Learning German Vocabulary:
An Investigation into Learners' Use of Vocabulary Learning Strategies

by

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Author’s Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by examiners. I understand that my thesis may be made electronically available to the public.

Abstract

This research is an empirical multiple-case study that is designed to explore adult individual learners' vocabulary learning processes, and to examine their use of vocabulary learning strategies. It investigates the following key questions: (1) What vocabulary learning strategies do the individual learners usually use to find the meaning of unknown words? (2) What vocabulary learning strategies do the individual learners usually use to consolidate the words? (3) How do the individual learners apply the vocabulary learning strategies for the purposes mentioned above? (4) What are the differences between the learners' use of vocabulary learning strategies? By using multiple data collection methods – questionnaires, interviews, and think-aloud protocols – I not only investigate *what* strategies the individual research participants use to study vocabulary, but also look at *how* they actually employ the strategies while completing a series of vocabulary activities. Finally, I also compare the patterns in the use of strategies between the participants.

After the introduction, Chapter Two begins with the clarification of basic terms: "word," "word knowledge," and "strategy." In Chapter Three, studies in the fields of vocabulary learning strategies are reviewed. Chapter Four deals with mental processes involved in vocabulary learning. Chapter Five focuses on the empirical study. I describe briefly the German language course (GER 101) and the language textbook, *Vorsprung (2nd edition, 2002)*, and illustrate in depth the methodology used for data collection and data analysis. The results of the study are presented in Chapter Six. Chapter Seven summarizes the study results, followed by suggestions for foreign vocabulary instruction and for future research.

The study illustrates that participants used a variety of vocabulary learning strategies to learn vocabulary. In total, 49 individual vocabulary learning strategies are identified and

classified. Further, the differences between the learners are shown to be not only in *what* strategies they use but also in *how* they employ them. Finally, the study shows that well-organized and planned learning strategy training should be provided to language learners in order to make sure that they can use the strategies effectively, and that language instructors and the language textbook should play an active role in strategy training.

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Dedication

For

my father 林福雄 (Fu-hsiung Lin)

my mother 李式娟 (Shih-juan Li)

and especially, my husband Michael John DiSanto

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Chapter One: Introduction

In the late 1970s and early 1980s, several articles were published to address the issue of vocabulary being largely neglected in the field of second/foreign language [1] acquisition/learning[2] research: "For some years now the study of second language lexical acquisition has been languishing in neglect. 'Neglect' is perhaps an understatement; one might almost say that second language lexical acquisition has been a victim of discrimination" (Levenston, 1979, p. 147; also cited in Sanaoui, 1992, p. 6). Also, Meara (1982) emphasizes the neglect directly in the title of his article, "Vocabulary Acquisition: A Neglected Aspect of Language Learning." Today, almost three decades later, it is pleasing to witness that "the field of vocabulary studies is now anything but a neglected area" (Schmitt & McCarthy, 1997, p. 1).[3] Researchers have made great efforts to tackle vocabulary from various aspects. Among the most frequently studied issues and questions[4] are, for example:

- Word definition (What is a word?)
- Word knowledge (What does it mean to know a word?)

[1]The terms "second language" and "foreign language" both signify a language other than one's native language. In many studies, the two terms are used without differentiation. Sometimes, in order to contrast the difference between the two terms, second language is more narrowly defined as a language that is learned in a country where this language is used broadly in the society or in the business of education and government, whereas foreign language is a language which is learned in a country where this language is not widely used as a medium of communication in the society (Richards & Schmidt, 2002). Based on this contrast, German is a foreign language in Canada and in the present thesis. Nevertheless, I will used the two terms interchangeably to reflect the use of the particular researcher being discussed. I will also use the term "target language" as a generic phrase to refer to the language being learned (e.g., German in my study).

[2]I am aware of the debates about the term definitions "acquisition vs. learning" (Krashen, 1981, 1982, 1985). However, in this thesis, they will be used interchangeably, as in most of the vocabulary research literature.

[3]For the history of vocabulary in language learning research, refer to Schmitt (2000), Chapter Two.

[4]There have been numerous publications discussing these issues, for example: books by Aitchison (2003), Carter (1998), Coady and Huckin (1997), Hiebert and Kamil (2005), McKeown and Curtis (1987), Nation (1990, 2001), Schmitt and McCarthy (1997), Schmitt (2000), Singleton (1999, 2000). Applied linguists in Germanic speaking world such as Bahns (1997), Bausch, Christ, Königs, and Krumm (1995), Bayerlein (1997), Bohn (1999), De Florio-Hansen (1994), Kemmeter (1999), Löschmann (1993), Müller (1994), and Zhang (2001) also concluded significant studies to vocabulary. In addition, Nation compiled an extensive list of bibliography on vocabulary, available at: http://www.victoria.ac.nz/lals/staff/paul-nation/vocrefs/index.aspx. (Retrieved on September 10, 2008).

- Vocabulary size (How many words does a native speaker know? How many words does a second language learner need?)
- Word frequency (Low vs. high frequency words)
- Vocabulary instruction (How should vocabulary be taught? How should vocabulary be chosen for teaching?)
- Mnemonics (particularly, the keyword method)[5] and its efficiency
- Mental lexicon (How do monolinguals and bilinguals organize words in mind? Are the first language (L1) and the second language (L2) mental lexicons integrated or separated?)
- The source of linguistic input in L1 and L2 vocabulary learning
- Individual learner differences in vocabulary learning (e.g., motivation, attitudes, learner beliefs, gender)

In parallel with the growth of the vocabulary studies was the change in research focus in the field of second/foreign language learning: Beginning in the late 1970s, the focus has shifted gradually from teaching to learning, i.e., "from the methods of teaching to the learner characteristics and their possible influence on the process of acquiring a second language" (Wenden, 1987a, p. 3). In other words, researchers have become more concerned with how language is learned, not merely with how it should be taught. Along with this concern emerged the interest in the language learner's use of learning strategies (language learning strategies).

The rationale that the researchers in the field of language learning strategies built their work upon is that the language learner's success should be attributed to the learner's effort and to the language learning strategies they apply, not merely because "they just have an ear for language" (O'Malley & Chamot, 1990, p. 2). Further, researchers also assumed that once the

[5] Refer to Chapter 4.1.5.4 for a detailed description of the mnemonics, including the keyword method.

strategies which are used by the more successful language learners are identified, the less successful learners can benefit from them as well by applying these strategies to improve their own learning processes (Hosenfeld, 1977, 1979; Rubin 1987). These assumptions led to a growing interest in language learning strategies (e.g., Bialystok, 1981, 1983; Chamot, 1987, 2001, 2004; Chamot et al. 1999; Cohen, 1998; Goh, 1998, 2002; McDonough, 1995; Naiman et al., 1978; Nyikos & Oxford, 1993; O'Malley & Chamot, 1990; Oxford, 1990, 1996; Prokop, 1989; Rubin, 1975, 1981, 1987; Schmeck, 1988; Stern, 1975, 1986, 1992; Tarone, 1981; Wenden & Rubin, 1987; Wenden, 1987a, 1987b, 2001; Wong, 2005).

The two fields of second/foreign language learning research – vocabulary and language learning strategies – developed more or less in parallel for over a decade. In the 1990s, vocabulary learning strategies – the place where the two fields intersect (Schmitt, 1997, p. 199) – finally attracted more and more attention. Research in this new field started to grow. Researchers began to look into learners' use of vocabulary learning strategies and hoped that the studies would provide a different angle to tackle the question of how foreign vocabulary is learned.

Thus far, there have been numerous researches on vocabulary learning strategies. The researchers often recruit large groups of participants and use questionnaires or interviews to collect data. In addition, many of the studies aim to find out which strategies are most and least frequently used (i.e., the "trends" of vocabulary strategy use; Schmitt, 1997) by the groups, and/or to make correlation to learning outcomes. Furthermore, data are usually statistically analyzed. Research results are presented through numbers. Details behind the numbers are not the main interest. In my opinion, these approaches have the following problems: First, research on the group response does not really tell us what vocabulary learning strategies individual

learners use, and more importantly, how they use the strategies. Second, data collected from questionnaires, interviews, and self-reports can serve only as retrospection, since learners' answers to the questions might not be "a true reflection of what actually happens when a learner tackles a word" (Nation, 2001, p. 224). Empirical studies exploring individual learners' *actual* use of vocabulary learning strategies remain deficient in this field. The present thesis aims to fill that gap.

1.1 Objectives and Research Questions

The ultimate goal of my study is threefold: to make contributions to vocabulary learning research, to vocabulary instruction, and to language learning overall. I want to show that vocabulary should not be left to take care of itself. On the contrary, a "systematic and principled approach" to vocabulary instruction (Nation, 1990, p. 2) is necessary. However, I also argue that, without solid knowledge of how learners learn, any suggestion or idea for vocabulary teaching and/or strategy instruction will be nothing but speculation and assumption without a solid foundation. In other words, I believe that, before discussions on how to improve the quality of vocabulary teaching are carried out, one should take a step back and pay more attention to learners' learning processes. Hence, I conduct a multiple-case study to explore individual learners' vocabulary learning processes, and look at their actual use of vocabulary learning strategies. I particularly address the following key questions:

1. What vocabulary learning strategies do the individual learners *report* they usually use to find out the meaning of unknown words and to consolidate the spelling and meaning of the words they have encountered?

2. What vocabulary learning strategies do the individual learners *actually* use to find the meaning of unknown words and to consolidate the words in the vocabulary study activities?
3. How do the individual learners apply the vocabulary learning strategies for the purposes mentioned above?
4. What are the differences between the individual learners' use of vocabulary learning strategies?

From my point of view, only when these questions are investigated can I move on to make suggestions for vocabulary learning and instruction.

1.2 Outline of the Thesis

This thesis addresses the role of vocabulary learning strategies in learning vocabulary in German as foreign language. It begins with the clarification of basic terms. In Chapter Two, three basic terms and questions pertinent to vocabulary learning and vocabulary learning strategies will be dealt with: "word" (What is a word?), "word knowledge" (What does it mean to know a word?), and "strategy" (What is a strategy?). In Chapter Three, studies in the field of vocabulary learning strategies will be reviewed. Chapter Four deals with mental processes involved in vocabulary learning. Vocabulary learning is a complex process. From encountering the unknown word, to learning both form and meaning features, to being able to select the correct words and use them accurately, memory plays a crucial role. The memory process involves, for example, retaining the knowledge (remembering), storing it in the brain, and retrieving it when needed for use. How do memory and the mental lexicon deal with those issues? What are the differences in the mental lexicons of native speakers and foreign language learners? These are the topics I will address in this chapter. Chapter Five focuses on the

empirical study. I will describe briefly the German language course (German 101 Elementary German I) and the language textbook, *Vorsprung (2002, 2nd edition)*, which was used for the German language courses at the University of Waterloo in the fall term, 2006. Then, I will illustrate in depth the methodology used for data collection and data analysis. The results of the study will be presented in Chapter Six. The final chapter, Chapter Seven, concludes the study results and discusses the implications of the results, followed by suggestions for foreign vocabulary instruction and for future research.

Chapter Two: Fundamental Issues

The main aim of this chapter is to clarify the terms that are most essential to the present thesis: First, what is a word? How is it defined in linguistics? (Chapter 2.1) Second, what does it mean to know a word? As Nation (2001) points out, "Words are not isolated units of language, but fit into many interlocking systems and levels. Because of this there are many things to know about any particular word and there are many degrees of knowing" (p. 23). Thus, I will discuss what is actually involved in "knowing" a word and the incremental nature of word knowledge (Chapter 2.2). Finally, the term "strategy": Has there been a consensus on its definition? If not, how has this term been defined in the research literature? (Chapter 2.3)

2.1 What Is a Word?

Vocabulary is primarily understood as a body of words used in a particular language, or in a particular sphere, or at a particular point of time.[6] However, this definition leads to the question: what is a word? Most of us have the ability to identify a nonsense word from a real word in our first language (L1) or in a language which we are very familiar with. Everyone seems to have some common-sense notion of what a word is. But it is not easy to clearly state what a word is, even for linguists. Numerous scholars in linguistics have tried to define the term word. However, a generally accepted definition does not exist. As Bussmann (1998) indicates, "A word is characterized by different, often contradictory traits depending on the theoretical background and descriptive context" (p. 521). In the following, I will briefly describe how linguists of different fields define the term, and discuss the controversy and contradiction between the definitions.[7]

[6]Cf. Bussmann (1998), Soanes and Hawker (2005), Stork (2003, p. 15).
[7]The description draws on Bussmann (1998), Carter (1998), Nation (2001), Schmitt (2000), and Takač (2008).

On the **orthographic** level, "A word is any sequence of letters (and a limited number of other characteristics such as hyphen and apostrophe) bounded on either side by a space or punctuation mark" (Carter, 1998, p. 4). However, the following question arises with this definition: Are the words *die Birne* (pear), *die Birne* (light bulb) – words which have the same form but different meanings – viewed as one word or several words? The same question comes up with *gehen, gehe, gehst, geht, ging, gegangen* which are grammatical variants of the stem *-geh-*.

On the **lexical-semantic** level, "A word is the minimum meaningful unit of language" (ibid., p. 5). With this definition, the problem with *die Birne* (pear), *die Birne* (light bulb) is solved: they can be regarded as different words, because the words have different meaning. However, this definition is also problematic because it presupposes a clear one to one correspondence between a single word and a meaning. However, there are single units of meaning that consist of more than one word. For example:

sterben – hinscheiden – das Zeitliche segnen – ins Gras beißen

These four units all mean *to die*. But the last two units do not contain only one word, they are idioms – "a string of words which taken together has a different meaning than the individual component words" (Schmitt, 2000, p. 1).

From the **morphological** point of view, "A word is a minimal free form." That is, "a word is a word if it can stand on its own as a reply to a question or as a statement or exclamation" (Carter, 1998, p. 5). Also, based on the morphological view, a word cannot be subdivided (ibid., p. 5).[8] Indeed, in German, one can, for example, simply just answer *Ja.* (Yes) or *Nein.* (No) to the question *Haben Sie Hunger?* (Are you hungry?) or *Da.* (There) or *Hier.* (Here) to the question *Wo ist mein Stift?* (Where is my pen?) Nevertheless, we cannot ignore

[8]This view originally stems from Bloomfield (1933).

the fact that not all of the minimal free forms can stand on its own. For instance, the conjunctions (e.g., *weil* [because], *aber* [but]) are unlikely to occur on their own without other words. In addition, idioms such as *ins Gras beißen* cannot be further divided without losing the meaning of *to die*.

It is obvious that the attempts to define the term "word" have encountered difficulties in many ways. In order to resolve the problems described above, a neutral term "lexeme" (also lexical unit or lexical item) has been proposed to replace the term "word." A lexeme is, according to Richards and Schmidt (2002),

> the smallest unit in the meaning system of a language that can be distinguished from other similar units. A lexeme is an abstract unit. It can occur in many different forms in actual spoken or written sentences, and is regarded as the same lexeme even when inflected. (p. 303)

Hence, the idioms *das Zeitliche segnen* or *ins Gras beißen* are lexemes. In other words, *sterben – hinscheiden – das Zeitliche segnen – ins Gras beißen* are lexemes with the same meaning. The problem of lack of correspondence between a single word and meaning is solved if we regard a single word (e.g., *sterben*) and an idiom (e.g., *das Zeitliche segnen*) as a lexeme, a lexical unit. A lexeme can also be an abstract unit which may be realized in various grammatical variants (Carter, 1998; Bussmann, 1998). For example, *geh-* is the lexeme which is realized in the inflections *gehen*, *gehst*, *geht*, *ging*, and *gegangen*.

An important question arises with the controversy of the word definitions: Should the term "word" still be used in this study? Or should I avoid these terms and use "lexeme" or "lexical items" instead? In this issue, I agree with Carter (1998) that "it is clear that the uses of the words ***word*** or ***vocabulary*** have a general common-sense validity and are serviceable when

there is no need to be precise" (p. 8). Further, another reason for keeping the term "word" is to be consistent with the term used in the questionnaires developed for the empirical study of my research. It was difficult and not reasonable to avoid using the term "word" in the questionnaires and interviews during the data collection period, because the participants were not familiar with linguistic terms such as lexeme. The language used in the questionnaires and interviews should be easy for the participants to understand. Finally, as Carter (1998) also points out, "writers of any kind of text produce particular effects on readers if they keep repeating the same words without any kind of variation. In some contexts, it will be useful to have ***word, lexical item*** and ***vocabulary*** as variants" (p. 8). Thus, taking all these concerns into consideration, I will continue using the term "word" for general reference in the present thesis.

2.2 What Does It Mean to "Know" a Word? Aspects of Word Knowledge

It is not uncommon that we may have spoken a certain word of our mother tongue numerous times in our life without knowing how to write or spell the word; or we are able to recognize a word when we read it or hear it but we don't know how to pronounce it or use it correctly in context. A language learner may encounter these problems even more frequently. This common situation indicates that there are different types of word knowledge, and the degree of knowing a word is also different from person to person. In the literature of vocabulary research, word knowledge is often distinguished as follows: the ability to understand a word when reading or listening is usually called receptive (or passive) knowledge, while productive (or active) knowledge is connected to the ability to produce a word when speaking or writing. This way of distinguishing types of knowledge resembles the distinction between the receptive skills of listening and reading and the productive skills of speaking and

writing (Nation 2001, p. 24). However, Schmitt (2000) argues that it is far too simple to frame mastery of a word in terms of receptive versus productive knowledge. As the example shown above, one might have good productive knowledge of the spoken form of a word, but not of its written form, or vice versa. Besides, the distinction is not completely suitable here because the language learning process is not an "either-or" process of merely receiving or merely producing. When we hear or see words, we normally also produce meanings in our head, otherwise the sound and the written form of the word are meaningless to us. As Nation (2001, p. 24) points out, "there are productive features in the receptive skills – when listening and reading we produce meaning." Nation (ibid.) proposes three basic criteria of knowing a word: knowing its form, its meaning and its use. Under each of the three major aspects, the "receptive" (R) and "productive" (P) knowledge of a word are incorporated (see Table 2.1 below). I will describe each of the three categories in brief below. It is important to bear in mind that, although types of knowledge and their components are listed separately, they are actually interrelated in reality.

Table 2.1. General aspects of word knowledge (Source: Nation, 2001, p. 27)

Form	spoken	R	What does the word sound like?
		P	How is the word pronounced?
	written	R	What does the word look like?
		P	How is the word written and spelled?
	word parts	R	What parts are recognizable in this word?
		P	What word parts are needed to express the meaning?
Meaning	form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	concept and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	associations	R	What other words does this make us think of?
		P	What other words could we use instead of this one?
Use	grammatical functions	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	collocations	R	What words or types of words occur with this one?
		P	What words or type of words must we use with this one?
	constraints on use	R	Where, when, and how often would we expect to meet this word?
		P	Where, when, and how often can we use this word?

Form

The term "form" refers to both the spoken and written form of a word. Knowing the form means being able to recognize the word when it is heard and seen (e.g., in reading), being able to say it with accurate pronunciation including stress, as well as being capable of writing it with correct spelling. Study findings show that when the phonological patterns of the L1 and the target language are similar, the learning burden of the target words will be lighter. That is, "the more pronounceable the foreign words [are], the easier they [are] to learn" (Nation, 2001, p. 42). Also, if the L1 uses the same writing system as the target language, it will be much easier to learn the target language. For example, it will be much easier for an English native speaker to learn the written form of German words than to learn Chinese or Arabic, due to the very different script (Nation, 1990, 2001).[9]

In terms of word parts, it involves recognizing the parts that make up a word, and relating these parts to the meaning of the word. For instance, when seeing the word *underestimated*, one can identify that the word is made of *under-*, *-estimate-*, and *-(e)d*, and one can make the connection between these parts and the word's underlying meaning. Nation (2001) points out that the learning burden of foreign words will be light if the learner already knows the word parts from the L1 or from other languages he/she is familiar with. Bauer and Nation (1993) argue that learners' knowledge of word parts and how the parts are built together changes as their proficiency develops.

[9]This view seems to be based on Contrastive Analysis. It seems to suggest that the closer the L1 to the L2, the easier it is to acquire the L2. However, it is crucial to bear in mind that learning foreign language is much more complicated than that. Learning the script of the target language is only a part of the language learning processes.

Meaning

Based on de Saussure, a word ("sign" in de Saussure's terminology) consists of form (written and spoken) and meaning. Knowing a word not only means to know the form and the meaning, but more importantly, to be able to connect the two. According to Baddeley (1990), the retrieval of the meaning when seeing or hearing the word is affected by the strength of the connection between the form and its meaning. The connection between the two will be strengthened each time the meaning or the form is retrieved successfully. Hence, it is helpful to see the form and meaning together initially, and to have opportunities to make retrievals. Also, the learning burden of making the form-meaning connection will be lighter if the target word is a cognate or loan word shared by the L1 and the target language (Nation, 2001), for example, the English-German word pairs *politcs-Politik* or *brother-Bruder*. However, if the target word is a false cognate (also called false friend) – "a word which has the same or very similar form in two languages, but which has a different meaning in each" (Richards & Schmidt, 2002, p. 198) – such as the English word *handy* (as in *a handy man*) and *das Handy* (the cell phone) in German, the similarity might cause confusion and errors for the language learner.

With regard to a concept and its referent,[10] the relationship between the two is not always one to one. Many words have a variety of different meanings. When the meanings of words with the same form are completely unrelated, the words are called homonyms, for instance, the English verb *to lie* in *Don't lie, be honest!* and in *You need to lie down*. Sometimes, the meanings of a word show a relationship with each other (i.e., polysemy),[11] for example, the English noun *head* as *a person's head* and as *the head of a department* (Nation,

[10]See also Chapter 4.2 of the present thesis for more discussions on the relationship between the terms "word," "concept," and "referent."

[11]However, it is a well-known problem in semantics to differentiate between homonymy and polysemy (Richards & Schmidt, 2002, p. 241). A discussion about this problem is beyond the scope of the present thesis. Refer to Carter (1998), Saeed (2003) for more detailed discussions.

2001, p. 49). When facing homonyms and polysemous items, it is important to know the concepts behind the words, to have a good understanding of the word meanings in different contexts, and to know how to produce the words in a variety of contexts.

Finally, there is the issue of knowing the associations of a word: by associations, Nation (ibid.) means the semantic relationships between words, such as synonymy (i.e., different forms with the same, or nearly the same meaning, e.g., *beautiful – pretty*), antonymy (i.e., words with opposite meaning, e.g., *beautiful – ugly*), and hyponymy (i.e., the hierarchical relationship between words, e.g., *bird* is the hyperonym, *robin* is the hyponym). Nation states that "understanding these relations is useful for explaining the meanings of words and for creating activities to enrich learners' understanding of words" (ibid., p. 52).

Use

In order to use a word properly, one does not only need the knowledge of the form and the meaning, but also the knowledge of grammatical functions, such as knowing the part of speech of the word and what grammatical patterns it can fit into. The following erroneous sentence is an example of the lack of knowledge of grammatical functions:

**In Toronto, man kann Armbanduhr Basketballspiele*.
(In Toronto, one can watch basketball games.)

Obviously, the learner assumes that grammar in German works the same way as in English, and a word-by-word direct translation is appropriate. Regardless of the erroneous word order, the student apparently has not paid attention to the part of speech of the word *watch* when he was looking up its equivalent in German. *Watch* as a verb and a noun has two different equivalents in German. He has not noticed that *Armbanduhr* is a noun, and a verb was actually needed. He might have just selected the first German equivalent in the dictionary. The lack of

knowledge of the grammatical functions of words has led to the incorrect selection of the equivalent and finally to formation of a wrong sentence.

Concerning collocations, the term collocation refers to the way in which words are used together regularly, i.e., the restrictions on how words can be used together, for instance which prepositions are used with particular verbs, or which verbs and nouns are used together. For instance, in English, the verb *to perform* is used with the noun *operation,* not with *discussion*; *high* collocates with *probability,* not with *chance* (Richards & Schmidt, 2002, p. 87).

Last but not least, knowing the constraints on use is also significant. Two issues are involved in this aspect of word knowledge: first, it involves knowing whether the word is a high or low frequency word. Second, it means knowing how to use words appropriately. Nation (2001) points out that knowing the frequency constraint is important for both vocabulary teaching and learning: "If a teacher spends a lot of time on a word and overuses it, this affects the learner's use of the word. […] If time is given to words according to their usefulness [...] then this can be avoided" (ibid. p. 57).

Appropriateness of word use sometimes depends on the context. For instance, in German, there is a difference between *du* (informal you, singular), *ihr* (informal you, plural) and *Sie* (formal you, singular and plural). It is important to know when to use which "you" in what context. Nation (2001) also mentions that constraints on use may differ across cultures. For instance, "in Thai, names like *pig*, *fatty*, *shrimp* and *mouse* are common nicknames. They are less acceptable in English" (p. 58).

Vocabulary learning is a complex process. As shown above, it involves a range of aspects of knowledge. Nation points out that "[t]here is still little research on how vocabulary knowledge grows and how different kinds of encounters with words contribute to vocabulary

knowledge" (ibid., p. 4). Nevertheless, an important and widely recognized characteristic of vocabulary learning process is that it takes time to gradually master the types of word knowledge discussed above. For instance, it is likely that people may know what a word means when they hear it, but they may not know how to spell it properly at the same time. As Schmitt (2000, pp. 5-6) points out:

> The different types of word knowledge are not necessarily learned at the same time. Each of the word-knowledge types is likely to be learned in a gradual manner, but some may develop later than others and at different rates. From this perspective, vocabulary acquisition must be incremental, as it is clearly impossible to gain immediate mastery of all these word knowledges simultaneously. Thus, at any point in time, unless the word is completely unknown or fully acquired, the different word knowledges will exist at various degrees of mastery.

I agree with Nation that knowing a word should not merely refer to knowing the form and meaning of the word. The aspect of being able to use words accurately and properly in a context should not be neglected. Hence, in my empirical study, I will focus on the aspects of knowing form, meaning, and use. I will investigate what adult learners of German do to discover the meaning of unknown words and to consolidate the meaning and written form (i.e., spelling) of the words. I will investigate which vocabulary learning strategies are employed and how they are employed by the learners to discover the meaning of unknown words and to consolidate the meaning and form. Finally, I will also explore what the learners do to use the words they have encountered and whether the learners know how to use the words in context after they have studied the form and meaning.

2.3 What Is a Strategy?

The present thesis investigates language learners' use of vocabulary learning strategies. Thus, it is fundamental to define what a vocabulary learning strategy is. In my opinion, the definition of vocabulary learning strategy is closely related to the definitions of strategy and language learning strategy. Hence, I will look at all of these terms in the research literature step by step: starting from the definitions of strategy, to the definitions of language learning strategy, and finally, I will present the definition of vocabulary learning strategy for my research.

The word strategy, as Oxford (1990) points out, initially derives from the ancient Greek term *strategia* which meant "generalship or the art of war. More specifically, strategy involves the optimal management of troops, ships, or aircraft in a planned campaign" (pp. 7-8). In the contemporary world, the battle and war characteristics of the term have eventually faded away. Strategy has been applied to non-military settings and non-adversarial, non-aggressive, and non-competitive situations including language learning, and thus led to the emergence of the term learning strategy, or more specific, language learning strategy.[12] However, in spite of the huge body of research on language learning strategies in the second/foreign language learning since the mid 1970s, a consensus of the definition of learning strategy or language learning strategy has not been available. Table 2.2 below displays the variety of the definitions in the literature.

[12] There is a wealth of research and publications on strategies, not only in SLA but most prominently in psychology and educational psychology, e.g., Alexander and Judy (1988), Alexander, Graham, and Harris (1998), Baker (1989), Hamman, Berthelot, Saia, and Crowley (2000), Palmer and Goetz (1988), Pressley and Hilden (2006), Siegler and Alibali (2005), Siegler and Jenkins (1989), Snowman (1984), Wilson and Corbett (2001), to name but a few.

Table 2.2. An overview of definitions of (language) learning strategies in the research literature. (Source: Takač, 2008, p. 51; modified and added)

Source	Definition
Rubin (1975)	The techniques or devices which a learner may use to acquire knowledge.
Stern (1975, 1986, 1992), Naiman et al. (1978)	Strategies are general, more or less deliberate approaches, while techniques are more specific, observable forms of language learning behavior
Tarone (1981)	An attempt to develop linguistic and sociolinguistic competence in the target language.
Chamot (1987)	Techniques, approaches or deliberate actions that students take in order to facilitate learning, recall of both linguistic and content information
Weinstein & Mayer (1986)	Behaviors and thoughts that a learner engages in during learning that are intended to influence the learner's encoding process.
Wenden (1987a)	The term refers to language behaviors learners engage in to learn and regulate the learning of L2, to what learners know about the strategies they use (i.e., strategic knowledge), and to what learner know about aspects of L2 learning.
Schmeck (1988)	Strategy refers to a more general approach, whereas tactic refers to specific activities or steps.
O'Malley & Chamot (1990)	The special thoughts or behaviors that individuals use to help them comprehend, learn, or retain new information.
Oxford (1990)	Behaviors or actions which learners use to make language learning more successful, self-directed and enjoyable.
Ellis (1994)	Generally, a strategy is a mental or behavioral activity related to some specific stage in the process of language acquisition or language use.
Ridley (1997)	Broadly speaking, the term strategy denotes procedures – which are sometimes conscious and sometimes unconscious – used by a person as a way of reaching a goal.
Cohen (1998)	Processes which are consciously selected by learners and which may result in action taken to enhance the learning or use of a L2, through the storage, recall and application of information about that language.
Purpura (1999)	Conscious or unconscious techniques or activities that an individual invokes in language learning, use or testing.
Goh (1998, 2002)	The term "tactic" is used to refer to individual techniques through which a general strategy is operationalized. When we report the use of a certain comprehension strategy, we are saying that a particular approach has been taken. However, when we identify the tactics used, we are describing the actual steps taken to assist or enhance comprehension.

The first issue arising from the definitions listed in Table 2.2 is the emergence of the terms "technique" (e.g., Naiman et al., 1978; Stern 1975, 1986, and 1992) and "tactic" (Schmeck, 1988; Goh, 1998, 2002).[13] Both terms are applied to highlight the contrast between generality and specificity, i.e., between strategies as more general approaches and techniques or tactics as more specific actions, or the actually step taken by the learner. As Schmeck (1988) states, "tactics operationalize strategies, i.e., tactics are the observable activities that imply that certain strategies are in use" (p. 171). For instance, when learners use the context to infer the meaning of a word, or they infer the meaning of a word by remembering another word that sounds like the original, they are using the inferencing strategy (Goh, 1998, p. 125). Nevertheless, Takač (2008) points out that, "Currently, researchers have abandoned the dichotomy between strategies and tactics/techniques and use the term individual learning strategy to refer to the kind of behavior Stern called techniques" (p. 47). Hence, in my study, I will continue using the term strategy as it "enjoys the widest currency" (Larsen-Freeman & Long, 1991, p. 199).

The second issue arising from the definitions in Table 2.2 concerns the presence of consciousness. The question is: are learning strategies conscious, subconscious, or sometimes conscious and sometimes not? Takač (2008) indicates that this is still a controversial issue: "Many researchers agree, however, that [language learning strategies] are often used deliberately and consciously, but their use can become automatic, i.e., subconscious. It can be concluded that [language learning strategies] are conscious, potentially conscious or subconscious depending on individual learners and the task they are engaged in" (p. 55). For

[13]In addition to technique and tactic, the term strategy has also been referred to as potentially conscious plans, consciously employed operations, learning skills, basic skills, functional skills, cognitive abilities, language processing strategies, problem solving procedures, language learning behaviors, thinking skills, thinking frames, reasoning skills, basic reasoning skills, and learning-to-learn skills (Cf. Wenden, 1987a; Oxford, 1990; Takač, 2008).

my study, I follow Takač's conclusion and do not exclusively look at strategies which learners employ deliberately, but also at those that are used automatically, because my goal is to elicit rich and comprehensive data.

Taking the issues discussed above into account, and summarizing the definitions listed in Table 2 and the characteristics of learning strategies put forward by Oxford (1990), Takač (2008), and Wenden (1987a), I define language learning strategies broadly as follows: **language learning strategies are specific physical or mental actions (approaches, behaviors, steps) that language learners take (consciously or subconsciously) to enhance the development of language competence in the target language. Vocabulary learning strategies are then language learning strategies employed to learn vocabulary in the target language.**

According to Nation (2001), vocabulary learning strategies which deserve attention from a teacher should have the following characteristics (p. 217):

(1) They involve choice, that is, there are several strategies to choose from.

(2) They are complex, i.e., consisting of several steps to learn.

(3) They require knowledge and benefit from training.

(4) They increase the efficiency of vocabulary learning and use.

Nonetheless, as I have argued in the introductory chapter, without a more solid knowledge of how learners learn, suggestions or ideas for vocabulary teaching and/or vocabulary learning strategy instruction remain nothing but speculation; they cannot be based on a solid empirical foundation. I believe it is crucial to conduct an empirical study to explore learners' use of vocabulary learning strategies before discussing the usefulness of strategy

training or which strategy should be chosen for strategy instruction. I will introduce the study in Chapter Five of the present thesis.

Chapter Three: Literature Review

Research on vocabulary learning strategies is a relatively new field. Researchers' interests in this area started to grow about two decades ago. In general, as Schmitt (1997) points out, research has tended to concentrate on individual strategies (such as the keyword method, repetition, and guessing from context),[14] or to deal with vocabulary strategy training. Only very few studies looked at the group "as a whole" (Schmitt, 1997).[15] In this chapter, I will concentrate especially on these studies.[16]

Ahmed (1989) was the first study that investigated vocabulary learning strategies on the whole.[17] His study aimed to identify the vocabulary learning strategies used by 300 Sudanese learners of English. Unlike the early studies on language learning strategies which were only concerned with good language learners and their strategy use (e.g., Rubin, 1975; Stern, 1975; Naiman et al., 1978), Ahmed (1989) wanted to discover the difference between good and poor language learners[18] with regard to how they applied vocabulary learning strategies. In addition, Ahmed did not only want to identify the vocabulary learning strategies at the "macro-level," but also at the "micro-level." Learning strategies at the macro-level (or "macro-strategies" as Ahmed called them) refer to the general approaches to learning, while "micro-strategies" are

[14]Refer to Chapter 4.1.5 for more discussion about these strategies.
[15]Schmitt did not explicitly explain what he meant by looking at vocabulary learning strategies "as a whole." Takač (2008) interpreted it by viewing vocabulary learning strategies as "a specialized subgroup of general learning strategies" (p. 64). In my own understanding, studies that dealt with vocabulary learning strategies "as a whole" were those that identified and/or classified learners' use of vocabulary learning strategies, such as those reviewed in this chapter.
[16]As for the research on the keyword method and repetition, I will present it in Chapter Four (on memory), since they are much discussed in memory research.
[17]According to Kudo (1999) and Stork (2003) who followed Kudo, Stoffer (1995) was the first study that investigated vocabulary learning strategies as a whole group. However, this statement was not accurate. According to Schmitt (1997) as well as Nation (2001), investigation as such had already started with Ahmed (1989).
[18]The 300 research participants were categorized as good or poor language learners by school officials based on the school records and subjective assessment.

the "more detailed, specific learner behaviors" (ibid., p. 4). Ahmed gave an example to make the distinction more comprehensible:

> For example, at the macro-strategy level, most good learners engage in what might be called "practice." However, some learners use specific micro-strategies in their practice which do not appear in the behavior of other learners; for instance, some learners test themselves systematically as part of their practice, while others do not. (ibid., p. 4)

Ahmed used the following instruments to collect data: a think-aloud task, observation during the think-aloud procedure, and an interview with the help of a questionnaire. As results, nearly 40 micro-strategies were identified and grouped into six macro-strategies (see Table 3.1 below).

Table 3.1. List of macro- and micro-strategies identified in Ahmed (1989, pp. 10-11).

Macro-strategies	**Micro-strategies**
Information sources	ask classmates guessing ask teacher overlook ask for L2 paraphrases ask for L1 equivalent ask for example of use group work dictionary
Dictionary use	monolingual dictionary bilingual dictionary look up meaning look up derivation look up word class look for example of use
Memorization	write and repeat aloud repeat aloud write, repeat and L2 synonym write, repeat and L1 equivalent

Practice	new word in real situation new word in imaginary situation ask for test ask others to verify knowledge use written source to verify knowledge self-test
Preferred source of information	asking somebody group work dictionary
Note-taking	take notes at all notes in margin vocabulary book ordering new words sequentially organizing words by meaning spelling info L1 equivalent L2 synonym L1 equivalent and L2 synonym word derivations grammatical info

The results also showed that, in general, good and poor language learners indeed used vocabulary learning strategies differently: the good learners used a variety of strategies, had a clear awareness of what they could learn about new words, knew that it is important to learn words in context, were conscious of the semantic relationship between new and already learned-L2 words, and made full use of monolingual or bilingual dictionaries to get many kinds of information. The poor language learners, on the contrary, applied a much smaller range of strategies, showed little interests in learning words in context, and did not know how to connect the new words to old knowledge.

In fact, before Ahmed (1989), Porte (1986, 1988) had already looked specifically into poor language learners' use of strategies for dealing with new vocabulary. Porte (1988) interviewed 15 poor learners of English and came to the conclusion that these learners "were using strategies for dealing with new vocabulary which were very similar to those found in

studies of 'the good language learner'" (p. 167), but the difference was that they applied them unsophisticatedly and inefficiently. Porte (1988) suggested that teachers should not ask the students to uncritically copy "model strategies" (i.e., strategies used by good language learners). Rather, "it is vital to know [...] how far [...] the problem lies in an inappropriately applied, unsophisticated, or incomplete set of learning strategies" (ibid., p. 171). The teachers' responsibility is to help the weak learners to "identify, nurture and, where necessary and feasible, refine their own current repertoire of learning strategies" (ibid., p. 171).

Hatch and Brown (1995) contributed one chapter of their book to vocabulary learning strategies in general. Based on Brown and Payne (1994), Hatch and Brown divided vocabulary learning strategies into five groups which were also viewed as the five essential steps for vocabulary learning:

(1) Encountering new words

(2) Getting the word form

(3) Getting the word meaning

(4) Consolidating word form and meaning in memory

(5) Using the word

The five steps also function as five sieves. Hatch and Brown (1995) stated, "If learners or teachers can do anything to move more words through any of the steps, the overall result should be more vocabulary learned" (p. 373). The first step – encountering new words – refers to having sources for words. The sources are derived from reading books, newspapers and magazines, listening to TV and radio, having conversations with native speakers, studying' language textbooks (especially the word lists, end glossaries often provided in the textbooks), and consulting dictionaries. The second step – getting the word form – means to get a clear

visual and/or auditory image of both the written and spoken form of words. It might be done, for instance, by associating the new words with words with sounds similar in language(s) that the learner is familiar with, or by seeing a word that looks like another word the learner has already studied. As for getting the word meaning, it includes strategies such as asking other people the meaning of the word (i.e., people who speak the same L1 or L2 native speakers), guessing from context, using a dictionary, and so forth. After the form and meaning are discovered, the next step is to create a strong linkage between the two. This can be done by all kinds of consolidation strategies, such as creating and using flash cards, reviewing the material, using mnemonics, etc. The final step, using the words, is important especially if the goal of vocabulary learning is to have not only the perceptive, but also the productive vocabulary knowledge. This view was echoed in Nation's (2001) model of word knowledge (see Chapter One of this thesis). Hatch and Brown also indicated that making use of words is also one of the ways to test whether knowledge gained in the previous steps is correct and to retain the words longer in the memory.

