage of the 20 target words in academic context by using IELTS preparing book (material item 3). The ‘Find’ function of Adobe Reader will be used to locate and highlight the target words in the contexts.</td>
<td>Listening to the teacher, discussing the meaning and usage with teacher and classmates in academic context. Doing exercise from the resource item 6.</td>
<td>Learning to use the target words both receptively and productively in academic context.</td>
</tr>
<tr>
<td></td>
<td>15-20 mins</td>
<td>Teaching students to use the 20 target words at sentence level. Providing example sentences from the resource Longman online dictionary (resource item 4)</td>
<td>Listening to the teacher, speaking out the sentences with classmates and completing exercise 5 (attached).</td>
<td>Learning the receptive and productive knowledge of the target words at sentence level.</td>
</tr>
<tr>
<td></td>
<td>15-20 mins</td>
<td>Teaching the phrases and collocations of the 20 target words. Using the Longman Dictionary (resource item 4) to check the phrases and collocations of the target words.</td>
<td>Listening to the teacher, speaking out the phrases and collocations and completing exercise 3.</td>
<td>Learning the phrases and collocations of the target words.</td>
</tr>
<tr>
<td></td>
<td>15-20 mins</td>
<td>Teaching the pronunciation, spelling, and formation of their family words. Using the sub-list of the AWL (material item 2) to define family words of the 20 target words.</td>
<td>Listening to the teacher, reading aloud after the teacher and completing the exercise 3.</td>
<td>Gaining and consolidating the pronunciation, spelling, and formation of other family forms.</td>
</tr>
<tr>
<td></td>
<td>15-20 mins</td>
<td>Teaching the definition and L1 translation of the 20 target words. Using the online</td>
<td>Looking at the screen, listening to the teacher’s explanation and completing exercise 2 (attached).</td>
<td>Learning the basic definition and meaning of the target words. Knowing the related</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>15-20 mins</td>
<td>231</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>----</td>
<td>------------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td></td>
<td>231</td>
<td>dictionary to define the definition and related words (resource item 2, 3, 4 and 5)</td>
<td>words of the 20 target words by dictionaries.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teaching the word parts of the 20 target words.</td>
<td>Looking at the projector screen for the information on word parts of the target words</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Using the “wordinfo” (research item 1) to provides word parts information on the target words.</td>
<td>Listening to the teacher’s explanation and completing exercise 1 (attached).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gaining and consolidating the word formation knowledge of the 20 target words.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>4. Closure</th>
<th>3-5 mins</th>
<th>Looking to the teaching and asking questions.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>231</td>
<td>Summarising the learning procure, the components and importance of the top-down approach.</td>
<td>Reviewing and developing students’ awareness of using the top-down approach deliberately.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>5. Follow-up</th>
<th>3-5 mins</th>
<th>Giving input on future lessons.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>231</td>
<td>Presenting information on next lesson.</td>
<td>Listing to the teaching and asking questions.</td>
</tr>
</tbody>
</table>
An example of how the word “TRANSPORT” was taught

**Event 1: Introducing the spoken and written form, as well as the morphemic structure, of “TRANSPORT”**

The teacher presented the phonological, morphological and graphemic structure of the target word “transport”. For instance, “port” was identified as the root, while “trans” was defined as a prefix meaning “across, beyond”. This part of the instruction was reinforced by reference to the online resource about morphemic structure (http://wordinfo.info/).

The students were asked to complete exercise 1 about knowledge of words parts, as shown below:

**EXERCISE 1: WORD FORMATION**

Please listen to the lecture and complete the column below:

<table>
<thead>
<tr>
<th>Target words</th>
<th>Pronunciation</th>
<th>Word parts</th>
<th>Meaning of the parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: MIRACULOUS</td>
<td>[mi'rækjuləs]</td>
<td>Miracle + ous</td>
<td>an amazing event + adj. form</td>
</tr>
<tr>
<td>1. transport</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Event 2: Introducing the definition and L1 translation of “transport”**

The teacher explained the definition of the word “transport” bilingually (a system or method for carrying passengers or goods from one place to another; its equivalent Chinese translation is “交通”, and then provided the related words: e.g. its synonym:

The students were asked to use online bilingual dictionaries (http://www.iciba.com), WordNet 3.0 (http://wordnetweb.princeton.edu/perl/webwn), and Visual Thesaurus (http://www.visualthesaurus.com/trialover/) to finish exercise 2 as follows:

**EXERCISE 2: DEFINITION AND RELATED WORDS**

Please listen to the lecture and complete the column below:

<table>
<thead>
<tr>
<th>Target words</th>
<th>Definition in English</th>
<th>Translation in L1</th>
<th>Related words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: RESEARCH</td>
<td>serious study of a subject, in order to discover new facts or test new ideas</td>
<td>研究</td>
<td>synonym: study</td>
</tr>
<tr>
<td>1. transport</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Event 3: Introducing related forms from the same lexical family**

The teacher taught the family words of “transport”, which are available in the sub-list of AWL, as illustrated below:
The students then finished the exercise 3 about the distinction between derivations and inflections.