Sanaoui (1992, 1995) presented a series of longitudinal case studies exploring adult language learners' approaches[19] to learning vocabulary in English and French as second languages. The methodological tools used to collect data in the first phase were daily written records,[20] interviews, and the researcher's own records of materials which the participants had used, such as course materials, dictionaries and so on. For the second phase of the study, questionnaires were the main instrument for data collection. The results of her research showed that language learners' approaches to vocabulary learning fitted generally into two categories:

[19]Sanaoui did not specifically use the term "vocabulary learning strategies" in her research. She defined a learner's approach to vocabulary learning as "a learner's study habits for learning vocabulary" (Sanaoui, 1992, p. 22).

[20]Research participants were asked to keep a daily written record (a diary) of what they did in order to learn vocabulary. In the diary, the participants had to record vocabulary items they were learning and describe specific mnemonic procedures they applied to remember those words.

structured (or organized) and unstructured (or unorganized), with regards to the following five aspects (Sanaoui, 1992, p. 46):

1. the extent to which learners engaged in independent study
2. the range of self-initiated learning activities in which learners engaged
3. the extent to which learners recorded vocabulary items they were learning
4. the extent to which learners reviewed such records
5. the extent to which they practiced using the words they were learning outside their course

The learners with a structured approach shared the following characteristics: They organized and controlled their learning rather than being dependent on the language course they were taking. They engaged themselves in a variety of self-initiated activities, such as listening to radio, watching videotapes, speaking the target language with friends. The records of vocabulary they kept were very systematic and well organized, and they viewed these records extensively. The learners who fell into the unstructured category relied mainly on the course, and their range of self-initiated activities was very restricted. Their records of the vocabulary were minimal and tended to be ad hoc, and they did not review or very rarely reviewed the records (see Table 3.2 below).

Table 3.2. Features of a structured and an unstructured approach. (Sanaoui, 1995, p. 24)

Structured approach	**Unstructured Approach**
Opportunities for learning vocabulary	
self-created	reliance on course
independent study	minimal independent study
Range of self-initiated activities	
extensive	restricted
Records of lexical items	
extensive (tend to be systematic)	minimal (tend to be ad hoc)
Review of lexical items	
extensive	little or no review
Practice of lexical items	
self-created opportunities in and outside classroom	reliance on course

In the same year as Sanaoui, Stoffer (1995) carried out a series of studies (including two pilot studies and a large-scale study involving 707 students) for her thesis at the University of Alabama. The research participants of this study were students taking different language courses at the beginner's level at the University of Alabama. The study aimed to measure the frequency of the use of vocabulary learning strategies and its relationship to their previous language learning experience, course level, language studied (i.e., German, Japanese, French, Spanish, and Russian), previous vocabulary learning strategies, instruction, age and gender. To collect data, Stoffer used a questionnaire consisting of 50 items derived from Oxford's (1989) Strategy Inventory for Language Learning (SILL)[21] and 53 items from the Vocabulary Learning Strategy Inventory (VOLSI) that she developed particularly with regard to vocabulary learning. Stoffer divided the 53 items on the VOLSI into nine categories (see Table 3.3 below). Several strategies were classified into two different categories. For instance, the strategy "use pantomime and gestures to practice" was categorized as "strategies involving creative activities" (group 2) and as "strategies involving physical action" (group 7); the

[21]See footnote 22 below.

strategy “use rhymes to remember new words” appeared in both group 5 (memory strategies) and group 6 (visual/auditory strategies).

Table 3.3. Stoffer’s vocabulary learning strategy taxonomy.

1. Strategies involving authentic language use	• Read L2 newspapers and magazines • Read L2 literature and poetry • Watch L2 movies • Listen to L2 radio programs • Make up conversations with L2 speaker • Write letters using new words • Make collages with related words • Link words in list by creating a story • Write poetry using new words • Picture oneself using word in situation • Make up a sentence with each new word
2. Strategies involving creative activities	• Use computer programs to practice words • Record words on tape and listen • Organize new words on word processor • Watch videos made for L2 learners • Write poetry using new words • Physically act out new words • Use color-coded flash cards (genders) • Link words in list by creating a story • Write letters using new words • Make collages with related words • Use pantomime and gestures to practice • Use brainstorming to recall words • Practice words by using real objects
3. Strategies used for self-motivation	• Enjoy learning new vocabulary • Feel successful when learning new words • Encourage yourself when afraid of mistakes • Pay attention to speech • Aware of incorrect use • Quiz myself or have others quiz me • Make up a sentence with each new word • Picture myself using word in situation • Try to relax when afraid of using word • Use brainstorming to recall words
4. Strategies used to create mental linkages	• Link word to L1 similar spelling • Link word to similar sounding L1 word • Create links with already known words • Learn related topics at the same time

	• Relate new words to myself • Learn easy words first • Group new words by topic • Use natural associations (opposites)
5. Memory strategies	• Use flashcards • Repeat new word aloud several times • Write down new words over and over • Review frequently • Concentrate hard to avoid distractions • Quiz myself or have others quiz me • Break lists into smaller parts • Learn easy words first • Use rhymes to remember new words
6. Visual/auditory strategies	• Arrange words on page to form patterns • Sing words or grammar paradigms • Draw pictures of new words • Use rhymes to remember new words • Give myself reward or treat • Talk to someone about feelings • Associate with preceding/following word • Use color-coded flashcards (genders)
7. Strategies involving physical action	• Use pantomime and gestures to practice • Practice word by using real objects • Physically act out new words • Visualize new words • Relate new words to myself • Draw pictures of new words • Repeat new word aloud several times • Use rhymes to remember new words
8. Strategies used to overcome anxiety	• Notice when tense or nervous • Try to relax when afraid of using word • Encourage myself when afraid of mistakes • Talk to someone about feelings • Learn easy words first • Give myself a reward or treat
9. Strategies used to organize words	• Group words by grammatical class • Break word into its parts (prefix, root) • Group new words by topic • Use natural associations (opposites) • Break lists into smaller parts • Use flashcards

In the questionnaires, the research participants were asked to read the statements and answer how often they use that particular strategy when encountering a new word. The Likert-type scale was used for all responses, as illustrated below:

I ask for help from native speakers.

a. Never b. Seldom c. Sometimes d. Often e. Always

The study showed that participants believed they used the fourth category most frequently (i.e., creating mental linkage), and the second category (i.e., strategies involving creative activities) least frequently. Also, there seemed to be a tendency for the more experienced learners to use strategies more frequently than the novice learners. Further, age did play a role in the use of vocabulary learning strategies: older learners used strategies more often than younger learners. However, gender did not make a significant difference in strategy use. An unexpected finding from this study was that the foreign language studied influenced the frequency of strategy use: students enrolled in the more difficult languages (i.e., Japanese and Russian) used vocabulary learning strategies more frequently than those learning German and Spanish.

Lawson and Hogben (1996) conducted a study of 15 Australian university students learning the meaning of 12 new Italian words. The research participants were presented with a number of sentences in Italian, each of which contained an unknown word. At the same time, the participants had access to dictionary-like definitions in English. Using a think-aloud method, Lawson and Hogben observed the strategies being used by the participants. They also tested how well each word was learned, and correlated strategy use with recall of the word's meaning. Their research shows: a) Learners who recall more words used a greater range of strategies and used strategies more often than learners who recalled fewer words. b) The most

frequently used strategy was repetition. c) Strategies involving more detailed internal information, such as analyzing the word parts, paraphrasing, or using the semantic context, were used much less frequently.

An interesting finding from this study was the lack of positive association between the context and the recall of the word's meaning. In the literature of vocabulary learning, the importance of the use of context for learning the word's meaning has been repeatedly discussed (see, for example, Nation 1990, 2001; Nagy, 1997). However, Lawson and Hogben (1996) noticed that a rich context may be helpful for generating the meaning of the unknown word, but it does not necessarily lead to long-term retrieval of the word's meaning, because learners are likely to pay less attention to the unknown word since they could comprehend the text or the sentence without knowing the word anyway. Hence, Lawson and Hogben (1996) argued that it is necessary to "distinguish between the use of context for generation of meaning of a new word and the use of context for acquisition of the meaning for subsequent recall" (p. 131).

Gu and Johnson (1996) also presented a large-scale questionnaire study of 850 Chinese students of English at Beijing Normal University. They aimed to elicit advanced learners' beliefs about vocabulary learning and their self-reported vocabulary learning strategies. Also, Gu and Johnson intended to shed light on the relationships between strategy use and the following two dependent variables: learner's vocabulary size and English proficiency. They achieved this by correlating the questionnaire-replies to the results of a vocabulary size test and the results of the College English Test. For the study, Gu and Johnson developed a Vocabulary Learning Questionnaire (VLQ Version 3) with 113 statements which were divided into two major parts: The first part concerned learners' belief about how vocabulary should be learned.

The statements represented three major dimensions of beliefs: words should be memorized; words should be acquired in context; words should be studied and put to use. Participants were asked to rate each of the statements on a 7-point scale from Absolutely Disagree (1) to Absolutely Agree (7).

The second part of the questionnaire focused on learners' use of vocabulary learning strategies in various dimensions including:

(1) metacognitive regulation (selective attention, self-initiation)
(2) guessing strategies (using background knowledge/wider context, using linguistic cues/immediate context)
(3) dictionary use strategies
(4) note-taking strategies (meaning-oriented or usage-oriented)
(5) memory strategies for rehearsal (e.g., by using word lists, oral repetition, or visual repetition)
(6) memory strategies for coding (e.g., association/elaboration, imagery, visual encoding, auditory encoding, using word-structure, etc.)
(7) activation strategies (e.g., deliberately using the vocabulary that has been studied)

Participants were also asked to rate each of the statements on a 7-point scale from Absolutely Untrue of Me (1) to Absolutely True of Me (7). The results from the questionnaire showed that, contrary to common assumptions about Asian learners, the participants predominantly believed that vocabulary should be carefully studied and then put to use, not merely be memorized. Mechanical memorization such as rote repetition was not popular among the Chinese students either. What these students said they did most for vocabulary learning was guessing from context, using a dictionary for comprehension or learning, and

taking notes. The results further showed that vocabulary size and general English proficiency related positively to each other, and that there were positive correlations between vocabulary size and the following strategies: self-initiation strategies, activation strategies, selective attention strategies, dictionary look-up strategies, semantic encoding strategies, extended dictionary strategies, and meaning-oriented note-taking strategies. But vocabulary size correlated negatively with visual repetition.

Last but not least, Gu and Johnson discovered five types of learners based on the clustering of the various beliefs and the strategies they examined : readers, active strategy users, non-encoders, encoders, and passive strategy users. With regard to vocabulary size and proficiency, the most successful learners were "readers" who used reading as a means to learn vocabulary, and those who used a wide range of strategies (the "active strategy users"). The "passive strategy users," who strongly believed in memorization, were least successful.

Schmitt (1997) proposed a taxonomy which includes 58 vocabulary learning strategies. The development of the taxonomy was based on two different sources: partially on the distinction between discovery and consolidation proposed by Cook and Mayer (1983) and Nation (1990), and partially on Oxford's (1990) classification system. Following Cook and Mayer (1983) and Nation (1990), Schmitt first distinguished between strategies used for discovery of a new word's meaning (discovery strategies) and strategies used for consolidating a word once it had been encountered (consolidation strategies). Then these two primary categories were further subdivided. For the subcategories, Schmitt adopted four of the six categories in Oxford's (1990) taxonomy of general language learning strategies – social, memory, cognitive, and metacognitive strategies – and added the category "determination

strategies" to make his taxonomy more complete and suitable for categorizing vocabulary-specific strategies.[22]

Determination strategies are, in Schmitt's own words, "the kind of strategies used by an individual when faced with discovering a new word's meaning without recourse to another person's expertise" (1997, p. 205). Following Oxford (1990), he defined metacognitive strategies as "a conscious overview of the learning process and making decisions about planning, monitoring, or evaluating the best ways to study," and social strategies as using "interaction with other people to improve language learning" (ibid., p. 205).

However, Schmitt found it difficult to clearly distinguish cognitive strategies from memory strategies because "the goal of both is to assist recall of words through some form of language manipulation" (ibid., p. 205). Hence, in order to solve this problem, he adopted Purpura's (1994) division of storing and memory strategies and decided to categorize those strategies which are "less obviously linked to mental manipulation (repeating and using mechanical means)" as cognitive, while memory strategies are those "closer to traditional mnemonic techniques which either organize mental information together or transform it in a

[22]Oxford (1990) proposed a strategy classification scheme. She first divided language learning strategies into two major categories: direct and indirect. In her definition, direct strategies "directly involve the target language" and "require mental processing of the language" (Oxford, 1990, p. 37). Indirect strategies "support and manage language learning without directly involving the target language" (ibid., p. 135). Each major category is further subdivided into three subcategories. Under the direct category are memory strategies, cognitive strategies, and compensation strategies, while social, affective, and metacognitive strategies are grouped under the indirect category. According to Oxford, memory strategies deal with memory, the entering and retrieving of information. Cognition strategies involve manipulation of reception and production of language. Compensation strategies are used to overcome the limitations of existing knowledge. Metacognitive strategies deal with the organization and evaluation of learning. Affective strategies cope with management of emotions and attitudes. Social strategies relate to learning of a language with the help of others. Based on this classification scheme, Oxford developed the Strategy Inventory for Language Learning (SILL) which is a survey instrument used to measure frequency of the use of the six types of language learning strategies. SILL has been translated into different languages, including Chinese, Japanese and Spanish. According to Chamot (2004), its various versions have been used extensively to collect data on large numbers of mostly foreign language learners (see e.g., Cohen, Weaver & Li, 1998; Nyikos & Oxford, 1993; Olivares-Cuhat, 2002; Oxford, 1990; 1996; Oxford & Burry-Stock, 1995; Wharton, 2000), or even in research on vocabulary learning strategies (e.g., Stoffer 1995 as presented previously; Fu, 2005).

way which makes it more memorable," such as associating, linking with prior knowledge, using imagery, and summarizing (Schmitt, 1997, p. 206).

Determination and social strategies are grouped under discovery strategies, while social, memory, cognitive, and metacognitive strategies are subcategorized under consolidation strategies (see Table 3.4 below). Schmitt (1997) explained the rationale behind the grouping as follows:

> When encountering a word for the first time, learners must use their knowledge of the language, contextual cues, or reference materials to figure out the new meaning (Determination Strategies), or ask someone else who knows (Social Strategies). These strategies for gaining initial information about a new word are labeled Discovery Strategies. Of course, there are various other kinds of knowledge about words besides meaning, such as word class, spelling, collocations, and register (Richards, 1976), but determining the meaning appropriate to the situation must normally be the most fundamental task on initial introduction. Once learners have been introduced to a new word, it is worthwhile to make some effort to remember it using Consolidation Strategies, which can come from the Social, Memory, Cognitive, or Metacognitive Strategy groups. (p. 206)

According to Takač (2008), this taxonomy is "currently the most comprehensive typology" of vocabulary learning strategies (p. 67). The individual strategies in each category derive from relevant research literature, learners' retrospective descriptions of their own strategies, and teacher's experiences. Based on this classification scheme, Schmitt (1997) then completed a survey study of Japanese students in English as Foreign Language classes. The aim of his study was to investigate which strategies learners use most frequently and which

they *believe* to be most helpful to discover and consolidate word meaning. The findings showed that, in terms of discovering word meaning, using a bilingual dictionary was the most frequently used strategy, and students also thought it the most helpful strategy. In terms of consolidation of word meaning, rote repetition featured as the most frequently used and most helpful strategy. In addition, Schmitt found that strategies requiring deeper mental processing such as "analyzing affixes and roots," "checking for L1 cognate," or "using semantic map" were low down on the list. This finding basically echoes the research results from Lawson and Hogben (1996) as described above.

Table 3.4. Schmitt's vocabulary learning strategy taxonomy. (Schmitt, 1997, pp. 207-208)

Strategies for the discovery of a new word's meaning	
Determination	Analyze part-of-speech Analyze affixes and roots Check for L1 cognate Analyze any available pictures or gestures Guess from textual context Bilingual dictionary Monolingual dictionary Use word lists Use Flash cards
Social	Ask teacher for an L1 translation Ask teacher for paraphrase or synonym of new word Ask teacher for a sentence including the new word Ask classmates for meaning Discover new meaning through group work activity

Table 3.4 (continued). Schmitt's vocabulary learning strategy taxonomy.

Strategies for consolidating a word once it has been encountered	
Social	Study and practice meaning in a group Teacher checks student's flash card or word lists for accuracy Interact with native speakers
Memory	Study word with a pictorial representation of its meaning Image word's meaning Connect word to a personal experience Associate the word with its coordinates Connect the word to its synonyms and antonyms Use semantic maps Use scales for gradable adjectives Peg Method Loci Method Group words together to study them Group words together spatially on a page Use new word in sentences Group words together within a storyline Study the spelling of a word Study the sound of a word Say new word aloud when studying Image word form Underline initial letter of the word Configuration Use Keyword Method Affix and root (remembering) Part of speech (remembering) Paraphrase the word's meaning Use cognates in study Learn the words of an idiom together Use physical action when learning a word Use semantic feature grids
Cognitive	Verbal repetition Written repetition Word lists Flash cards Take notes in class Use the vocabulary section in the textbook Listen to tape of word lists Put English labels on physical objects Keep a vocabulary notebook
Metacognitive	Use English-language media (songs, movies, newscasts, etc.) Testing oneself with word tests Use spaced word practice Skip or pass new word Continue to study word over time

Reviewing literature on vocabulary learning strategies, Nation (2001) proposed a taxonomy which tries to divide vocabulary learning strategies into the following three primary groups: (1) planning vocabulary learning, (2) sources of vocabulary knowledge, and (3) learning processes. Table 3.5 gives an overview of the taxonomy:

Table 3.5. Nation's taxonomy of vocabulary learning strategies. (Nation, 2001, p. 218)

General class of strategies	Types of strategies
Planning: choosing what to focus on and when to focus on it	Choosing words Choosing the aspects of word knowledge Choosing strategies Planning repetition
Source: finding information about words	Analyzing the word Using context Consulting a reference source in L1 or L2 Using parallels in L1 and L2
Processes: establishing knowledge	Noticing Retrieving Generating

Under the "planning" category are strategies involving decisions regarding "where to focus attention, how to focus attention, and how often to give attention to the item" (Nation, 2001, p. 218). The fundamental arguments for having a plan for vocabulary learning can be summarized as follows: Nation points out that there are various levels of vocabulary (e.g., high frequency, low frequency, academic, and technical vocabulary) and various aspects of vocabulary knowledge (i.e., form, meaning, and use; see the introductory chapter in this thesis for more detail). Hence, learners should be aware of "what their vocabulary goals are and should choose what vocabulary to focus on in terms of these goals" (ibid., 218), and of what aspects of word knowledge to choose and focus on. Further, according to Nation, learners should know how to achieve their goals by "choosing the most appropriate strategy from a range of known options and deciding how to pursue the strategy and when to switch to another

strategy" (ibid., p. 219). However, knowing what to focus on and how to choose strategies is not sufficient. Learners should also make a plan for reviewing the learned items, for example, "an informal schedule for returning to previously studied items on word cards and the recycling of old material, or […] more organized review using a computer or filing system" (ibid., p. 219).

As for the second category, "source," it means to find information about the new word. The information may include all or some aspects of word knowledge, depending on the learning goals. Learners can get the information from various sources: from the target word itself (e.g., analyzing word parts), from the context in which the word appears, from monolingual or bilingual dictionaries, from asking other people including teachers, native speakers, or peers, or from using parallels with other previously learned languages (ibid., pp. 219-221).

The third category, "processes," involves establishing vocabulary knowledge gained from the sources and making it accessible when needed. Nation includes three major processes: noticing, retrieving, and generating. Each of them plays an important role in remembering words. Strategies for noticing involve seeing the word as an item to be learned, and then recording it, for example, by putting it in a vocabulary notebook, a word list, or a word card (flash card), or by visually or orally repeating the word.

Retrieval, in the context of vocabulary learning, means recalling the previously studied word knowledge. It is a significant process because it increases the possibility of a word being remembered: "A word may be noticed and its meaning comprehended in the textual input to the task, through teacher explanation or dictionary use. If the word is subsequently retrieved during the task then the memory of that word will be strengthened" (ibid., p. 66f.). Strategies

for retrieval may be receptive or productive. Receptive retrieval includes, for instance, when seeing or hearing the word during reading or listening, learners try to recall the meaning of the word. A productive retrieval strategy means to recall the written or spoken form of the word when writing and/or speaking (ibid., pp. 221-222).

Generative strategies include the following: attaching new aspects of knowledge to what is known through instantiation (visualizing examples of the word), word analysis, semantic mapping, and using scales and grids, using the word (e.g., in new context, collocations, and sentences) across the four skills of listening, speaking, reading and writing, and finally, using the keyword method.

Takač (2008) is the most recent book-length publication that concentrates primarily in vocabulary learning strategies. The author describes three large-scale empirical studies. The aim of the first study was to construct a questionnaire to measure the frequency of vocabulary learning strategy used by elementary school students (aged between 10 and 14) learning foreign languages (e.g., English, German, Russian … etc.) in Croatia. By constantly testing, modifying, and conducting several factor analyses, the Vocabulary Learning Strategy Questionnaire for Elementary Schools (VOLSQES) was developed. It consists of 27 statements (i.e., individual vocabulary learning strategies), such as:

I use new words in a sentence in order to remember them.

I make word lists and write their translations in my mother tongue.

Further, Takač classifies the vocabulary learning strategies listed in the questionnaire into three broad categories: (1) Formal vocabulary learning and practicing, (2) Self-initiated independent vocabulary learning, and (3) Spontaneous (incidental) vocabulary learning (acquisition). The first category refers to strategies involving rote memorization, reliance on L1,

and a metacognitive aspect of regular and planned revision. The second category includes the strategies of exposure to the target language and those strategies that reveal an elaborated approach to vocabulary study including the use of memory strategies. The third category consists of spontaneous vocabulary learning in naturalistic learning situations as well as communication strategies (ibid., p. 100). Table 3.6 below illustrates the classification:

Table 3.6. Vocabulary learning strategy classification proposed by Takač (2008).

Strategies of formal vocabulary learning and practicing	Repeating new words aloud when studying Repeating words mentally Writing down words repeatedly to remember them Testing oneself Testing oneself with word lists Regular reviewing outside classroom Remembering words if they are written down Planning for vocabulary learning Making word lists Using spaced word practice Translating words into L1
Self-initiated independent vocabulary learning	Taking notes when watching films and TV programs Taking notes while reading for pleasure Imaging word's orthographical form Grouping words together to study them Connecting words to physical objects Imaging word's meaning Associating words with the context Reading and leafing through dictionary Using new words in sentences
Spontaneous (incidental) vocabulary learning (acquisition)	Remembering words from books, magazines Using circumlocution Listening to songs in the target language Remembering words from the Internet Associating news words with already known Using synonyms in conversations Remembering words from films and TV programs

Takač's second study focused on the relationship between vocabulary learning strategies and vocabulary teaching strategies. It was based on the assumption that "learners may select their language learning strategies under the direct influence of teaching strategies

employed by their teachers" (Takač, 2008, p. 105; this idea was inspired by O'Malley & Chamot, 1990). Takač aimed to discover whether there is a difference in vocabulary learning strategy usage between a group of learners whose teachers use corresponding vocabulary teaching strategies and those learners whose teachers do not use them, and whether there is a difference between vocabulary teaching strategies as perceived by learners and their use of vocabulary learning strategies (ibid., p. 107).

Over 350 Croatian primary school students learning English and their teachers participated in this study. A questionnaire was again the main instrument for data collection. The VOLSQES developed in the first study was used, together with another questionnaire containing 29 statements about learners' perception of vocabulary teaching strategies. Research participants were asked to choose one of the three responses to each of the statements, for instance,

> The teacher tells us to group words.
>
> 1. Never 2. Sometimes 3. Always.

In addition, classroom lessons were observed and videotaped to determine whether a teaching strategy was presented or not. Learning materials (i.e., language textbooks and workbooks) were analyzed as it was assumed that the choice of teaching strategies is often influenced by tasks presented in learning materials.

The study results showed that vocabulary learning strategies used by learners were mostly independent of vocabulary teaching strategies applied by their teachers. That is, "using a VTS and giving a vocabulary task targeting the use of a particular VLS do not guarantee that learners will indeed use that VLS in doing the task. Learners may opt for VLS that are

available to them or are simpler for them to use. [...] This means that learners select their own VLS regardless of the VTS employed" (ibid., p. 133).

However, there was a certain degree of association between certain teaching strategies and compatible learning strategies. For instance, when the teacher presented the meaning of a word with a picture, his/her students tried to memorize it by linking it to the mental image of the word's meaning. Further, if the teacher asked the students to check the meaning of a word in a dictionary, the learners more often chose this resource to learn new words.

Based on these findings, Takač concluded that "training in vocabulary learning strategies should begin early enough for the learners to develop and acquire a satisfactory inventory of VLS. [...] In order to be successful, strategy training demands a constant cooperation between teachers and learners in sharing their observations, experiences and problems connected with vocabulary learning" (ibid., p. 133).

The third research by Takač was a cross-linguistic survey study aiming to explore the difference in vocabulary learning strategies used by learners of two different foreign languages. The difference in frequency was the main concern. Participants were 322 learners of English and 353 of German. All of them were elementary school students in Croatia, aged between 11 and 14. The VOLSQES was used again as the only instrument for data collection.

The results of the statistic analysis showed that the two groups of learners used a large part of the 27 vocabulary learning strategies differently in terms of frequency. Generally, English learners more frequently used the following vocabulary learning strategies which are all classified under the category of spontaneous incidental vocabulary learning in the classification Takač proposed. For example:

- Remembering words from books, magazines
- Remembering words from the Internet

- Using synonyms in conversations
- Remembering words from films and TV programs
- Using circumlocution
- Listening to songs in the target language

Learners of German, on the other hand, used strategies that were grouped under the first category (i.e., formal vocabulary learning and practicing) and the second category (i.e., self-initiated independent vocabulary learning) more often. For instance (the number behind the strategy indicates the category number):

- Regular reviewing outside classroom (1)
- Testing oneself (1)
- Testing oneself with word lists (1)
- Remembering words if they are written down (1)
- Using spaced word practice (1)
- Imaging word's meaning (2)
- Imaging word's orthographical form (2)
- Grouping words together to study them (2)
- Connecting words to physical objects (2)

Takač attributed the differences in the use of vocabulary learning strategies between the two groups to the degree to which the learners were exposed to the two languages:

> Learners of English seem to benefit from the fact that films and other TV programs in Croatia are subtitled and not dubbed. They are exposed practically daily to authentic English. Because of a large amount of the language input, learning of English has certain characteristics of L2 learning environment. In such a learning context, learners have an opportunity to develop VLS uncommon in formal learning contexts. (Ibid., p. 144)

Therefore, Takač concluded that the position of the foreign language in the learning context does play a part in the selection and use of the vocabulary learning strategies.

Summary

In this chapter, I have reviewed the most representative studies dealing with vocabulary learning strategies as a whole since the late 1980s. Most of them aimed to investigate learners' use of vocabulary learning strategies and/or to put forward a classification scheme.

As for the classification scheme, the existence of distinct strategy classifications indicates that there is a lack of a consistent, widely accepted system to describe strategies. While some researchers use vocabulary learning steps as categories to classify vocabulary learning strategies, it is not uncommon for other researchers to categorize them as learning activities. Table 3.7 below summarizes the different strategy categories/clusters used in the studies reviewed in this chapter.

The reason for the lack of a consistent classification system may be that a certain degree of arbitrariness in the classification schemes could not be entirely avoided, as some strategies could be classified under several categories (Schmitt, 1997). However, among the studies presented, Schmitt's (1997) vocabulary learning strategy taxonomy has been recognized as the most extensive and comprehensive. Nevertheless, as Schmitt himself admitted, "[t]he present taxonomy ... should not be viewed as exhaustive, but rather as a dynamic working inventory which suggest the major strategies" (p. 204). His words indicate that there could still be space for revision and/or augmentation.

Table 3.7. Overview of the categories used in the reviewed studies.

Studies	Categories used in the vocabulary learning strategy classification
Ahmed (1989)	• Information sources • Dictionary use • Memorization • Practice • Preferred source of information • Note-taking
Hatch & Brown (1995)	• Encountering new words • Getting the word form • Getting the word meaning • Consolidating word form and meaning in memory • Using the word
Stoffer (1995)	• Strategies involving authentic language use • Strategies involving creative activities • Strategies used for self-motivation • Strategies used to create mental linkages • Memory strategies • Visual/auditory strategies • Strategies involving physical action • Strategies used to overcome anxiety • Strategies used to organize words
Gu & Johnson (1996)	• Metacognitive regulation • Guessing strategies • Dictionary use strategies • Note-taking strategies • Memory strategies for rehearsal • Memory strategies for coding • Activation strategies

Schmitt (1997)	• Discovery strategies
	  ○ Determination
	  ○ Social
	• Consolidation strategies
	  ○ Social
	  ○ Memory
	  ○ Cognitive
	  ○ Metacognitive

Nation (2001)	• Planning • Source • Processes
Takač (2008)	• Strategies of formal vocabulary learning and practicing • Self-initiated independent vocabulary learning • Spontaneous (incidental) vocabulary learning (acquisition)

With regards to the methodologies employed to investigate learner's use of vocabulary learning strategies, a large number of the studies used questionnaires as the primary or the only instrument to collect data (e.g., Ahmed, 1989; Porte, 1988; Sanaoui, 1992, 1995; Stoffer, 1995;

Gu & Johnson; 1996; Schmitt, 1997; Takač, 2008). The research participants were asked to either tick a box or circle a number. As Nation (2001) emphasized, such method reveals information about what learners say they usually do, or what learners believe they usually do for vocabulary learning. Those findings do not inform us much about learners' *actual use* of strategies.

Further, most of the studies focused on frequency (i.e., how frequently do the learners use a specific vocabulary learning strategy?) and on range (i.e., do learners apply a wide or narrow range of the strategies?). Knowing vocabulary learning strategy A is used more than B, or the discovery of whether learners use a wide range of strategies might give us a general picture of *what* learners usually do for vocabulary learning. However, these findings do not reveal much about *how* the strategies were applied and how well they were applied. In my opinion, the "how"-aspect is as essential as the "what"-aspect in the vocabulary learning process, and should not be neglected in the research.

Third, the majority of the large-scale survey studies have been conducted within a quantitative framework. Through statistical calculation, they aimed to explore the following two issues:

a) What vocabulary learning strategies does a certain large group of learners use (e.g., Japanese learners of English in Schmitt, 1997; Chinese learners of English in Gu & Johnson, 1996)?
b) What is the correlation between the variables of individual learner differences and the use of vocabulary learning strategies (e.g., good vs. weak language learners; beginners vs. experienced learners; learners of German or Russian vs. learners of English; female vs. male learners; young vs. older language learners)?

Individual differences have been considered a powerful factor in language acquisition. Investigating vocabulary learning strategies has been viewed as a way to shed light on differences between individual learners (Takač, 2008). However, in my opinion, the quantitative studies focus mainly on the groups and different variables, not on the individuality. McGregor's (2006) study reveals that learners "have the ability to view themselves as individuals within a larger diverse group" (p. 92), and "individual learners, when grouped together, remain diverse" (p. 93). I agree with her view that "understanding learner individuality will only be accomplished by studying individual learners" (p. 91).

My current research aims to bridge the gaps in the research literature mentioned above. I conduct a multiple-case study to explore individual learner's use of vocabulary learning strategies. I do not only investigate what strategies each of the research participants uses to study vocabulary, but also look at how he/she employs the strategies during a vocabulary study activity. A detailed description of my study and its results will be presented in Chapter Five and Chapter Six of the present thesis.

Chapter Four: Mental Processes – Memory and Mental Lexicon

Cognitive processes play an important role in learning. Understanding the cognitive processes sheds light on how humans learn. Findings from cognitive psychology are influential because they often serve as the theoretical foundation for research on second/foreign language acquisition/learning. Hence, the present chapter contributes to the understanding of the cognitive aspects of vocabulary learning. I will focus on memory and mental lexicon which play significant roles in vocabulary learning. I will explore various important aspects of memory and mental lexicon, and then discuss their implications for second/foreign language vocabulary learning.

4.1 Memory

Memory, generally defined as the ability to preserve and recover information that has previously been acquired (Nairne, Lindsay, Paulhus, & Smith, 2004; Ormrod, 2008),[23] is fundamental in human learning and development. Nairne et al. (2004) state,

> A world truly without memory would be devoid of thought and reason. You would never learn; you would not be able to produce spoken language or understand the words of others; your sense of personal history would be lost, and thereby much of your personal identity; even motor skills, such as walking, sitting in a chair, or feeding yourself, require memory for the complex set of muscle controls involved (p. 258).

[23]In the literature, the word "memory" is used in many different ways. As Ormrod (2008) noticed, besides the definition written above, it is sometimes used to refer to the processes of maintaining information. At other times, it refers to the "location" or "space" where the acquired information is stored, for example, as used in "working memory" or "long-term memory" which will be discussed in 4.1.2.

There is never a guarantee that every piece of the acquired information will be remembered, because many variables determine whether information will be remembered. However, without memory, nothing will be acquired. In other words, learning presupposes memory.

So, how does memory work? What factors influence memory? The current subchapter aims to answer these questions.[24] I will give an outline of recent research into memory processes and memory theories. I will also introduce the theories explaining why forgetting occurs. Last but not least, I will discuss how, according to recent research, memory can be enhanced.

4.1.1 The Major Memory Processes

The dominant view of memory processes in contemporary cognitive psychology has been developed based on the "information processing theory"[25] which views human memory with the following three key stages: encoding, storage, and retrieval.[26]

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[24]The search for the answers to this question has continued to expand in various disciplines including cognitive psychology, neurosciences, and neuropsychology. Due to space limitations, I will not provide an overview of the memory research in every related discipline. I will focus mainly on the cognitive psychological perspectives for the present thesis. For a comprehensive overview of memory research within the framework of cognitive psychology, neurosciences, and neuropsychology, refer to Haberlandt (1999), Ormrod (2008), and Smith and Kosslyn (2007).

[25]Information processing theory is one of the approaches used by cognitive psychologists to illustrate how learning occurs. It focuses on "how people think about (i.e., *process*) information they receive from the environment – how they perceive the stimuli around them, how they 'put' what they've perceived into their memories, how they 'find' what they've learned when they need to use it, and so on" (Ormrod, 2008, p. 163).

[26]These three terms are derived from the context of computer-based information processing. According to Ormrod (2008), many early information processing theories (e.g., those appearing in the 1960s) often drew an analogy between human brains and computers. They posited that, like computers, the human mind is a system which processes information through the application of logic and rules. Like the computer, the mind has a limited capacity for the amount of the information it can process. However, it soon became obvious that the computer-metaphor is too simplistic. Sousa (2006), for instance, sees great differences between the human brain and the computer: First of all, the computer cannot exercise judgment which the human mind can easily do. Second, the computer is based on closed linear systems limited to binary code 0s and 1s, but the human brain is an open, parallel-processing system which constantly interacts internally (between the neurons) and with the outside world. Third, the human brain also stores information in a very different way than the computer: "The brain stores sequences of patterns, and recalling just one piece of a pattern can activate the whole. We can also identify the same thing in different forms [...], computers cannot deal well with such variations" (p. 40). Weiten (2004, p. 262) also indicates that when information is stored on a hard drive, there is almost a guarantee that it remains

Encoding refers to the process of acquiring information and forming a memory trace (or memory record, memory representation) (Haberlandt, 1999). **Storage** refers to the process in which acquired information is put into memory and maintained there over time. **Retrieval** is the process in which stored information is retrieved from memory and translated into performance (i.e., using the information). We usually hope the to-be-remembered information will remain in memory as long as possible. However, it is not sufficient if we cannot get the information out of the memory store when we need it. Encoding, storing, and retrieval are of equal importance in the memory system. As Haberlandt (1999) states, "[s]uccessful remembering depends on a proper functioning of each of these three stages" (p. 2).

In addition, a significant characteristic of memory processes should not be neglected: that is, memory is "constructive" in nature (Bartlett, 1932). **Construction** is the process in which individuals use the information they receive and their background knowledge to build a reasonable understanding of the world around them. Hence, during the encoding, storage and retrieval processes, information is often modified in some way. For example, during the encoding and/or storage processes, people may change the form of the incoming information (e.g., from visual to auditory form), add interpretation to new information using their prior knowledge, or simplify the to-be-remembered information by remembering the overall meaning rather than the specific details (Ormrod, 2008). It is also very common that people "retrieve only a portion of the information that has previously been presented to them, and they may fill in the 'holes' based on what is logical or consistent with their existing knowledge and beliefs about themselves or about the world more generally" (ibid., p. 288). Hence, the recalled

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unchanged unless the hard drive suddenly breaks. But the human memory changes over time. What is stored in the brain might not stay exactly the same. Last but not least, emotion does not play a role in the computer information process, but it does have an important part in the human cognition. Nevertheless, despite of the disagreement on the computer metaphor, the terms – encoding, storage, and retrieval – have earned recognition and continued to be used among information processing theorists.

memory could be more or less different from the information actually received. Additionally, because people use their existing knowledge to cope with the new information, it is possible that different people may construct different interpretations of and arrive at different conclusions about the same given event.

So, where is the information stored, in one store or multiple stores? How is it encoded, stored, and retrieved? How is it represented and organized in the store(s)? More importantly, how is it possible to enrich encoding, strengthen storage and enhance retrieval to maximize remembering, and hence, minimize forgetting? In memory research, there are various approaches used to explore these three major processes. Different approaches lead to different memory theories/models. I will present the most researched and discussed memory theories/models in 4.1.2.

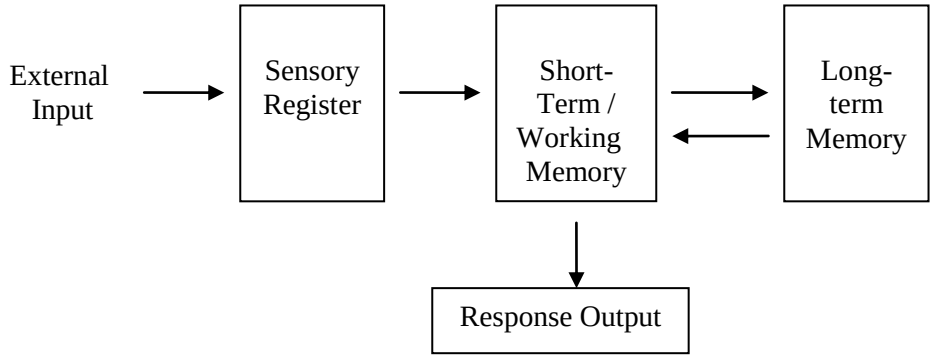
4.1.2 Memory Theories/Models

Various memory theories/models have been developed in the field of human memory research. I will introduce the most well known and most researched ones: the "multi-store" model devised by Atkinson and Shiffrin (1968), and the "levels of processing" (or "depth of processing") framework put forward by Craik and Lockhart (1972). The former is usually regarded as a "structural" approach due to the focus it places on the different components and their interrelationship, while the latter is regarded as a "functional" approach due to its focus on how the mind functions and operates to process information (cf. Ormrod, 2008; Stork, 2003).

4.1.2.1 The Multi-Store Model

According to the multi-store model originated by Atkinson and Shiffrin (1968), the human memory system is composed of three components: the sensory register (or sensory memory), the short-term memory (or short-term store), and the long-term memory (long-term store).[27] Incoming information has to pass through the sensory register and short-term memory, before it enters into the long-term memory, in a sequence of stages.

Figure 4.1. Multi-store memory model.



Atkinson and Shiffrin's model was highly influential because it presented a comprehensive view of information processing in memory. However, theorists have continued to modify the model over the years. The most noticeable change is the concept of short-term memory. Contemporary memory research favors the working memory model which was developed originally by Baddeley and Hitch (1974)[28] to capture more of the dynamic

[27]As Weiten (2004, p. 266) points out, "the names for these stores and their exact characteristics varied some from one theory to the next." Atkinson and Shiffrin (1968) did draw a distinction between short-term memory and short-term store, as well as between long-term memory and long-term store. For Atkinson and Shiffrin (1968), short-term memory and long-term memory refer to the memory examined in the experiments, while short-term store and long-term store are theoretical concepts used to explain results derived from memory experiments (cf. Baddeley, 1999, p. 39). However, in most literature, the terms "short-term store" and "long-term store" are either used interchangeably with "short-term memory" and "long-term memory," or they are replaced by the latter terms. In the present thesis, I shall follow the convention and use the terms "short-term memory" and "long-term memory," instead of "short-term store" and "long-term store," to refer to the memory storage systems.

[28]The working memory model was further elaborated by Baddeley (1990, 1992), and later slightly revised by Baddeley (2000). See section 4.1.2.1.2 below.

characteristics of the mechanism that controls the memory over the short-term. To be consistent with most of the contemporary theories, I will use the term working memory from this point on.

In the following section, I will look at each of the three components of the multi-store model. I will present their characteristics with regard to capacity, duration (i.e., the time that the information remains), and form of encoding/storage.[29] It is important to bear in mind that, although I will examine the three components one at a time, they are "not necessarily three separate 'places' in the brain" (Ormrod, 2008, p. 169).

4.1.2.1.1 Sensory Register

Our five sense modalities (or five senses) – vision/sight, hearing, smell, touch, and taste – collect a huge amount of information every day. Information first enters the sensory register. Although it is very difficult to measure the exact duration, it is generally agreed that information stays in the sensory register for a very brief period of time, "typically no longer than a few hundred milliseconds" (Haberlandt, 1999, p. 10). In other words, the capacity of the sensory register is very large, or even unlimited (Ormrod, 2008), but the duration is rather short.

Also, information held in the sensory register is thought to be unprocessed, i.e., it is stored in its original sensory form (Coltheart, Lea, & Thompson, 1974; Cowan, 1995; Ormrod, 2008). Although researchers assume that there is a separate sensory register for each of the five sensory modalities, iconic (visual) memory and echoic (auditory) memory are the two types of sensory memory that have been most explored (Nairne et al., 2004; Stork, 2003).

In addition, although our five sense modalities perceive large amounts of information every day, it is extremely difficult for our brain to take in all the information. Hence, only a

[29]In some literature, such as Ormrod (2008), the third characteristic is considered a form of storage.

very small portion of the information will enter the working memory. In order for this movement to take place, we must at least consciously direct our attention to the information. Therefore, attention plays a significant role in moving information from the sensory register to the working memory. Information that is attended to is transformed to working memory, whereas unattended information is lost from the memory system. I will discuss the factors influencing attention in Chapter 4.1.5.1 in more detail.

4.1.2.1.2 Working Memory

As already mentioned above, since Baddeley and Hitch (1974) proposed the working memory model, the term "short-term" memory has been largely replaced by "working" memory. However, a detailed description of the working memory model is beyond the scope of this section.[30] I will briefly describe its major components and then focus on the same three characteristics: capacity, duration, and form of encoding/storage in the sections that follow.

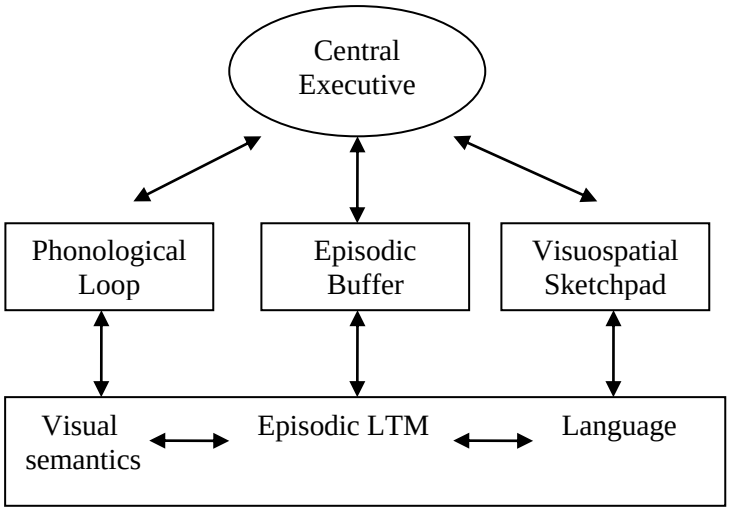
The working memory is often viewed as a kind of mental workplace which controls and monitors an individual's overall memory processes (Ormrod, 2008). As Ormrod elaborates,

> [w]orking memory is that component of memory in which "thinking" occurs. You might think of it as the "awareness" or "consciousness" of the memory system. It identifies information in the sensory register that warrants attention, saves the information for a longer period of time, and processes it further. It may also hold and process information that it retrieves from long-term memory – information that will help in interpreting newly received environmental input. (p. 176)

[30]See Baddeley (1990, 1992, 1999, 2000) for a detailed description of working memory.

The working memory model consists of four components[31] (Baddeley, 2000): the central executive as a supervisory system and the three storage buffers as slave systems – the "phonological loop," the "visuospatial sketchpad," and the "episodic buffer" (as shown in figure 4.2 below).

Figure 4.2. The multi-component working memory model by Baddeley (2000).



The central executive is "the component that most strongly differentiates the idea of working memory from the earlier conceptions of "short-term memory," and is "what does the work in working memory" (Smith & Kosslyn, 2007, p. 259). It determines when information is deposited in the storage buffers and which buffer is selected for storage. It also integrates and coordinates information between the buffers, and provides a mechanism by which information held in the buffers can be inspected, transformed, and otherwise cognitively manipulated (cf. Smith & Kosslyn, 2007, p. 259).

[31]The original version of the model consists of three components (Baddeley & Hitch, 1974; Baddeley, 1992, 1999): central executive, phonological loop, and visuospatial sketchpad. Baddeley (2000) added the fourth element – episodic buffer.

The first slave system, the phonological loop (or "articulatory loop"), copes with sound or phonological information. This component is at work when we temporarily store verbal information and engage in repetitive rehearsal, for instance, when we repeatedly rehearse a phone number in order to temporarily keep it in our mind.

The second slave system, the visuospatial sketchpad, allows us to temporarily hold and manipulate spatial and visual information, such as remembering shapes and colors, or the location or speed of objects in space. It is also involved in tasks which engage planning of spatial movements.

The episodic buffer has various features. It is a temporary storage system with limited capacity. It integrates information from a variety of sources (i.e., phonological loop, visuospatial sketchpad, and long-term memory), and holds episodes of information across space and time, and hence plays an important role in the storage and retrieval of episodic long-term memory.[32] With the addition of the episodic buffer, the emphasis of the model is on the process of integration and coordination of information, rather than on the isolation of the slave systems (cf. Baddeley, 2000, p. 422).

Working memory is a temporary memory store with limited capacity. In terms of the duration, studies show that information will be held only for less than 20 seconds.[33] As for the capacity of the working memory, most researchers agree that it can hold only a fairly small amount of information at any one time,[34] although it is difficult to investigate the actual capacity in terms of a specific number of discrete items that can be stored (Anderson 1990; Ormrod, 2008).

[32]See the long-term memory section below for the definition of the term episodic memory.
[33]There have been different test results regarding the durability of working memory: from a couple of seconds to less than a minute. Refer to the experiments by Brown (1958) and Peterson and Peterson (1959).
[34]For example, Miller (1956) – in his classic paper titled "The Magical Number Seven, Plus or Minus Two" – indicates that people could remember only about five to nine items (e.g., numbers, letters, words) in tasks.

Regarding the form of encoding/storage, researchers suggest that information is typically recoded and stored in an auditory form in the working memory, regardless of the form in which information is received, especially when the information is language based (Baddeley & Hitch, 1974). Take the letters UGBKW as an example: If the letters are presented in auditory form to us (i.e., when we hear them), they will also remain in auditory form in our working memory. However, when they are presented visually to us, the visually presented letters will be recoded or translated into an auditory form in the working memory through a kind of silent rehearsal, i.e., we will be repeating the letters silently to ourselves.

In addition to the typical auditory recoding, Baddeley (1986) also suggested that information can sometimes also be stored visually in the short-term memory. For instance, when we are shown a house and then asked to describe the layout or the interior design of the house, we usually carry out this task by visualizing the house as if we were "seeing" the house (Nairne et al., 2004, pp. 262-263).

4.1.2.1.3 Long-Term Memory

Long-term memory is the most complex component of the human memory system and has been more extensively studied than the other two components. It is

> a repository of our knowledge of the world. This includes general knowledge, such as the role of grammar or arithmetic, along with personal experiences, such as memories of your childhood. [Long-term] memory holds all of the information we have retained from the past that is not currently active (that is, in working memory). These memories are used to interpret new experiences, and, in turn, the new events may later be added to this store house of information" (Carroll, 2004, p. 48).

Researchers are generally of the opinion that long-term memory has unlimited capacity. However, with regard to the issue of duration, theorists have not reached an agreement. Some theorists believe that information remains in long-term memory permanently once it is stored there, and that forgetting is merely a retrieval problem (Bahrick, 1984; Loftus & Loftus, 1980; Penfield 1958, 1969), while others argue that information can disappear from long-term memory through various forgetting processes. Hence, the question about the duration of long-term memory is still inconclusive. Maybe it is most suitable to say that "long-term memory's duration is indefinitely long" (Ormrod, 2008, p. 183), as its name suggests.

Considering the form of encoding/storage, Ormrod (ibid.) concludes that "[i]nformation is probably encoded in long-term memory in a variety of ways. For example, language provides one basis for storing information, sensory images provide another, and nonverbal abstractions and meanings […] provide still another." Ormrod (ibid.) also points out two further characteristics of long-term memory: First, information stored in long-term memory rarely remains exactly as it was previously received:

> Rather than remember word-for-word sentences or precise mental images, people tend to remember the gist of what they see and hear, along with idiosyncratic interpretations and (often) minor or major distortions of reality. (ibid., p. 183)

This reflects Bartlett's view that memory is "constructive" in nature. Second, information stored in long-term memory is interconnected: "Related pieces of information tend to be associated together. Ultimately, probably every piece of information is either directly or indirectly connected with every other piece" (p. 183).

4.1.2.2 The Levels of Processing Framework

Although the multi-store model has been very popular and influential, it was challenged by the levels of processing framework[35] developed by Craik & Lockhart in the early 1970s. The framework focuses on the encoding process, and emphasizes how memory functions during the encoding processes rather than the possible structures of memory. The two researchers argued that the memory trace should be understood, not as the "result," but rather as a "by product" of the encoding process.

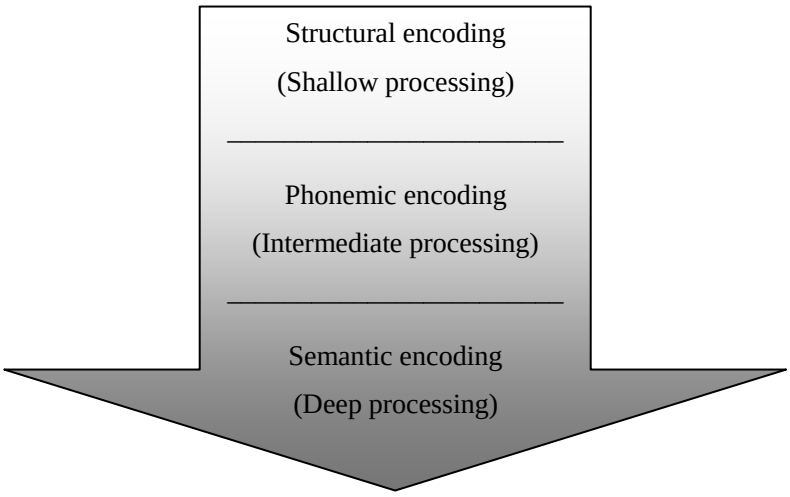
According to this framework, there are three types of encoding: structural, phonemic, and semantic encoding. Structural encoding is a relatively shallow process which focuses on the physical structure of the stimulus, for example, the length of a word and whether the letter is capitalized or not. Phonemic encoding is a deeper processing than the structural encoding. It is related to the sound aspect of the stimulus. It involves, for instance, the pronunciation of a word, and practicing the pronunciation (silently or out loud). The deepest processing, the semantic encoding, stresses the meaning of the input, for example, when we think about the meaning of a word or about the object or action with which the word is associated.

While multi-store theorists emphasize the significance of rehearsal in maintaining information in the working memory so that it will be further transferred to the long-term memory, theorists who advocate the "levels of processing" framework argue that rehearsal per se might keep material available, but would not enhance long-term memory retention (Baddelely, 1999, p.41). In their view, it is the encoding process (i.e., the level/depth of encoding) that determines whether the material will be subsequently remembered: the deeper the encoding processing goes, the longer the information will remain. In other words, "the

[35]Many researchers call it the Level of Processing "Theory." However, Craik and Lockhart (1972) carefully stress at the end of their paper that their approach "does not constitute a theory of memory. Rather, it provides a conceptual framework – a set of orienting attitudes – within which memory research might proceed" (p. 681).

greater the contribution of meaning to these processes, the stronger the memory trace" (Haberlandt, 1999, p. 75).

Figure 4.3. Levels of processing.



Like the multi-store memory theory, Craik and Lockhart's (1972) levels of processing framework serves as the starting point for a large body of research on the type of processing.[36] Nevertheless, their work has also been the subject of criticism. Critics have argued that "depth" is a fairly vague concept and is also difficult to measure. In addition, the levels of processing approach does not present an objective index of depth. The questions remain: How can one determine whether one level is deeper than another? On which criterion could the determination be based (Baddeley, 1978)? Thus, it is suggested that the terms "level" and "depth" should be defined separately.[37]

With regards to the criticisms and comments, the levels of processing framework has been revised and updated several times during the past decades. Craik & Tulving (1975) argue

[36]Among them are, for instance, Craik and Tulving (1975), Hyde and Jenkins (1973), Slamecka and Graf (1978), just to name a few. For a general review of the subsequent studies, refer to Craik (2002), Haberlandt (1999), and Smith and Kosslyn (2007).

[37]For more details on the limits of levels of processing framework, refer to Haberlandt (1999), Smith and Kosslyn (2007), Stork (2003), and Watkins (2002).

that information processing is most effective not necessarily when it is semantic but rather when it involves elaboration – that is, when the learner adds information to the material to be learned in such a way that the new material is understood, interpreted, and encoded meaningfully.[38] Lockhart and Craik (1990) admitt that their previous theoretical assumption – that the processing of stimuli always proceeds from the shallow to the deeper level – was inadequate and needed to be adjusted. They revised their view by taking the complex interactions between top-down and bottom-up processes into account. In addition, in recent years, the role of consolidation has been reconsidered. Craik (1999) argues that "deep processing is necessary but not sufficient" (p. 102), and that both deep processing and a process of consolidation are necessary for long-term memory (Craik, 1999, 2002). However, it remains unclear how the process of consolidation occurs.[39]

Another issue that has been the subject for debate for decades is whether the levels of processing framework should be regarded as an approach that attacks the distinction between short-term memory and long-term memory. It is interesting to note that, in Lockhart and Craik (1990) and Craik (2002), the authors themselves address the issue:

> We (Craik and Lockhart) criticised the notion of memory stores, including the concept of a separate capacity-limited STM [short-term memory] in which incoming information was held before being 'transferred' to LTM [long-term memory]. But we retained the STM/LTM distinction, recasting the concept of STM as a temporary activation of processes representing perceptual and conceptual aspects of incoming (or

[38] See also Chapter 4.1.5.3 and 4.3.3 of this thesis.

[39] According to Haberlandt (1999) and Ormrod (2008), the notion of consolidation can be traced back to Müller and Pilzecker (1900), and is over a century old. However, it is still "not fully clear what mechanisms are at work to produce consolidation at various intervals following initial learning" (Haberlandt, 1999, p. 63). Ormrod (2008) stated that "At this point, theorists can only speculate about the processes involved in the consolidation aspect of long-term storage. Possibly it involves some sort of low-level, unconscious activation or rehearsal" (p. 210).

recently retrieved) stimuli. So in a sense STM was thought of as a temporary activation of parts of LTM, but the short-term activity presumably also involves perceptual aspects of the input: Lockhart and I preferred the Jamesian term "primary memory" (PM)[40] to capture this account of STM phenomena. By this view, PM is not a store in any sense, and is not located in one fixed place in either the cognitive system or the brain. Rather, PM involves activation of representations that correlate with present experience [...] and thus PM activity can be located in many different brain locations depending on the type of information "held in mind." (Craik, 2002, pp. 307-308)

That is to say, Craik and Lockhart stand for the retention of the distinction between short-term and long-term memory, but their conception of short-term memory is to some extent different: short-term memory (or primary memory as preferred by the authors) is not viewed as a "store/box" or "separate mechanism or structure," rather a "continued processing activity" within the whole cognitive system, or "an active subset" embedded in long-term memory (Lockhart & Craik, 1990).

In sum, the levels of processing framework provides a possible and logical account for how information is encoded into the long-term memory. In addition, as Baddeley (1999) points out, with the emphasis being laid on the encoding process and the relationship between the way in which information is processed and the probability that it will be subsequently remembered, the levels of processing approach is "primarily a theory of long-term memory" (Baddeley,

[40]William James was the first psychologist who put forward the distinction between short-term and long-term memory. James (1890) called these two memory systems primary memory and secondary memory to stress the degree of the relationship of the stored information to consciousness. Primary memory is the "initial repository in which information can be stored and made available to conscious inspection, attention, and introspection. In this way, such information would be continually accessible" (Smith & Kosslyn, 2007, p. 243). In contrast, information from secondary memory "cannot be retrieved without initiating an active cognitive process" (ibid., 2007, p. 243). For more details about primary memory, refer to Craik (2002), Lockhart and Craik (1990).

1999, p. 41). However, the unique role of primary memory within the cognitive system should not be neglected.

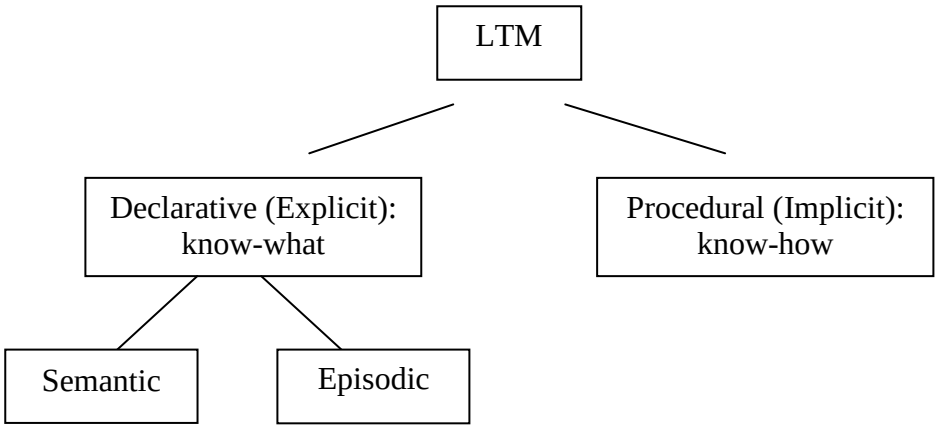
4.1.3 Forms of Long-Term Memory

In addition to memory theories, researchers are also interested in the types (or forms) of information stored in long-term memory. For example, Anderson (1976, 1983) divides long-term memory into two classes: declarative (explicit) and procedural (implicit) memory. Declarative memory refers to the information of "know-what" and includes definitions of words, facts, and rules, while procedural memory is related to the information of "know-how," for instance, the ability to understand and to produce language or apply our knowledge of rules to solve a problem, and to use learning strategies.

Some researchers believe that there is an association between declarative memory and explicit memory as well as between procedural memory and implicit memory (cf. Smith & Kosslyn, 2007; Weiten, 2004). Explicit memory is the intentional and conscious recollection of previous experiences and information (Weiten, 2004). It is apparent, for example, when we consciously recall definitions of words, the time of an appointment, or an event from years ago, that is, when we recall declarative memory. In contrast, implicit memory is incidental and unintentional. It refers to that kind of remembering "which occurs automatically and without a subjective feeling of remembering" (Nairne et al., 2004, p. 283). We use implicit memory all the time in our everyday life, for instance, when we walk, speak, or ride a bicycle. All these activities require memory, but we usually do these activities without subjective experience of remembering the past (cf. Nairne et al., 2004, p. 283).

Another common classification is to further sub-divide declarative (explicit) memory into semantic memory and episodic memory.[41] Semantic memory concerns facts, concepts or abstract knowledge about the world, such as "Ottawa is the capital of Canada," "Dogs have four legs." It is not tied to the time when the information was learned, and it does not involve personal feeling or emotion. Episodic memory, on the other hand, concerns information specific to a particular context, such as a time and place. It refers to more personal memories, such as a particular moment, event, or episode of our past experience. Weiten (2004) describes the difference between the two forms of memory as follows: "Episodic memory is like an autobiography, while semantic memory is like an encyclopedia" (p. 291).

Figure 4.4. Classification of long-term memory.



The classification of the forms of memory further leads memory researchers to assume that different forms of memory are presented and organized in different ways. Nevertheless, according to Weiten (2004), most research on this issue focuses on the semantic memory, i.e., on how semantic memory is represented and organized in long-term memory, especially on how concepts are structured and how the semantic relationship between the concepts is formed

[41]According to Stork (2003, p. 66) and Weiten (2004, p. 291), the Canadian psychologist Endel Tulving (1986, 1993) was the originator of this classification.

in our brain. This is also the topic that researchers in the field of the mental lexicon are most interested in. I will discuss this in more detail later in Chapter 4.2: Mental Lexicon.

4.1.4 Forgetting

So far, I have focused on how information is encoded, stored and retrieved. However, forgetting also plays an important part during the memory processes. After all, as Dörner (1996) points out, "Behalten und Vergessen sind komplementäre Prozesse. Was nicht behalten wird, wird vergessen" (p. 174; cited in Stork, 2003, p. 60).[42]

Forgetting is the inability to recall or recognize previously learned information (Smith & Kosslyn, 2007). It is not always a bad thing that people forget, especially when the information is relatively unimportant: "Forgetting fulfills a selective function by uncluttering our memories and thereby increasing the chance of recalling important information" (Haberlandt, 1999, p. 304). There are various theories trying to explain why forgetting occurs. The most well known theories in psychology are decay, interference, retrieval failure, and motivated forgetting (repression).

Earlier psychologists proposed the decay theory. They believed that information stored in the memory simply fades with time. This is a commonsense view of memory, especially when information is rarely used or not used at all (Altmann & Gray, 2002; Loftus & Loftus, 1980; Schacter, 1999). Further, Ormrod (2008) points out that some information is more susceptible to decay, such as the exact details of an event. People usually forget the details more quickly than the underlying meaning or gist of the event. However, when certain details capture key perceptual features of an event or are distinctive and unique, people tend to

[42] English translation of the quotation: Remembering and forgetting are complementary processes. What is not remembered is forgotten.

remember them better than the less distinctive details. Nevertheless, decay theory cannot explain the following phenomena/questions: First, there is the tip of the tongue phenomenon.[43] If the passage of time was the reason for forgetting, then why is the forgotten information later remembered? Second, why do people often remember a trivial event (such as a joke) better than information that was once extensively rehearsed, such as the materials studied for a quiz? Again, if forgetting was simply caused by decay, the extensively studied information should be stored longer (cf. Nairne et al., 2004). Hence, researchers indicate that the time factor is not as influential as it is believed to be for the loss of information in the long-term memory.

With the proposal of interference theory, researchers suggest that people forget information due to competition and interference from other materials over time. There are two types of interference: retroactive and proactive interference. Retroactive interference is evident when new information impairs old information (i.e., a backward effect). For example, when we move to a new place and get a new phone number, it will become more and more difficult to recall the old phone number. On the other hand, proactive interference occurs when old information hurts the new information (i.e., a forward effect). For instance, students need to prepare for a German vocabulary test. However, if they study French vocabulary first and then German, then the interference from the French study will be proactive (cf. Weiten 2004; Nairne et al., 2004). No matter which type of interference occurs, in both situations, learning one set of material interferes with the ability to recall another (Ormrod, 2008). Thus, Ormrod (ibid.) describes interference as a theory of confusion: "An individual has learned numerous responses and gets them mixed up" (p. 295). She also points out that interference (or confusion)

[43]The tip of the tongue phenomenon refers to the situation when we suddenly cannot remember the word we want to use, or maybe we can only remember the initial letter of the word. This missing word might keep us thinking every minute until we finally find it. When we recall it, we say to ourselves, "Oh, how could I forget that word?"

is more likely to occur when associations between pieces of information are arbitrary rather than logical.

The third theory attributes forgetting to the failure of retrieval, i.e., the failure to recover information from the long-term memory store. Researchers proposing this theory aim to find out why retrieval fails, for instance, in the tip of the tongue phenomenon. They believe the retrieval cues – "stimuli that help gain access to memories" (Weiten, 2004, p. 276) – play a crucial role. The theory suggests that the failure is due to the absence of retrieval cues or the mismatch between retrieval cues and cues that were present at the time of encoding of the information. This kind of forgetting is thus also called cue-dependent forgetting (Nairne et al., 2004, p. 276). Thus, the encoding specificity principle (Tulving & Thompson, 1973) suggests that a retrieval cue is more effective when it is consistent with the original encoding of the information.

There are various types of retrieval cues, such as identity cues, organizational cues, and contextual cues. Identity cues (Bourne, Dominowski, Loftus, & Healy, 1986) are cues that are identical to the information one is trying to recall. For instance, try to fill in the blank in the following question without looking back at Chapter 4.1.2.1.2 (working memory):

> The working memory model consists of four components: the central executive, the phonological loop, the _____, and the episodic buffer.

Maybe the choices below will make the retrieval easier:

> (a) auditory board (b) visuospatial sketchpad (c) visual pad

The choices serve as identity cues. Ormrod (2008) points out that "[r]ecognition tasks, such as multiple-choice tests, are often easier than recall tasks, presumably because of the identity cues that recognition tasks provide" (p. 286).

Organizational cues refer to cues that are presented in an organized format, rather than in a random order. For instance, in order to remember the five Great Lakes: Huron, Ontario, Michigan, Erie, and Superior, we can take the first letter of each lake and form the word HOMES (using a type of mnemonic called an acronym). HOMES serves as an organizational cue which makes retrieval of the names of the five Great Lakes easier.[44]

In psychology, contextual cues refer to the physical environment in which something has been learned. Researchers argue that exposure to the same or similar environment helps people remember. For instance, Godden and Baddeley (1975) had scuba divers learn 36 unrelated words either on shore or 20 feet below the water surface. They were then asked to recall words in either the same or a different environment. The results showed that the divers were able to recall more words when they were in the same environment in which they had learned the words than when they were in the other environment (cf. Ormrod, 2008).

The fourth theory of forgetting – motivated forgetting – can be traced back to Freud (1901, 1905, 1924, 1940).[45] Freud asserted that people often repress embarrassing, unpleasant, threatening, or painful feelings, thoughts, and memories out of conscious awareness. Hence, in Freud's view, when we forget unpleasant things such as a dentist's appointment, it may be due to motivated forgetting.[46] According to Ormrod (2008), contemporary psychology tries to explain the relationship between repression and forgetting from the perspective of emotion (anxiety):

[44]In addition to acronyms, structural cues can be a sentence, story, rhythm, or anything else already familiar to the learner. Refer to Ormrod (2008, p. 373) for more examples on structural cues.
[45]For a more recent study on motivated repression, refer to Erdelyi (1985), Erdelyi and Goldberg (1979), Jones (1993), Schooler (2001).
[46]Although Freud's concept of repression has been well known for over a century and served as a source for a large amount of research, it is important to bear in mind that it remains very controversial in the field of psychology.

> Painful information begins to produce anxiety whenever the relevant part of long-term memory is approached. Because anxiety itself is unpleasant, the memory search will tend to steer clear of the anxiety-arousing part of long-term memory. Thus, the painful memory, as well as any other information stored in close association with it, remains out of reach and so is essentially "forgotten." (p. 296)

In addition to the four major theories of forgetting, Ormrod (ibid.) also mentions "construction error" and "failure to store or consolidate" as possible reasons for why forgetting occurs. As described earlier, human memory is constructive in nature, and construction can lead to erroneous recall:

> Construction can occur either at storage (i.e., learner-invented information is stored) or at retrieval (i.e., the learner "remembers" information that was never encountered). Construction at retrieval time is particularly likely to occur when there are holes in the information retrieved – holes possibly due to decay, interference, or unsuccessful retrieval. […] erroneous reconstruction of an event of a body of learned information is increasingly likely to occur as time goes on. (Ormrod, ibid., p. 297)

Failure to store or consolidate refers to the fact that some information may never have been stored in the first place, perhaps due to lack of attention to the information, or because of some outside factor such as a serious accident which interferes with consolidation processes.

4.1.5 Memory Enhancement

As described previously, forgetting is not always a bad thing, because it unclutters our memories and increases the chance of recalling important information. However, forgetting can also be painful and embarrassing, especially when the forgotten information is important.

Hence, I now proceed to an issue that concerns most people greatly: How do we improve our memory? In the following section, I will present the most researched subjects in memory enhancement: paying attention/noticing, elaboration, rehearsal (practice), and mnemonics. These methods are introduced here not only because they improve our everyday memory and learning in general, but also because they are significant for learning vocabulary in a foreign language. Finally, I will also briefly discuss the roles of affect and motivation in memory processes.

4.1.5.1 Paying Attention/Noticing

As pointed out previously, paying attention/noticing[47] plays an essential role in moving information from sensory register to working memory. Ormrod (2008) also indicates that "one reason people do not remember something they have heard or seen, then, is that they never really paid attention to it" (p. 171). Nevertheless, attention is a limited capacity, that is, it is simply impossible to pay attention to everything at the same time. Thus, it is of interest to know what makes people pay more attention to a stimulus.

Ormrod (2008) listed the following features of stimuli which affect our attention: motion, size, intensity, novelty, emotion, social cue, and personal significance. Moving stimuli (e.g., waving hands), or stimuli which have larger size (e.g., the letter B in: a **B** c d), which are more intensive (e.g., brighter colors or louder noises), which are novel or unusual (e.g., a dog with three legs), which are strongly associated with emotion (e.g., words such as blood or murder), all tend to draw more attention. In addition, people are more likely to pay attention to

[47]Paying attention and noticing are often treated as synonyms: "If you are conscious of something, then you are attending to it … and if are attending to something, then you are conscious of it" (Carr & Curran, 1994, p. 219). Nation (2001) also defines noticing as "giving attention to an item" (p. 63). See Schmidt (1990, 1995) for more discussions of attention and noticing.

the stimuli that other people are looking at and reacting to (the so-called social cues). Finally, stimuli which are personally significant and/or interesting will attract more attention from people.

Nevertheless, Ormrod (2008) also points out that, although information is transferred to working memory through attention, it is not necessarily guaranteed that the information will remain in the working memory and move further to the long-term memory. Paying attention is merely the first step, the foundation. In order to keep the information in the memory longer, more consolidation effort needs to be carried out, such as rehearsal and elaboration (see the sections below).

4.1.5.2 Rehearsal and Distributed Practice

In memory research, the term rehearsal[48] is generally defined as repeating the to-be-remembered information over and over again in a short period of time (Ormrod, 2008; Vintere, Hemmes, Brown, & Poulson, 2004; Weiss & Klint, 1987). Different memory theories view the function of rehearsal differently: On the one hand, multi-store memory theorists believe that simply repeating the material over and over again (so-called "maintenance rehearsal") is efficient enough for keeping information in working memory as well as in long-term memory. On the other hand, the levels of processing approach argues that rehearsal leads to long-term

[48] I note the difference in the use of the terms "rehearsal," "practice," and "repetition" between cognitive psychology, educational psychology, and research on vocabulary learning and teaching. In the field of cognitive psychology, the term rehearsal is used interchangeably with practice and repetition. In vocabulary learning and teaching research, researchers usually use the term repetition to refer to the action or process of repeating words over and over again for memorization (see e.g., Gairns & Redman, 1986; Nation, 1990, 2001; Schmitt 1997), while the term practice does not only refer to repetition, but also to activities engaging practical use of words, such as writing vocabulary exercises, playing vocabulary games … etc. (e.g., Baumann and Kame'enui, 2004). To follow the literature convention, I will use the term "rehearsal" in this chapter because it focuses mainly on research on memory. In the later chapters on vocabulary learning strategy, I will use the term repetition.

retention only when the new information is associated with existing knowledge (also known as "elaborative rehearsal") (Craik & Watkins, 1973; Craik & Tulving, 1975).

Nevertheless, study findings further show that rehearsal – no matter what kind of rehearsal is being carried out, maintenance or elaborative – will be effective only if we avoid "massed practice," and instead schedule "distributed practice" (Anderson, 1990; Baddeley, 1990; Nairne et al., 2004; Ormrod, 2008; Weiten, 2004).[49]

Massed practice is very common among learners. It refers to cramming all the study into a very short period of time, usually the day before the exams for many students. It is an ineffective way, especially if one wants to retain the studied material after the exams are over, because memory research findings reveal that the most forgetting occurs immediately after initial learning and then, as time passes, the rate of forgetting slows down (Anderson & Jordan, 1928; Pimsleur, 1967; Seibert, 1927, 1930). Hence, a better approach is to distribute the studying over a period of time, for example, three 2-hour study sessions on consecutive days, with other activities interspersed between the study sessions (cf. Nairne et al., 2004; Weiten, 2004).

Nairne et al. (2004) add more explanation for why distributed practice is a more effective way to study than massed practice:

> If you engage in massed practice – where you simply reread the same material over and over again without a break – you're likely to think about the material in almost exactly the same way every time it is presented. If you insert a break between study sessions, when you see the material again there is a better chance that you will notice something new or different. Thus, compared to massed practice, distributed practice leads to memory records that are more diversified, elaborate, and distinctive. Also, distributed

[49]This phenomenon is also known as "spacing effect" (Ormrod, 2008, p. 219).

study sessions provide you with opportunities to practice retrieving memories of prior study episodes. Finally, distributing study sessions gives you a better sense of which things you have learned well and which things you haven't yet mastered. (p. 271)

4.1.5.3 Elaboration

In a very broadly defined sense, elaboration refers to the process of connecting the to-be-remembered information to other existing information in memory in our everyday lives (cf. Nairne et al., 2004, p. 269).[50] Also, the connections must be meaningful. There are numerous ways to form this connection, such as using some kind of mental imagery, grouping several pieces of information together and remembering them as a storyline, thus creating meaningful associations between the to-be-remembered information. Mnemonics, such as the loci method, peg method, and keyword method, are good examples of elaboration. I will describe them in the section 4.1.5.4 below.

Elaboration during the encoding and/or storage processes makes later retrieval much easier. Most of the time, it is a very effective means for the following reasons:

> First, elaborated information is less likely to be confused with other similar information stored in long-term memory (Ellis & Hunt, 1983). Second, elaboration provides additional means through which the information can later be retrieved (Anderson, 1990, 1995); in a sense, it provides more places to look for the information. And third, elaboration may help with inferences about what the information was likely to have

[50]Ormrod (2008) gave elaboration a narrower definition by distinguishing elaboration from "meaningful learning." Both elaboration and meaningful learning involve making connections between new information and the things we already know. However, while meaningful learning is "a process of relating new material to knowledge already stored in long-term memory," elaboration does more than that: it "embellishes" on new information by adding interpretations, drawing inferences or assumptions using prior knowledge (p. 206; 357). Nevertheless, as Ormrod (2008) also points out, in most literature the two terms are used without differentiation.

been when the information itself cannot be accurately recalled (Anderson, 1990). (Ormrod, 2008, p. 207)

4.1.5.4 Mnemonics

Mnemonics[51] are, frankly speaking, memory "tricks" or strategies that facilitate the recall of hard-to-remember material. There are various types of mnemonics. Concerning the relevance to vocabulary learning, I will discuss the following: the loci method, peg method, and keyword method.[52]

The loci method (or method of loci, method of places – loci means places in Latin) is based on the assumption that people can best remember places that they are familiar with, such as their own house. Hence, if they can link the to-be-remembered information with a place that they know very well, the location will serve as a cue to facilitate recall.

This method needs a lot of mental visualization. For example, I need to remember the following shopping list:

ketchup, peaches, hot dogs, shaving cream, and ice cream

First, I visualize a place that I am most familiar with, and that will be my own house. I picture a series of locations in my home in logical order. For example, I picture the path I normally take to get from the front door to my bedroom. I begin at the front door, open the front door, enter the foyer, climb a few stairs up to the main floor, turn right into the hallway, and proceed through the hallway, walk pass the washroom, and then go into the bedroom. Next, I mentally position each item on the shopping list at one of the locations with the same order of the path.

[51]The term "mnemonic" is related to the Greek goddess of memory in Greek mythology (Haberlandt, 1999, p. 305).

[52]These three methods are included in Schmitt's (1997) vocabulary learning strategy taxonomy. For Schmitt, mnemonics also involve elaboration. See Chapter 4.3 for more description.

The mental images should be distinctive and vivid. For instance, I imagine the front door is all covered in ketchup, or there are huge peaches rolling down the stairs, or shaving cream is sprayed everywhere in the washroom. Later, when I want to remember the items, I simply visualize the path and go through the rooms in initial order in my mind. Each item that I associated with a specific location should spring to mind.

The loci method is also effective for remembering important points in a speech, names of people at an event or meeting, or things needing to be done. It is particularly useful when we need to remember things in a certain order.