**EXERCISE 3: FAMILY WORDS**

Please listen to the lecture and complete the column below:

<table>
<thead>
<tr>
<th>Target words</th>
<th>Derivations</th>
<th>Inflections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example:</td>
<td>approachable, unapproachable</td>
<td>approached, approaching</td>
</tr>
<tr>
<td>APPROACH</td>
<td></td>
<td>approaches</td>
</tr>
<tr>
<td>1. transport</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Event 4: Instructing the knowledge on phrase and collocation of the word “transport”**

The teacher instructed different syntactic uses and collocations of “transport”, e.g.
Nominal: means/mode/form of transport
Verbal: transport somebody/something to something
Collocational: road transport, air transport, public transport, and transport links

The students completed the related exercise 4 as follows by the reference to Oxford Collocation Dictionary Online (http://www.ozdic.com/).

**EXERCISE 4: PHRASES AND COLLOCATIONS**

Please listen to the lecture and complete the column below:

<table>
<thead>
<tr>
<th>Collocates in the front</th>
<th>Target words</th>
<th>Collocates behind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very</td>
<td>Example:</td>
<td>solution</td>
</tr>
<tr>
<td></td>
<td>SIMPLE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>transport</td>
<td></td>
</tr>
</tbody>
</table>

**Event 5: Presenting the word “transport” at the sentence level**

The teacher presented example sentences like:
1. It's easier to get to the college if you have your own transport.
2. One look, and I was transported back to childhood.
(Long Online Dictionary of Contemporary English: http://www.ldoceonline.com)

Students did a dictation exercise of some sentences in which “transport” occurs and then were asked to construct their own sentences involving the target word as shown below:
EXERCISE 5: SENTENCES

Please first listen to the recording and do a dictation of the sentences in which the target words occur, and then finally make up a sentence on your own using the target words.

<table>
<thead>
<tr>
<th>Target words</th>
<th>Example sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td>1. It’s easier to get to the college if you have your own transport (Dictation).</td>
</tr>
<tr>
<td></td>
<td>2. .................................................................(Make up a sentence using “transport” by yourself).</td>
</tr>
</tbody>
</table>

Event 6: Presenting the word “transport” at the level of the whole context

The teacher presented how the designated word was used at the level of the whole context in listening and reading comprehension passages from the two IELTS preparing books (IELTS 5, 2008; IELTS 7, 2009) to show students the occurrence of “transport” in IELTS texts:

- Hello, this is Land Transport Information at Toronto Airport. How may I help you?
- Right. Well, I don't really want to drive myself, so I'd like more information about public transport.
- All right, let's see, name, age, now the location. Are you familiar with the public transport system?
- The disappointing results of many conventional road transport projects in Africa led some experts to rethink the strategy by which rural transport problems were to be tackled at the beginning of the 1980s. A request for help in improving the availability of transport within the remote Makete District of south-western Tanzania presented the opportunity to try a new approach. The concept of integrated rural transport was adopted in the task of examining the transport needs of the rural households in the district. The objective was to reduce the time and effort needed to obtain access to essential goods and services through an improved rural transport system.

The students were asked to complete online academic vocabulary exercises for the Academic Word List (http://www.englishvocabularyexercises.com/AWL) as shown below:

EXERCISE 6: ONLINE ACADEMIC VOCABULARY EXERCISES

1. Gas and oil are very convenient forms of energy, simply because they are so easy to handle and ............ transport 😊
2. We stopped driving............to have something to eat, and then set out again.
## Appendix C: Teaching Materials