The peg method (or pegword method) is another effective mnemonic for remembering a list of items. It also heavily relies on visual imagery. This method uses a well-known or easily-learned list of items that then serves as a series of pegs (hooks) on which the to-be-remembered list of items is "hung" through visual imagery (Ormrod, 2008, p. 368). For instance, the following rhymes are often used as pegs: One is a bun. Two is a shoe. Three is a tree. Four is a door, etc.[53]

Take the items on the shopping list above as an example again – ketchup, peaches, hot dogs, shaving cream, and ice cream; the first step is to memorize the words that rhyme with numbers (e.g., one with bun, two with shoe, and so on, as peg words). Then I must link each item of the shopping list with the pegs: the first item with a bun, the second item with a shoe, and so on. I could start out by visualizing putting ketchup on a bun, then imagine a pair of shoes with peaches in them. Later, when I got to the store and I think of one – bun –I will think of the ketchup I need to purchase.

The keyword method, developed by Atkinson and Raugh in 1975, is very well known for its effectiveness for learning foreign vocabulary. It is primarily a way of making a strong

[53]For a complete list of rhymes from one to ten, see Ormrod (2008), p. 368.

link between the form of an unknown word and its meaning. It involves two steps after the learner has met the unknown word and has found or been provided with its meaning:

The first step is that a learner finds a L1 word which sounds like the beginning or all of the target L2 word. This L1 word is the Keyword. The second step is for the learner to think of an image association between the meaning of the target word and the meaning of the keyword. For example: an English native speaker learning German wants to memorize the German word *Fenster* (window). In the first step, s/he could find an English word that sounds like *Fenster*, for example *fence* – this word is then the keyword. In the second step, the learner creates an image combining the two words *Fenster* (window) and *fence*, such as a window can be seen through the fence. When the unknown word is later heard, the sound similarity invokes the created image which prompts the L2 word's meaning. After the learner is familiar with the target word, the keyword will no longer be needed to recall the meaning (Nation, 2001).

Most of the studies on the key word method investigate its effectiveness for memorizing word meaning. Nevertheless, memorizing word meaning is not its only function. Studies (Desrochers, Gelinas, & Wieland, 1989; Desrochers, Wieland, & Coté, 1991) demonstrated that this method can be modified and used to acquire the grammatical gender of German nouns that carry no semantic or morphological cues.

Memorizing the gender of German nouns is a very hard task for many learners. All the participants of my survey mentioned that they have encountered great difficulties. We all know it is a matter of memorization. That is what the teachers usually say to the students, too: "well, you just need to memorize them." However, studies show that applying the modified version of the key word method will make memorization easier and more interesting.

The general principle of the modified version is to

> have the learners recode the gender tag so as to make it more concrete, and form a semantic link between the German noun and its recoded gender tag. A simple way of recoding the feminine, masculine, and neuter genders is to substitute the concept of a woman, a man, and an inanimate object, respectively, for them. This more concrete representation of the gender tag then can be included easily in the formation of a mental image. (Desrochers, Wieland, & Coté, 1991, p. 20)

For example, when learning the masculine German noun *Bottich* (tub), the learner with English as L1 can, first, associate *Bottich* with *bottle* (the key word) which is physically similar to the target word. Second, the learner creates a mental image that includes: 1) the German noun (*Bottich*), 2) the keyword (bottle), and 3) a male person to represent the grammatical gender of the noun, for instance, a man sitting in a tub and drinking from a bottle.

4.1.5.5 Affect and Motivation

Cognitive psychology has been criticized for its neglect of the affective aspects of mental processes. Yet affect is obviously influential for learning and cognition. Affect – generally defined as an individual's feelings, emotions and general moods – has various forms, such as happiness, anxiety, excitement, pride, sadness, depression, anger, fear, and guilt (Smith & Kosslyn, 2007, p. 330; Ormrod, 2008, p. 474). Affect is strongly interrelated to motivation. As defined in Smith and Kosslyn (2007), "motivation refers to the propensity to action that is a component of some affective responses. […] A primary function of emotion is to motivate action" (p. 329).

Research findings in contemporary psychology show that affect and motivation play a role in memory processes (Bower, 1994; Christenson & Thurlow, 2004; Hettena & Ballif, 1981;

Hertel, 1994; Isen, Daubman, & Gorgoglione, 1987; Pugh & Bergin, 2006; Schwarz & Skurnik, 2003). When people are in a good mood (e.g., when they feel happy or excited, rather than sad or depressed), less anxious and highly motivated, they are more likely to pay attention to information, relate it to things they already know and creatively elaborate on it (Ormrod, 2008, p. 475).

To summarize, in order to retain memory longer, memory researchers suggest that people should pay attention to the stimuli, rehearse the to-be-remembered information with time intervals, and elaborate the information. In addition to these memory enhancement methods, the influence of affect and motivation has been increasingly considered by contemporary cognitive psychologists. Research findings indicate that good moods and a high level of motivation lead to better cognitive engagement in the mental processes such as paying attention, rehearsal, and elaboration.

After a systematic exploration of human memory from the point of view of cognitive psychology, the next subchapter is devoted to mental lexicon which specifically focuses on the words in our mind from psycholinguistic perspectives.

4.2 Mental Lexicon

The mental lexicon[54] is, simply speaking, the "human word-store" (Aitchison, 2003, p. 10), the word repository in our brain. It is the part of long-term memory where our knowledge about all of the words – not only the words in L1 but also in L2 or in any other languages we know – is stored. The knowledge of words is referred to as the semantic memory in memory research (Stork, 2004, p. 69).

In this section, I will focus on the following question: How is meaning of words represented in the mental lexicon (4.2.1)? I will first look at the monolingual mental lexicon and then move on to the bilingual/multilingual mental lexicon. I will discuss the issue of whether the meaning representations in a bilingual/multilingual mental lexicon are organized differently from a monolingual mental lexicon (4.2.2). Research findings will be presented in the form of a summary. Nevertheless, investigating language learners' mental lexica is not the focus of my study. I do not intend to discuss the implications of the research findings on these issues for language learning.

4.2.1 Representations of Word Meaning in the Mental Lexicon

First of all, before I proceed to the representation of word meaning in the mental lexicon, I want to briefly discuss the question: What does the "meaning" of a word mean? For instance, what does it mean when people say they know the meanings of *bird*, *blue*, or *happy*? This issue has been a subject of debates in philosophy, psychology and linguistics, and the discussion can become very complex and obscure (Schmitt, 2000). In what follows, I will only outline the key aspects.

[54] "Lexicon" is "dictionary" in Greek. However mental lexicons share very little similarity with book dictionaries. For the difference between them, refer to Aitchison (2003), chapter 2.

Schmitt (2000) points out that at the most basic level, "meaning consists of the relationship between a word and its *referent* (the person, thing, action, condition, or case it refers to in the real or an imagined world)" (p. 23). The relationship is rather arbitrary and needs to be agreed by people within a group or a community (e.g., speakers of a language). For instance, a large and heavy animal with a prehensile trunk, long curved ivory tusks, and large ears could have been called (for example) a *muno* or a *bango* in English. Only agreement within the English speaking community that the described animal should be labelled as *elephant* gives this word any meaning. Nevertheless, the relationship between a word and its referent is not usually one to one. More often, the word refers to a class or category such as *dog*, *car,* or *flower*. There are various kinds of dogs, thus, the word *dog* cannot exactly describe each one; rather, it represents our "concept" of what a dog generally looks like (Schmitt, 2000). Hence, for most words, meaning is considered very closely related to its concept,[55] not to the referent.

A concept is a "mental representation that determines how things are related or categorized. It enables us to group things together, so that instances of a category all have something in common" (Harley, 1995, p. 176). Every word has an underlying concept, as Vygotsky (1965) stated, "from the point of view of psychology, the meaning of every word is a generalization or a concept" (p. 120).[56] Based on this idea, when individuals claim that they know the meaning of the word *rose*, it implies that they know the concept of *rose*, and

[55]The question of "what is a concept" and its relationship to word meaning has been discussed since the time of ancient Greek. A thorough discussion of it is beyond the scope of this thesis. Refer to Harley (1995), and Murphy (1991) for more discussion.

[56]However, "not all concepts are labelled by a word" (Harley, 1995, p. 176). As Aitchison (2003) points out, the meaning of a word overlaps "with the concept to a large extent, though not necessarily totally: the overall concept may extend beyond the sections labeled with a word" (p. 43)

furthermore, they are able to identify roses as roses, and to use the word *rose* only to refer to roses.[57]

In sum, "[t]o describe the meaning of a word, then, we need to describe the concept it represents" (Schmitt, 2000, p 23). In the sections below, I will outline the most discussed approaches/theories of meaning representation. I will first introduce the "fixed-meaning approach" (4.2.1.1 including "semantic feature analysis" and "feature list theory"), followed by descriptions of the "fuzzy-boundary approach" (4.2.1.2 including "prototype theory" and "exemplar theory"), the "semantic network approach" (including "hierarchy theory" and "spreading activation theory"), and finally "schema theory" (4.2.1.3).

4.2.1.1 Fixed-Meaning Approach

S**emantic feature analysis** (Bierwisch, 1970; Katz & Fodor, 1963, 1964) is regarded as a fix-meaning approach (Aitchison, 2003) because it argues that the meaning of a word can be decomposed into smaller units called semantic features. These features form the core meaning of the word and serve as a check list to identify whether an entity is an instance of the word.[58] Aitchison (2003, p. 45) gives the word "square" as an example. It has four features:

1. a closed, flat figure
2. having four sides
3. all sides being equal in length
4. all interior angles being equal

[57]Nonetheless, how do individuals identify a rose as a rose? How do they pick out an instance of rose in the environment? The answers involve the process of categorization. Categorization is a crucial and inevitable process in identifying a concept. Lakoff (1987, p. 5) describes it as follows: "There is nothing more basic than categorization to our thought, perception, action, and speech. Every time we see something as a kind of thing, for example a tree, we are categorizing. Whenever we reason about kinds of thing – chairs, nations, illnesses, emotions, any kind of thing at all – we are employing categories." Thus, the notions of meaning and of concept are closely bound to that of categorization.

[58]Hence, this approach is also termed as "check list theory" (Fillmore, 1975) or "decompositional theory" (Harley, 1995).

Each of these features is "necessary" so that the entity can be identified as a square, and when combined, they are "sufficient" to define a square, and only a square. In addition, an entity is either an instance of the concept or it is not, with nothing in-between.

Harley (1995) points out that this approach is useful for some domains where there is a clear-cut relationship between the concepts of the domain. For instance, in the concepts of kinship: *man, woman, boy,* and *girl:* the meaning of these four words can be captured by the combination of the features [human], [male], [female], [adult] (see Table 4.1 below).

Table 4.1. An example of semantic feature analysis.

	man	woman	boy	girl
human	+	+	+	+
male	+	–	+	–
female	–	+	–	+
adult	+	+	–	–

However, semantic feature analysis has been heavily criticized in that only very few words have a straightforward set of features that are common to all their members. Taking the word "bird" as an example: At first sight it seems easy to specify the critical attributes of "bird" as "animal," "can fly," "has feathers" and "has wings." Nevertheless, with these attributes, penguins and ostriches will not be identified as birds because they cannot fly.[59]

With regards to the problems described above, Rips, Shoben, and Smith (1973) and Smith, Shoben, and Rips (1974) proposed the **feature list theory** which suggests that there are two types of semantic features: defining features and characteristic features. The former are "essential to the underlying meaning of a word and relate to properties that things must have to be a member of that category (for example, a bird is living, it is feathered, lays eggs, and so

[59]For more problems of the semantic feature approach, refer to Aitchison (2003), Fillmore (1975), Geeraerts (1988), Harley (1995), and Kleiber (1998).

forth)," while the latter are "usually true of instances of a category but are not necessarily true (for example, most birds can fly but penguins and ostriches cannot)" (Harley, 1995, p. 186).

The essential problem of the feature list theory is that it assumes there are defining features that one can depend on to categorize. However, the boundary between concepts is often fuzzy. Sometimes there is no single set of defining features for a category that effectively includes all members of the category and excludes all items that are not part of the category. For example, among the items listed below, it is not easy to decide which one does not fit, and to agree on the defining and characteristic features that exclude this item:

> apple, pear, banana, pineapple, guava, orange, mango, cherry, pea, strawberry, raspberry, blueberry, grape, grapefruit, watermelon, cantaloupe, tomato, kiwi

4.2.1.2 Fuzzy-Boundary Approach

Contrary to the fixed-meaning approach, the fuzzy-boundary approach argues that the boundary between many concepts is not a clear-cut one. For instance, Berlin and Kay's (1969) research indicate that people did not agree on the borderline between the colors red and orange. Labov (1973) studied various participants' naming of drawings illustrating cups, mugs, vases, bowls with different heights, widths, the presence or absence of handle, etc. Certain items were classified easily as belonging to a certain category, while some borderline cases were not. In particular, when a certain item was filled with various things (i.e., in different context), it was named differently. For example, an item was called a bowl when it was seen empty or full of mashed potatoes. However, when it contained flowers, then it was called a vase; or a cup when it was filled with coffee. As Labov (ibid., p. 340) points out, "In any kitchen, there are many

containers that are obviously bowls, cups, mugs, and dishes. But there are others that might be called cups or might not; or might be a kind of cup, according to some, but a kind of dish according to others." Also, the context plays a role in how an item is categorized (Ormrod, 2008, p. 257).

Also, the fuzzy-boundary approach suggests that many concepts are difficult to classify in terms of necessary and sufficient features. "Objects can lack important features yet still be identified as positive instances of a particular concept" (Ormrod, 2008, p. 255). For example, a common feature of chairs is that they have four legs. But nowadays there are modern looking chairs which have only two or even just one leg. Is it appropriate not to categorize them as chairs? Hence, researchers supporting the fuzzy-boundary approach argue that members of the same category usually share "family resemblance" (*Familienähnlichkeit*, Wittgenstein, 1958), that is, category members may share some of the characteristic features, but it is not necessary for each member to have all of the features.

However, if concepts have fuzzy boundaries, how does an individual cope with categorization? That is, how does an individual identify an item as a member of a concept? According to **prototype theory,** put forward by the psychologist Eleanor Rosch in the 1970s (Rosch, 1973a, 1973b, 1974, 1975a, 1975b, 1977, 1978; Rosch & Mervis, 1975; Rosch et al., 1976), human beings do not rank all members of a category equally: There are best, not so good, and bad examples. Further, people categorize an object by matching it against the prototype, "the best or most representative member of the category" (Nairne et al., 2004, p. 316). Prototype theorists believe that people store "abstract representations of category prototypes in long-term memory and use them to help decide category membership" (ibid., p. 316). For instance, in North America, most people might consider a robin the prototype of the

category *bird*, while canaries and doves are often considered less "birdy," owls and ducks are bad birds, and a penguin is a very bad bird. Hence, when they are asked to decide whether a creature is a bird at all, they might analyze the characteristics of robins and allow anything which sufficiently resembles it to belong to the category *bird*. This explains how humans deal with untypical or damaged examples, for instance, why ostriches, emus and one-legged blackbirds can be accepted as birds: because they have at least one feature in common with the prototype (Aitchison, 2003).

Although prototype theory provides powerful explanations for some problems that the semantic feature analysis cannot solve, it is not a "magic solution," especially when it comes to cope with a polysemy, a word with a number of distinct, yet related meanings, such as *over* which has about six different meanings depending on the context (Lakoff, 1987). The question remains: how is it possible to decide which meaning is more prototypical than the others? Even when it is possible to agree that a certain meaning is most prototypical, it is not uncommon that the other meaning has nothing in common with it. Thus, why do the meanings belong to the same concept? How are the meanings related to each other?[60]

Furthermore, prototype theory does not cope well with conceptual combinations such as *pet fish*. Osherson and Smith (1981) showed that while cat was the best representative of the category *pet*, and trout the prototype of the category *fish*, the best example of the category *pet fish* was goldfish (which is a fairly atypical members of the category *fish*).

Comparing with a prototype is not the only way people categorize. Based on **exemplar theory** (Carmichael & Hayes, 2001; Reisberg, 1997; Ross & Spalding, 1994), people also match the object to all of the exemplars (examples), rather than to the single prototype of a

[60]For a detailed description of prototype theory and thorough discussions about the problem with polysemy and its probable solutions, refer to Aitchison (2003), Kleiber (1998), Lakoff (1987), Taylor (1995).

given category. “If the object is similar to many examples in a particular category, then we would categorize the object as a member of that category” (Nairne et al., 2004, p. 316). Ormrod (2008) takes the concept *fruit* as an example:

> Consider the concept fruit: Many things are likely to come to mind here: Apples, bananas, grapes, mangos, and kiwifruit are all possibilities. If you encounter a new instance of fruit – a blackberry, let’s say – you could compare it with the variety of exemplars you have already stored and find one (a raspberry, perhaps) that is relatively similar. (p. 258)

However, exemplar theory is relatively new in the concept categorization research. At this stage, its impact for meaning representation in the mental lexicon still needs more exploration.

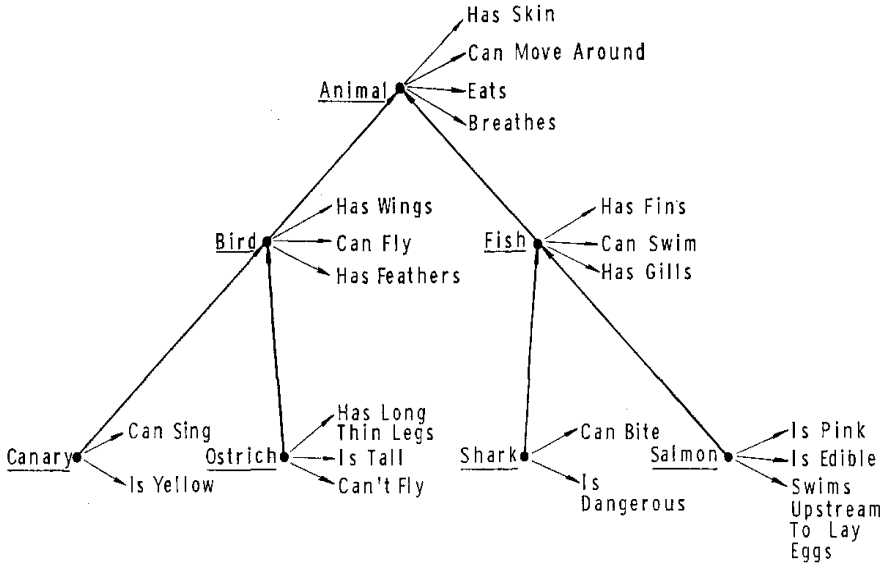
4.2.1.3 Semantic Network Approach

The essential idea of the **semantic network approach** is that “the meaning of a word is embedded within a network of other meanings. [...] knowledge is given meaning only by the way in which it relates to other knowledge” (Harley, 1995, p. 179). As Aitchison (2003) stresses, “Words cannot be treated as if they were a swarm of bees – a bundle of separate items attached to one another in a fairly random way. They are clearly interdependent” (p. 75). The question is this: How are meanings linked to each other from the network point of view?

An early view regarding meaning organization in a network was that concepts were linked as a **hierarchy** (Collins & Quillian, 1969, 1972), with more general, superordinate concepts at the top of the hierarchy (e.g., *animal*) and more specific, subordinate concepts below it (e.g., *bird, fish*). Each concept is a “node.” Connected to each node are semantic

features, such as “has skin” and “can move around” for “animal” (see Figure 4.5 for an illustration of the hierarchy).

Figure 4.5. Illustration of the hierarchical network in Collins and Quillian (1969, p. 241).



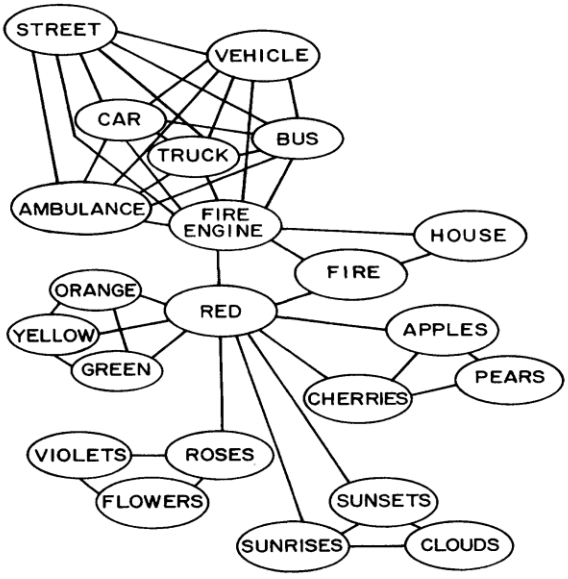
Collins and Quillian (1969) conducted an experiment concerning the relationship between retrieval time and concept hierarchy. Participants were asked to verify the following sentences: “A canary is a canary.” or “A canary is a bird” or “A canary is an animal,” and their reaction times to each of the sentences were recorded.[61] Collins and Quillian assumed: first, it takes time to move up a level in a hierarchy (e.g., from *canary* to *bird*, or from *bird* to *animal*). Second, one can move one level at a time. One step is dependent on completion of another step. Hence, it takes two steps to move from, for instance, *canary* to *animal*. Third, the time for the moving-up processes is additive. Hence, the more levels there are to move up, the longer it takes. For example, it takes longer to move from *canary* to *animal* than from *canary* to *bird*, because the former process takes two steps (i.e., from *canary* to *bird*, and then from *bird* to *animal*). The result of the study showed that these predictions were correct. However, Collins

[61]This is an example of the sentence verification task which was commonly used in semantic memory research. The reaction time is an index of the difficulty in making the decision.

and Quillian's (1969) methodology was heavily criticized and the results were regarded as unsubstantiated.[62] The model is regarded as too inflexible and makes more logical than psychological sense. Overall, researchers do not agree that concepts are always represented in hierarchy.

Collins and Loftus (1975) proposed a **spreading activation theory** as a revision to Collins and Quillian's (1969) hierarchy model. Like the hierarchy theory, each concept is assigned a node and is connected with every other. However, the nodes in spreading activation theory are not hierarchically organized; instead, they are linked together based on semantic relatedness (similarity). The lines (or paths) have varying lengths (strength) which reflect the semantic relatedness: the more closely related concepts are linked closer together within the network (see Figure 4.6 below). The length of the lines between the concepts can be determined by taxonomy and/or by typicality. According to the theory, when someone sees, hears, or thinks of a certain concept, the node assigned to this concept is activated, and this activation spreads out along the paths to concepts that are closely related.

Figure 4.6. Spreading activation theory by Collins and Loftus (1975, p. 412).



[62]Refer to Rips et al. (1973), Harley (1995), Aitchison (2003) for criticisms of hierarchy theory.

4.2.1.4 Schema Theory

S**chema theory**, originally put forward by Bartlett (1932),[63] also plays a role in concept/meaning representation in the mental lexicon. A schema is "an organized cluster of knowledge about a particular object or event abstracted from previous experience with the object or event" (Weiten, 2004, p. 273). Bartlett argues that our memory is not only affected by the information that is presented at hand, but also by our prior knowledge that is connected to the information, i.e., by the schema. A schema can be activated by a word itself in isolation or by the context it is embedded in. If there is not enough context to activate a schema, then the mind hypothesizes a probable one. (Schmitt, 2000, p. 28). For instance, there is the concept of "a professor's office": Brewer and Treyens (1981) tested the recall of 30 students who had visited an office which they believed to belong to a professor. Most students recalled correctly things that were typically seen in an office, such as desks and chairs. A few students remembered items that did not usually appear in an office, such as a wine bottle or a tennis racket. The most interesting results were that nine students falsely recalled books that were actually not there.

In sum, with regard to how people represent word meaning in the mental lexicon, it is very possible that people categorize in more than one way, because the human mind is very flexible. I agree with Ormrod (2008) that "we do not necessarily need to choose just one theory as being the 'right' one to the exclusion of the others" (p. 259). In my view, it is more important to bear in mind that the words do not exist in isolation in our mental lexicon; they are connected to each other in complex ways.

[63]Schema theory was originally developed by Bartlett to explore the constructive nature of long-term memory. It was then further developed by Anderson (1995), Anderson et al. (1977), Minsky (1975), Rumelhart (1980), Rumelhart and Ortony (1977) and has an influence on script theory by Schank and Abelson (1977), Schank and Kass (1988).

4.2.2 L1 vs. L2 Mental Lexicon: Integrated or Separate?

Bilingualism or multilingualism is a very common phenomenon (Romaine, 1995). In fact, all of the six research participants in my study had knowledge of at least one other language beside English: All of them had learned French at some point before they started the undergraduate studies at the University of Waterloo. Two of them had also learned Spanish as well. German was the second or third foreign language for them.[64] Therefore, after exploring the representation of meaning from the perspectives of the monolingual mental lexicon, I think it is essential to look at the organization of meaning in the bilingual mental lexicon, and ask two questions. First, do bilinguals represent their languages in separate or common memory systems? In other words, how many lexicons does a bilingual speaker possess? Second, is there a separate and independent system for each language, or just one common system? These questions have been investigated for more than half a century (since Weinreich, 1953[65]). Various theories/models have been proposed including separate storage model, common storage model, and distributed model. In the following, I will briefly describe each of these models.[66]

The **"**separate storage model" (or independent storage model; Grosjean, 1982) holds that each language of a bilingual has its own system, and that each system is independent

[64]Some of the participants therefore can be regarded as multilinguals, not just bilinguals. In bilingualism research, the term bilingual is also used to refer to the individuals with two or more languages. Hence, I will follow convention and use the term "bilingual" here as well. Nevertheless, it is worth mentioning that some researchers have called for the term "multilingual" to refer to an individual with two or more than two languages. (e.g., Cenoz, Hufeisen, & Jessner, 2003).
Also, I do not intend to discuss the issue of whether it is appropriate to regard the participants in my study as bilingual or multilingual, because there has not been a consensus of what an "ideal" bilingual or multilingual is with regard to the degree of language proficiency. Refer to Romaine (1995, Chapter One) for more discussions on this issue.

[65]According to Meara (1982, p. 14), "Weinreich (1953) is attributed as the first major researcher to classify bilinguals as having lexical entries which were either compound (one concept with two words) or coordinate (two concepts and two words).

[66]For a detailed review of the research on this topic, refer to Albert and Obler (1979), McCormack (1977), Meara (1982), and Singleton (1999).

(separate). Hence, each system has its own separate sets of phonemes, rules, and words. Also, because the systems are independent from each other, information processing in one language does not automatically affect processing in the other language. The "common storage model" (Green, 1986; Jessner, 1996; Kirsner et al., 1984) suggests that there is no separate storage for each language. Elements of the second language are simply stored with those of the first language. The "distributed model" (De Groot, 1993, 1995; De Groot & Nas, 1991; Jin, 1990) proposes neither a single nor a separate representational system, but rather a "mixed" representational system, "where concrete words and words perceived as cognates across the two languages are stored in a 'compound' manner, whereas abstract words and non-cognates in the respective languages are stored in a 'co-ordinate' manner," describes Singleton (1999, p. 172). That is, concrete words and cognates have relatively shared storage, whereas abstract and non-cognates have relatively separate storage. In other words, word type plays an important role in this model.

Singleton (1999) reviews a wide spectrum of research investigating the models. Each of the models has received support as well as criticism regarding the methodologies used in the studies. Singleton (1999) concludes that:

> It appears from the evidence reviewed that L1 and L2 lexis are separately stored, but that the two systems are in communication with each other – whether via direct connections between individual L1 and L2 lexical nodes, or via a common conceptual store (or both). It also seems likely, on the basis of the current state of research, that the relationship between a given L2 word and a given L1 word in the mental lexicon will vary from individual to individual, depending on how the words have been acquired and how well they are known, and also on the degree to which formal and/or semantic

similarity is perceived between the L2 word and the L1 word in questions. (ibid., pp. 189-190)

4.3 Implications for Foreign Language Vocabulary Learning

In the previous sections, I have presented various theories/models from memory and mental lexicon research in psychology. In the final section of this chapter, I focus on their probable implications for learning vocabulary in a foreign language and for my study. The discussion will focus on the following points:

- the role of attention/noticing in vocabulary learning
- rehearsal and distributed practice
- elaboration and vocabulary learning strategies

4.3.1 The Role of Attention/Noticing in Foreign Vocabulary Learning

Research findings in psychology indicate that paying attention/noticing is the basic condition for information to be remembered. This view has been supported by researchers in the field of foreign vocabulary learning and SLA. For instance, Nation (2001) views "noticing" as one of the general processes which encourage learning and lead to a word being remembered: "[L]earners need to notice the word, and be aware of it as a useful language item" (p. 63). Schmitt (1995) reviews a series of studies and concludes that "[n]ot all learning is deliberate or intentional (for example, it is clearly possible to learn vocabulary through extensive reading, without a clear intention to learn new words), but all learning does require attention (if readers do not pay attention to new words when they encounter them, they will not learn them)" (p. 1).

Nation (2001) also indicates that noticing could occur when learners are reading or listening. They could notice that a word is new, and then look it up in a dictionary, guess from context, or have a word explained to them. Noticing could also occur when learners are deliberately studying words. For instance, they could notice that although some foreign words sound similar to their L1 equivalents, they are spelled differently (e.g., *Schuh* in German and *shoe* in English; or *Bier* and *beer*), and employ a certain strategy (or strategies) on the basis of this 'discovery' to remember the word. In sum, noticing plays a role in learners' use of vocabulary learning strategies. Hence, in my study, I will pay attention to what the participants notice when they are studying words as well as what they do not notice.

Also, as shown previously, features of stimuli (such as the size, intensity, novelty, oddity, motion, personal significance … and so on) may affect our attention to them. For vocabulary learning, it means that the salience of words in the textual input may play an important role in whether a word will be noticed or not (Nation, 2001). Bearing this point in mind, when I introduce the textbook *Vorsprung* and analyze it in Chapter Five of this thesis, I will attend to how words are presented in the textbook.

4.3.2 Rehearsal (Repetition) and Distributed Practice

In memory research, multi-store memory theorists believe that maintenance rehearsal is efficient enough for keeping information in working memory as well as in long-term memory, while the levels of processing approach proposes elaborative rehearsal (see Chapter 4.1.5.2). Nevertheless, study findings further show both types of rehearsal will be effective only if rehearsal is distributed, not crammed into a very short period of time, usually the day before

the exams for many students. The general principle behind the distributed practice is that "the older a piece of learning is, the slower the forgetting" (Nation, 2001, p. 77).

This finding has also been strongly supported by researchers in foreign language vocabulary learning (e.g., Bahrick, 1984; Bahrick & Phelps, 1987; Bloom & Shell, 1981; Dempster, 1987). However, the key question is: do language learners know about this valuable and useful information? Do they know they should repeat the learning material immediately after initial learning and then at gradually increasing intervals, for instance, five to ten minutes after learning, then 24 hours later, a week later, a month later and finally 6 month later (Takač, 2008)? This question is also of interest to my study. Hence, in the interviews, I will specifically ask my participants about how often they repeat the learning material (if they use the repetition as a strategy for memorization), and whether they schedule the repetition at all.

4.3.3 Elaboration and Vocabulary Learning Strategies

In the memory research literature, it is generally agreed that elaboration – connecting the to-be-remembered information to prior knowledge in memory – results in longer memory retention. Also, it is essential that the connections are meaningful. It is important to bear in mind that, generally, human memory research on elaboration focuses on information seen in our everyday life, such as numbers, names, or items in a room. Also, the stimuli used in the empirical studies are usually presented in the participants' native language.[67] In other words, human memory research does not focus on language learners and how they deal with words in foreign languages. Thus, it is important to consider and investigate whether the memory

[67]Furthermore, it is not uncommon that the empirical studies were carried out on medical patients who were traumatized or physically injured, and had thus lost their memory (amnesia).

theories can also be applied to foreign vocabulary learning, and how foreign language learners use elaboration to remember words they have encountered.

Further, the term elaboration is very broadly defined and used in psychology. I believe it is necessary to illustrate more concretely what this term refers to in vocabulary learning, i.e., what (kind of) vocabulary learning strategies involve elaboration? To do so, I first look into various classifications of language learning strategies and of vocabulary learning strategies in which this term has been used or defined.

O'Malley and Chamot (1990) classified elaboration under cognitive strategies which involve "interacting with the material to be learned, manipulating the material mentally or physically, or applying a specific technique to a learning task" (p. 138). They defined elaboration as follows: "relating new information to prior knowledge, relating different parts of new information to each other, or making meaningful personal associations with the new information" (p. 138). From their think-aloud data, eight different types of elaboration were identified (p. 138):

1. Personal elaboration: making judgments about or reacting personally to the material presented.
2. World elaboration: using knowledge gained from experience in the world.
3. Academic elaboration: using knowledge gained in academic situations.
4. Between parts elaboration: relating parts of the task to each other.
5. Questioning elaboration: using a combination of questions and world knowledge to brainstorm logical solutions to a task.
6. Self-evaluative elaboration: judging self in relation to materials.
7. Creative elaboration: making up a story line, or adopting a clever perspective.

8. Imagery: using mental or actual pictures or visuals to represent information.[68]

In Oxford (1990), the term elaboration was synonymous with "association" and was viewed as a way of creating mental linkages which is classified as a memory strategy, not cognitive strategy (refer to footnote 21 in Chapter Three for Oxford's definitions of memory strategy and cognitive strategy). Table 4.2 below shows the categorization of memory strategies.

Table 4.2. Memory strategies in Oxford (1990). Source: Oxford (1990, p. 39).

Memory strategies	A. Creating mental linkages	1. Grouping
		2. Associating/Elaborating
		3. Placing new words into a context
	B. Applying images and sounds	1. Using imagery
		2. Semantic mapping
		3. Using keywords
		4. Representing sounds in memory
	C. Reviewing well	1. Structured reviewing
	D. Employing action	1. Using physical response or sensation
		2. Using mechanical techniques

Oxford defined association/elaboration as "relating new language information to concepts already in memory, or relating one piece of information to another, to create associations in memory" (ibid., p. 41). Associations can be made between two items, such as "bread and butter," or between multiple parts, such as "school-book-paper-tree-country-earth." The bottom line is that these associations "must be meaningful to the learner" (ibid., p. 41).

[68]O'Malley and Chamot (1990, p. 138) point out that imagery is sometimes classified as a separate category, but is viewed as a form of elaboration.

However, Oxford also points out that the strategies "placing new words into a context,"[69] "using imagery,"[70] "semantic mapping,"[71] "using keywords," and "representing sounds in memory"[72] all involve association/elaboration, too.[73]

In Schmitt's (1997) taxonomy no group of strategies was directly labelled as elaboration. Nevertheless, he indicated that *most* (i.e., not all) of the memory strategies in his taxonomy involve "relating the word to be retained with some previously learned knowledge, [it is] the kind of elaborative mental processing" (pp. 211-212; Table 4.3 below demonstrates all the memory strategies from his taxonomy). His words imply that most memory strategies in his taxonomy can be viewed as elaboration. However, his words are also ambiguous: Schmitt did not concretely point out which memory strategies *do not* involve elaboration. Hence, it is left for the reader to judge which strategy involves elaboration and which does not. Nonetheless, it is not always easy to do so. It is not difficult to classify certain strategies as elaboration because they are well-known mnemonics involving elaboration such as the key word method, peg method, and loci method (see sections 4.1.5.3 and 4.1.5.4). But some other strategies are difficult to judge. For instance, can "configuration" be regarded as elaboration?

[69] "Placing a word or phrase in a meaningful sentence, conversation, or story in order to remember it" (Oxford, 1990, p. 41).

[70] "Relating new language information to concepts in memory by means of meaningful visual imagery, either in the mind or in an actual drawing" (ibid., p. 41).

[71] "Making an arrangement of words into a picture, which has a key concept at the center or at the top, and related words and concepts linked with the key concept by means of lines or arrows" (ibid., p. 41).

[72] "Remembering new language information according to its sound. This is a broad strategy that can use any number of techniques, all of which create a meaningful, sound-based association between the new material and already known material" (ibid., p. 42).

[73] In my opinion, Oxford's classification of memory strategies is rather confusing. First, there is an overlap between "creating mental linkages" and "applying images and sounds." The latter is also to a certain extent a way of creating mental linkages. Secondly, based on her definitions of elaboration, I think it would be more comprehensible if the five strategies – "placing new words into a context," "using imagery," "semantic mapping," "using keywords," and "representing sounds in memory" were categorized simply under "elaboration," not under "creating mental linkages" and "applying images and sounds."

Table 4.3. Memory strategies in Schmitt's (1997) vocabulary learning strategy taxonomy

Memory strategies	Study word with a pictorial representation of its meaning Imagine word's meaning Connect word to a personal experience Associate the word with its coordinates Connect the word to its synonyms and antonyms Use semantic maps Use scales for gradable adjectives Peg Method Loci Method Group words together to study them Group words together spatially on a page Use new word in sentences Group words together within a storyline Study the spelling of a word Study the sound of a word Say new word aloud when studying Imagine word form Underline initial letter of the word Configuration Use Keyword Method Affix and root (remembering) Part of speech (remembering) Paraphrase the word's meaning Use cognates in study Learn the words of an idiom together Use physical action when learning a word Use semantic feature grids

To summarize, all of the three studies basically agree on the definition of elaboration: relating new information to prior knowledge in memory. O'Malley and Chamot (1990) identified numerous types of elaboration from empirical studies of language learning strategies, while Schmitt (1997), by reviewing research literature, presented a list of vocabulary memory strategies which contain many elaboration strategies (although it is not clear which strategies do not involve elaboration). However, none of the studies specifically look into the process of elaboration during vocabulary study and/or its effectiveness for vocabulary learning. How do students connect new information to prior knowledge to remember words? How are

elaboration strategies carried out? Is elaboration helpful for learning vocabulary in a foreign language? My study aims to answer these questions. In the next chapter, I will provide a detailed account of the context and the methodology of my empirical multiple case study.

Chapter Five: The Study – Context and Methodology

My study aims to gain insight into adult learners' vocabulary learning processes by looking at their use of vocabulary learning strategies. The objective of the study is to investigate the following key questions:

1. What vocabulary learning strategies do the individual learners *report* they usually use to find out the meaning of unknown words and to consolidate the spelling and meaning of the words they have encountered?
2. What vocabulary learning strategies do the individual learners *actually* use to find out the meaning of unknown words and to consolidate the words in the vocabulary study activities?
3. How do the individual learners apply the vocabulary learning strategies for the purposes mentioned above?
4. What are the differences between the individual learners' use of vocabulary learning strategies?

In order to do so, I conducted a qualitative multiple-case study in a context of a German language course for beginners (German 101 Elememtary German I; henceforth, I will cite it as GER 101) in the fall term of 2006 (September-December, 2006) at the University of Waterloo, Ontario, Canada. Full ethics clearance for this research was received (ORE # 12842).

This chapter deals with all the issues involved in the research design of this study. It aims to describe in detail how the data were collected and analyzed. For a better understanding of the research context, I will begin with a brief introduction of the German language course (5.1). Next, I will describe the usage and presentation of vocabulary in the first three chapters of the textbook *Vorsprung* (5.2), following this by a description of the data collection

procedure (5.3) and of the materials designed for the study (5.4). The last part of the chapter is devoted to the data analysis (5.5).

5.1 The Language Course

As previously mentioned, the research was carried out in a GER 101 course (section three) provided by the Department of Germanic and Slavic Studies at the University of Waterloo during the fall semester of 2006. GER 101 is designed for beginners only[74] and had seven sections in total in that semester. Section three had 24 students and was taught by an instructor who is a German native speaker. The textbook used for all the German language courses was *Vorsprung* (Lovik et al., 2002). Only chapters 1 to 3 are taught in GER 101.

Students meet four times a week (Monday, Wednesday, Thursday, and Friday for the students in section three) for 12 weeks, and each time for 50 minutes. Of the four times, three meetings take place in a regular classroom, and one (Thursday) in the language laboratory. According to the course syllabus, the main goal of this beginner's course is to "equip students with a basic ability in German," i.e., students

- learn to comprehend and speak German with a good degree of accuracy,
- learn to read and understand the main content of simple German texts, and
- learn to write basic German.[75]

In other words, all four skills – listening, speaking, reading and writing – are covered. The syllabus also stresses "a style of language learning in which communication plays a key role," i.e., the course is designed to help the students to develop the ability to communicate in

[74]In the course syllabus, it is indicated that "GER 101 is not open to students with Ontario High School Grade 12 German, OAC, or equivalent."
[75]Information source: German 101 course outline. Available on the Germanic and Slavic Studies departmental website: http://germanicandslavic.uwaterloo.ca/courses/german_courses.html

German; teaching grammar and language structures is not the primary or only focus of this course.

The language laboratory contains 24 multi-media computers with audio equipment (e.g., headsets). Here, the instructor assigns students different audio, video, or multi-media exercises that are to be accomplished during the laboratory time.

In order to assess students' progress, during the semester, at regular intervals, students are required to write four quizzes in the classroom, four tasks in the laboratory, and a midterm exam (which takes place approximately in the 8th week of the semester). Towards the end of the term, there is also a test which mainly assesses students' ability to comprehend spoken German; a speaking test which is a combination of a skit usually involving two students and a spontaneous question-answer session; and finally, a 2.5-hour written final exam that tests their abilities to understand and to use structures and vocabulary acquired during the semester.

5.2 The Textbook *Vorsprung*

In the present section, I will describe the language textbook *Vorsprung* (Lovik, Guy, & Chaves, 2002, 2nd edition, Instructor's Annotated Edition; henceforth, I will cite it as *Vorsprung*) with a focus on vocabulary and vocabulary learning strategies.[76] I will first introduce the structure of the textbook. Then, I will explore how the vocabulary is introduced to learners and look at whether any suggestions or guidance for vocabulary learning strategies

[76]Accompanying the text are a Workbook/Lab Manual, an Audio program, the *Unterwegs* video, and Computer Study Modules. The audio program and the *Unterwegs* video are to be found on UW language lab website and in the computers in the language laboratories. Students can either go on the language laboratory website or go to the language laboratory to use these multi-media materials. To limit the scope of my analysis, I will focus only on the textbook itself. Also, because GER 101 only covers Chapters One to Three of *Vorsprung*, I will examine mainly these three chapters.

are provided to the students to learn the vocabulary. I will also examine whether there are any exercises designed specifically for developing vocabulary learning strategies.

According to the description of "Teaching German with *Vorsprung*" in the textbook preface, *Vorsprung* is

> a complete first-year program designed for beginning students of German. It offers a communicative introduction to the German language and culture and provides beginning German students with the necessary skills for successful communication in today's rapidly changing world by exposing them to a wealth of spoken and written authentic textual materials. (Lovik et al., 2002, p. xi)

The book contains 12 chapters, "each focusing on a different aspect of German culture" (ibid.). Each chapter begins with a photo, which serves as a preview of the cultural theme of the chapter. All chapters (except Chapter One and Eleven) are divided into three major sections: 1) *Anlauftext* (warm-up text) − a text illustrated in comics and recorded on the audio program. It presents a storyboard that runs throughout the book and tells the story of Anna Adler, an American student who is going to study at the University of Tübingen, Germany, for a year and meet her German relatives living in Weinheim, Germany. 2) *Absprungtext* (take-off text) − an authentic written text such as advertisements, brochures, letters, short stories, etc. 3) *Zieltext* (target text) − an authentic listening text recorded on the audio program. It incorporates "the structures and vocabulary of the chapter in a free flowing dialogue" (*Vorsprung*, p. xiii). Most of the activities in the chapters are closely related to these texts. Table 5.1 below provides an overview of the organization of the chapters.

Table 5.1. Basic organization of the chapters in *Vorsprung.*

Opening photograph		
Anlauftext section	*Vorschau* (Preview activities)	*Thematische Fragen* (Thematic questions)
		Wortdetektiv (Word-detective)
	Anlauftext	
	Rückblick (Follow-up activities)	*Stimmt das?* (True or false?)
		Ergänzen Sie. (Fill-ins)
		Kurz gefragt. (Short-answer questions)
	Strukturen und Vokabeln (Structure and vocabulary)	
Absprungtext section	*Vorschau* (Preview activities)	*Thematische Fragen* (Thematic questions)
		Wortdetektiv (Word-detective)
	Absprungtext	
	Rückblick (Follow-up activities)	*Stimmt das?* (True or false?)
		Ergänzen Sie. (Fill-ins)
		Kurz gefragt. (Short-answer questions)
	Strukturen und Vokabeln (Structure and vocabulary)	
Zieltext section	*Vorschau* (Preview activities)	*Thematische Fragen* (Thematic questions)
		Wortdetektiv (Word-detective)
	Zieltext	
	Rückblick (Follow-up activities)	*Stimmt das?* (True or false?)
		Ergänzen Sie. (Fill-ins)
		Kurz gefragt. (Short-answer questions)
Wortschatz (Vocabulary List)		

Most of the three major sections begin with the *Vorschau* (preview activities) which include activities like *thematische Fragen* (thematic questions) and *Wortdetektiv* (Word-detective). The *thematische Fragen* (thematic questions) activity aims to help students

"activate prior knowledge of themes, vocabulary, and structures before listening to the *Anlauftext*." The *Wortdetektiv* (Word-detective)[77] is a word matching activity which tries to "help students focus on synonyms and build their active vocabulary base" (Lovik et al., 2002, p. xi). On the left hand side, several German words selected from the major texts (i.e., *Anlauftext, Absprung*text, or *Zieltext*) are listed, while the possible English equivalents are seen on the right hand side. Students are asked to draw a line from the German word to its logical English equivalent (see Figure 5.1 below).

Figure 5.1. The *Wortdetektiv* activity in Chapter Three (Souce: Lovik et al., 2002, p. 80)

Deutsch	***Englisch***
1. verstehen	a. to eat
2. das Gepäck	b. to bring along
3. mit·bringen	c. to understand
4. essen	d. luggage
5. wandern	e. to hike
6. trinken	f. pork
7. bleiben	g. to wear
8. der Bahnhof	h. to stay
9. das Schweinefleisch	i. to drink
10. tragen	j. train station

After these warm-up activities, the texts are introduced. Vocabulary that has been briefly encountered in the warm-up activities will be seen and heard again, but now they are presented within a context, not in isolation as in the *Wortdetektiv* activity. Usually, the instructor presents the texts to the students more than once. Taking the *Anlauftext* in Chapter Three as an example: First, the students listen to the text in audio recording only, without the book. Then, the students can read the text while listening to the recording again. Finally, the instructor models the sentences of the text and explains the content to the students.

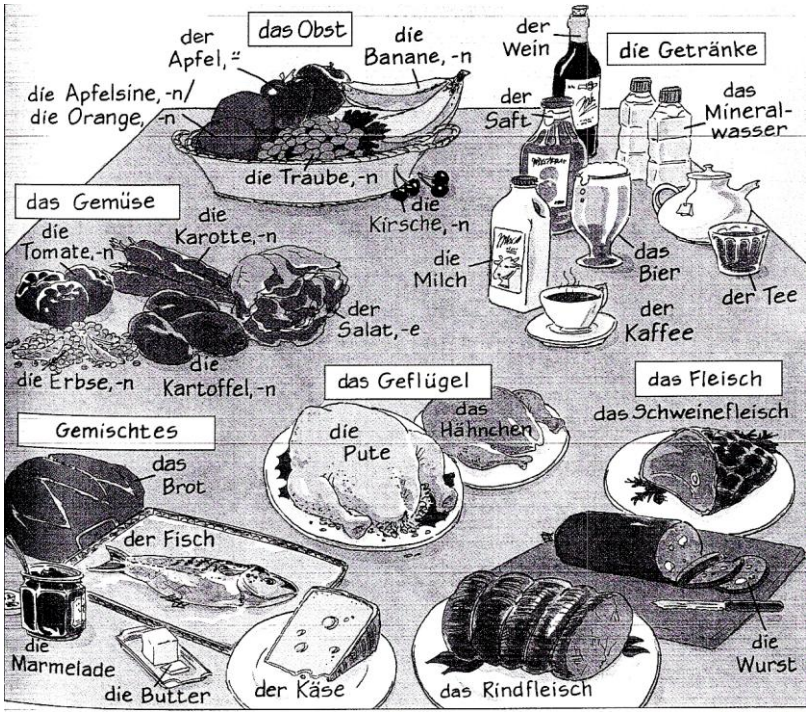
[77]Beginning with Chapter Four, *Wortdetektiv* is replaced by Satzdetektiv (Sentence detective activity) Strukturen und Vokabeln do not appear in the division of *Zieltext*, only in that of *Anlauftext* and *Absprungtext*.

After the texts are presented, students move on to the section of *Rückblick* (follow-up exercises) containing various activities that guide students "from initial comprehension of the text to personalization of the topics in the text" (ibid., p. xii). For example, the *Stimmt das?* (True or false?) activity "provides a quick check of the content to determine how much of the text students understood"; the *Ergänzen Sie* (Fill-ins) activity requires students to focus on vocabulary in the context of the text; the *Kurz gefragt* (Short-answer questions) activity "guides students to produce more complete statements about the text" (Lovik et al., 2002, p. xii).

The Rückblick section is usually followed by *Strukturen und Vokabeln* (Structures and Vocabulary).[78] As the name suggests, this section focuses on grammar structures and vocabulary. Grammar structures are explained in English. As for vocabulary, it is presented in the parts called *Wissenswerte Vokabeln* (vocabulary worth knowing) where "[g]roups of thematically related words and phrases are presented in richly illustrated format" (ibid., p. xii). By "richly illustrated format," the authors mean that words are illustrated with images such as pictures or drawings (see, for instance, Figure 5.2 below: the vocabulary of food).[79]

[78] *Strukturen und Vokabeln* do not appear in the *Zieltext* section, only in that of *Anlauftext* and *Absprungtext*.
[79] The original picture in the textbook is in color.

Figure 5.2. Wissenswerte Vokabeln: Lebensmittel (food). (Lovik et al., 2002, p. 95)



Presenting words in semantic groups is intended to facilitate learning. As described previously, according to the **spreading activation theory** by Collins and Loftus (1975), each concept is connected with the others based on semantic relatedness (see 4.2.1.3). Sometimes, there is a annotation for the instructor on how to demonstrate the vocabulary to the learners. For instance, beside the picture of *Lebensmittel* (Figure 5.2 above), the following short note is given to the instructor: "Model the pronunciation of each food item while pointing to the matching picture. Ask Ss [students] for ingredients of dishes: Was ist in Cappuccino? In Spaghetti? Auf Pizza?" (*Vorsprung*, p. 95)

Nonetheless, I want to point out that, in general, vocabulary in *Wissenswerte Vokabeln* is introduced mainly to practice the grammar structures. Take the vocabulary of food in Figure 5.2 above again as an example: it is introduced to practice the use of the modal verb *möchten*

(would like to), the structure *Verb+gern* (to like to…), or the structure *Verb+lieber* (rather), such as:

Möchtest du lieber Cola oder Kaffee (trinken)?

(What do you prefer (to drink), coke or coffee?)

Ich möchte lieber Kaffee (trinken), und du?

(I prefer (to drink) coffee, and you?)

Was isst du gern? Ich esse gern Salat.

(What do you like to eat? I like to eat salad.)

In other words, grammar is the major concern and focus, not vocabulary. In my opinion, when vocabulary is introduced in this way in the textbook, it could make instructors focus mainly on grammar when planning a syllabus for teaching, and make learners believe vocabulary is less important and ignore the significant role of vocabulary in language learning.

Each chapter ends with *Wortschatz*, a vocabulary list that presents German-English word pairs. It includes all active words and expressions taught in the chapter. According to the textbook preface, *Wortschatz* is organized by semantic fields (e.g., *Das Essen* [the food], *Freizeitaktivitäten* [free time activities] in Chapter Three). However, based on my examination, *Wortschatz* is not always organized by semantic fields. For instance, in both chapters Two and Three, words are also categorized by parts of speech (i.e., *Verben* [verbs], *Adjektive und Adverbien* [adjectives and adverbs]) and by the source of the words (i.e., *Aus dem Zieltext*). There is also a category called *Andere Wörter* (other words) where words such as *auch, dein(e), ein* … etc. are listed. The category *Ausdrücke* (expressions) also appears several times on the list. From my point of view, the organization of the list is fairly confusing and makes it difficult to use it as a reference material.

At the end of the textbook, there are two long vocabulary lists as well. One is from German to English, the other from English to German. The German-English Vocabulary compiles all the vocabulary used in *Vorsprung*, while the English-German one focuses on high frequency words from the core texts and the *Wissenswerte Vokabeln*.

In regard to vocabulary learning strategies, I examine whether there are activities created for students to practice vocabulary learning strategies in the textbook. I notice that from Chapter One to Three, two strategies are mentioned to the students: (1) acting out the words, (2) guessing through sound and spelling similarities.

In Chapter One, there are a couple of Total Physical Response activities with which students learn to understand commands and requests (the imperative) by carrying them out, such as:

Stehen Sie auf. (Stand up.)

Setzen Sie sich. (Sit down.)

Drehen Sie sich um. (Turn around.)

Also in Chapter One, the textbook has started to encourage students to use their intuition to decipher new German words in Chapter One: "Intuition can be useful when it comes to deciphering new German words. […] Look for words that may be similar to English" (Lovik et al., 2002, p. 3). Later in Chapter Three, next to the *Wortdetektiv* activity (on p. 80, see Figure 5.1 above), there is a brief note that guides students to guess the meaning of the German words through cognates:

> To guess the meaning of the German words, look for similarities with English (cognates), determine which English and German words belong to the same categories (nouns, verbs, adjectives), and use a process of elimination. (Lovik et al., 2002, p. 80)

On the same page, a definition of the term cognate is provided: "A cognate is a word that has a similar form in two different languages, like the German **Haus** and the English *house*" (ibid., p. 80).[80] The term explanation is followed by an activity called *Kognate entdecken* (Discover cognates). This activity asks the students to scan the statements in the *Anlauftext* and find six cognates in the text and circle them. It also suggests the instructor should "write the words on the overhead as students call them out and model their pronunciation" (ibid, p. 80).[81]

In addition to these activities, vocabulary learning strategies are also briefly mentioned and described in the textbook preface section. In "To the Student," there is a short passage encouraging students to "[d]evelop a vocabulary learning strategy":

> When learning new vocabulary, practice writing new words on note cards or identifying objects in your environment with stick-on tags. You may also find it helpful to record new vocabulary onto a cassette and play it back to yourself. Try to organize words into small manageable groups organized thematically, by gender, or by ranking, for example. Continually test your knowledge of these new words. Avoid memorizing lists of words. Learn to associate new words with the visual or linguistic context provided in *Vorsprung*. (ibid., p. xviii)

Within this short paragraph, various vocabulary learning strategies are mentioned, such as "practice writing new words on note cards," "identify objects with stick-on tags," "record new vocabulary onto a cassette and play it back to yourself," and "group words." However, the

[80]However, I also notice that the textbook does not mention the notion of false cognates (false friends, e.g., *Handy* in German vs. *handy* in English). Using intuition to decipher false cognates usually leads to erroneous use of the words.

[81]In the actual teaching in the classroom, the *Kognate entdecken* activity was skipped and not carried out. The instructor did not draw students' attention to the notion of cognates, either. However, the instructor did the *Wortdetektiv* activity with the students. He said the words in English and asked the students to say the equivalents in German. He listened to the students' pronunciation and demonstrated the pronunciation of each German word to the class.

key questions are: Is it sufficient just to mention them briefly in the book, especially in the preface of the textbook which students often tend to ignore? Do the students receive the message that developing their vocabulary learning strategy inventory is important?

Additionally, there is advice for using dictionaries in the preface as well:

> Learn to use a dictionary, but don't let your dictionary become a substitute for effective reading strategies. This can undermine your own ability to associate meaning with new words and may inhibit your acquisition of German. (ibid., p. xviii)

This paragraph first encourages the students to learn to use a dictionary. However, it does not mention how they should learn this strategy, what they need to pay attention to or be cautious about when they use a dictionary.

To summarize, in the major texts, vocabulary is usually presented contextually within the storyboard. In the sections of *Wissenswerte Vokabeln*, vocabulary is grouped thematically with picture illustration, and introduced mainly for the purposes of grammatical drill. Further, there is very little information about vocabulary learning strategies. There are very few activities integrated for developing vocabulary learning strategies. This makes the students and the instructor focus much more on grammar structures, and leaves them to deal with the vocabulary learning and teaching on their own.

5.3 Data Collection Methodology

I began to collect the empirical data for the research in September 2006. The study was designed to elicit both retrospective and introspective data on the uses of vocabulary learning strategies in language learning activities. In order to enhance the validity and reliability of the data collected, the "triangulation" technique was used, that is, using "multiple data-gathering

procedures" (Brown & Rodgers, 2002, p. 244). As Brown and Rodgers point out: "If you can examine your data from at least two points of view, you will maximize the possibility of getting credible findings by cross-validating those findings" (p. 244). Chapelle and Duff (2003) also indicate that this technique "adds texture, depth, and multiple insights to an analysis" (p. 165).

The data for the research derived primarily from the following sources:

- Questionnaires
- Semi-structured interviews
- Think-aloud protocols

In addition to the sources listed above, the participants' performance in the classroom were observed throughout the whole semester. The purpose of observation was to get to know the research participants better as well as to understand the development of the course more fully. Also, I had their consent to collect their course notes and course material (for example, handouts from the instructor). In the following sections, I will describe step by step how the data were collected and the design of the three primary instruments.

Step 1: Introducing the project to the class

The first step in data collection was to go to the German language class (GER 101) to introduce myself and my research project. As requested by the Office of Research at the University of Waterloo, the first time I attended the class, I handed out information letters about my research and encouraged the whole group to take part in my research. I also pointed out clearly to the group that their participation or refusal to participate in the research would not affect their term grades, and all the information they provided would remain confidential.

The instructor also informed the group that I would be observing the class throughout the semester, so that the students would be prepared for my presence and accustom themselves to it.

Step 2: Administering Questionnaire 1

The second time I attended the class, I brought participation consent forms for interested students to sign. The first questionnaires (see Appendix A) were then given to those students to fill out. The purposes of administering the first questionnaires were to gather basic learner profiles of the whole group in an efficient way and then to select a small number of research participants. As Lindlof and Taylor (2002) point out, questionnaires can be "a valuable exploratory method," as they can "offer a comprehensive look at an entire social unit" (p. 119).

The questionnaires consisted of three parts. The first part of the questionnaire contained questions regarding the learners' demographic information (i.e., age, gender), and their contact information. The second part focused on their language background, such as their native language, and languages learned in and outside of a classroom setting. Through these questions, I intended to find out whether they had already had experiences in learning a second/foreign language before and for how long. If they had, I would ask them (in the later interview) to describe the experiences. For instance, how was the language taught? Did they enjoy the course? Did the instructor teach them any language learning strategies? The questions in the third part of the questionnaire concerned the language learning in general, for example, why they were taking GER 101, how they evaluated themselves as language learners, whether they preferred to learn alone or in a group, whether they took notes while learning, whether they

used a computer program to facilitate learning and so on. Sufficient time (less than a week) was given to the interested students to fill out the questionnaire.

At the end of the week, 16 students in total filled out the questionnaires and handed them back to me. They were eight male and eight female students with ages between 18 to 23. Twelve of them were English native speakers (i.e., 75%); most of them were born and grew up in Canada, and had learned French in elementary and/or high schools. Two of them had learned German before. They took the German course mostly because they needed to fulfill the language requirement for their programs, but also because they were interested in the German language and its associated culture(s).

Step 3: Selecting Research Participants

After the questionnaires were collected, I evaluated the answers for the next step of the data collection procedure: selecting participants for this study. Out of the 16 students, 10 were selected and contacted for further interviews. These 10 students were selected based on the following criteria:[82]

(1) They should have no experience learning German. Hence, the two students who had learned German before were excluded because the target group for this study was limited to German beginners. Although these two students could stay in the GER 101 course and were regarded as "beginners," based on course observation, one of them had much more knowledge in German than anyone else in the group; thus, I did not see her as a beginner.

[82]Typicality (or representativeness) is not the primary focus of this study. Case studies have been criticized because the samples do not represent the population from which the samples were drawn, and hence the study results cannot be generalized. However, as Lindlof and Taylor (2002) point out, generalizability should not be considered a problem, because: "(1) Qualitative studies do not produce data that can be subjected to statistical procedures that allow generalization to a population; and (2) qualitative studies focus on the social practices and meaning of people in a specific historical or cultural context. […] Because social phenomena are studied for their unique qualities, the question of whether they are normally distributed in a population is not an issue" (p. 122).

The other student was excluded not only because he was not a beginner, but also because he had rarely appeared in class and I had very little access to him (see criterion 4 below).

(2) Their interesting and/or unique answers to the questionnaires gave me a good reason to believe that, using Schwandt's words (1997), "what goes on there [i.e., the case] is critical to understanding some process or concept, or to testing or elaborating some established theory" (p. 128; also cited in Lindlof & Taylor, 2002, p. 122). The interesting and/or unique answers may be relevant to their previous learning experience, their thoughts on language learning, their learning habits, and their family background. For example, one student mentioned that he was home-schooled for five years, while the other reported that his family had a German background.

(3) I also included those students whose first language is not English, for instance, students from other countries such as China or India, because I assumed that they could provide a different insight on how German vocabulary is learned.

(4) Their performance in class played a crucial role as well. According to my course observation, most of the 10 students came to the class regularly, which indicated a willingness to learn German. Also, I believed if I saw them more in class, I could gain access to them more easily and had more opportunities to observe them and to get to know them.

(5) The last criterion was accessibility. I considered this an important criterion also because it is important for the researcher to meet with the participants. Although some students signed the consent forms for participation at the beginning of the research, some of them were not really interested in taking part in the study. I concluded this from their behavior and responses to my requests. For instance, when I asked them for an appointment for an

interview, they either said they were very busy and could not find a time for it; or they did not often come to class and were difficult to reach.

Based on these criteria, I selected ten students and contacted them for further research. However, only six of them responded positively to my request and stayed until the study was completed. The six participants, two female (Anna and Sarah) and four male students (Kevin, Kenny, Erik, Ian)[83] became the participants of my research. Five of them (except Ian) were enrolled officially for the course, and the other one was auditing. Their ages ranged from 18 to 22. What they had in common were:

- All of them spoke English fluently; they were either English native speakers or near native speakers.
- They all had some experience in learning foreign language(s) before, for example, French or Spanish.
- None of them had learned German before.

A detailed description of their personal backgrounds will be presented in Chapter Six.

Step 4: Interviews, Round 1

Immediately after the list of participants was finalized, I met the participants for further in-depth-interviews. Interviews are a commonly-used instrument in case studies. There were several reasons why I chose interviews as an instrument for my research. First and foremost because the "interviewing provides access to the context of people's behavior and thereby provides a way for researchers to understand the meaning of that behavior" (Seidman, 2006, p.

[83]In compliance with university ethical guidelines, each of the participants is given a pseudonym.

10), in other words, "interviewing allows us [researchers] to put behavior in context and provides access to understanding their action" (ibid., p. 10).

Second, interviewing could be used as a complementary tool to questionnaires and to observation. Using questionnaires is an efficient and convenient method to gather information. However, it is deficient in supplying much detail about the participants' individuality, their personalities, personal learning experiences, and their valuable thoughts. Interviewing could make the information more complete. As Seidman (2006) points out,

> [a] researcher can approach the experience of people in contemporary organizations through examining personal and institutional documents, through observation, through exploring history, through experimentation, through questionnaires and surveys, and through a review of existing literature. If the researcher's goal, however, is to understand the meaning of people involved in education make of their experience, then interviewing provides a necessary, if not always completely sufficient, avenue of inquiry. (pp. 10-11)

The third reason for interviewing was to confirm, and validate the information obtained from other sources, such as questionnaires or observation. It is a technique known as "member validation" (Lindlof & Taylor, 2002) or "member checking" (Brown & Rodgers, 2002).[84] It is not unusual that informants misread or misinterpret the questions, and thus provide answers that are misleading or irrelevant. It is also possible that the researchers misinterpret or cannot understand very well the words or terms used by the participants in the questionnaires. Member validation can be carried out at many points during the process of data collection; it does not

[84]This technique is also known as "member tests of validity" (Douglas, 1976), and "host verification" (Schatzman & Stauss, 1973).

necessarily occur only in interviews. However, when needed, I find it most efficient to carry it out in the prearranged interviews.

Interview context (Lindlof & Taylor, 2002, p. 185), for instance the location selected for interviews to occur, is an important issue. Bearing in mind the confidentiality and the technical devices needed for recording, I chose the audio recording studio in the Modern Language building at the University of Waterloo to conduct the interviews. It was equipped with a host computer, a recorder, and a microphone. The studio was soundproof, and I interviewed each of the participants individually so that they did not need to worry about the presence of others and could feel comfortable in speaking freely.[85]

The interviews in this research were semi-structured interviews which lie somewhere between the structured and unstructured interviews. A semi-structured interview

> involves the implementation of a number of predetermined questions and special topics. These questions are typically asked of each interviewee in a systematic and consistent order, but the interviewers are allowed freedom to digress; that is, the interviewers are permitted (in fact, expected) to probe far beyond the answers to their prepared standardized questions. (Berg, 2007, p. 95)

Hence, before coming to the interviews, I prepared a list of guideline questions for each of the individual participants. Nevertheless, this guideline did not prevent me from being flexible and adding other questions that were not included on the list, nor did it stop me from reordering the questions during the interviews. This approach has the advantage that it helps the interviewer, especially a novice interviewer like me, to come to the interviews well prepared. Also, it makes the interviewer pay careful attention to the words of the participants in

[85]However, the first interview with Anna and Erik were not audio recorded as I was not able to use the studio. Hence, I took notes during the interviews and checked the notes with them before the end of the interview.

order to add necessary questions or exclude inappropriate or irrelevant questions during the interviews.

Once decisions about the location for the interviews and the structure of interviews were made, I needed to meet the participants for the interviews. As mentioned above, the first round of interviews took place immediately after the sampling procedure was finalized. The language used in the interviews was English which was the language spoken most fluently by all of the participants. The length of each interview was approximately 30 minutes.

The goals for this round of interviews were to become more familiar with the participants and to discuss, review, and confirm their answers in the first questionnaires. I also encouraged them to provide more detail about their personal experience with language learning, for example, how they learned French or Spanish, how the courses were organized and whether they enjoyed the courses. If there was anything that was not quite clear, I asked the subject for their explanation or more elaboration by saying, for instance, "Sorry, I didn't understand very well what you mean. Could you explain that again?" or some similar request. On the other hand, I also kept in mind that I am not an English native speaker. Hence, before the interview began, I always told the participants that they could always ask me for further clarification as well when they did not understand my words.

Step 5: Administering Questionnaire 2

In about the sixth week of the language course, I distributed the second questionnaires (see Appendix B) to the participants. The rationale behind the timing of administering this questionnaire was very simple: because it contained only questions regarding learning German vocabulary and the use of vocabulary learning strategies. If the participants had to finish the

questionnaire right at the beginning of the semester, they could not provide much useful information since they had just started learning German. But in the sixth week of the semester, the participants had finished the first chapter of the textbook and had learned some German vocabulary. It made more sense to administer this questionnaire at this point because they were much more capable of answering the open-ended questions such as how they find out the meaning of unknown words, how they study the word forms, how they memorize the gender of nouns and so on.

After the second questionnaires were filled out, I read through the answers carefully and took notes when participants' answers needed more clarification and explanation. These notes were later used to form the second set of guideline questions for the next round of interviews which took place soon afterwards.

Step 6: Interviews, Round 2

The second round of interviews was undertaken in a similar way as the first round. The location, the setting, the structure, and the language used for the interviews remained the same. However, I noticed a difference during the second round of interviews: A rapport, "a quality of a communication" (Lindlof & Taylor, 2002, p. 189) had been slowly achieved. The participants and I had known each other better than at the beginning of the research. Through the first round of interviews and ongoing course observation, I had a much better picture of them as individuals. I no longer regarded them simply as the "informants" of my research who provided the information that I needed. They had also come to know me better, had become accustomed to my presence in class, and felt more comfortable with my endless questions and their participation in my research. They were reassured constantly from the very beginning of

their participation that there were no right or wrong answers to my questions, and that the purpose of my questions were not to judge whether they were good or poor learners, but to understand how they learn German vocabulary.

Both rounds of interviews were audio recorded in the recorder, then transferred to the host computer, and finally burned onto a VCD for further analysis. In accordance with the ethical guidelines, the entire interview files were immediately deleted from the host computer after the VCD had been created.

In sum, the data collected up to this point, i.e., from the questionnaires and interviews, illustrate an overall picture of what the research participants do to learn vocabulary. It reveals that the participants did use vocabulary learning strategies for vocabulary tasks, for instance, for finding out the meaning of unknown words and memorizing the form and meaning of the words. They mentioned various vocabulary learning strategies such as looking up words in the dictionary, using flash cards or using the textbook for review, etc. Also, each of the participants coped with vocabulary learning in a similar yet different way. For instance, for memorizing the spelling of words, two participants mentioned that verbal repetition was the major strategy they use. However, one said that she also spelled out each single letter aloud, while the other stated that he needed to look at the words as well while he repeated them. I will present the results of the questionnaires and interviews in depth later in Chapter Six.

Nevertheless, the data served only as a means of *retrospection*, since participants' answers to the questionnaires and during the interview might not be "a true reflection of what actually happens when a learner tackles a word" (Nation, 2001, p. 224). Also, it did not provide any detail on how the individual vocabulary learning strategy was carried out, for instance: How do the participants use dictionaries or other reference materials? How are the flash cards

made and used? In my opinion, it is important to know not only *what* strategies are used, but also *how* they are used. Finally, the questionnaires and interviews did not really reveal participants' thinking processes while studying vocabulary. Therefore, for the next step of data collection, I aimed to investigate what participants do and think while they are actually studying vocabulary.

Step 7: Conducting think-aloud protocols

In order to gather data on what the research participants actually do and their thinking processes during a vocabulary task, I created a series of vocabulary learning activities (which will be presented in subchapter 5.4 below), and asked the participants to think aloud: In general, the participants were required to keep on talking, speak out loud whatever thoughts came to mind as they carried out the tasks at hand.

Think-aloud is one of the verbal report methods. There are other verbal report methods that can be used to elicit information underlying cognitive processes,[86] such as retrospection,[87] introspection,[88] and questions and prompting. However, I chose think-aloud as one of the data collection methods because this method has the following characteristics and merits when comparing it to other methods and is most suited for my research: First, there are no prompts or questions which will interrupt the thinking process (see for example Chi et al., 1989; Ferguson-Hessler & de Jong, 1990). Also, participants may encounter difficulties in returning to the

[86]There is a variety of verbal reports applied in second language research. Brown and Rodgers (2002), Cohen (1987), Faerch and Kasper (1987), Ericsson and Simon (1993), van Someren, Barnard, and Sandberg (1994) all provide a detailed introduction of verbal reports.

[87]In retrospection, the cognitive processes are verbalized, in an ideal case immediately after the task is finished as much information is still in short-term memory. If the information is not elicited until long after the task is completed, it is referred to as "delayed retrospection" (Faerch & Kasper, 1987)

[88] According to van Someren, Barnard, and Sandberg (1994), this technique stands somewhere between retrospection and thinking aloud: participants in introspection are instructed to report not after completing the problem-solving task, but at intermediate points chosen by the subject. However, participants are also encouraged to interpret in order to provide an accurate, complete and coherent report on a cognitive process

point where they were stopped and subsequently resuming. Second, during the think-aloud procedure, the participants are encouraged to give a concurrent account of their thoughts at the same time as they carry out the vocabulary exercises. Data are gathered very directly without delay. This could avoid invalidity and incompleteness of the data due to memory errors. Last but not least, based on an extensive review of the psychological studies on the issue of reactivity, Ericsson and Simon (1993) indicate that there is no evidence that think-aloud triggers changes in research participants' cognitive processes while performing the tasks, although in some cases participants need a longer time to complete the exercises. "Thinking aloud does not lead to a reliable change in the cognitive process as reflected in accuracy of response" (p. XX). In the field of second/foreign language learning research, Ericsson and Simon's statement was subsequently empirically proven by Leow and Morgan-Short (2004) in a study of the processes of learning the impersonal imperative in Spanish.

Although using think-aloud protocols has various advantages, the data must be elicited with caution, otherwise "small errors in the procedure can render the data almost useless" (van Someren, Barnard, & Sandberg, 1994, p. 41). Anderson (1996), Brown and Rodgers (2002), Cohen (1987, 1996), van Someren, Barnard, and Sandberg (1994) all provide very clear and useful instructions and suggestions on how to carry out valid and complete think-aloud protocols. My data collection follows the following six general principles to produce useful and accurate protocols:

(1) Training: It is important to train the participants prior to actually carrying out the think-aloud protocols, because thinking aloud is not what the participants usually do when they study. Thus, practice is necessary. I gathered the participants (two at a time) one day before the scheduled think-aloud day. In the training sessions, I explained to them what

thinking-aloud is and how to produce the protocols. They were encouraged to speak out loud what went through their mind and to avoid explanation or interpretation of what they were doing. We also practiced the method by using some exercises provided in Brown and Rodgers (2002).

(2) Location: "The first thing to do when one wants to get a subject to think aloud is to make sure that the setting is such that the subject feels at ease" (van Someren, Barnard, & Sandberg, 1994, p. 41). Bearing this principle in mind, and with the help from a departmental faculty member, I found a quiet and bright room for producing think-aloud protocols. There was a large desk which the participants could use. Behind that desk there was also a small desk where I could sit and listen to the participants clearly but without disturbing them.

(3) Language: Should the participants use their L1 or the target language (German) to carry out the protocols? The general principle for this issue is that the participants should use any language that they feel comfortable with so that they can speak freely. In my research, this issue was easily solved since all the participants were only beginners in German and native or near native speakers of English. Hence, the protocols were all carried out in English.

(4) Instructions: The researcher's instruction plays an important role in gathering think-aloud protocols. On the one hand, the instructions about the vocabulary exercises that they are going to undertake should be clear to the participants; on the other hand, the instruction should not be too "directive" because "you [i.e., the researcher] want to know what the participants are thinking not what they think about what your are thinking" (Brown & Rodgers, 2002, p. 58). Following this suggestion, before the participants started to perform

the vocabulary exercises, I explained to them what the exercises were, and again, encouraged them to constantly think out loud. They were also told if they were silent longer than ten seconds, I would remind them by saying "keep thinking aloud." However, this was the only interference from me during the whole think-aloud procedure.

(5) Individual or pair: In most of the studies, think-aloud protocols are conducted individually. Brown and Rodgers (2002) particularly point out that "verbal reports of mental processes should avoid the usual social conversation of talking to someone" (p. 57). Also, using pair think-aloud increases the chance that the participants analyze, explain, or interrupt their thoughts, which is, as described above, strongly discouraged in carrying out think-aloud protocols. Taking all these points into consideration, the think-aloud protocols in my study were carried out individually.

(6) Recording device: As directed by Brown and Rodgers (2002), when producing think-aloud protocols, the researcher should not just rely on observation to gather data. It is very important to "always use a tape recorder or other recording device" (p. 57) and to make accurate transcriptions. In my opinion, video recording is better than audio, because the former can also record participants' actions, gestures or facial expressions, not merely words. Especially in a study of learners' use of vocabulary learning strategies such as the present one, participants did not only express words, but also carry out acts, for instance, using a dictionary or checking their notes. As Brown and Rodgers (2002) point out, "there is a lot of information in introspective reports aside from the words themselves. Researchers need to be aware of these parallel signal systems and be prepared to include them in their analyses" (p. 55). Hence, with the assistance from the Audio Visual Centre at

the University of Waterloo, all the think-aloud protocols were first video recorded, then transferred to a computer, and finally burned onto several DVDs.

After I received the DVDs, I immediately started reviewing and transcribing the protocols. During the transcription process, I found that at times, although not very often, the participants' words were not comprehensible. I did not want to simply speculate what they had said because their words are important for the data analysis later on. Hence, when there were unclear parts in the transcription that needed to be clarified, I met the participants in the audio recording room again. During these meetings, I showed the participants their performance in the DVDs to help them recall what they had said during the protocols. This again proves that using video recording devices is important for carrying out think-aloud protocols. It is useful not only for recording participants' acts and words, but also for the accuracy of the transcriptions.

In addition, the think-aloud protocols elicit much more detail about participants' use of vocabulary learning strategies. The data reveal not only what vocabulary learning strategies the participants used, but also how they used them to tackle vocabulary. For instance, during the think-aloud protocols, most of the participants used the strategy "repetition" to memorize the meaning of the words on the word list. However, one participant read through the word list quickly one time, while the other participant rehearsed over and over again as well as tested herself. These minute but significant differences in the use of strategies between the individuals are readily captured by video recording.

Hence, I agree with Ahmed (1989, see Chapter Three of this thesis) that it is not sufficient to simply look at the "macro"-level and conclude that, for instance, learners frequently use repetition for memorization. It will be more helpful to further illustrate how the

learners actually carry out the repetition strategy. Therefore, I strongly believe that it is important to let the participants actually show how they use the vocabulary learning strategies especially when the research is aiming to explore in depth the use of vocabulary learning strategies.

5.4 Materials for the Vocabulary Activities

As previously mentioned, in order to investigate participants' actual use of strategies and their thinking processes during the strategy use, I designed a series of vocabulary activities and asked the participants to think aloud while accomplishing the activities. The activities begin with a word list study session, followed by a quiz and four follow-up exercises.