1. **Academic Words Lists (AWL) (Coxhead, 2000)**

<table>
<thead>
<tr>
<th>Word</th>
<th>Frequency</th>
<th>Word</th>
<th>Frequency</th>
<th>Word</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>abandon</td>
<td>8</td>
<td>attain</td>
<td>9</td>
<td>compound</td>
<td>5</td>
</tr>
<tr>
<td>abstract</td>
<td>6</td>
<td>attitude</td>
<td>4</td>
<td>comprehensive</td>
<td>7</td>
</tr>
<tr>
<td>academy</td>
<td>5</td>
<td>attribute</td>
<td>4</td>
<td>comprise</td>
<td>7</td>
</tr>
<tr>
<td>access</td>
<td>4</td>
<td>author</td>
<td>6</td>
<td>compute</td>
<td>2</td>
</tr>
<tr>
<td>accommodate</td>
<td>9</td>
<td>authority</td>
<td>1</td>
<td>conceive</td>
<td>10</td>
</tr>
<tr>
<td>accompany</td>
<td>8</td>
<td>automate</td>
<td>8</td>
<td>concentrate</td>
<td>4</td>
</tr>
<tr>
<td>accumulate</td>
<td>8</td>
<td>available</td>
<td>1</td>
<td>concept</td>
<td>1</td>
</tr>
<tr>
<td>accurate</td>
<td>6</td>
<td>aware</td>
<td>5</td>
<td>conclude</td>
<td>2</td>
</tr>
<tr>
<td>achieve</td>
<td>2</td>
<td>behalf</td>
<td>9</td>
<td>concurrent</td>
<td>9</td>
</tr>
<tr>
<td>acknowledge</td>
<td>6</td>
<td>benefit</td>
<td>1</td>
<td>conduct</td>
<td>2</td>
</tr>
<tr>
<td>acquire</td>
<td>2</td>
<td>bias</td>
<td>8</td>
<td>confer</td>
<td>4</td>
</tr>
<tr>
<td>adapt</td>
<td>7</td>
<td>bond</td>
<td>6</td>
<td>confine</td>
<td>9</td>
</tr>
<tr>
<td>adequate</td>
<td>4</td>
<td>brief</td>
<td>6</td>
<td>confirm</td>
<td>7</td>
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<tr>
<td>adjacent</td>
<td>10</td>
<td>bulk</td>
<td>9</td>
<td>conflict</td>
<td>5</td>
</tr>
<tr>
<td>adjust</td>
<td>5</td>
<td>capable</td>
<td>6</td>
<td>conform</td>
<td>8</td>
</tr>
<tr>
<td>administrate</td>
<td>2</td>
<td>capacity</td>
<td>5</td>
<td>consent</td>
<td>3</td>
</tr>
<tr>
<td>adult</td>
<td>7</td>
<td>category</td>
<td>2</td>
<td>consequent</td>
<td>2</td>
</tr>
<tr>
<td>advocate</td>
<td>7</td>
<td>cease</td>
<td>9</td>
<td>considerable</td>
<td>3</td>
</tr>
<tr>
<td>affect</td>
<td>2</td>
<td>challenge</td>
<td>5</td>
<td>consist</td>
<td>1</td>
</tr>
<tr>
<td>aggregate</td>
<td>6</td>
<td>channel</td>
<td>7</td>
<td>constant</td>
<td>3</td>
</tr>
<tr>
<td>aid</td>
<td>7</td>
<td>chapter</td>
<td>2</td>
<td>constitute</td>
<td>1</td>
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<td>10</td>
<td>chart</td>
<td>8</td>
<td>constrain</td>
<td>3</td>
</tr>
<tr>
<td>allocate</td>
<td>6</td>
<td>chemical</td>
<td>7</td>
<td>construct</td>
<td>2</td>
</tr>
<tr>
<td>alter</td>
<td>5</td>
<td>circumstance</td>
<td>3</td>
<td>consult</td>
<td>5</td>
</tr>
<tr>
<td>alternative</td>
<td>3</td>
<td>cite</td>
<td>6</td>
<td>consume</td>
<td>2</td>
</tr>
<tr>
<td>ambiguous</td>
<td>8</td>
<td>civil</td>
<td>4</td>
<td>contact</td>
<td>5</td>
</tr>
<tr>
<td>amend</td>
<td>5</td>
<td>clarify</td>
<td>8</td>
<td>contemporary</td>
<td>8</td>
</tr>
<tr>
<td>analogy</td>
<td>9</td>
<td>classic</td>
<td>7</td>
<td>context</td>
<td>1</td>
</tr>
<tr>
<td>analyse</td>
<td>1</td>
<td>clause</td>
<td>5</td>
<td>contract</td>
<td>1</td>
</tr>
<tr>
<td>annual</td>
<td>4</td>
<td>code</td>
<td>4</td>
<td>contradict</td>
<td>8</td>
</tr>
<tr>
<td>anticipate</td>
<td>9</td>
<td>coherent</td>
<td>9</td>
<td>contrary</td>
<td>7</td>
</tr>
<tr>
<td>apparent</td>
<td>4</td>
<td>coincide</td>
<td>9</td>
<td>contrast</td>
<td>4</td>
</tr>
<tr>
<td>append</td>
<td>8</td>
<td>collapse</td>
<td>10</td>
<td>contribute</td>
<td>3</td>
</tr>
<tr>
<td>appreciate</td>
<td>8</td>
<td>colleague</td>
<td>10</td>
<td>controversy</td>
<td>9</td>
</tr>
<tr>
<td>approach</td>
<td>1</td>
<td>commence</td>
<td>9</td>
<td>convene</td>
<td>3</td>
</tr>
<tr>
<td>appropriate</td>
<td>2</td>
<td>comment</td>
<td>3</td>
<td>converse</td>
<td>9</td>
</tr>
<tr>
<td>approximate</td>
<td>4</td>
<td>commission</td>
<td>2</td>
<td>convert</td>
<td>7</td>
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<td>arbitrary</td>
<td>8</td>
<td>commit</td>
<td>4</td>
<td>convince</td>
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<td>area</td>
<td>1</td>
<td>commodity</td>
<td>8</td>
<td>cooperate</td>
<td>6</td>
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<td>aspect</td>
<td>2</td>
<td>communicate</td>
<td>4</td>
<td>coordinate</td>
<td>3</td>
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<td>assemble</td>
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<td>corporate</td>
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<td>assign</td>
<td>6</td>
<td>compensate</td>
<td>3</td>
<td>correspond</td>
<td>3</td>
</tr>
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<td>assist</td>
<td>2</td>
<td>compile</td>
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<td>couple</td>
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</tr>
<tr>
<td>assume</td>
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<td>complement</td>
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<td>credit</td>
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</tr>
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<td>attach</td>
<td>6</td>
<td>component</td>
<td>3</td>
<td>criteria</td>
<td>3</td>
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<td>1</td>
<td>phase</td>
<td>4</td>
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<td>migrate</td>
<td>6</td>
<td>phenomenon</td>
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2. Sub-lists of the AWL (Coxhead, 2000)

Sublist 5 of the Academic Word List

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3. IELTS Preparing Book (IELTS 7, 2008, p. 78)

After many vicissitudes the Dictionary was finally published on 15 April 1775. It was instantly recognised as a landmark throughout Europe. 'This very noble work,' wrote the leading Italian lexicographer, 'will be a perpetual monument of Fame to the Author an Honour to his own Country in particular; and a general Benefit to the republic of Letters throughout Europe.' The fact that Johnson had taken on the Academies of Europe and matched them (everyone knew that forty French academics had taken forty years to produce the first French national dictionary) was cause for much English celebration.