The activities were undertaken approximately in the ninth week of the course, immediately after the mid-term exam. The setting for the think-aloud protocols has been described above: It took place in a quiet and bright room; the whole procedure was video recorded; the language used was English. In order to minimize the pressure of having to finish the exercises in a certain amount of time, no time limit was set for the participants. All of the participants finished the activities in about 60 to 70 minutes. In the following sections, I will present the materials for the activities and describe the foci in these activities.[89]

The word list

The first activity required the participants to study a list of words and phrases which derived from the *Anlauftext* of Chapter Three of *Vorsprung*. In Chapter Three, the *Anlauftext* focuses on the topic "cultural stereotypes." Anna talks about German stereotypes, while her German relatives express their ideas about typical Americans. In total, I selected 7 verbs, 10

[89]See Appendix C for a complete version of the materials.

nouns, 2 adverbs, 3 expressions (phrases) from the *Anlauftext* for the word list. I listed the 22 words/expressions randomly on a sheet without grouping them according to the part of speech (see Figure 5.3 below for a simplified version of the word list). The participant was asked to discover the meaning of the words/phrases and memorize the meaning and spelling.

Figure 5.3. A simplified version of the word list.

1. essen* (*er isst*)	12. der Fußball
2. der Bahnhof	13. die Schuhe
3. wahrscheinlich	14. das Bier
4. das Schweinefleisch	15. mitbringen
5. das Gepäck	16. fernsehen* (*er sieht fern*)
6. wandern	17. die Politik
7. bleiben	18. das Wochenende
8. der Kaugummi	19. vielleicht
9. der Mund	20. verstehen von (etwas)
10. tragen* (*er trägt*)	21. halten* von (etwas) (*er hält*)
11. lächeln	22. nur Bahnhof verstehen

The * sign indicates that the verb is a strong verb. Its conjugation for the 3rd person singular is provided in parentheses in italic.

The words/expressions on the list were not completely unfamiliar to the participants. The *Anlauftext* was introduced in class very shortly before the think-aloud protocols were undertaken. I chose the words and phrases that had been introduced to the participants because I believed that the participants did not remember most of them. They had mentioned in the questionnaires that they usually studied only shortly before quizzes or exams. Also, if they did remember some of the words/phrases, it would be of interest to investigate why they remembered some lexical items, but not other ones. Also, I presented the items on a list because I wanted to show the participants explicitly what words they needed to study.

For finding the meaning of the words/expressions, the participants could use the items they usually used, for example, the textbook, the notes they took in class, and a dictionary.

They could bring their own dictionary or use the bilingual German-English dictionary that I provided.[90] They could also use their vocabulary notebooks or flash cards if they had made them. As described above, no time limit was set. The participants could have as much time as needed. They were also told there would be a quiz immediately after the word list activity, but the content or the format of the quiz was not revealed. The purpose of using the word list was to investigate the following questions:

- What kind of strategies do they use to find out the meaning of the words/expressions? Do they refer to the *Anlauftext* and use the context to infer meaning of the words? Do they analyze word parts? Do they consult their notes, textbook or dictionary? How do they use these strategies?
- What strategies do they employ to memorize the meaning of the words/expressions? Do they use repetition? Do they use elaboration? Do they use mnemonics such as the keyword method? How do they employ these strategies?
- What strategies do they use to memorize the spelling of words? How do they use these strategies? Do they notice the special orthographic form such as an Umlaut?
- What strategies do they use to memorize the gender of nouns?
- Do they recognize the words/expressions that they have just learned in class? Why do they recognize or remember some words easier/better than others?

<u>The quiz</u>

The quiz was presented on a separate sheet. It consisted of 14 isolated lexical items in English, each followed by a space in which the participants were required to write the German

[90]Kopleck, H. et al. (Eds.). (2001). *Collins Easy Learning German Dictionary*. Glasgow: HarperCollins Publishers. Henceforth, I will cite it as *Collins Dictionary*.

equivalent. Participants were also asked to write down the definite articles (*der*, *die*, *das*) if the word was a noun. If it was a verb, they were to write the infinitive. The order of the words in the quiz was random and different from that of the word list (see Figure 5.4 below for a simplified version of the quiz). No aids such as dictionary or textbook were allowed, only pens and papers. Through the quiz, I wanted to study the following questions:

- Can they remember the German equivalents when they see the English words?
- Can they correctly spell the German words/expressions they have just studied?
- Can they recall the grammatical gender of the nouns they have just studied?

Figure 5.4. Quiz for the vocabulary activities.

to eat:	_____
to wear:	_____
probably:	_____
train station:	_____
chewing gum:	_____
to smile:	_____
luggage:	_____
to stay:	_____
to understand nothing:	_____
to hike; go hiking:	_____
weekend:	_____
to think of something:	_____
to bring along:	_____
mouth:	_____

The four follow-up activities

The goal of the follow-up exercises was to investigate whether the participants could accurately use the words they had just studied. The four activities were designed to progress gradually from receptive to productive activities. This idea is based on the overall structuring pattern of the activities in *Vorsprung*. In *Vorsprung*, as the authors point out, "activities are

carefully programmed to move from receptive to productive" (Lovik et al., 2002, p. IAE 5) based on the belief that language instruction and learning "should focus initially on comprehension" (ibid., p. IAE 7). Also, during the process of moving from receptive to productive, I wanted to explore whether these activities help the participants process the words they have studied more deeply.

The first two receptive exercises functioned as warm-up activities for the productive exercises. The first exercise (see Figure 5.5 below) required participants to recognize words that they had just studied from the word puzzle.

Figure 5.5. The word recognition exercise

A	W	O	C	H	E	N	E	N	D	E	B	C	B	F	M
S	T	C	F	I	N	U	I	A	O	T	H	E	L	Ä	G
G	E	Ä	Ö	F	V	R	ß	G	T	R	A	G	E	N	H
H	S	C	H	U	H	E	I	E	I	V	L	Ö	I	H	B
N	W	E	T	ß	E	V	D	P	ß	Ü	T	E	B	F	V
K	A	Q	G	B	M	Ö	O	Ä	I	F	E	T	E	H	I
V	H	U	E	A	N	F	T	C	N	G	N	U	N	O	E
E	R	P	O	L	I	T	I	K	Ä	Q	B	I	E	R	L
R	S	T	Q	L	Ä	C	H	E	L	N	F	T	Q	E	L
S	C	H	W	E	I	N	E	F	L	E	I	S	C	H	E
T	H	I	ß	K	A	U	G	U	M	M	I	G	Ü	B	I
E	E	S	S	B	Ü	R	O	V	Q	U	W	T	Q	O	C
H	I	F	E	R	N	S	E	H	E	N	A	R	T	F	H
E	N	A	Ü	C	D	B	S	M	ß	D	N	Ä	V	ß	T
N	L	G	H	H	T	D	S	J	B	T	D	O	E	P	G
M	I	T	B	R	I	N	G	E	N	K	E	R	Ä	Ö	M
D	C	Ä	Ö	H	J	A	N	L	H	G	R	T	ß	B	H
C	H	G	J	E	K	O	M	B	A	H	N	H	O	F	D

In total, 21 words from the word list were incorporated (see Appendix C for the solution to the word puzzle). At least ten words had to be found. The aim of this receptive activity was to address the following questions:

- Can the participants recognize the words that they have just studied?
- Can they recall the meaning of the words they have studied when they recognize them?

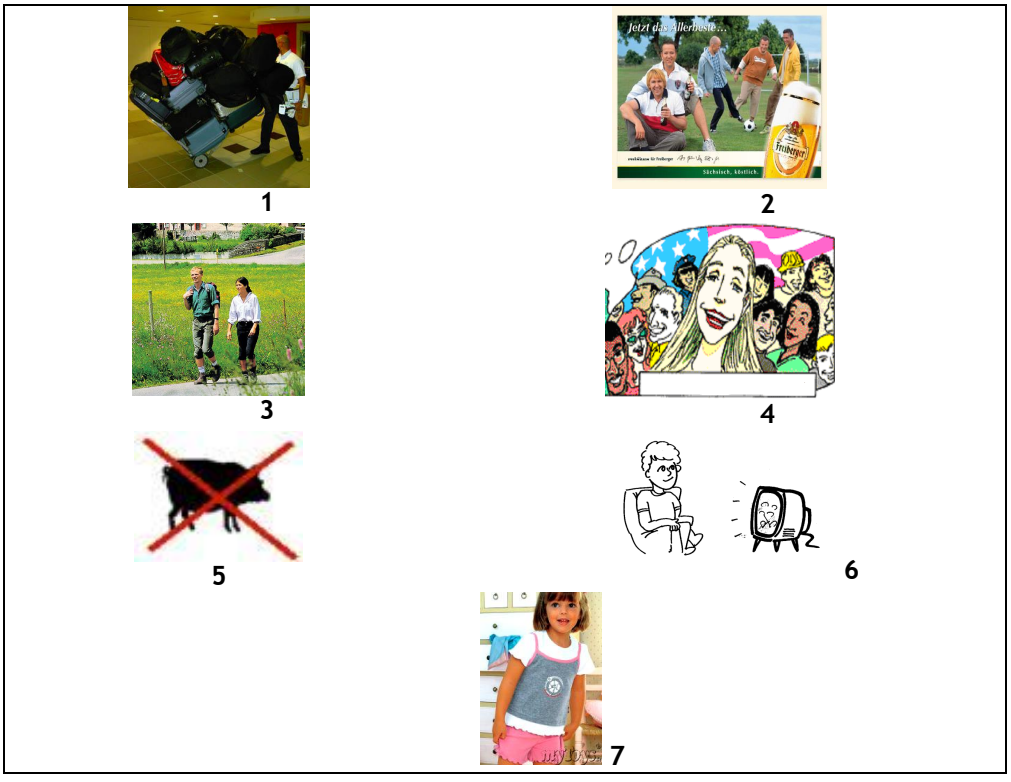
The second exercise was a matching activity. Seven sentences (see Figure 5.6) and seven pictures were presented (see Figure 5.7). Participants were asked to match the sentences with the pictures. The words they had just studied from the word list were incorporated in the sentences. The aim of this receptive activity was to study the following questions:

- Can the participants recognize the words that they have just studied in the sentences?
- Can they recall the meaning of the words they have studied when they recognize them?
- Can they understand the sentences correctly?

Figure 5.6. The seven sentences for the matching exercise

1. Muslime essen kein Schweinefleisch. Bild _____
2. Die Deutschen spielen gern Fußball und trinken gern Bier. Bild _____
3. Das kleine Mädchen trägt gern T-Shirts und Shorts. Bild _____
4. Der Mann bringt viel Gepäck mit. Bild _____
5. Der Junge sieht den ganzen Tag nur fern. Bild _____
6. Laura und Bill wandern sehr gern. Bild _____
7. Anna ist sehr freundlich. Sie lächelt immer. Bild _____

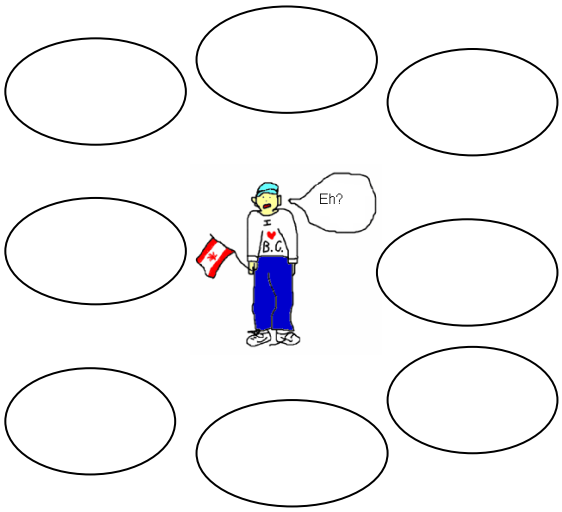
Figure 5.7. The seven pictures for the matching exercise



The third and fourth exercises were productive activities and were connected with each other. For the third exercise, participants used their own words to discuss Canadian stereotypes. This topic is connected to the *Anlauftext* of Chapter Three which discusses only German and American stereotypes. However, I thought it would be more interesting and relevant to talk about Canadian stereotypes in these two productive activities, since most of the participants were born and grew up in Canada, and/or were studying in Canada. In case they had difficulties with the topic, some helpful hints were given as follows: "For example, what does a typical Canadian eat, drink, wear, and read? What about sport and music? The language(s) he/she speaks?" The participants were encouraged to use the words or expressions they had just studied and to write down as many words as possible in the circle (See Figure 5.8 below). The fourth and last exercise is more productive than the preceding one. Participants were asked to write a short essay with the words or phrases they wrote down in the third exercise. Through these two productive activities, I aimed to investigate the questions below:

- Do the participants use the words they have just studied from the word list? If they do, can they recall the words without consulting the reference materials? Can they use the words accurately in a context ?
- If they do not use the words they have just studied, what other words do they use to talk about Canadian stereotypes? How do they search for these words? What strategies do they use to look for words they want to use? For instance, do they consult the dictionary or the textbook? How do they use these reference materials? Can they use these words adequately and accurately in a context?

Figure 5.8. Writing about Canadian stereotypes.



5.5 Data Analysis

In section 5.3, I thoroughly described how the data for my study were collected. This section focuses on the data analysis – "the process of labelling and breaking down (or decontextualizing) raw data and reconstituting them into patterns, themes, concepts, and propositions" (Lindlof & Taylor, 2002, p. 210).[91]

Transcribing the data collected from interviews and think-aloud protocols is "an integral and important initial phase of data analysis" (Duff, 2008, p. 154). For my research, I followed the basic form of the *Gesprächsanalytisches Transkriptionssystem* (GAT; Selting et al., 1998) for a consistent transcription.[92] The purpose of interviews and think-aloud protocols in my research was to get information about the participants' views on their second/foreign language and vocabulary learning experiences and to shed light on their thinking processes

[91]Although I explore the process of data analysis in the final part of the current chapter, it had actually already started during the data collection phases. For instance, I made notes or wrote short summaries after reviewing questionnaires or after conducting interviews and think-aloud protocols. In these notes or summaries, I highlighted questions or the most salient point that arose from these data.

[92]I chose the GAT because its basic version is suitable and useful for transcribing the data of this study. It captures exactly what I needed to transcribe, and it allows me to leave out what was not important for my study.

during the use of vocabulary learning strategies, and not to do an analysis of turn-taking or code-switching. Hence, while transcribing, I did not extensively measure the length of all pauses or include behaviors such as eye gaze or nose scratching. However, I did note behaviors related to strategy use, for instance, looking up words in the dictionary or in the textbook, writing down words repeatedly, or using flash cards and so on.

After the transcription was completed, I started to find a focus or foci in the think-aloud data for further analysis, because if all the think-aloud data were to be presented in a thick descriptive manner, the present thesis would be excessively long. I decided to present "a lot about a little" (Silverman, 2005; i.e., an in-depth description of a focus selected from the data) rather than "a little about a lot" (i.e., a short description about every single point in the data). I decided to focus on the participants' performance in the word list study session, because these data show most extensively the participant's use of vocabulary learning strategies. The results from the quiz and the follow-up activities will still be presented, but in the form of summary.

I then started to code the textual data at hand. Coding is an essential step for a systematic data analysis because it helps the researcher to organize and make sense of the large amounts of data. It refers to the process in which the researcher uses labels to classify and assign meaning to a chunk or unit of data. These labels are called codes (Brown & Rodgers, 2002; Duff, 2008). They could be patterns, concepts, constructs, characters, items, or themes[93] (Berg, 2007, p. 312f; Lindlof & Taylor, 2002, p. 216).

[93]According to Berg (2007), a theme, in its simplest form, "is a simple sentence, a string of words with a subject and a predicate" (p. 312). Duff (2008), following Miles and Huberman (1994), defined a theme as "a short code word or phrase" such as resistance, or motivation.

A decisive issue during the initial stage of coding involves the source of codes.[94] In general, the categories can be determined "inductively, deductively or by some combination of both" (Berg 2007, p. 311): Deductively determined categories are those that derive from the existing theory or research, and from standard demographics, e.g., sex, race, occupation, religion, place of residence (Lindlof & Taylor, 2002, p. 215). The other option is that the categories emerge inductively from the data, from the "researcher's own lived experiences with the scene" (ibid., p. 219) without drawing on already existing coding systems in the research literature.

Brown and Rodgers (2002, p. 65) point out the advantages of taking one of the existing coding systems:

(1) The coding system already exists, is documented, and has the prestige of published acceptance.

(2) The study becomes part of a set which uses a common coding system and for which data comparisons can readily be made.

However, Brown and Rodgers (ibid.) also reminded the readers that the existing coding system may not fit the data perfectly. They suggested the researchers to "try employing a coding system which already exists and adapt it as necessary. Go for an original system only if the borrowed one proves clearly inadequate for your purposes" (p. 66).

In the field of vocabulary learning strategies, it is not uncommon at all that the researchers use existing research literature as a source for labeling the vocabulary learning

[94]Whether the researcher should emerge the codes deductively or inductively has been the subject of debate among the grounded theorists, especially between Glaser (1992) and Strauss and Corbin (1998): Both deductive and inductive ways were acceptable to Strauss and Corbin (1998; see p. 50-53.), although the latter is much preferred by them. Contrary to Strauss and Corbin's broader stand, Glaser (1992) insisted that "there is a need not to review any of the literature in the substantive area under study" (p. 31). Berge (2007) was of the opinion that "in order to present the perception of the others [i.e., the research participants] in the most forthright manner, a greater reliance on induction is necessary. Nevertheless, […] induction should not be undertaken to the exclusion of deduction" (p. 312).

strategies (e.g., Lawson & Hogben, 1996; Nation, 2001; Schmitt, 1997; Stoff, 1995; Stork, 2003; Takač, 2008), especially strategies such as using dictionaries, guessing from the context, and repetition. These have been much discussed in the literature, and have thus gained published acceptance. It is pointless to discard these terms and to create new terms. Therefore, for the data analysis of the current thesis, particularly for labeling the vocabulary learning strategies mentioned or used by the participants, some of the codes are derived from the research literature. Nevertheless, I did not exclude the possibility of coming up with a new coding scheme. After deciding the source of codes, I read the data repeatedly and assigned codes to the units of data. Then, I reviewed and compared the codes for a higher-level classification or grouping. In total, 49 individual vocabulary learning strategies are identified and further categorized. The results will be presented in Chapter Six.

Chapter Six: Study Results

In the previous chapter, I described how the data for my study were collected and analyzed. This chapter focuses on the results of the study. It is divided into three subchapters. The first part (Chapter 6.1) presents, in-depth, each participant's answers and thoughts from questionnaires and interviews, as well as each participant's performance during the think-aloud protocols. Then, in 6.2, I present a classification of the vocabulary learning strategies identified during my study, and compare the six participants with regard to their use of vocabulary learning strategies.

6.1 Results of the Individual Participants

This subchapter is composed of six sections (6.1.1 – 6.1.6). Each section presents the results of an individual participant (sequence: 6.1.1 Anna, 6.1.2 Sarah, 6.1.3 Kevin, 6.1.4 Kenny, 6.1.5 Erik, and 6.1.6 Ian). Each individual participant's section is further divided into three parts. In the first part, I describe the results from the questionnaires and the interviews with three focuses:

- Basic personal information
- Language learning in general
- Vocabulary learning strategies reported by the participant

First, I provide the basic personal information of the individual participants (such as their age, education, language and family background, and motivation for taking GER 101). Next, I describe their general language learning experience, including how they learned foreign languages before, whether they enjoyed learning them, whether they enjoy the GER 101 course, and their learning habits. Finally, I concentrate on the vocabulary learning strategies reported

by the participants. I describe what the participants said they do to learn vocabulary in and outside of the classroom.

In the second part of each section, I present the results from the individual learner's think-aloud protocols. First, I describe in detail the vocabulary learning strategies used in the word list study session. I explore what the individual participants *actually* do when they encounter unknown words, what they do to memorize a word's meaning and spelling, and how the vocabulary learning strategies are carried out. Then, the results from the quiz and the follow-up activities are briefly summarized.

At the end of each individual section, I summarize the reported and used vocabulary learning strategies and discuss the individual differences by illustrating the essential characteristics of each participant's use of vocabulary learning strategies. For a better understanding of the structure of the individual participant section, Figure 6.1 below provides an overview of the basic organization of the individual section (with 6.1.1 Anna as an example).

Figure 6.1. Example of the basic organization of the individual participant section

6.1.1 Anna
6.1.1.1 Results of the Questionnaires and Interviews
- Basic personal information
- Language learning in general
- Vocabulary learning strategies reported by Anna

6.1.1.2 Results of the Think-Aloud Protocols
- Vocabulary learning strategies used by Anna at the word list study session
- Results of the quiz
- Results of the follow-up activities

6.1.1.3 Analysis of Anna's Vocabulary Learning Strategy Repertoire

Before I proceed to the study results, I would like to briefly point out that this subchapter is written in a more personal narrative manner and a less formal and academic tone. During the data collection period, I became acquainted with the participants. They shared their

learning experiences, thoughts, and stories with me. Now, they are more than just "somebody" who participated in my study. Through a more narrative writing style, I want to accurately reflect the atmosphere, their thoughts and performance during the think-aloud procedures and present the results in a way that attempts to bring the readers close into the participants' worlds.[95]

Also, my descriptions below may seem to contain my own subjective voice. However, as a researcher of a qualitative research, it is impossible to interpret the results entirely objectively. In fact, Stake (1995) argues that "the intent of qualitative researchers to promote a subjective research paradigm is a given. Subjectivity is not seen as a failing needing to be eliminated but as an essential element of understanding" (p. 45; also cited in Duff, 2008, p. 56). Duff (2008) also believes that subjectivity is "an inevitable engagement with the world in which meanings and realitites are constructed (not just discovered) and in which the researcher is very much present" (p. 56).

6.1.1 Anna

6.1.1.1 Results of the Questionnaires and Interviews

<u>Basic personal information</u>

Anna, an 18-year-old first year student, would like to major in economics. Her family originated in Hong Kong, China, and moved to Trinidad decades ago. She was born and grew up in Trinidad. She came to Canada in August 2006 as an international student to begin her studies at the University of Waterloo. Although her family had a Chinese background, English is her first language (L1). Neither she nor her parents speak Chinese or Cantonese, although

[95]See also Adler and Adler (1994), Duff (2008), Richardson (1990, 2000), Richardson and St. Pierre (2005), van Maanen (1988) for more discussions on stylistic issues in writing a qualitative study.

three of her four grandparents were Cantonese speakers. She speaks English exclusively at home. From age 11 to 18, she learned French and Spanish at schools in Trinidad. She enrolled in GER 101 because she was very interested in the language. Also, she planned to go to Europe to work or for further study in the future. She believed that, since she already had knowledge of French and Spanish, learning German would help her to communicate with people there even more easily when traveling in Europe.

Language learning in general

Through the course observation, I noticed that she was usually very active in the German classroom. She never missed a class and always tried to answer the instructor's questions. In the questionnaire, she indicated that she did not like to work in a group in class, but preferred to work on her own. Outside the class, she usually studied on her own as well. However, when the course instructor assigned group work, she did not object to working with the other group members. If she did not understand something, she would ask the instructor directly instead of seeking help from her peers. Textbooks, course materials, and the course instructor were her primary resources for learning, including learning languages.

As mentioned above, Anna was an experienced language learner. She had learned French and Spanish for seven years from ages 11 to 18. She was fairly confident in her ability to learn languages, and viewed herself as a good language learner, especially when it came to reading and writing. However, when it came to listening comprehension or speaking the language, she was not so certain. In the interviews, she admitted that listening was very difficult for her, even in French and Spanish, which she had learned for a long time: "the truth is ... the listening comprehension, I don't do as well, because you know, the hearing and the

speaking, that does not come that easily" (Anna, Interview 2, 354-357).[96] During the GER 101 course, when she needed to write the lab tasks, which usually aim to test students' listening comprehension, she did not often understand the contents of the task and had to rely on guessing. When speaking, she was often hesitant, especially if she believed her classmates were better speakers, because she did not want to make mistakes. However, if her classmates were at the same level or not as proficient as she was, then she was not as worried about her self-image and was more willing to speak.

Regarding the awareness of learning vocabulary, she believed that vocabulary is important, because "if you don't know any vocabulary, you cannot really say much" (Anna, Interview 2, 3-4). Nevertheless, she also emphasized in the interview that vocabulary only plays a more important role when beginning to learn a language. She said, "as you learn more of something, grammar becomes more important" (Anna, Interview 2, 12-13). I also noticed that she put much effort into learning grammar in the GER 101 course. She asked the course instructor to recommend to her some extra grammar exercise books for more practice. She explained why she paid much attention to grammar in the interview. She said that it was because the (French and Spanish) language courses before were very much grammar-orientated. Using the languages in communication was not the focal point of the courses. Hence, she had been accustomed to learning a language through repeated grammar drills. On the other hand, she also thought she could comprehend grammar concepts very well. This also motivated her to focus more on grammar.

[96] The information in parenthesis indicates the source of the quotation in the transcription.

Vocabulary learning strategies reported by Anna

When asked about her experience in learning vocabulary in German, Anna answered that, in general, she had not encountered much difficulty. In the classroom, she usually took notes and tried to write down everything the instructor taught. She had a notebook which she kept for the GER 101 course. She had an organized and systematic way of recording new lexical items in the notebook: she usually wrote the new words in the form of a word list with two columns. She wrote the words in German in the left column and listed English equivalents in the right column.

Because the notebook did not only contain new vocabulary items, but also grammar rules or sentences taught in class, Anna used it as a significant resource for her vocabulary learning process. When she needed to write a short essay for the homework, she usually looked for words in her notes. She did not study regularly, but she reviewed the course notes especially before quizzes or exams.

When encountering unknown words, Anna said that she avoided turning to a dictionary immediately. She usually tried to guess the meaning from the context first. She emphasized that the dictionary was usually the last option she chose. She developed his strategy a long time ago while she was learning French in schools in Trinidad. She explained that in the upper-year French classes, the instructor gave the students many reading comprehension exercises and asked them to guess the meaning of unknown words from the context. Students read many authentic articles from French newspapers or magazines and were asked to answer questions about the articles in full sentences, and to summarize the articles in their own words. Anna emphasized that "using a dictionary usually handicaps you, because then you won't learn to guess things from the context" (Anna, Interview 2, 265-266).

Besides guessing from context, Anna also tried to recognize word parts when she encountered an unknown word. She explained step by step how she carried out this strategy, using the German word *Geburtstag* (birthday) as an example: First, she noticed that it is capitalized, so it must be a noun. She also knew that *Tag* means day in English, so she guessed that the word must be related to *-day*. Since she had learned the weekdays (*Montag, Dienstag, ... Sonntag*) in German, she knew that *Geburtstag* had nothing to do with the weekdays. Then she asked herself: How many words go with a day? Not that many. She explained, "I mean, after you learn the weekdays there are not many that go with a day" (Anna, Interview 2, 205-207). Hence, she was confident of the guess that *Geburtstag* means *birthday*.

Anna stressed in the interview that only when neither of the two strategies mentioned above could be of much help did she turn to a print dictionary.[97] She said she used an online dictionary sometimes, too (e.g., Google translation). Finally, Anna also revealed that she consulted her own course notes to look up words for which she could not remember the meaning.

To memorize the meaning of the target words in German and their English equivalents, Anna made connections between the target word and her existing knowledge, which could be a French or Spanish word that she had learned before. In the interviews, Anna gave details about how this strategy works. Taking the German noun *Fenster* (window) as an example: to her, *Fenster* looked and sounded similar to its French equivalent *fenêtre*. Since she was already familiar with the French word *fenêtre* and knew it means window in English, it was not difficult for her to remember the German target word *Fenster*.

[97]The one that she usually used was: *Larousse Pocket Dictionary: German-English English-German.* (2001). Paris: Larousse

Figure 6.2. From *Fenster* to *fenêtre* to *window*.

Target word		Mediator		L1
Fenster	→	*fenêtre* (French)	→	*window*

Thus, the existing knowledge of *fenêtre* functioned like a "mediator"[98] and led her to equate *Fenster* with *window* (see Figure 6.2 above). The mediator may share similarities in spelling and/or sound with the target word, which made memorization easier.

Anna also made sound connections between the target word and its English (L1) equivalent. For example, to memorize the German noun *Tür*, she tried to pronounce the L1 equivalent *door* like *dur*, and then *dür* (see Figure 6.3 below). She explained in the interviews: "*Tür*, *door*. If I say *door*, I can say *dur*, *dür*, *tür*. Eventually, it comes around" (Anna, Interview 2, 215-217). In this case, the mediator was not even a real word. It was created on the basis of a sound similarity for the purpose of memorization.

Figure 6.3. From *door* to *dür* to *Tür*.

Target word		Mediator		L1
door	→	dur → dür	→	Tür

In regards to remembering the spelling of the target German words, Anna indicated that she always tried to remember the orthography of the target words with the help of correct pronunciation. Hence, learning the correct pronunciation of the target words was a very important focus in her vocabulary learning process. Anna explained, "A lot of people learn French and Spanish, but they pronounce the words in English. I cannot do that. That is terrible. I don't like that. So whenever I think of the word, I always pronounce it the way it is supposed to be" (Anna, Interview 2, 395-400). She noticed that "many people don't know how to spell

[98]In German, there is a similar term called *Eselsbrücke* which is defined as "Anhaltspunkt als Gedächtnisstütze" (an aid or a hook for memory enhancement) in *Duden Deutsches Universal Wörterbuch.*

things correctly because they pronounce [them] badly" (Anna, Interview 2, 414-415). In other words, she thought that correct pronunciation facilitates memorizing the spelling. She also believed that this was especially important for learning German, because German pronunciation was, in her own words, "very logical," i.e., words are pronounced as they are spelled.

So how did Anna learn the pronunciation of German words? How did she improve her pronunciation? Anna revealed in the questionnaires that she listened to and repeating the professor's words. That is, to her, the course instructor was the main resource for learning pronunciation. However, she also stressed that she rarely said the words out loud, even when she practiced pronunciation. Instead, she repeated the word silently in her brain. "I don't really do anything out loud. […] I think of it in my mind," explained Anna, "because, I mean, people in the room ... In my whole life, I have rarely had a room for myself, so if I start reading things out loud, people would think I am crazy" (Anna, Interview 2, 345-348).

For memorizing the gender of German nouns, Anna admitted that it was a very difficult problem for her, although, in learning French and Spanish, she had encountered this difficulty before. However, she indicated that genders in French and Spanish are much easier, and they have only two genders (i.e., masculine and feminine), not three. In order to reduce the difficulty, she tried to find rules that she could follow. For instance, she noticed that sometimes words in the same semantic field have the same gender. For example, languages are usually neuter, such as *das Englisch, das Deutsch, das Französisch,* and the four seasons of a year are all masculine (*der Frühling, der Sommer, der Herbst, der Winter*). In addition, she also noticed that nouns ending in *-chen* carry the neuter gender, such as *das Mädchen, das Hähnchen,* and occupation words with the suffix *–in* are feminine, such as *die Professorin, die Studentin, die*

Lehrerin. Keeping these observations in mind helps her to recall the gender of those nouns more easily.

What about the nouns that do not carry suffixes that indicate their gender, such as *der Stuhl, das Fenster, der Tisch*? How did Anna cope with them? She answered with laughter, "go with *der*, that's what I do. I assume it is masculine when I don't know" (Anna, Interview 2, 465-467). She also pointed out that the course instructor once gave the students some advice to facilitate the recollection of noun gender: the use of color coding. However, Anna said that it did not work for her: "I don't remember the color at all, so even if I've done it, I really don't remember the color" (Anna, Interview 2, 480-482).

In order to ensure that the meanings of target German words were well stored in her memory, Anna always tested herself. She carried out this strategy by first covering the English equivalents, looking at the German words, and trying to remember the English words, and vice versa. If she could not recall the words, she would uncover them and study them again. She repeated this testing process until she could recall the target words as well as their English equivalents.

In terms of using the words, Anna simply used the learned words in the homework assigned by the instructor. She did not watch German movies or listen to German music outside of the class. Neither did she attend the events organized by the departmental German club. She explained that it was because she has other courses to go to and she did not think movies would help to improve her German efficiency since listening comprehension, as mentioned above, was her weakness. She stated, "I am not so good at listening, and you know, in the movie, they have more slang and more colloquial words and it did not add up too much

for me. Even though I have learned French or Spanish for so long, when I see [French or Spanish] movies, I'm still puzzled for most of it" (Anna, Interview 2, 500-511).

6.1.1.2 Think-Aloud Protocols

Vocabulary learning strategies used by Anna in the word list study session

The similarity in spelling and/or sound between the target word and English equivalent made it very easy for Anna to infer the meaning of the words *Fußball, Bier,* and *Politik*. Anna was very confident that they mean *football, beer,* and *politics* because they sound and look very similar to the English equivalents. Also, when Anna saw the word *Schweinefleisch,* she said immediately that "that's *swine flesh,* and that will be *pork*" (Anna, Thin-aloud protocols [TAP], 7-8). Her explanation indicates that she first segmented *Schweinefleisch* as *Schweine* and *Fleisch* and then recognized it is *swine flesh* by the similarities in spelling and sound.

These strategies – recognizing part(s) of the word and connecting the target word to other German word she already knew – were evident as Anna tried to discover the meaning of the verb *fernsehen*. As Anna saw this word, she immediately pointed out that *sehen* is *[to] see* and *Fernseher* is *TV,* so she believed that *fernsehen* must be *to watch TV*. This process demonstrated the following points: First, she knew the meaning of *sehen*. Second, she was familiar with the word *Fernseher* (appears in *Vorsprung,* Chapter One, p. 26). Third, she noticed *fernsehen* is also a verb like *sehen*. Using her existing knowledge, she arrived at the correct conclusion that *fernsehen* means *to watch TV*.

The textbook *Vorsprung* also played an important role in Anna's discovery of the meaning of the words *bleiben, Gepäck, Kaugummi, Mund, wahrscheinlich,* and *vielleicht*. She found the meanings of *bleiben* and *Gepäck* in the *Wortdetektiv,* and she discovered the

meanings of *Kaugummi, Mund*, *vielleicht*, and *wahrscheinlich* by looking up in the *Wortschatz* (Vocabulary List) section at the end of Chapter Three.

Anna's own notes also helped her discover meanings of unknown words. For instance, as she saw the word *lächeln*, she could not recall what it means, but she remembered that she wrote it down in her notes during the class. Hence, she looked it up in her notes and indeed found it there.

Besides the textbook and her notes, the print dictionary was another reference tool Anna consulted to find the meanings of unknown words. For instance, she looked up the word *Schuhe* in the dictionary and found that *Schuhe* is *shoes*.

It is also worth mentioning how Anna recalled the meaning of *Bahnhof*. When she first saw the word *Bahnhof,* she could not remember what it means. She skipped the word and moved on to quickly read through the word list. As she saw the last item on the list – *nur Bahnhof verstehen* – she suddenly recalled that *Bahnhof* is *train station*. She said, "oh, *Bahnhof*! *The train station*! I remember it now because *nur Bahnhof verstehen* is *to not understand anything*" (Anna, TAP, 44-47). This indicates that her memory of the idiom *nur Bahnhof verstehen* was vivid and led her to recall the word *Bahnhof*. The reasons why she remembered the idiom may be: (1) Because of the oddity of this idiom, the instructor spent more time explaining it in class, thereby enhancing Anna's memory. (2) Because the idiom itself is unusual. As pointed out previously in Chapter Four of the present thesis, unusual stimuli attract people's attention, which is fundamental for moving information from sensory register to working memory.

Anna found the meanings of most of the lexical items correctly, except one: the phrase *halten von etwas*. She looked up *halten* in her own notes and found out that *halten* alone means

to hold. Since she knew that *vestehen von etwas* is *to know something*, she came to the conclusion with confidence that *halten von etwas* must mean *to hold something*.

After Anna discovered the meaning of a lexical item, she immediately wrote the English equivalent next to the German word in the word list, such as *to eat – essen*, like a word pair. This was similar to how she recorded vocabulary in her notebook (see descriptions above). After the meanings of all lexical items were found and all their equivalents in English were written, she returned to the top of the list and started to memorize the meanings and spelling of the items.

Another vocabulary learning strategy she used was to connect the target word to other German words she already knew. For instance, to memorize the meaning of *Bahnhof*, she said, "*der Bahnhof ... train station*. *Autobahn* is for cars, so *train station* is *Bahnhof*" (Anna, TAP, 144-145). Also, she connected *lächeln* to the similar verb *lachen.* She said, "*lachen* is *to laugh* and *lächeln* is *to smile*" (Anna, TAP, 274).

It is very interesting to notice how Anna memorized the meanings of words by making sense of them. As Anna discovered that *Kaugummi* means *chewing gum* in English, she immediately saw *gum* in *Kaugummi* and then tried to "reason out" the meaning of *Kaugummi*. She said, "*Kaugummi, chewing gum*, because it has *gum* in it. *Gummi*, *gum, chewing gum*, hm, makes sense" (Anna, TAP, 74-76). In other words, Anna made sense of the word by looking at both *Kaugummi* and *gum* and finding what is common between them.

Anna also tried to memorize the word pair *Gepäck – luggage* by making the connection *Gepäck – pack – luggage*. She said, "*das Gepäck* is *luggage*. *Luggage, luggage*, *pack*, hm, makes sense" (Anna, TAP, 63-65). Here, the word *pack* plays the mediator role: it shares similarities in sound and spelling with *Gepäck*, and is also semantically related to *luggage*.

In addition, Anna uttered many oral repetitions. She read the word list and repeated all the words a number of times, especially those whose meanings she could not recall immediately, such as *Gepäck, bleiben, Mund, lächeln, wahrscheinlich,* and *vielleicht*. Sometimes, she also repeated the English equivalents of the German words as word pairs.

For the word pair *vielleicht* – maybe, Anna also did the following to assist her memory: she repeated, "*Maybe vielleicht ... maybe vielleicht ...* maybe he'll like" (Anna, TAP, 207-209). "*maybe vielleicht*" rhymes somewhat with "*maybe he'll like*". By making a sound connection, Anna found her own unique way to deal with *vielleicht – maybe*.

Anna also made written repetitions. However, she used this vocabulary learning strategy only for the German words *wahrscheinlich* and *vielleicht.* As she orally repeated these two words, she also wrote them several times on the same page of the word list. This indicates that these two words were particularly difficult for her so she needed to make an extra effort to learn them.

Anna also noticed that *fernsehen* and *mitbringen* are both separable verbs. She added a bracket symbol between *fern* and *sehen* and between *mit* and *bringen* (i.e., mit]bringen; fern]sehen). She also wrote "separable prefix" besides the two verbs to remind herself.

Furthermore, Anna placed a new word in a sentence to enhance her memory. For instance, as she worked on the word pair, *tragen – to wear*, she said, "*to wear ... tragen ... alle ... alle Deutschen tragen Lederhosen ... alle Deutschen tragen Lederhosen*" (Anna, TAP, 227-229).

Oral repetition was also the strategy Anna used to remember the gender of German nouns on the word list. As Anna repeated nouns orally, she usually included their gender too. For instance, she repeated "*mouth,* der *Mund, der Mund*," not simply "*mouth, Mund*."

Finally, Anna tested herself to ensure that she remembered the meanings of all the lexical items. She used an extra paper to cover the column of the German words. She looked at the column of the English words and said the German equivalents. She tested herself several times until she knew all of the meanings of the target words accurately.

Results of the quiz

Anna did very well in the quiz. Among the 14 items, she only misspelled the word *wahrscheinlich* (she wrote *warscheinlich*), and did not answer the phrase *to think of something* (*halten von etwas*) correctly (she wrote *denken von etwas*). The latter is not surprising because she did not find the correct meaning of *halten von etwas* in the first place.