Johnson had worked for nine years, 'with little assistance of the learned, and without any patronage of the great; not in the soft obscurities of retirement, or under the shelter of academic bowers, but amidst inconvenience and distraction, in sickness and in sorrow'. For all its faults and eccentricities his two-volume work is a masterpiece and a landmark, in his own words, 'setting the orthography, displaying the analogy, regulating the structures, and ascertaining the significations of English words'. It is the cornerstone of Standard English, an achievement which, in James Boswell's words, 'conferred stability on the language of his country'.

The Dictionary, together with his other writing, made Johnson famous and so well esteemed that his friends were able to prevail upon King George III to offer him a pension. From then on, he was to become the Johnson of folklore.
Before solutions could be proposed, the problems had to be understood. Little was known about the transport demands of the rural households, so Phase I, between December 1985 and December 1987, focused on research. The socio-economic survey of more than 400 households in the district indicated that a household in Makete spent, on average, seven hours a day on transporting themselves and their goods, a figure which seemed extreme but which has also been obtained in surveys in other rural areas in Africa. Interesting facts regarding transport were found: 95% was on foot; 80% was within the locality; and 70% was related to the collection of water and firewood and travelling to grinding mills.

Section C

Having determined the main transport needs, possible solutions were identified which might reduce the time and burden. During Phase II, from January to February 1991, a number of approaches were implemented in an effort to improve mobility and access to transport.

An improvement of the road network was considered necessary to ensure the import and export of goods to the district. These improvements were carried out using methods that were heavily dependent on labour. In addition to the improvement of roads, these methods provided training in the operation of a mechanical workshop and bus and truck services. However, the difference from the conventional approach was that this time consideration was given to local transport needs outside the road network.

Most goods were transported along the paths that provide short-cuts up and down the hillsides, but the paths were a real safety risk and made the journey on foot even more arduous. It made sense to improve the paths by building steps, handrails and footbridges.

It was uncommon to find means of transport that were more efficient than walking but less technologically advanced than motor vehicles. The use of bicycles was constrained by their high cost and the lack of available spare parts. Oxen were not used at all but donkeys were used by a few households in the northern part of the district. MIRTP focused on what would be most appropriate for the inhabitants of Makete in terms of what was available, how much they could afford and what they were willing to accept. After careful consideration, the project chose the promotion of donkeys - a
4. The List of Target Teaching Words

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## EXERCISE 1: WORD FORMATION

Please listen to the lecture and complete the column below:

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<th>Meaning of the parts</th>
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<td>an amazing event + adj. form</td>
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**EXERCISE 2: DEFINITION AND RELATED WORDS**

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<td>8. ACHIEVE</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>9. ACKNOWLEDGE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. ACQUIRE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. ADAPT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. ADEQUATE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. TRANSPORT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. ADJUST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. ADMINISTRATE</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>16. ADULT</td>
<td></td>
<td></td>
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<tr>
<td>17. AFFECT</td>
<td></td>
<td></td>
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<tr>
<td>18. AGGREGATE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. AID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. ALBEIT</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE 3: FAMILY WORDS

Please listen to the lecture and complete the column below:

<table>
<thead>
<tr>
<th>Target words</th>
<th>Derivations</th>
<th>Inflections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: APPROACH</td>
<td>approachable, unapproachable</td>
<td>approached, approaching approaches</td>
</tr>
<tr>
<td>1. ABANDON</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ACADEMY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. ACCESS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ACCOMMODATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ACCOMPANY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. ACCUMULATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. ACCURATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. ACHIEVE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. ACKNOWLEDGE</td>
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<tr>
<td>10. ACQUIRE</td>
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<tr>
<td>11. ADAPT</td>
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<tr>
<td>12. ADEQUATE</td>
<td></td>
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<tr>
<td>13. TRANSPORT</td>
<td></td>
<td></td>
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<tr>
<td>14. ADJUST</td>
<td></td>
<td></td>
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<tr>
<td>15. ADMINISTRATE</td>
<td></td>
<td></td>
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<tr>
<td>16. ADULT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. AFFECT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. AGGREGATE</td>
<td></td>
<td></td>
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<tr>
<td>19. AID</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. ALBEIT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE 4: PHRASES AND COLLOCATIONS

Please listen to the lecture and complete the column below:

<table>
<thead>
<tr>
<th>Collocates in the front</th>
<th>Target words</th>
<th>Collocates behind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very</td>
<td>Example: SIMPLE solution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ABANDON</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACADEMY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACCESS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACCOMMODATE</td>
<td></td>
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<tr>
<td></td>
<td>ACCOMPANY</td>
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<tr>
<td></td>
<td>ACCUMULATE</td>
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<td></td>
<td>ACCURATE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACHIEVE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACKNOWLEDGE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACQUIRE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADAPT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADEQUATE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TRANSPORT</td>
<td></td>
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<tr>
<td></td>
<td>ADJUST</td>
<td></td>
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<tr>
<td></td>
<td>ADMINISTRATE</td>
<td></td>
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<tr>
<td></td>
<td>ADULT</td>
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<td></td>
<td>AFFECT</td>
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<tr>
<td></td>
<td>AGGREGATE</td>
<td></td>
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<tr>
<td></td>
<td>AID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALBEIT</td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE 5: SENTENCES

Please first listen to the recording and do a dictation of the sentences in which the target words occur and finally make up a sentence on your own using the target words.

<table>
<thead>
<tr>
<th>Target words</th>
<th>Example sentences</th>
</tr>
</thead>
</table>
| **TRANSPORT** | 1. It's easier to get to the college if you have your own transport (Dictation).  
2. …………………………………………………………………………………..(make up a sentence using “transport ” by yourself). |
| 1. ABANDON | 1.  
2. |
| 2. ACADEMY | 1.  
2. |
| 3. ACCESS | 1.  
2. |
| 4. ACCOMMODATE | 1.  
2. |
| 5. ACCOMPANY | 1.  
2. |
| 6. ACCUMULATE | 1.  
2. |
| 7. ACCURATE | 1.  
2. |
| 8. ACHIEVE | 1.  
2. |
| 9. ACKNOWLEDGE | 1.  
2. |
| 10. ACQUIRE | 1.  
2. |
EXERCISE 6: SENTENCES("AWL Exercises," 2009)

Please look at the projector, and right down the correct word from the drop down menu for each sentence.

### AWL Sublist 5 - Exercise 1b

Matching exercise

Match the items on the right with the items on the left.

<table>
<thead>
<tr>
<th>English</th>
<th>Vocabulary ESL</th>
<th>Vocabulary</th>
<th>English Vocabulary</th>
<th>Exercise</th>
<th>Fun Exercise</th>
<th>Ants by Google</th>
</tr>
</thead>
</table>

1. The government of East Timor faces great _____________ in rebuilding the country after years of war and occupation.
   - _____________

2. Recent studies suggest that the use of physical action when reviewing new vocabulary can _____________ second language learning.
   - _____________

3. The traditional viewpoint of the family _____________ typically describes it as consisting of two parents of the opposite sex with one or more children.
   - _____________

4. The number of houses sold in our city has _____________ by almost 10% in the past year due to rising interest rates.
   - _____________

5. Chemical compounds which are not _____________ can be very dangerous.
   - _____________

6. The _____________ way to reduce the number of cars on the road would be to make mass transit more attractive.
   - _____________

7. The Earth’s surface fluids are of _____________ importance in the origin and development of our planet’s landscape.
   - _____________

8. After taking classical ballet for years, Jennifer decided to try a jazz dance course at the _____________.
   - academy

9. The University of Victoria has its own computer _____________ which extends to all the buildings on campus.
   - _____________

10. If more people used public _____________, it would help to reduce air pollution in our cities.
    - _____________

---

<table>
<thead>
<tr>
<th>English</th>
<th>Vocabulary ESL</th>
<th>Vocabulary</th>
<th>English Vocabulary</th>
<th>Exercise</th>
<th>Fun Exercise</th>
<th>Ants by Google</th>
</tr>
</thead>
</table>

1. Gas and oil are very convenient forms of energy, simply because they are so easy to handle and _____________.
   - transport

2. We stopped driving _____________ to have something to eat, and then set out again.
   - _____________

3. In general, a body of rock consists of mixtures or _____________ of minerals.
   - _____________

4. Discrimination is usually based on _____________ of other cultures or lifestyles.
   - _____________

5. The boss gave _____________ instructions for the running of the company while he is away on holiday.
   - _____________

6. The sugar used in jams and jellies both sweetens the fruit and _____________ the growth of bacteria.
   - _____________

7. The professor _____________ us on current trends in Canadian literature.
   - _____________

8. The religion of Islam teaches the word of God as _____________ to the Prophet Mohammed.
   - _____________

9. You may have failed the level, but your Spanish has improved a lot _____________.
   - _____________

10. The former U.S.S.R. was composed of 15 very _____________ republics with strong cultural differences.
    - _____________
Appendix D: Teaching Resources

1. Word Formation: http://wordinfo.info/

You searched for: “transport”

**transport**
The action of carrying or conveying a thing or person from one place to another.

This entry is located in the following units:
port-, portat- (page 4)
trans-, tran-, tra- (page 10)

**port-, portat-**
(Latin: carry, bring, bear)
Don’t confuse this port-, portat with another port- meaning "door, gate, entrance," or "harbor".

**trans-, tran-, tra-**
(Latin: across, through, over, beyond, on the far side of; most often used as a prefix)
Don’t confuse the tra- in this element with another tra- in "drag" or "draw". Trans- becomes tra- before the consonants -d, -j, -l, -m, -n, and -v.
2. Bilingual online dictionary: http://www.iciba.com/

WordNet Search - 3.1
- WordNet home page - Glossary - Help

Word to search for: transport  
Search WordNet

Display Options: (Select option to change)  
Change

Key: "S:" = Show Synset (semantic) relations, "W:" = Show Word (lexical) relations

Display options for sense: (gloss) "an example sentence"

Noun

- S: (n) conveyance, transport (something that serves as a means of transportation)
- S: (n) transport (an exchange of molecules (and their kinetic energy and momentum) across the boundary between adjacent layers of a fluid or across cell membranes)
- S: (n) transportation, shipping, transport (the commercial enterprise of moving goods and materials)
- S: (n) ecstasy, rapture, transport, exaltation, raptus (a state of being carried away by overwhelming emotion) "listening to sweet music in a perfect rapture" – Charles Dickens
- S: (n) tape drive, tape transport, transport (a mechanism that transports magnetic tape across the read/write heads of a tape playback/recorder)
- S: (n) transportation, transport, transfer, transferral, conveyance (the act of moving something from one location to another)