Results of the follow-up activities

For the first and the second receptive activities, Anna had no difficulties at all finding out the German words in the chart or to understand the sentences and match them with the pictures. Actually, for the first exercise, she found all of the 20 words incorporated in the chart within a very short period of time. In the second activity, she recognized all the words she had just studied, such as *Schweinefleisch, Fußball, Gepäck, trägt, fernsehen* … and so on.

In the third activity – writing about a typical Canadian – she put the following words/phrases in the circles:

das Buch
das T-Shirt
der Käse
der Kaffe
nach Tim Hortons
der Cola
das Englisch und das Französisch
der Rockmusik

die Limo

Some of the words were found in the print dictionary. For instance, she wanted to say that "Canadian people drink soft drinks," but she did not know how to say *soft drinks* in German. So, she referred to the *Collins Dictionary* and looked up *soft drink* in the English-German section. However, *soft drink* was not listed as an entry there, *soda* and *soda pop* were. *Soda* was translated as *das Sodawasser* and *soda pop* as *die Limo*. She chose to add *die Limo* into the circle.

It is interesting to notice that she wrote *der Cola* (should be *das* or *die Cola*) and *der Rockmusik (die Rockmusik)*. As Anna herself described in the interviews, when she was not sure about the article of the noun, she "goes with *der*."

In the fourth activity, she used the words in the circles and wrote a short essay as follows:

Der typischer Kanadier trinke der Cola sehr gern.

Viele Kanadier haben der Tim Hortons Kaffe gern.

Alle Kanadier sprechen Englisch oder Französisch.

Nicht so wenige Kanadierinnen höre Rockmusik sehr gern.

Viele Kanadier essen der Käse gern.

Alle Kanadier tragen die T-Shirts gern im Sommer.

Nicht viele Kanadier lesen das Buch sehr gern.

Nicht alle Kanadier trinke die Limos jedes Tage.

In sum, for the productive activities, she did not use many of the words she had just studied (only *essen* and *tragen*). Nevertheless, with help of the dictionary, she found many other words to describe Canadian stereotypes. She conjugated the two verbs *essen* and *tragen* and the other verbs such as *haben, sprechen, lesen* correctly, but not the verbs *trinken* and

hören.[99] The sentences in the essay also revealed that Anna was not certain about the use of definite articles. In other words, the two productive activities showed that knowing the German equivalent of an English word (and its gender if the word is a noun) does not necessarily equal knowing how to use the German word in a context.

6.1.1.3 Analysis of Anna's Vocabulary Learning Strategy Repertoire

In the questionnaires and interviews, Anna said that, in order to discover meanings of unknown words, she relied primarily on guessing from the context, and secondarily on dictionaries or her course notes, or she asked the course instructor. Further, Anna said she took notes in class, tried to pronounce the target words correctly to memorize the spelling, connected the target words to words in French which she was very familiar with, and made sound and/or meaning connections (e.g., *door – Tür*). As for remembering the gender of a noun, she noticed that some words in the same semantic fields share the same gender, and that suffixes are also a helpful indicator of the gender. After studying the words, she always tested herself. Doing homework assigned by the course instructor was the only thing she did to actually use the words.

In the think-aloud protocols, Anna recognized the similarities in spelling and/or sound between the target word and its English equivalent (e.g., *Fußball, Bier, Politik, Schweinefleisch*), or recognized part(s) of a word (e.g., *sehen* in *fernsehen),* and then inferred the meaning. Also, she connected the target words to other German words she knew (e.g., *fernsehen – Fernseher*). She consulted various reference materials, such as the *Wortdetektiv* activity in *Vorsprung* Chapter Three, the *Wortschatz* at the end of Chapter Three, her own

[99]At that point, the participants had not learned the accusative case and the adjective endings. Thus, the structures like *Der typisch**er** Kanadier…* or *haben **der** Tim Hortens Kaffe sehr gern* should not be counted as errors.

notes, and the print dictionary. Finally, she translated the phrase(s) literally to infer the meaning of the phrase *halten von etwas.* Further, she took notes and wrote the English equivalents next to the German target words; she connected the target words to other German words (e.g., *Autobahn – Bahnhof*; *lächeln – lachen*); she reasoned out the meanings of words by finding what is common between the German word and its English equivalent (e.g., *gum* in *Kaugummi*); she made a sound and meaning connection (e.g., "*maybe-vielleicht, maybe he'll like."; Gepäck – pack – luggage)*; she paid attention to affix and root and added a bracket between them (e.g., *mitbringen, fernsehen*); she placed a new word in a sentence (e.g., *tragen: "Alle Deutschen tragen Lederhosen.")*; she repeated the word pairs orally and wrote the two words *vielleicht, wahrscheinlich* repeatedly. As for the gender of nouns, she memorized the definite article with the noun together. Finally, she tested herself to ensure that she had remembered all the words properly. Table 6.1 below summarizes the vocabulary learning strategies reported by Anna as well as actually used strategies during the think-aloud protocols.

Table 6.1. Vocabulary learning strategies reported and used by Anna.

Reported vocabulary learning strategies	• Taking notes • Recognizing part(s) of a word and then guessing the meaning • Guessing from the context • Consulting print dictionary (bilingual) • Consulting electronic dictionary • Consulting course notes • Asking the teacher or German native speakers • Connecting the target German word to words in languages other than German (e.g., French or Spanish) • Connecting the target German word to other words in German (for consolidation) • Making sound and/or meaning connections • Oral or silent repetition • Reviewing notes • Pronouncing words in German correctly to remember the word spelling • Listening to the instructor's (or native speaker's) pronunciation • Remembering the gender of nouns by the semantic field

	• Remembering the gender of nouns by the suffix • Testing herself • Doing homework assigned by the instructor
Used vocabulary learning strategies	• Taking notes • Recognizing part(s) of a word and then guessing the meaning • Recognizing the similarity in spelling and/or sound between the German word and its equivalent in English or other languages (cognates or borrowings) • Connecting the target German word to other words in German (for meaning discovery) • Consulting print dictionary (bilingual) • Consulting the *Wortschatz* (Vocabulary List) • Consulting the *Wortdetektiv* activity in *Vorsprung* • Consulting course notes • Translating phrases literally • Placing new words in sentences • Connecting the target German word to other words in German (for consolidation) • Making sound and/or meaning connections • Making sense of the meaning of words by finding what is common between the German word and its English equivalent • Oral repetition • Written repetition • Orally repeating the definite article together with the noun • Reviewing notes • Making visual indication of the separability of the affixes and roots • Testing herself

After examining data from Anna's questionnaires, interviews, and think-aloud protocols, I would describe her learning processes and her use of vocabulary learning strategies as organized and structured. The characteristics of being organized and structured are clearly shown in the way she created her course notes and studied the word list, and the way she quizzed herself to be certain that she had remembered the words.

In addition, she used various vocabulary learning strategies to consolidate the word list. Among all of the participants, she applied the most consolidation strategies in the word list study session. The majority of the consolidation strategies she applied are elaboration strategies

(i.e., placing new words in sentences, connecting the target German word to other words in German, making sound and/or meaning connections through a mediator, making sense of the meaning of words). An essential feature of elaboration is to make sense of the to-be-remembered information. Hence, I believe that making sense of the German target words or any to-be-remembered information plays a crucial role in Anna's memory process. As she also stated in the interviews, learning German vocabulary was not difficult for her, because she thought German vocabulary (especially the pronunciation) makes sense (i.e., "logical" in her own word). Thus, using various elaboration strategies perhaps could explain why she did well in the quiz in my study. In sum, taking notes, reviewing the notes with various elaboration strategies, and testing herself form the basic pattern of her use of strategies to learn vocabulary.

However, it is also significant to note that she did not use the textual context as a means to infer the meanings of the words at all, although she especially emphasized the importance of guessing from the context in the interviews. Nevertheless, it does not mean that she did not use this strategy at all when she encountered unknown words. It is possible that the inconsistency between her reported and actually used strategies was caused by the fact that the lexical items in my study were not presented within a context.

Anna also reported that she used electronic dictionaries and asked the instructor for meaning clarification when she encountered unknown words. Theses two strategies were not evident in her think-aloud protocols because my study did not incorporate the instructor and computers into the vocabulary activities. Yet this does not mean that Anna does not use these two strategies in other learning situations.

Further, she reported that she used the strategy "connecting the target German words to words in French or Spanish" for memorization. However, this strategy was not evident in the

vocabulary study session. I assume that it was not applied because the lexical items on the word list were not similar to any French or Spanish words she knew, and thus, she was not able to make such elaborative connections. It indicates that which strategies being used for memorization has much to do with the words being memorized.

6.1.2 Sarah

6.1.2.1 Results of the Questionnaires and Interviews

Basic personal information

Sarah was a 20-year-old first-year student. She would like to major in both Arts and Business (international trade). She was born and grew up in Ontario, Canada. English is her L1. She learned French for 5 years (from Grade 4 to 9) and Spanish for 6 months in high school. She evaluated her French and Spanish as both very poor: She could understand some simple words, but was not able to have a conversation in these two languages.

She took GER 101 primarily because she needed to fulfill the language requirement, but also because she was interested in the language and culture. In addition, some relatives in her family could speak a bit of German. She did not see them very often, and so far she had not learned German from them. But from hearing conversations in German at some family reunions, she found the language very interesting. She knew that Kitchener-Waterloo has a large German population, and was familiar with the Oktoberfest. That was also one of the reasons that she was interested in learning German.

Language learning in general

In the interviews, Sarah further explained why she did not take French at UW to fulfill the language requirement because she did not like the language itself very much. The pronunciation of French was very difficult to her. She said, "There are too many silent letters, I just don't get it" (Sarah, Interview 1, 26-27). She thought that languages like Spanish or German make more sense, "because you pronounce each and every letter" (Sarah, Interview 1, 21-22). Taking French courses from Grade 4 to Grade 9 was a requirement in her school. After Grade 9, it became optional, so she stopped.

Sarah described how French was taught in these classes. It seemed that the major focus was on vocabulary: her teachers used many signs or flash cards to teach vocabulary. There was always a central topic to introduce vocabulary, such as Halloween or Christmas, and vocabulary was built around the central topic. Students learned how to conjugate verbs, but they did not learn how to use the vocabulary in a context or in a real conversation. Neither did the teachers encourage students to speak or to practice French in class: students could always speak English. Sarah recalled, "The teachers are all English speaking people. So you can speak English in class. Only in Grade 9, they made you say '*Can I go to the bathroom*?' in French, and that's it" (Sarah, Interview 1, 82-86). After class, she didn't practice French much either. She only studied in order to pass exams.

Compared to her unpleasant experiences of learning French, Sarah said that she enjoyed the GER 101 course and was highly motivated to take German 102 Elementary German II (GER 102) as well. One of the reasons for her positive attitude was that it was her own decision to take German, and not a mandatory requirement. She also emphasized that having a good instructor was the most significant reason for her to enjoy the course.

If her positive experiences of learning German continue, she would like to go to Germany through the exchange program. She thought it is important and an advantage to be proficient in German, since she studied International Trade and might make use of in her future career. By "proficient," she meant to be able to engage fluently in German conversations. In other words, developing conversational skills (i.e., speaking) was her priority while learning German. Writing skills were not so important to Sarah.

However, it is worth noticing that she also stated she did not like to be called on in class by the instructor, although she was not scared to speak German. She said that she did not mind working in a group in the language classroom, because then she could hide herself in the group. She believed that, in this way, she would not be called on by the instructor. But when it came to studying for exams or quizzes, she preferred to study alone to avoid distractions. Sarah's self-description matched my impression of her through the course observation. Sarah usually sat in the corner of the classroom and did not often volunteer to answer the instructor's questions. Nevertheless, when she was called on, she was usually able to answer the question very well.

With regards to the vocabulary learning experience, Sarah said that she was always very keen to learn new words. She also thought that developing her vocabulary size was important. She explained, "to have a bigger vocabulary is obviously better, because you can better express what you are trying to say" (Sarah, Interview 2, 11-13). So far, the instructor and the textbook *Vorsprung* are Sarah's primary resources for learning German vocabulary. "I am just relying on the instructor and the course right now," said Sarah (Sarah, Interview 2, 60-61). She did not have an additional plan specifically for increasing her vocabulary size.

Vocabulary learning strategies reported by Sarah

Sarah thought it important that the instructor was a German native speaker. She remarked that it is actually the first time that she had a native speaker as a language teacher. Her former language teachers, in French as well as in Spanish, were all English. She thought that they all sound so English when they speak the foreign languages. She said, "I just think when you are learning a language, you should have somebody who knows how to say the words. I mean, after all, that's the person you are trying to sound like" (Sarah, Interview 2, 186-189). Hence, in class, she listened to the instructor's pronunciation very carefully and tried to pronounce the word as accurately as possible. She stated that she practiced the pronunciation when she was alone, to avoid attention from the instructor or her peers.

Sarah also took notes in the classroom. She had a notebook especially for GER 101. The notes did not contain only vocabulary, but also sentences or grammatical information presented in class. Sarah said that, when the instructor introduced new vocabulary, she always wrote it down in the notebook. The words were written in the form of word pairs: the German word and its English equivalent were placed on the same line, and usually separated by an equal sign (=), for example: *fragen = to ask.*

As mentioned previously, Sarah considered accurate pronunciation an important aspect of learning a foreign language. Thus, she attended to the pronunciation of words in her notes as well. She not only wrote down the new German word, but also noted its pronunciation with English spelling, particularly when the word had a special orthographic form. For example, besides the word *Tisch*, she also added (*tish*) to remind herself that *sch* in German is pronounced like *sh* in English.

These notes were important material for Sarah's vocabulary learning process. Sarah usually reviewed the notes after class for about an hour, and especially before quizzes or exams. She said she always did homework assigned by the course instructor. Sometimes after class, she watched German movies with English subtitles with her sister, who was very interested in international films. However, she did not try to use this media as a tool for learning German. She simply wanted to enjoy the movies.

Sarah stated that, when encountering unknown words or when having any questions, either in or out of the class, she rarely asked the instructor for clarification because she did not want to interrupt or slow down the class discussion. She usually tried to find the answers to her questions on her own after class. She usually simply used the *Wortschatz* (vocabulary list) section at the end of each chapter and the German-English vocabulary in the reference section at the end of the textbook. She mentioned that she never used print dictionaries to look up the words. As for electronic dictionaries, she had used them only a couple of times.

In order to facilitate the memorization of words, Sarah revealed that, when preparing for quizzes or exams, she usually made a list of words that she needed to study. Then she focused on the items on the list and repeated them orally. For example, if she needed to memorize the meaning of the German word *Tisch*, she would write "*Tisch = table/desk*" on a list, and then repeat orally "*Tisch table, Tisch table*" several times. However, after the exams or quizzes, she did not usually keep the word lists and review them again.

For studying the spelling of the target words, Sarah mentioned that oral repetition was her major strategy as well. Take *Tisch* as an example again: she repeatedly spelled out loud each letter of *Tisch*: "*T-I-S-C-H, T-I-S-C-H*." As mentioned previously, Sarah thought pronouncing the words in German correctly is important. She thought it is also very helpful for

remembering the spelling of words, because, as she remarked previously, "you pronounce each and every letter."

Oral repetition was also used to memorize the gender of nouns. For instance, in order to recall that *Tisch* is masculine, Sarah said out loud *der Tisch* repeatedly until she had got "a feeling of it," to quote her own words (Sarah, Interview 2, 179).

Sarah indicated that, after the oral repetition session was over, she also quizzed herself to ensure that she remembered all the words that she had studied. She simply covered the words and tried to recall their meanings, spelling and grammatical gender (for nouns). If a word could not be recalled, she returned to the start and worked on memorizing the forgotten word again with repetition.

Why was Sarah so devoted to oral repetition? Had she ever tried other strategies to facilitate memorization? She pointed out that the course instructor had introduced the class to several different ways to help remember the gender of nouns, such as color coding and analyzing the suffixes.[100] However, she did not follow the advice, because she liked her own way and she knew it worked best for her. She explained, "I like to do things on my own. […] I am happy with my own way. I don't like people to force me to do things in their way, because I know what works for me" (Sarah, Interview 2, 373-379). Additionally, she did not trust the general guideline for the gender of nouns, because there might be exceptions to these rules. She said she did not like to take a chance: "It makes me nervous when something says 'usually'. […] I'd rather know for sure than assume" (Sarah, Interview 2, 312-316).

[100]The course instructor gave the class a handout to introduce some general guidelines of the gender of nouns. For instance, most nouns ending in -er are usually masculine.

6.1.2.2 Think-Aloud Protocols

Vocabulary learning strategies used by Sarah in the word list study session

As the session of word list study began, Sarah took a blank sheet of paper and put it beside the word list. She wrote down "meaning of the words" at the top of the paper and started to work through the word list, beginning with the first item *essen*. She first wrote down the German target word, and then moved on to find its meaning.

In order to discover the meanings of unknown words on the list, Sarah relied heavily on the textbook, particularly the German-English vocabulary at the end of the textbook. She basically looked for each lexical item there. Even when she recognized the words such as *Bier, Politik,* and *Wochenende* which look or sound similar to their English equivalents and guessed the meanings correctly, she still turned to the textbook to ensure her inferences were accurate.

As for the phrase *verstehen von etwas*, Sarah looked up the phrase in the textbook German-English vocabulary and found the phrases *verstehen von* (see Figure 6.4 below) within the text of the same entries for *verstehen*. Then she searched for a translation for *etwas* and found that it is translated as *some, somewhat*. Hence, she interpreted the whole phrase as *to know something somewhat*.

Figure 6.4. The entry *verstehen* in the German-English vocabulary in *Vorsprung* (Source: Lovik et al., 2002, p. R-27).[101]

verstehen (verstand, hat verstanden)
to understand, comprehend [AL 1];
~ **von** + dat. to know something (anything) about [AL 3]

[101]According to *Vorsprung*, "The information in brackets indicates the chapter in which the word was first used for recognition […] or the text section in which the word was presented as active vocabulary" (Lovik et al., 2002, p. R-3). The abbreviation K. stands for *Kapitel* (chapter), AL stands for *Anlauftext*.

When encountering the next phrase, *halten von etwas*, she found it under the entry *halten* (see Figure 6.5). It is translated as *to think of*. She remarked, "*to think of, to think of somewhat* … It doesn't make a lot of sense. … *to think of some* … Ok, *halten von etwas ... to think of some slash somewhat*" (Sarah, TAP, 139-144). Her words indicate that she tried to make sense of the odd outcome derived from the literal translation. Nevertheless, at the end, she persuaded herself that *halten von etwas* means *to think of some/something*.

Figure 6.5. The entry *halten* in the German-English vocabulary in *Vorsprung* (Source: Lovik et al., 2002, p. R-13).

halten (halt, hielt, hat gehalten) to
stop [K. 4]; ~ **für** + acc. to believe
someone to be [AL 10]; ~ **von** + dat.
to think of [AL 3]

Finally, Sarah had difficulties understanding *nur Bahnhof verstehen.* Sarah found in the German-English vocabulary that *Bahnhof verstehen* is translated as *to not speak much German* (Lovik et al., 2002, p. R-6), and that *nur* means *only*. So she interpreted *nur Bahnhof verstehen* as *only to not speak much German* and thought it very awkward. However, she did not turn to the *Anlauftext* where the phase originally appears to check the context.

As described above, Sarah wrote the meanings of the German words on an extra sheet of paper. After she discovered the meaning of a German word, she wrote its English translation in brackets right next to the German word, for example:

der Bahnhof (train station)

After finding the meanings of all the lexical items, Sarah worked on remembering the meanings and spelling. First, she separated the words into 2 groups: nouns and verbs. Using two new sheets of paper, she wrote down all the German nouns with the definite articles on one

paper, and verbs and phrases on the other paper. She also included *wahrscheinlich* and *vielleicht* in the verb group which indicated that she did not know they are not verbs.

The main strategy Sarah used to memorize the spelling of the German words was to spell every letter of the word aloud. For instance, while she wrote *Kaugummi*, she spelled aloud *K-A-U-G-U-M-M-I* in English. When it is a long word like *Schweinefleisch* or *wahrscheinlich*, she repeated the letters more times. She also paid attention to unusual German letters. For instance, she noticed that *Gepäck* has the umlaut *ä*, and *Kaugummi* has two *M*s**.**

After grouping the words on two separate sheets of paper, she returned to the noun group. She quizzed herself on the meanings of the German nouns by writing down the English translations beside them, for example:

der Bahnhof → train station

das Schweinefleisch → pork

Then she tested herself on the spelling of the nouns as well by covering the German column (e.g., *der Bahnhof, das Schweinefleisch*), looking at the English translations (train station, pork) and then writing down the German words again but in a different space on the same page. Next, she uncovered the German column to check whether she had written the words accurately. She noticed that she misspelled *Gepäck* (i.e., she wrote *Gepät*), so she corrected it. Next, Sarah focused on the gender of the nouns. She divided the nouns into three subgroups based on the gender. She wrote the English translations of the neuter nouns under *das*-group, the masculine nouns in English under *der*-group, and the feminine noun under *die*-group (see Figure 6.6 below).

Figure 6.6. An example of grouping strategy employed by Sarah.

Das	Der	Die
→ pork	→ train station	→ politics
→ luggage	→ mouth	
→ chewing gum	→ soccer	
→ beer	→ shoe	
→ weekend		

Then Sarah quizzed herself again on spelling. This time, she looked at the English words in Figure 6.6 above, and wrote down the German equivalents for each word next to the English words (illustrated in Figure 6.7 below). While she was writing the nouns in German, she also repeated the gender of each noun orally. For instance, *das Schweinefleisch, das Gepäck* and so on. After writing all the nouns in German, she orally repeated the nouns in German with their definite article again (i.e., *das Schweinefleisch, das Gepäck* and so on), followed by the final round of oral repetition of both the nouns in English and their German equivalents (i.e., pork, *Schweinefleisch*; luggage, *Gepäck* and so on).

Figure 6.7. An example of testing-oneself strategy employed by Sarah.

Das
→ pork (Schweinefleisch)
→ luggage (Gepäck)
→ chewing gum (Kaugummi)
→ beer (Bier)
→ weekend (Wochenende)

Next, she moved on to the group of verbs which she had written on the other sheet of paper. Similarly to how she studied the group of nouns, she tested herself on the meanings and spelling of the verbs, orally repeated the word pair (e.g., *essen, to eat*; *wandern, to hike*), and spelled the letters out loud numerous times. She had to pay extra attention to *wahrscheinlich*, *vielleicht* an d *nur Bahnhof verstehen* because she could not recall their meaning correctly

when she tested herself. Finally, she returned to the noun group and tested herself on the meanings, spelling and definite articles again, before she wrote the quiz.

Results of the quiz

Sarah did very well in the quiz. Among the 14 items, she had difficulty only with *to understand nothing*. This is the only question she did not answer correctly (she wrote *verstehen von etwas)*. It is not a surprise because the textbook, on which she relied, translated the phrase as *not to speak much German*, not as *to understand nothing*.

Results of the follow-up activities

In the first activity, Sarah found the 10 German words very quickly: *Wochenende, Fußball, Kaugummi, Bahnhof, mitbringen, tragen, Schuhe, Gepäck, Bier, Politik*. She stopped after the 10th word was discovered and moved on to the second activity. She recognized the words from the word list she had studied, understood all the seven sentences and matched the pictures with the sentences without any problem.

In the third activity – writing about a typical Canadian, Sarah wrote down the following words in the circles:

das Hockey
das Französisch
das Bier
freundlich
friedlich
die Pommes frites

She thought of hockey (*das Hockey*) immediately. Then she wanted to add French to the circles, but she could not remember the German equivalent *das Französisch* which she had learned in Chapter Two of *Vorsprung*, and needed to look it up in the dictionary. The third word she put

into the circle is *das Bier* which she had studied shortly beforehand. The fourth word she wrote down was *freundlich* (friendly). Then, the word *friendly* links to the word *peaceful* (*friedlich*). However, she did not know how to say *peaceful* in German and found it in the dictionary. Finally, she wanted to add the fast food *poutine* to the circles, but the dictionary did not contain this word. So she changed *poutine* to *French fries* and found the translation *die Pommes frites* in the dictionary.

In the fourth activity, she used the six words and wrote a very short text as follows:

Die Kanadier sind freundlich und friedlich.

Sie spielen Hockey gerne und sie trinken das Bier.

Sie sprechen Französisch und sie isst die Pommes frites.

Her performance in the two productive activities showed that she remembered the noun *das Bier* and the verb *essen*. In general, she was able to conjugate most of the verbs correctly. The only verb that she did not conjugate correctly was *essen*. The other problem was the use of definite articles. She had difficulty in knowing whether she should add the definite article to the noun or not. For instance, when she was writing the sentence "*Sie spielen Hockey gerne und sie trinken das Bier*," she was hesitant about adding the article *das* for *Bier*. But she decided to write it. It showed that knowing the grammatical gender of nouns is not sufficient. Knowing when to use it and when not to use it is also important.

6.1.2.3 Analysis of Sarah's Vocabulary Learning Strategy Repertoire

Overall, Sarah reported in the questionnaires and interviews that, when she encountered unfamiliar words, she usually consulted the *Wortschatz* (vocabulary list) section at the end of each textbook chapter, or the German-English vocabulary at the end of the textbook. In

addition, she reported that she took notes in class, did homework assigned by the course instructor, and made a word list to study especially for quizzes or exams. Oral repetition was the primary strategy she used to memorize word meaning, spelling, and the gender of nouns. She also tried to pronounce words in German correctly to assist memorizing word spelling. Spelling the letters aloud (e.g., "*T-I-S-C-H*") was also very commonly used to memorize word spelling. Like Anna, she also tested herself after she studied the words.

In general, for word meaning discovery and word consolidation, the strategies reported in the questionnaires and interviews is similar to the strategies identified in Sarah's think-aloud protocols. During the word list study session, Sarah recognized the similarity in spelling and/or sound between the target word and its English equivalent and then inferred the meaning. Even when she was very certain about her inferences, she always consulted the reference materials to confirm them. The reference source she used during the think-aloud protocols was the German-English vocabulary at the end of the textbook. She also translated the phrases literally. Finally, to consolidate the lexical items on the word list, Sarah took notes and wrote the English equivalents next to the German target words on an extra piece of paper. Then she made a word list to study and grouped words together based on the parts of speech and on the gender. She repeated orally, wrote repeatedly, and spelled the letters of words aloud. She memorized the definite article together with the noun. Finally, she tested herself many times until she was positive that she had accurately remembered all the meanings, spelling and the grammatical gender of the nouns. Table 6.2 below summarizes the vocabulary learning strategies reported by Sarah as well as actually used strategies during her think-aloud protocols.

Table 6.2. Vocabulary learning strategies reported and used by Sarah.

Reported vocabulary learning strategies	• Taking notes • Making a word list to study • Consulting e-dictionary (but rarely) • Consulting the *Wortschatz* (Vocabulary List) • Consulting the German-English vocabulary • Reviewing notes • Reviewing word lists • Oral repetition • Spelling the letters aloud repeatedly • Pronouncing words in German correctly to remember the word spelling • Listening to the instructor's (or native speaker's) pronunciation • Testing herself • Doing homework assigned by the instructor
Used vocabulary learning strategies	• Taking notes • Making a word list to study • Recognizing the similarity in spelling and/or sound between the German word and its equivalent in English or other languages (cognates or borrowings) • Confirming the result of guessing by consulting the reference materials • Consulting the German-English vocabulary at the end of the textbook • Translating a phrase literally • Reviewing notes • Reviewing word lists • Grouping words (i.e., nouns) together by gender • Grouping words together by parts of speech • Oral repetition • Written repetition • Spelling the letters aloud repeatedly • Orally repeating the definite article with the noun together • Testing herself

Sarah is to a certain degree similar to Anna. I would also characterize her way of studying vocabulary learning as organized and structured. These two characteristics also shows in the way how she organized her course notes, created the word list, and tested herself repeatedly until she was sure that all the target words, including their spelling and meanings,

are well stored in her brain. However, she also mentioned that after the exams or quizzes, she did not usually keep the lists and study them again. It seems to indicate that her way of studying is extremely exam-oriented, although she said that fulfilling the language requirement was not the only reason for her to take the GER 101. She made the word list because she needed to remember the words to pass exams, and that was the main and only reason.

Another characteristic of Sarah's vocabulary learning processes is that she did not like to guess. Making sure and being certain of information is important for her. This is shown, on the one hand, in the fact that she quizzed herself repeatedly; on the other hand, it is shown in that, even when she recognized the words that look or sound similar to their English equivalents (e.g., *Politik, Wochenende, Bier*), she still consulted the textbook to make sure she was right. In the interviews, she also admitted that she preferred to know things for sure than to assume, and that she did not like to take a chance. Hence, it is not a surprise that, in the questionnaires and interviews, she did not report that she used the strategy "guessing from the context" to infer meaning of unknown words, and that she did not use it in the word list study session either.

The most unique part of Sarah's memorization processes is that she used a variety of repetition strategies (i.e., oral repetition, written repetition, spelling the letters aloud repetitively, orally repeating the definite article with the noun together). Not like any other participant, she spelled out loud each letter of the word repeatedly to memorize the spelling of German words. In the quiz, she did not make any mistake in spelling. It seems that her unique strategy works well for her. However, I believe that the other two consolidation strategies that she applied, i.e., "written repetition" and "testing herself", are also helpful to memorize the

word spelling. When she quizzed herself, she practiced writing the words repeatedly as well. This is also a way of memory reinforcement.

To sum up, taking notes, making a word list out of the notes, and studying the word list that she made with primarily repetition strategies form the model of Sarah's vocabulary learning processes. For a language learner like Sarah who believes that repetition works best for her and does not like to be forced to adopt other learning strategies, it is helpful to provide information about other memorization strategies and offer training opportunities for these strategies.

6.1.3 Kevin

6.1.3.1 Results of the Questionnaires and Interviews

Basic personal information

Kevin was a 19-year-old first-year University of Waterloo student. He would like to major in drama. He is a very experienced performer of the traditional Irish River Dance. He was born and grew up in a small town near Kitchener, Ontario. English is his L1. He had very unique educational experiences. He went to the public elementary school, and then was home-schooled between ages 10 and 15 (i.e., between Grade 5 and Grade 10), taught by his own parents and by their friends who also appreciated the idea of home schooling. Then he returned to the public education system and finished the last two years of high school. He learned French for five years: four years at the elementary school and one year with his father during the home schooling period. But he evaluated his French proficiency as poor and himself as a weak language learner. He had also been learning sign language on his own. He thought it was very interesting and might be helpful for being a good teacher in the future. He decided to take

GER 101 because he was interested in the language itself and the German culture. Also he knew that many famous modern theatre playwrights came from Germany or originated from German culture. He believed that learning German would help him with his studies in drama as well.

Language learning in general

Kevin said that he was not scared of speaking German. He did not feel uncomfortable when the instructor called on him to answer questions in German. However, he did not often volunteer to answer the instructor's questions. He liked to work in a group in the language classroom as well as in other courses. Because he was very interested in theatre and dancing, and had performed on stage for years, Kevin enjoyed working with people in a group. Yet, for quizzes or tests, he usually studied alone because then he could concentrate better on the study material. He usually studied only before quizzes and exams. After the tests, if he was very interested in that test material, and more importantly, if he had time, he would review his mistakes in the tests and the course materials. But if he did not like the course, he usually just forgot about the test results and moved on.

Kevin occasionally watched German movies with English subtitles. He said that he even repeated the dialogue after the actors occasionally. But he explained that he did so not because he wanted to remember or learn any words from the movie; it was just an instinct and spontaneous reaction for him because he studies drama. Hence, movies were not his primary tool for learning German. The primary resources of learning German were the course and the textbook. He said he enjoyed the GER 101 course very much. He liked the instructor, the classmates and the class atmosphere. The instructor was a very important factor for him to be

motivated for the course. He also tried to listen to the instructor's pronunciation carefully and mimic how he pronounced German words.

Kevin was fully aware that vocabulary is very important in learning a foreign language, especially when one wants to use the foreign language in a conversation. He said, "You can just tell somebody that your German is not very good and stream a poor sentence together with right vocabulary; they can probably still understand what you are saying" (Kevin, Interview 2, 13-16). He spent approximately one hour per week studying German outside of class. Although he was aware of the importance of vocabulary, he also pointed out that he usually paid more attention to grammar while studying, because he believed he had much more difficulty learning grammar than vocabulary.

Kevin explained in the interview why German vocabulary had not been very hard for him: "A lot of [German] vocabulary simply sounds similar [to English], you know, like *lecturer* and *Lehrer*, they really sound similar to me" (Kevin, Interview 2, 75-77). That is to say, when the German target word sounds similar to its English equivalent, it is much easier for him to remember. He also said that this was also true of his experience learning French vocabulary previously. He still remembered some colors in French very well because they sound very similar to their English equivalents to him. Nevertheless, he also knew that not all German vocabulary sounds similar to the equivalent English words. When he studied German words that sound nowhere close to the English equivalents, he still tried to make a phonetic connection between them.

Vocabulary learning strategies reported by Kevin

When encountering unknown words, Kevin said that he usually tried to guess the meaning from the context. He also used the *Wortschatz* (Vocabulary List) at the end of each chapter or consulted the German-English vocabulary in the reference section at the end of the textbook to discover the meanings of unknown words.

Kevin revealed that he usually took notes in the classroom when the instructor introduced new German words. Unlike Anna or Sarah, who wrote the German words and their English equivalents in two columns next to each other, Kevin wrote the German words across the sheet, and then, underneath the German words, he wrote down the English translations. Usually, only before the quizzes or exams, he would read through his notes. He revealed that, most of the time, he read them only once or twice the same way that he read anything. "I don't like to read the same word or the same sentence over and over again; I get bored," explained Kevin (Kevin, Interview 2, 172-174).

He also mentioned that if he had the opportunity to say the words out loud to someone while he was reviewing the material or immediately after he encountered the words, he could remember the words much better than if he only read them once or twice. For example, he described that, one day while he was memorizing the vocabulary for the time of the day in German (e.g., *Viertel nach/vor neun, halb zehn*) at home, he rehearsed those words with his sister although she did not understand German at all.

In reference to memorizing the spelling of a German word, he admitted that he always had a hard time with spelling, not only in German, but also in English, his L1. He stated, "I've never been good in spelling, in general. [...] Especially when the words sound very similar, then I got confused" (Kevin, Interview 2, 248-257). In order to retain the spelling, he usually read the words a couple of times, similar to the way in which he memorized the meanings of

the words as described above. He also tried to write the words on a piece of paper, but he revealed that this was not a consistent practice.

As for memorizing the gender of German nouns, Kevin had a unique way to remember that the article *der* is masculine and *die* is feminine. He revealed that, for him, some words just sound more masculine or feminine than the others. Even the definite articles themselves, especially *der* and *die*, were sounds of different pitch and thus sounded more masculine or feminine. He explained, "*die* is just a higher pitch sound, and *der* is a little bit 'harsher' and sounds more masculine" (Kevin, Interview 2, 267-268). But how did he connect *das* to neuter? Did it sound "neuter" to him? He explained that he knew *das* is neuter before he came to the class, so he did not have any difficulty remembering that and did not confuse it with the other two articles. Hence, in order to memorize the gender of German nouns, he studied the definite article with the noun together. Take the noun *Tisch* as an example, he did not just memorize *Tisch* but *der Tisch*. Through the "harsher" sound *der*, he remembered that *Tisch* is masculine.

In terms of using the words after studying them, Kevin said that he did homework assigned by the course instructor and tried to incorporate the learned words in the assignment. Sometimes, when he had opportunities, he tried to say one or two simple words or phrases in German. For instance, he once said *Entschuldigung* to the German course instructor to apologize for attending the class late.

6.1.3.2 Think-Aloud Protocols

<u>Vocabulary learning strategies used by Kevin in the word list study session</u>

Kevin used the German-English vocabulary at the end of the textbook as the primary reference tool to find the meanings for words that he did not know. Among the 22 lexical items

on the word list, he found the following words in the German-English vocabulary without difficulty: *essen, Bahnhof, Schweinefleisch, Kaugummi, tragen, Schuhe, mitbringen, fernsehen, Wochenende, vielleicht*.

He had trouble finding *Gepäck* in the German-English vocabulary, although the word is listed there. He skipped it and wrote it in the margin of a blank paper to remind himself he had not yet found its meaning. At a later point, he turned to the *Collins Dictionary* and finally discovered the meaning of *Gepäck* there.

It is also worth mentioning how Kevin dealt with the meanings of some words, such as *wahrscheinlich, Mund*, and *Politik*. With these three words, Kevin was fairly confident of his memory or inference. For instance, as he encountered *wahrscheinlich* on the word list, he said immediately, "I think that is *a sneeze* if I remember properly" (Kevin, TAP, 27). Actually, at a later point, as he reviewed the word list, he corrected himself and said that "I guess it is just *sneeze*, not *a sneeze*" (Kevin, TAP, 48). I asked him after the think-aloud protocols why he recalled *wahrscheinlich* as *a sneeze* or *sneeze*, but he could not explain where this idea came from.

When he saw *der Mund*, he said, "*der Mund* is *the moon*, I believe" (Kevin, TAP, 87). He inferred the meaning of *Mund = moon* obviously based on the sound similarity between the two words. Unfortunately, the similarity led to a mistake here.

Further, as to the noun *die Politik*, a word that looks and sounds fairly similar to its English equivalent (i.e., *politics*), Kevin surprisingly did not infer the meaning correctly either. He said, "*die Politik* is *a politician*, but *a female politician*, I suppose" (Kevin, TAP, 178-179). I assume that his erroneous inference is probably influenced by the definite article *die*.

These errors could have been easily corrected if Kevin used the reference materials (i.e., the textbook or the dictionary) to double check the meanings. But he did not. However, I noticed that Kevin did double check the meanings occasionally, such as in the case of *Schweinefleisch*. As he saw this noun, he recalled that it means *pork* in English. Although he was right this time, he said, "I will double check it because I might be wrong" (Kevin, TAP, 33-34). In other words, Kevin employed the confirmation strategy inconsistently.

The examples above also demonstrate that Kevin's inference of word meaning is mainly based upon the similarities in spelling and/or sound between German and English. Another example was evident in Kevin's response to the verb *fernsehen*. As described above, Kevin discovered in the German-English vocabulary that *fernsehen* is *to watch TV*. He also saw on the word list the conjugation of *fernsehen* in third person singular (i.e., *er sieht fern*) and said, "so once again, this is one of those verbs that split up in a sentence" (Kevin, TAP, 156-157). He continued with his word analysis and stated, "I am sure *sehen* must be *watching* and *fern* is *television*. […] I assume *sehen* is *watch* because that is similar to the word *see,* so *fern* must be *television*" (Kevin, TAP, 169-177). Again, he believed *sehen* is *to see* because they sounded similar to him.