Verb

- S: (v) transport (move something or somebody around; usually over long distances)
- S: (v) transport, carry (move while supporting, either in a vehicle or in one's hands or on one's body) "You must carry your camping gear"; "carry the suitcases to the car"; "This train is carrying nuclear waste"; "These pipes carry waste water into the river"
- S: (v) enchant, enrapture, transport, enthral, ravish, enthrall, delight (hold spellbound)
- S: (v) transport, send, ship (transport commercially)
- S: (v) transmit, transfer, transport, channel, channelize, channelise (send from one person or place to another) "transmit a message"

*transport* noun

ADJ cheap, efficient | public | private | local | city | urban | rural | horse-drawn | motor | air | canal | ground | land | marine | rail | railway | river | road | sea | water | passenger | freight

VERB + TRANSPORT use | arrange | provide | have access to people who have no access to private transport

TRANSPORT + NOUN facilities, provision, services | infrastructure, network, system | business, company, group, industry, operator, organization | chairman, chief, executive, manager, officer, official | consultant, planner | project, scheme, strategy | legislation, policy, budget | minister, spokesman | authority, authorities, committee, department, ministry | needs, requirements | market, sector | costs, fares, allowance | Staff who transfer to a different office will receive a transport allowance | user, worker | links, routes | congestion | police, safety, strike, union

PRED with ~ The car broke down, leaving us without transport

PHRASES a form/means/method/mode of transport, your own transport | Applicants for the job must have their own telephone and transport.

**transport**

1 [uncountable] British English a system or method for carrying passengers or goods from one place to another [= transportation American English]
   air/rail/road transport
   Improved rail transport is essential for business.
   commuters who travel on public transport (=buses, trains etc)
   It's easier to get to the college if you have your own transport (=a car, bicycle etc).
   means/mode/form of transport
   Horses were the only means of transport.

2 [uncountable] the process or business of taking goods from one place to another [= transportation American English]
   transport of
   Canals were used for the transport of goods.

3 [countable] a ship or aircraft for carrying soldiers or supplies

4 be in a transport of delight/joy etc literary to be feeling very strong emotions of pleasure, happiness etc
Appendix E: Research Instruments

1. Background Information Collection Form

<table>
<thead>
<tr>
<th>Reference Number:</th>
</tr>
</thead>
</table>

As part of our research data, we would like you to provide your background information listed below. Please tick the most appropriate answer to each of the statements and specify if necessary.

1. **Age**

<table>
<thead>
<tr>
<th>Age</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td></td>
</tr>
<tr>
<td>21-23</td>
<td></td>
</tr>
<tr>
<td>24-26</td>
<td></td>
</tr>
<tr>
<td>27+</td>
<td></td>
</tr>
</tbody>
</table>

2. **Gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
</tr>
</tbody>
</table>

3. **In which country were you born?**

<table>
<thead>
<tr>
<th>Country</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td></td>
</tr>
<tr>
<td>Other – please specify</td>
<td></td>
</tr>
</tbody>
</table>

4. **In what type of city were you grown up?**

<table>
<thead>
<tr>
<th>City Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital city</td>
<td></td>
</tr>
<tr>
<td>Medium city (over 2 million people)</td>
<td></td>
</tr>
<tr>
<td>Small city (less than 2 million people)</td>
<td></td>
</tr>
<tr>
<td>Rural area</td>
<td></td>
</tr>
</tbody>
</table>

5. **Are you of the Han ethnic group and other minority ethnic groups?**

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Han ethnic group</td>
<td></td>
</tr>
<tr>
<td>Other, please specify</td>
<td></td>
</tr>
</tbody>
</table>
6. Do you mother/guardian or their father/guardian speak a language other than English at home? (If more than one language, indicate the one that is spoken most often.

Chinese only............................................
Other - please specify...............................

7. What is the highest year of primary or secondary school your parents/guardians have completed? (For persons who have never attended school, mark ‘Year 9 or equivalent or below’.)

Year 12 or equivalent................................
Year 11 or equivalent................................
Year 10 or equivalent..............................
Year 9 or equivalent or below....................

8. What is the level of the highest qualification your parents/guardians have completed?

Bachelor degree or above.........................
Advanced diploma/Diploma......................
Certificate I to IV (including trade certificate)...
No non-school qualification........................

9. What is the occupation group of the mother/parent1/guardian1?

group 1

10. What is the occupation group of the father/parent2/guardian2?

group 1

Please select the appropriate parental occupation group from the attached list.

- If the person is not currently in paid work but has had a job in the last 12 months or has retired in the last 12 months, please use the person’s last occupation.
If the person has not been in paid work in the last 12 months, enter ‘8’ in the box above.

Thank you for your time.

Please return this form to the researcher in the enclosed envelope.
List of Parental Occupation Groups (for question 9 and 10)

**Group 1: Senior management in large business organisation, government administration and defence, and qualified professionals**

<table>
<thead>
<tr>
<th>Senior executive/manager/department head</th>
<th>Public service manager</th>
<th>Other administrator</th>
<th>Defence Forces Commissioned Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior executive/manager/department head in industry, commerce, media or other large organisation.</td>
<td>Public service manager (Section head or above), regional director, health/education/police/fire services administrator</td>
<td>Other administrator [school principal, faculty head/dean, library/museum/gallery director, research facility director]</td>
<td>Defence Forces Commissioned Officer</td>
</tr>
</tbody>
</table>

**Professionals** generally have degree or higher qualifications and experience in applying this knowledge to design, develop or operate complex systems; identify, treat and advise on problems; and teach others.

- **Business** [management consultant, business analyst, accountant, auditor, policy analyst, actuary, valuer]
- **Air/sea transport** [aircraft/ship’s captain/officer/pilot, flight officer, flying instructor, air traffic controller]

**Group 2: Other business managers, arts/media/sportspersons and associate professionals**

<table>
<thead>
<tr>
<th>Owner/manager</th>
<th>Specialist manager</th>
<th>Financial services manager</th>
<th>Retail sales/services manager</th>
<th>Arts/media/spots</th>
<th>Associate professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner/manager of farm, construction, import/export, wholesale, manufacturing, transport, real estate business</td>
<td>Specialist manager [finance/engineering/production/personnel/industrial relations/sales/marketing]</td>
<td>Financial services manager [bank branch manager, finance/investment/insurance broker, credit/loans officer]</td>
<td>Retail sales/services manager [shop, petrol station, restaurant, club, hotel/motel, cinema, theatre, agency]</td>
<td>Arts/media/spots [musician, actor, dancer, painter, potter, sculptor, journalist, author, media presenter, photographer, designer, illustrator, proof reader, sportsman/woman, coach, trainer, sports official]</td>
<td>Associate professionals generally have diploma/technical qualifications and support managers and professionals.</td>
</tr>
</tbody>
</table>

- **Business/administration** [recruitment/employment/industrial relations/training officer, marketing/advertising specialist, market research analyst, technical sales representative, retail buyer, office/project manager]
- **Defence Forces** senior Non-Commissioned Officer
Group 3: Tradesmen/women, clerks and skilled office, sales and service staff

**Tradesmen/women** generally have completed a 4 year Trade Certificate, usually by apprenticeship. All tradesmen/women are included in this group.

**Clerks** [bookkeeper, bank/PO clerk, statistical/actuarial clerk, accounting/claims/audit clerk, payroll clerk, recording/registry/filing clerk, betting clerk, stores/inventory clerk, purchasing/order clerk, freight/transport/shipping clerk, bond clerk, customs agent, customer services clerk, admissions clerk]

**Skilled office, sales and service staff.**
- **Office** [secretary, personal assistant, desktop publishing operator, switchboard operator]
- **Sales** [company sales representative, auctioneer, insurance agent/assessor/loss adjuster, market researcher]
- **Service** [aged/disabled/refuge/child care worker, nanny, meter reader, parking inspector, postal worker, courier, travel agent, tour guide, flight attendant, fitness instructor, casino dealer/manager]

Group 4: Machine operators, hospitality staff, assistants, labourers and related workers

**Drivers, mobile plant, production/processing machinery and other machinery operators.**

**Hospitality staff** [hotel service supervisor, receptionist, waiter, bar attendant, kitchenhand, porter, housekeeper]

**Office assistants, sales assistants and other assistants.**
- **Office** [typist, word processing/data entry/business machine operator, receptionist, office assistant]
- **Sales** [sales assistant, motor vehicle/caravan/parts salesperson, checkout operator, cashier, bus/train conductor, ticket seller, service station attendant, car rental desk staff, street vendor, telemarketer, shelf stacker]
- **Assistant/aide** [trades’ assistant, school/teacher’s aide, dental assistant, veterinary nurse, nursing assistant, museum/gallery attendant, usher, home helper, salon assistant, animal attendant]

**Labourers and related workers**
- **Defence Forces** ranks below senior NCO not included above
- **Agriculture, horticulture, forestry, fishing, mining worker** [farm overseer, shearer, wool/hide classer, farm hand, horse trainer, nurseryman, greenkeeper, gardener, tree surgeon, forestry/logging worker, miner, seafarer/fishing hand]
- **Other worker** [labourer, factory hand, storeman, guard, cleaner, caretaker, laundry worker, trolley collector, car park attendant, crossing supervisor]
2. Vocabulary Pre and Post Tests

Reference No: _____

THE UNIVERSITY WORD LEVEL LIST
Controlled Productive (Pre-test)

1. The Far East is one of the most populated reg______ of the world.
2. She spent her childhood in Europe and most of her ad_______ life in Asia.
3. Many people get bored with the endless cyc______ of getting up going to work and coming home, day after day.
4. Even though I don't usually side with you, in this ins_______ I must admit that you're right.
5. The parents gave their con_______ to their daughter's marriage.
6. I like mathematics in general and geo_______ in particular.
7. The resignation of the president upset the country's economic equil_______.
8. You usually pay less if you buy in bu_______.
9. He backed up his assertions by quoting the latest research and stat_______.
10. The plaster on the wall was removed to exp_______ the original bricks underneath.
11. His new book will be pub_______ at the end of this month by a famous University Press.
12. It is not easy to abs_______ all this information in such a short time.
13. The students were inhi_______ by the presence of the Dean of the Faculty.
14. Judging by the political changes in the world, our economic scheme will have to be rev_______.
15. If I were you I would con_______ a good lawyer before taking action.
16. There is still no val_______ data that supports your theory.
17. A civ_______ centre was built for community activities.
18. She didn't openly attack the plan, but her opposition was imp_______ in her attitude.

(Laufer & Nation, 1999; Nation, 2008)
1. The afflu____ of the western world contrasts with the poverty in other parts.
2. The book covers a series of isolated epis____ from history.
3. Farmers are introducing innova_______ that increase the productivity per worker.
4. They are suffering from a vitamin defic_____.
5. There is a short term oscill____ of the share index.
6. They had other means of acquiring wealth, pres______, and power.
7. The parts were arranged in an arrow-head configu______.
8. The learners were studying a long piece of written disco______.
9. People have proposed all kinds of hypot______ about what these things are.
10. The giver prefers to remain anony______.
11. The elephant is indig______ to India.
12. You'll need a mini______ deposit of $20,000.
13. Most towns have taken some eleme______ civil defence precautions.
14. The presentation was a series of sta______ images.
15. This action was necessary for the uli______ success of the revolution.
16. He had been expe______ from school for stealing.
17. The lack of money depressed and frust______ him.
18. The money from fruit-picking was a suppl______ to their regular income.

(Laufer & Nation, 1999; Nation, 2008)
This list contains the head words in the Academic Word List (Coxhead, 2000).

4. Please put a (✓) after it, if you recognise the word (at least one equal Chinese Translation).
5. Please put a (?) after it, if you are not sure.
6. Please put a (×) after it, if you don't know the word.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>terminate</td>
</tr>
<tr>
<td>8.</td>
<td>ignorance</td>
</tr>
<tr>
<td>9.</td>
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</table>

(Coxhead, 2000; Paribakht & Wesche, 1997)
Academic Vocabulary Size test (Post-test)

This list contains the head words in the Academic Word List (Coxhead, 2000)

1. Please put a (✓) after it and write down at least one equal Chinese translation, if you recognize the word.
2. Please put a (?) after it, if you are not sure.
3. Please put a (×) after it, if you don't know the word.

1. circumstance
2. likewise
3. cite
4. link
5. civil
6. locate
7. clarify
8. logic
9. classic
10. maintain
11. clause
12. major
13. code
14. manipulate
15. coherent
16. manual
17. coincide
18. margin
19. collapse
20. mature
21. colleague
22. maximise
23. commence
24. mechanism
25. comment
26. media
27. commission
28. mediate
29. commit
30. medical
31. commodity
32. medium
33. communicate
34. mental
35. community
36. method
37. compatible
38. migrate
39. compensate
40. military
41. compile
42. minimal
43. complement
44. minimise
45. complex
46. minimum
47. component
48. ministry
49. compound
50. minor

(Coxhead, 2000; Paribakht & Wesche, 1997)
3. Course Evaluation Questionnaire

<table>
<thead>
<tr>
<th>Course:</th>
<th>Bottom-up</th>
<th>Top-down</th>
<th>Class:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>Gender:</td>
<td>Male</td>
<td>Female</td>
<td>Age:</td>
<td>18-20</td>
<td>21-23</td>
<td>24-26</td>
<td>27+</td>
</tr>
</tbody>
</table>

As we come to the end of the vocabulary course, we would like you to participate in a final evaluation by answering the questions below. Please circle the most appropriate answer to each of the questions using the code given, which gives the extent to which you either agree or disagree with the following statements.

**Strongly agree** = 1  
**Agree to some extent** = 2  
**Neither disagree nor agree** = 3  
**Disagree to some extent** = 4  
**Strongly disagree** = 5

A. Evaluation of the course

1. I was given sufficient information on the objectives of the vocabulary course.  
2. The course encouraged a gaining of vocabulary knowledge and learning procedure successfully.  
3. The course covered the topics I intended to learn about.  
4. I feel that the course took into account what the participants considered important to learn.  
5. I found that the different phases listed below were relevant and of good quality:
   g. Gaining and consolidating the word knowledge of spoken form, written form and word parts.  
   h. Gaining and consolidating the pronunciation, spelling, and formation of other family forms.  
   i. Learning the basic definition and meaning of the target words.  
   j. Learning the phrases and collocations of the target words.  
   k. Learning the receptive and productive knowledge of the target words at sentence level.  
   l. Learning to use the target words both receptively and productively in academic context.  
6. I found that the training methods listed below were relevant and of good quality:
   a. Instruction  
   b. Group discussion  
   c. Exercises  
   d. Review and revision  
   e. Class time management  
7. The language used in the training sessions was easy to understand.  
8. The general atmosphere during the course enhanced the learning process.  
9. The course fostered learning interests and motivation among participants.  
10. In general, the objectives of the course were achieved.
B. Evaluation of the Teaching

1. The teacher had sufficient knowledge in teaching vocabulary.
2. The teacher communicated clearly.
3. The teacher was open, honest and fair to all students.
4. The teacher was committed to the course.
5. The teacher was receptive/open to students’ questions.
6. The teacher encouraged participants to join in group discussions in a way that helped us to participate and develop the relevant vocabulary knowledge.
7. The teacher was consistent in keeping class hours.
8. In general, the overall performance of the instructor was very good.

C. Participants' Self-Evaluation

1. My English vocabulary knowledge is still very poor.
2. I am interested in this vocabulary course and have learned a lot.
3. I have no difficulty in understanding the vocabulary courses.
4. I consider myself a very good student during the course.
5. I was rarely absent from the class.
6. I positively participated in class discussions.
7. I made every possible effort to study the course well.
8. In general I am satisfied with my performance in the course.

D. Your Opinion

1. Which part of the course did you enjoy most? Can you explain why?

2. Which part of the course did you enjoy least? Can you explain why?

3. How will the course be of use to you in your future study or work?

4. What is the most important thing that you have learned from the course?

5. Please write any suggestions or recommendations for improvements or additions to the vocabulary course?