In addition, Kevin had great difficulties with the three phrases on the word list. With *verstehen von etwas,* he first referred to the German-English vocabulary but saw the word *Verstand* which is translated as *reason, logic*. He did not see the verb *verstehen*, which is listed several words after *Verstand*. Next, he thought *verstehen* is a separable verb. He split the prefix *ver* from *stehen* and said, "*stehen* is *to stay*, I think. I think it is, or I hope it is" (Kevin, TAP, 265-266) and "I am sure it's one of the verbs that we can split up and be *stehen Sie ver* or something similar to that" (Kevin, TAP, 312-313). Then he tried to discover what *etwas* means.

He referred to the German-English vocabulary and learned it means *somewhat*. Then he interpreted it, "so *to think and understand somewhat* […], *verstehen von etwas*" (Kevin, TAP, 276-277). I notice that he suddenly stated that *verstehen* is *to think, to understand*. He did not say *to stay somewhat* as he just assumed for *stehen*. It seemed that he suddenly "remember" the meaning of *verstehen*.

Later on, he returned to the phrase and wanted to check the verb *verstehen* in the German-English vocabulary again. He said, *verstehen von etwas* is "*to understand only somewhat.* I should be sure of that before I go on" (Kevin, TAP, 301-303). At this moment, it seemed that he was going to refer to one of the reference materials, but then he suddenly changed his mind and decided to simply write *verstehen* on the extra sheet besides the word *Gepäck* to remind himself he needed to go back to this word. Minutes later, as he finally returned to the word *verstehen*, he referred to the print dictionary and discovered that it means *to understand*. He said, "I've seen this one before. Yeah, I think it was *understand* before. Oh it is good to know that I … I infer the right thing from root words. So *verstehen von etwas* is *to almost understand*" (Kevin, TAP, 393-397). As one can see, Kevin's translation of *verstehen von etwas* changes repeatedly, from *to think and understand somewhat* to *to understand only somewhat*, and finally to *to almost understand*. He spent much time on this phrase but did not get it right.

Kevin had difficulties finding the meaning of *halten von etwas* as well. As he saw the phrase on the word list, he said, "It'll be easy to say that *halten* in German and *halt* in English are similar. I hope they are … but that will only mean *to halt somewhat* which simply doesn't make sense" (Kevin, TAP, 315-318). Hence, he wanted to find the verb *halten* in the German-English vocabulary. Surprisingly, he saw the word *halt* (translated as *just*), not *halten* which is

listed immediately below *halt*. He moved on to translate the whole phrase and said, "*halt*, *just*, so *just understand.* […] So *verstehen von etwas* is *to understand a little bit, halten von etwas* is *just understand*" (Kevin, TAP, 323-327).

Finally, the idiom *nur Bahnhof verstehen*: As he saw the idiom, he did not recall the meaning of the noun *Bahnhof*. He referred to the German-English vocabulary and then remembered it means *train station*. However, he did not notice *Bahnhof verstehen* is cited immediately under the entry *Bahnhof*. He then translated the phrase as *almost near the train station*. He seemed to believe that *nur* means *near*, probably because both words start with *N* and end in *R*, and sound slightly similar. Later on, after he discovered *verstehen* means *to understand* in the *Collins Dictionary*, he decided that *nur Bahnhof verstehen* is *to understand the train station*. However, at the end of the word list study session, he changed the translation again. He said, "*nur Bahnhof verstehen* means *no where close to the train station*" (Kevin, TAP, 433-434).

Unlike Anna and Sarah, who generally memorized the words on the list after they had worked through the list and had discovered the meaning of all the words, Kevin started memorizing while he was still in the process of discovering the meanings, primarily by repeating the words orally. After he discovered the meaning of a word (accurately or not), he occasionally went back to the top of the list, and orally repeated each word, from *essen* to the words he had just encountered. When repeating, he said the German word and its English equivalent together, for instance, "*essen, to eat; der Bahnhof, train station*." Certainly, because he did not find the correct meanings for some words, he memorized the wrong translation as well, such as "*wahrscheinlich, sneeze*" or "*der Mund, the moon*."

Kevin also tried to make sound (phonetic) connections. For example, he thought that the pronunciation of *Bahnhof* sounds like *train station*; or as described above, he remarked that the verb *sehen* sounds like *see*.

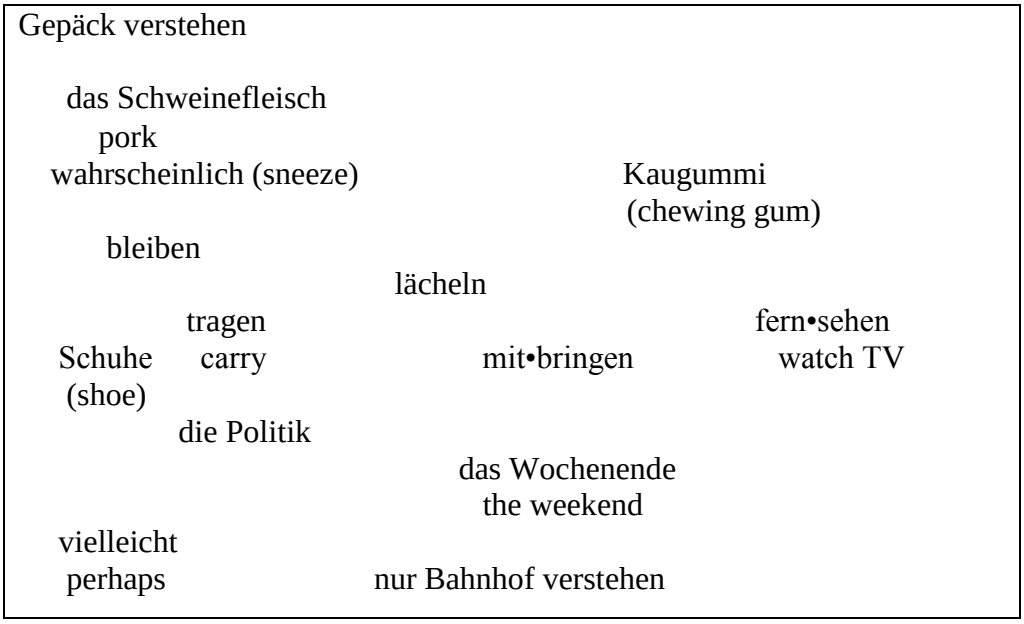
Like Anna, Kevin also memorized the word pair *Gepäck – luggage* by making a phonetic and semantic connection between the two words. He said, "*Gepäck*, *luggage*. Luggage for pack. *Gepäck*, pack, luggage, backpack. *Gepäck* is *luggage*" (Kevin, TAP, 368-372). Here, the words *pack* and *backpack* play the role of a mediator. Both words share to a certain extent sound and spelling similarities with *Gepäck*, and are also semantically related to *luggage*.

As described in the previous section, he believed that *Politik* means *a female politician*. In order to remember it, he also made connections between *Politik* and *a female politician* by thinking of an example of a female politician. He remarked, "I should think of a female politician like. […] Hillary Clinton" (Kevin, TAP, 181-182).

Kevin took notes on an extra sheet (see Figure 6.8 below) for multiple purposes. First of all, he wrote a couple of words on the margin of the paper to remind himself that he had not discovered their meaning and he needed to come back to these words (e.g., *Gepäck*, *verstehen* as mentioned above). Secondly, he wrote several German words to remember how they are spelled, such as *Schweinefleisch, wahrscheinlich, bleiben, tragen*, and *lächeln* because there is the Umlaut[102] *ä* in it. However, he did not particularly practice writing the German words (i.e., written repetition). Third, like Anna, Kevin also noted that *mitbringen* and *fernsehen* are separable verbs. In order to remind himself that they are separable, he wrote these two verbs in the notes and added a dot between *fern* and *sehen* and between *mit* and *bringen*.

[102]Kevin called the Umlaut "üpsilon." I believe he confused its pronunciation with that of the letter *y*.

Figure 6.8. An illustration of Kevin's notes during the think-aloud protocols.



In addition to writing down the verb *mitbringen* on the sheet of notes and putting a dot between *mit* and *bringen*, Kevin also created the imperative sentence "*Bringen Sie mit*!" to remember the meaning of *mitbringen* and that it is a separate verb.

Kevin had a unique way to remember the word *Kaugummi*: to memorize *Kaugummi* is *chewing gum*, he exaggeratedly moved his mouth slowly as if he was actually chewing something in his mouth and said "*Kaugummi*" by lengthening the sound of the diphthong *au*.

Finally, he tried to make sense of the gender of the nouns by finding a reason why the word is masculine, feminine or neuter. For instance, to remember that *Schweinefleisch* is neuter, he said that "*das Schweinefleisch*, it's *das*, neuter, because the pork is dead, doesn't have a gender" (Kevin, TAP, 226-227). As for *der Mund,* which he mistakenly thought it means *the moon*, he remarked that the moon is masculine, "because the first one on the moon is a man" (Kevin, TAP, 237). Also, *Fußball* is masculine because football is a masculine sport.

Results of the quiz

Kevin's quiz result was poor. He answered only the following words correctly:

to eat:	*essen*
to hike/go hiking:	*wandern*
weekend:	*das Wochenende*

He could not recall the following words in German and did not write anything in the blanks: *to wear, probably, to smile, to think of, mouth*. It is no surprise that he could not answer these questions. After all, he only knew *tragen* as *to carry*, and mistakenly believed *lächeln* is *to laugh*, *halten von etwas* means *just to understand*, and *der Mund* is *the moon*.

He knew the German words for *chewing gum, luggage*, and *to stay*. However, he made some spelling mistakes. He did not capitalize the nouns (i.e., he wrote: *der kaugummi*, *das gepäck*), although he knew nouns in German always begin with a capital letter. As for the verb *to stay*, he wrote *bleibe* instead of *bleiben*.

He was confused by the questions *probably*, *to understand nothing*, *to bring along*. He wrote:

probably:	*verstehen*
to understand nothing:	*verstate von etwas*
to bring along:	*mitwoch*

It is not surprising either that he did not know the German words for *probably* and *to understand nothing*, because, as described above, he thought *wahrscheinlich* (*probably*) means *sneeze*, and *nur Bahnhof verstehen* (*to understand nothing*) means n*owhere close to the train station*. However, it is surprising that he did not recall *mitbringen* for *to bring along*, since he wrote it down to remember the spelling, added a dot between *mit* and *bringen* to remember it is separable verb, and even used it in a sentence.

Results of the follow-up activities

In the first activity – the word chart – Kevin first went through the chart horizontally and then vertically. He recognized the following 12 words: *Wochenende, Schuhe, Politik, Bier, Schweinefleisch, Kaugummi, Fernsehen, mitbringen, wandern, wahrscheinlich, verstehen, bleiben*. He also remembered the meaning of these words, including *wahrscheinlich* as *sneeze* and *Politik* as *female politician*.

In the second activity, he had difficulties understanding the following two sentences:

Das kleine Mädchen trägt ein T-Shirt und Shorts.

Der Junge sieht den ganzen Tag nur fern.

He did not know the meanings of *das kleine Mädchen* and of *trägt* in the first sentence. However, the words *T-Shirt* and *Shorts* helped him find the matched picture. As he encountered the second sentence for the first time, he could not understand it and decided to skip and come back to it at the end. Later, he found the matching picture because it was the only one that had not been picked yet. Then he recognized the word *fern* and said, "oh, *fern, fern* is *TV*, I should remember that" (Kevin, TAP, 579).

In the third activity, Kevin wrote down the following words in the circles:

der typischer Kanadier trinken keine gut bier gern
keine fußball gerne
ist Deutsch, Englisch, Polisch
Both parents work
habe klein Familie
liebe hübsch oder schöne sie

He first thought about what a typical Canadian likes to drink. He recalled the word *beer* immediately. He said, "I wanna say *beer* because it is one of the words that I just memorized. I want to say they like bad beer" (Kevin, TAP, 585-587). But he didn't know how to say bad in German, thus, he changed "they like bad beer" to "they don't like good beer," and added *der*

typischer Kanadier trinken keine gut bier gern to the first circle. Next, he thought about sports and added *keine fußball gerne*. Then, he moved on to the aspect of origins. He said, "typical Canadian comes from Europe actually" (Kevin, TAP, 617). But he didn't know how to say Europe in German, so he decided to list a few countries. But he could not remember the names of the European countries. Then he recalled that he had learned the names of people from the European countries. So he wrote down *Deutsch, Englisch, Polisch* in another circle. Next, he wanted to say "both parents work," but again, he didn't know how to translate that into German. So he simply added the phrase in English. Then, he wanted to express that typical Canadians have small families. He tried to recall the word small in German, but he couldn't. He said, "Oh shoot! That French word is coming, I wanna say *petite* but it is not" (Kevin, TAP, 641-642). Then he recalled many other adjectives. He said, "*schlang* is *skinny*, *groß* is *large*, *dick* is *chubby*. What is *small*?" (Kevin, TAP, 643-647) He referred to the textbook and found the word *klein* in Chapter One. He then wrote down *habe klein familie* in the next circle. Finally, he wanted to say "typical Canadians love beautiful, good looking people." Instead of looking up the German equivalent of *people,* he wrote the pronoun *sie* which, he explained, refers to "the plural of you" (Kevin, TAP, 659).

In the fourth activity, Kevin wrote the following sentences:

der typischer Kanadier keine trinken gut bier gerne.

die typische Kanaderin spielen fußball nicht gern.

es ist halt Deutsch, Englisch, oder Polisch…

der typischer Kanadier habe klein Familie.

Lieben hübsch oder schön Menschen.

In the fourth sentence above, Kevin used *halt* to mean *just*, as he believed that *halten von etwas* means *just to understand.* He said, "*Halt* is *just*. I could say *halt,* it is just Polish or English. Yeah, it works" (Kevin, TAP, 703-705). When he was writing down the last sentence, he decided to find out the German word for *people*. He looked it up in the dictionary and saw that it is translated as *Menschen*. However, the subject of this sentence was missing.

To summarize, Kevin's performance in the two productive activities showed that he was extremely weak in many aspects of word knowledge, especially in spelling (written form) and in using the words in the context. He did not capitalize the first words of the sentences. He did not capitalize *Bier* and *Fußball*. Verb conjugations seemed to be a problem for him as well. Also, he relied strongly on literal translation when he was asked to write full sentences. This was similar to the way he dealt with discovering the meaning of the three phrases in the word list.

6.1.3.3 Analysis of Kevin's Vocabulary Learning Strategy Repertoire

In the interviews and questionnaires, Kevin stated that, in order to discover meanings of unknown words, he usually guessed from the context or consulted the textbook *Vorsprung*, for example, the *Wortschatz* (Vocabulary List) at the end of each textbook chapter or the German-English vocabulary at the end of the textbook. He usually took notes in class, and did home work assigned by the course instructor; before quizzes or exams, he reviewed the notes by reading them through once or twice. Sometimes, he said the words out loud to someone who might not understand German at all, or to the course instructor. He was sensitive to the sound of words. He listened to the instructor's pronunciation carefully and studied the pitch of the

definite article *der* and *die*, and memorized the definite article with the noun together. Written repetition was employed occasionally to memorize the spelling of words.

During the word list study session, in order to discover the meanings of words, Kevin very often inferred from the similarity in spelling and/or sound. He also consulted the textbook German-English vocabulary and the print dictionary. He confirmed the result of guessing by consulting the reference materials, but not consistently. Very often, he translated the phrases literally word for word. Further, he repeated orally, made a sound and/or meaning connection (e.g., *Bahnhof* sounds like *train station*; *sehen* sounds like *to see*; *Gepäck* – pack – backpack – luggage), connected the word to a real figure (*die Politik* – female politician – Hillary Clinton). He also took notes and wrote the English equivalents underneath the German target words. He made a visual indication of the separability of the affix and roots (*mitbringen, fernsehen*), and used physical action to emphasize the sound and meaning of the word (e.g., *Kaugummi*). He placed the new word in a sentence (e.g., "*Bringen Sie mit!*"). Finally, for remembering the gender of the nouns, he made sense of the gender of nouns by finding a reason for why the word is masculine, feminine or neuter. Table 6.3 below summarizes the vocabulary learning strategies reported by Kevin as well as actually used strategies during the think-aloud protocols.

Table 6.3. Vocabulary learning strategies reported and used by Kevin.

Reported vocabulary learning strategies	• Taking notes • Guessing from the context • Consulting the *Wortschatz* (Vocabulary List) • Consulting the German-English vocabulary at the end of the textbook • Reviewing notes • Written repetition • Orally repeating the definite article with the noun together • Studying the symbolic volume of the sound • Listening to the instructor's (or native speaker's) pronunciation • Interacting with the course instructor or German native speakers • Saying the words in German to someone who may not understand

	German at all • Doing homework assigned by the instructor
Used vocabulary learning strategies	• Taking notes • Recognizing the similarity in spelling and/or sound between the German word and its equivalent in English or other languages (cognates or borrowing) • Confirming the result of guessing by consulting the reference materials • Consulting print dictionary (bilingual) • Consulting the German-English vocabulary at the end of the textbook • Translating a phrase/sentence literally • Making his own translation for the phrase • Reviewing notes • Placing new words in sentences • Connecting the word to a real figure • Making sound and/or meaning connections • Making sense of the gender of nouns by inventing a reason for why the word is masculine, feminine or neuter • Oral repetition • Orally repeating the definite article with the noun together • Making visual indication of the separability of the affixes and roots • Acting out the words

The most noticeable characteristic of Kevin's vocabulary learning processes shows in the way he inferred meaning of unknown words. He believed that many German words sound very similar to their English equivalents. Hence, he relied mainly on the similarities in spelling and/or sound between German and English to infer the meaning of new German words and made mistakes (e.g., *der Mund = the moon; nur = near; die Politik = female politician*). The erroneous inferences could be corrected if he had double checked them in the reference materials. However, although he did so, the problem is that he did it only occasionally, not consistently. Hence, in my opinion, to a language learner like Kevin, it is crucial to stress that although some German words do look or sound similar to their equivalents in English, it is not

always the case. The term "false friends" needs to be introduced at the early stage and the importance of comfirming the result of inferencing *consistently* should be emphasized.

Like Anna and Sarah, Kevin also made notes in the word list study session. However, his notes looked very different from the notes made by Anna and Sarah who wrote the German target words and their English equivalents in the form of word pair. It is interesting to note that he wrote down the English translations only for some German words. Among the 13 German lexical items he wrote on the sheet of notes, only eight of them were written together with their English equivalents (mostly underneath); the other five were not. The words were written randomly on the page like a simple memo. Although Kevin's way of organizing words in the notes was different from that of Anna and Sarah, his notes may very well represent some order or visual order that Kevin found helpful for memory.

Like Anna, Kevin also used a variety of vocabulary learning strategies to consolidate the word list (i.e., Anna used 10, Kevin used nine consolidation strategies). However, his quiz results were poor. It indicates that applying more strategies does not necessarily equal a better learning outcome. How and how well the strategies are applied also plays a role.

Lastly, Kevin's uniqueness shows in some of the vocabulary learning strategies he used to remember German vocabulary. He is the only participant who said that the German grammatical articles *der* and *die* have a different "pitch" which helped him to remember that *der* is the masculine article and *die* the feminine. He is also the only participant who acted out the noun *Kaugummi* when memorizing it. Finally, he is the only participant who said that he liked to practice saying German to someone even when this person did not understand German at all. I believe that the use of these three unique strategies probably has to do with his background as an experienced performer of the traditional Irish River Dance and as a student

with a drama major. The training in dancing to music, in performing and acting along the years makes it natural to him to pay attention the symbolic volume of sounds, to act out the words, and to say them aloud to people.

6.1.4 Kenny

6.1.4.1 Results of the Questionnaires and Interviews

Basic personal information

Kenny was a 20-year-old first year student. He would like to major in English literature. He was born and grew up in the Kitchener-Waterloo (K-W) region. English is his L1. He had learned French for nine years at the elementary and high school levels. He evaluated his French proficiency as excellent/good and considers himself an above-average language learner. He decided to take GER 101, not only because he needed to fulfill the language requirement, but also because he was interested in the language and the German culture.

Language learning in general

Based on my course observation and conversation during the interviews, my impression was that Kenny was an extroverted, relaxed, and easy-going student. He came to the German class fairly regularly,[103] enjoyed having conversations with his classmates and was active in the German class. He did not mind being in the spotlight and engaged enthusiastically in the classroom activities.

In his opinion, learning at least one foreign language was important for global communication: "Basically in the world today, there are so many people; everyone speaks something different; we have to keep up with that" (Kenny, Interview 1, 90-91). However, he

[103]Unfortunately, in the second half of the Fall term 2006, he became ill and missed many classes.

did not think it is so crucial to be proficient in German, "because," he explained, "it [German] is not that important compared to other languages like French which is secondary in this country or Spanish which has a big language population" (Kenny, Interview 1, 103-105).

Nevertheless, in interviews, Kenny stated that he enjoyed the GER 101 course very much, mostly because he liked the instructor and the way he taught. The lessons were relaxing and interesting to him: "He teaches in a way that makes it interesting and fun to actually learn it" (Kenny, Interview 1, 108-110). Kenny also explicitly stated that he prefers "people who are very relaxed and laid back about how they teach. They don't specifically try to beat it in you and say 'you need to know this, this is what you are doing, do this'. I like a more relaxed environment, communal type of things, not just the teacher is in the front and you are in the seats" (Kenny, Interview 1, 120-126). He regarded it as an advantage that the instructor was fairly young. He explained, "Because he is in the same age group so it is very easy to learn from him and it is sort of taking him as a friend instead of as a professor" (Kenny, Interview 1, 264-266).

In the same interview, Kenny emphasized the importance of the course instructor for his learning process. If he was not fond of the instructor, he did not want to make an effort in the course at all: "I get very turned off from it; it disturbs me from really focusing on it" (Kenny, Interview 1, 206-207). In other words, his motivation for learning was highly dependent on the degree of how much he liked the course instructor. The course instructor was also the source for him to learn the pronunciation of German words. He stated that hearing the words pronounced correctly by the instructor a few times helped him to remember how to pronounce the word.

Although he was an outgoing person and liked "communal type of things," he preferred to study alone without distraction. In addition, he did not enjoy doing group work at all because, as he explained, "unfortunately, most of the time, I usually get stuck doing the work" (Kenny, Interview 1, 150-151). If he had to finish an assignment or project with a group, he preferred to select his own group members rather than having the instructor randomly assign him to a group. He stated, "I prefer to choose my own partners because I know who they are and I know pretty much from their class participation how they work, and if they are like me, then I know we are going to get along" (Kenny, Interview 1, 170-174).

Although vocabulary had been a neglected aspect of his past language learning experience, Kenny was aware of its significance. He stated that without vocabulary, "there is no language" (Kenny, Interview 2, 9).

Vocabulary learning strategies reported by Kenny

Kenny said that he took notes in class and studied regularly. He spent approximately two to three hours per week studying German. To prepare for quizzes or exams, he often studied the *Wortschatz* (Vocabulary List) at the end of each of the chapters in the textbook.

Kenny stated that when he encountered words that he did not know, he usually first tried to guess the meaning of an unknown word from the context. Only when the context did not provide enough information did he take another step, such as consulting the textbook, his course notes or his print dictionary. He also used these reference materials when he needed to find words in German to finish homework, such as writing a short essay, or when he was not certain how to spell a word properly. He did not use an online dictionary at all. Sometimes, if the instructor was around, he would also ask the instructor for meaning clarification.

For memorizing the word meanings, Kenny indicated that he did not a have specific method besides repetition, because it is the only method he knew. Nevertheless, in addition to oral repetition, he emphasized that seeing the words (i.e., the German target word and its equivalent in English) while repeating them vocally was very important for him. Hence, seeing them and hearing them by pronouncing them out loud several times worked best for him. He said, "I usually have trouble with learning either way by itself. I cannot just learn by seeing it or just by hearing it. I usually need both" (Kenny, Interview 2, 72-74). Hence, when he studied the German word *Tisch* for instance, he looked at the target word as well as the English translation (table/desk) and repeated orally "*Tisch, table*" as a unit a few times.

He claimed that remembering word meanings had not been difficult for him. He wrote in the questionnaire, "I just have a decent memory." He explained that it was easy especially when the German word looks similar to its equivalent in English, or when he could connect the German word to French, the language he was very familiar with. In the latter case, he used the French word as a mediator between the target word and its English translation.

However, he was not so confident concerning memorization of word spelling. He admitted in the questionnaire that spelling was "probably the only thing that I'm a little slow at doing." He explained the difficulty with spelling in the interview: "Usually when I try to spell words, I'll sound them out. But in German, there are so many silent letters, they make spelling very difficult" (Kenny, Interview 2, 205-208). Taking the word *Tisch* (table/desk) as an example once more, Kenny said that, when he heard the word *Tisch*, the pronounced [t ɪ ʃ] lead him to spell the word as *Tish* instead of *Tisch*. In other words, being able to pronounce the word accurately did not always lead him to the correct spelling. He forgot the letter *C*, because, instead of regarding *SCH* as an inseparable unit for pronunciation, he only thought of *SH*, and

treated *C* as a silent letter which was easily ignored when spelling. He added that, sometimes, seeing the same German word many times helped him to retain the spelling in his mind. But merely hearing or orally repeating the word numerous times did not work well. This again indicated that he needed to see, to hear or to say the words for a better memory.

As for using the German words, Kenny stated that he tried to use the words in the assignments as well as in everyday conversation. He chatted to one of the classmates on MSN Messenger, and they tried to incorporate simple German words in their messages. For example, instead of saying *very good*, they used *sehr gut* when giving each other compliments.

6.1.4.2 Think-Aloud Protocols

Vocabulary learning strategies used by Kenny in the word list study session

Kenny began the session of word list study with the first lexical item *essen*, and then worked gradually through the list. In order to discover the meanings of unknown words on the list, he relied greatly on the print dictionary he owns.[104] He basically looked up each lexical item there.

Even when he guessed the meaning of the word correctly, for instance, words that look or sound similar to their English translations, such as *Fußball*, *Bier*, and *Politik*, he still referred to the dictionary to ensure his inferences were correct.

Kenny had more difficulty discovering the meanings of the last three phrases on the list. As he came across *verstehen von etwas*, he first looked up the word *etwas* in the dictionary and found out that it means *something*. Next, he guessed *verstehen von etwas* may be an expression (phrase). Thus, he further looked it up under *verstehen* and remarked that "it looks like it means *to know a bit or nothing about*. Hm … *to know nothing about or to know a bit*" (Kenny,

[104]Larousse Pocket Dictionary: German-English English-German. (2001). Paris: Larousse.

TAP, 267-269). He considered for a couple of seconds and decided to go with *to know a bit* rather than *to know nothing about*.

As to *halten von etwas*, he assumed now that "*von etwas* is probably *a bit*" (Kenny, TAP, 283). He moved on to look up *halten* in the dictionary and saw that it means *to hold.* He remarked, "The sentence doesn't make sense … *to hold a bit* …" (Kenny, TAP, 289-290). He continued looking for a translation for the phrase, but could not find it. Thus, he tried to straighten out the meaning by making his own translation/interpretation. He said, "So, see if I can get that … *hold a bit* … possibly means *do not have a lot*" (Kenny, TAP, 294-295).

For the idiom *nur Bahnhof verstehen*, Kenny also made his own translation. From encountering the noun *Bahnhof* and the phrase *verstehen von etwas* previously, he recognized that *Bahnhof* means *train station*, and *verstehen* means *to know*. He first looked up the whole phrase under the dictionary entry *Bahnhof* without any result. Next, he looked it up under *verstehen* but could not find it, either. Then he said, "So I am going to look at it separately. *Bahnhof verstehen, verstehen, to know*. So maybe it means *to know where the station is*" (Kenny, TAP, 324-327).

After discovering the meaning of a lexical item, Kenny always wrote its English translation next to the German target word. Then he orally repeated the word pairs, for instance, "*essen, to eat*." Further, each time after he orally repeated the word pair, he always returned to the top of the word list and repeated the preceding pairs. For instance, after he discovered *wahrscheinlich* means *probably*, he wrote down *probably* beside *wahrscheinlich*, and repeated *wahrscheinlich, probably*, he returned to the first word on the list and repeated the pair "*essen, to eat; Bahnhof, train station; wahrscheinlich, probably*." Hence, he reviewed the first word pair (*essen – to eat*) the most times, and the last pair (*nur Bahnhof verstehen – to know where*

the station is) the least times. According to his own description (see below), when he reviewed the words beginning at the top of the list, he sometimes only looked at the German words and tried to recall the English translations without looking at the latter. I also noticed that he did not repeat the definite article together with the noun. It seemed that he did not pay attention to the gender aspect of the nouns at all.

Results of the quiz

Kenny performed very poorly in the quiz. Basically, he forgot all the words he had just studied. As he was presented with the quiz, he stared at it for a couple of seconds and said, "I am gonna be honest. Everything just left my mind. … Everything just left my mind, I am completely blank" (Kenny, TAP, 345-350). I told him not to feel nervous. He responded, "I am not nervous at all" (Kenny, TAP, 352). He tried to write down some words, but then he said again, "All I am thinking of are French words […] I can't seem to place with the word even though I repeated it several times without even looking at the word when I was repeating it. I am drawing a complete blank, like I am really not even thinking of any words right now" (Kenny, TAP, 357-369). He looked at the quiz again and tried to write some answers. As results, he wrote down the following words:

train station:	*bahnof*
to understand nothing:	*versehen von etwas*
weekend:	*wochenende*
mouth:	*mund*

His answers showed that, first of all, he knew the German equivalents of *weekend,* and *mouth* in German. However, he did not capitalize the nouns. Second, he did not write the

definite articles. I believe that he had neglected to write the article because he did not pay attention to it during the previous study session and it was not registered in his memory.

Results of the follow-up activities

In the first activity, Kenny recognized the following ten words: *Wochenende, Schuhe, mitbringen, Schweinefleisch, Politik, Fußball, Kaugummi, Gepäck, verstehen, Bahnhof*. As he saw *Kaugummi*, he said, "*Kaugummi, chewing gum*, that is the one I couldn't figure out" (Kenny, TAP, 388-389). In the second activity, Kenny had difficulty finding out the matching picture for these two sentences:

Das kleine Mädchen trägt ein T-Shirt und Shorts.

Der Junge sieht den ganzen Tag nur fern.

He was confused by the subjects *das kleine Mädchen* and *der Junge*. For the first sentence, he knew it is about "somebody wearing T-shirt and shorts" (Kenny, TAP, 414). He believed it referred to picture 7. However, when he read the second sentence, he said, "*der Junge* ... somebody young" (Kenny, TAP, 418), he became uncertain and thought maybe the picture 7 did not match the first sentence but the second sentence. This uncertainty shows that he was not familiar with the words *das kleine Mädchen* and *der Junge*, and he did not recognize the verb *fernsehen* (*sieht fern* as in the second sentence) which he had studied briefly before this activity.

For the third activity, Kenny wrote down the following words:

hut
Schweinefleisch
Eh?
Biber
hockey
Bier

skate
Iglu

First of all, he thought of *touque* and looked up the German equivalent in the dictionary, but the word is not listed. He wondered whether it would be listed under the word *hat.* He saw *hat* is translated as *Hut*, but did not see any word close to *touque*. So he decided to write *hut* in the circle. Then he thought of bacon which is very common in Canada. But he could not find the German word for bacon in the dictionary either. So he wrote *Schweinefleisch* (pork) which bacon is made of. Next, he added the interjection *eh* in one circle since it is often said by Canadians in the conversation. Then, the word *beaver* came to his mind. He found its equivalent *Biber* in the dictionary. Then he added *hockey* and *Bier*. The word *hockey* led him to the word *skate*, but he could not find the German equivalent of *skate* in the dictionary (though it is there, see below). Finally, he thought of igloo and found its German translation *Iglu* in the dictionary.

In the fourth activity, Kenny used the words from the third activity and wrote a short text as follows:

Im Kanada, das typischer Kanadier spiele hockey und kleide Schlittschuh.

Er essen Schweinefleisch und trinke bier.

Er lebendig in ein Iglu mit ein Biber.

Er sagen "Eh?" und kleide ein hut.

With the first sentence, he wanted to say that "In Canada, a typical Canadian plays hockey and wears skates." He looked up the German equivalent for *skate* in the dictionary one more time. This time, he found it – translated as *Schlittschuh*. Next, he looked for the verb *to wear* in German in order to say *wears skates*. He found the translation *Kleidung,* which is a noun, and he used it as a verb. He translated the whole sentence as "*Im Kanada, das typischer Kanadier*

spiele hockey und kleide Schlittschuh." Next, he looked up the verb *to eat* in German and found *essen* in the dictionary. He wrote the second sentence "*Er essen schweinefleisch und trinke bier."* Then, he wanted to say "He lives in an igloo with a beaver." He looked up *to live* but found *live* (as an adjective) – *lebendig*. Hence, he wrote "*Er lebendig in ein Iglu mit ein Biber*." Finally, he looked up the verb *to say – sagen* and formed the last sentence "*Er sagen 'Eh?' und kleide ein hut*."

His performance in the two productive activities revealed that Kenny relied heavily on word for word translation when he was asked to write sentences in German. He seemed to think that a German sentence has the same structure as an English one. In addition, he had great difficulties in using the dictionary and reading the dictionary entries. He usually picked the first equivalent in the dictionary entry without noticing the part of speech (e.g., *to wear* vs. *Kleidung*). Further, his performance confirmed that the grammatical gender of the German nouns did not interest him. When he found the words he needed in the dictionary, and if it was a noun, he only attended to the noun, not the definite article which usually appears with the noun in the dictionary. Finally, the text also demonstrated that verb conjugation was not easy for him. In other words, he could not use the words properly in context.

6.1.4.3 Analysis of Kenny's Vocabulary Learning Strategy Repertoire

In the questionnaires and interviews, Kenny revealed that he usually tried to guess from the context first, and if context was not of much help, then he referred to various reference materials, such as the textbook, print dictionary, and his own notes from class. Further, in order to remember German words, he looked at the words (the target word and its English equivalent) and orally repeated them; he connected the word to words in a language other than German or

English, e.g., in French. Finally, he usually did the homework assigned by the instructor, and sometimes, he used some simple German words and expressions with classmates in online chatting. In general, he found memorizing German vocabulary not very difficult because he was very confident in his memory.

During the word list study session, Kenny consulted his print dictionary, guessed based on the similarity in spelling and/or sound between the target word and L1, confirmed the results of guessing by consulting the dictionary, and finally, translated the phrase literally and made his own translation when he could not find the phrases in the dictionary. He took notes and wrote the English equivalents next to the German target words in the word list and orally repeated the word pairs numerous times. Table 6.4 below summarizes the vocabulary learning strategies reported by Kenny as well as actually used strategies in his think-aloud protocols.

Table 6.4. Vocabulary learning strategies reported and used by Kenny.

Reported vocabulary learning strategies	• Taking notes • Guessing from the context • Recognizing cognates or borrowing • Consulting print dictionary (bilingual) • Consulting the *Wortschatz* (Vocabulary List) • Consulting the German-English vocabulary at the end of the textbook • Consulting course notes • Asking the instructor for meaning clarification • Reviewing notes • Oral repetition • Connecting the target German word to words in languages other than German for consolidation (e.g., French) • Listening to the instructor's (or native speaker's) pronunciation • Using some simple German words with classmates in online chatting • Doing homework assigned by the instructor
Used vocabulary learning strategies	• Taking notes and reviewing notes • Recognizing cognates or borrowing • Confirming the result of guessing by consulting the reference materials • Consulting print dictionary (bilingual) • Translating phrases literally • Making his own translation • Oral repetition

Kenny reported more strategies than he actually used in the vocabulary study session. It is logical that the reported strategies "asking the instructor for meaning clarification," "listening to the instructor's pronunciation," "using some simple German words with classmates in online chatting," and "doing homework assigned by the instructor" were not applied in the vocabulary study session because the activity was designed to be carried out by the participant alone without the presence of the course instructor, the classmates, and the computer. However, it is worth noticing that the two reported strategies "guessing from the context" and "connecting the target German word to words in languages other than German (i.e., French which he had learned for many years)" were not used either. As I have mentioned previously, the reason for that Kenny did not consult the textual context at all may be because the words/phrases were presented in the form of a word list, and consulting the print dictionary directly to find out the meaning of unknown words was faster and easier for the participants. As for the strategy "connecting the target German word to words in languages other than German (i.e., French)", I assume that Kenny did not use it probably because the German target words/phrases were not similar to any French word he knew or he could recall. Hence, he was not able to make such connection.

In addition, the data from Kenny's questionnaires, interviews, and think-aloud protocols show the following two characteristics: (1) the contrast between his self-perception about memory and the outcome of his word list study session (2) the exclusive use of maintenance repetition to memorize the word. In the questionnaires, he answered that remembering German vocabulary was not difficult for him because he was very confident of his memory. However, in the quiz, he could not remember much of the words that he had just studied – this might be caused by proactive interference (i.e., the French words he had learned

before interfered the German words he had just studied). The contrast indicates that when conducting a research in vocabulary learning strategies, it is not sufficient to collect only retrospective data which only look at learner beliefs. In additional to the retrospective data, eliciting introspective data will strengthen the richness, the credibility, and the reliability of the study.

The other characteristic is Kenny's exclusive use of maintenance repetition. He did not pay attention to the spelling of the words, to the capitalization of nouns. He did not think about the meanings of words or elaborate them either. In other words, he paid attention neither to the structural nor the semantic aspects of the input. His poor performance in the quiz seem to support the view of the levels of processing framework that merely repeating the words orally is not an effective way to register information in our memory. Nevertheless, I cannot rule out the possibility that other factors, such as motivation, anxiety (although he said he was not anxious at all), or the effect of the empirical study[105] affected Kenny's performance that day.

6.1.5 Erik

6.1.5.1 Results of the Questionnaires and Interviews

Basic personal information

Erik, 20 years old, studied economics at the University of Waterloo. English is his L1. His family background is German. A few family members could speak German (e.g., his mother), but very little. Nevertheless, he had never learned or spoken German before. He had learned French for nine years at the elementary and high school levels, but he evaluated his French proficiency as poor. His German background played an important role in making the

[105]In fact, study effect could also play a role in why some participants (e.g., Anna and Sarah) did particularly well in the quiz. This possibility should also be considered.

decision to take GER 101. His German relatives were very delighted that he is interested in learning more about the language and the culture. He also believed that learning German or learning a foreign language in general could be helpful for his future career. He wanted to major in economics and thought that, in the future, he might have to go on business trips to other countries. The ability to communicate in German could be an advantage for his career.

Language learning in general

Based on my course observation, Erik was fairly active in the GER 101 class. He rarely missed a class and always sat in the front row. He was not scared of speaking German and did not feel uncomfortable when the instructor called on him to answer questions. Actually, he often volunteered to answer the instructor's questions or questions from the classmates.

Erik said that he did not mind working in a group in class, because that way he could practice German with the others. However, for quizzes or tests, he usually studied alone to avoid distractions. He did not study regularly, but he was trying hard to do so. He explained that, at the beginning of the school term, he was more able to study everyday. But as he met more people from the university, and spent more time in conversations with them, his time for study decreased.

His primary resource for learning German was the course itself, which included the instructor and the textbook package. From time to time, he watched German movies with English subtitles, but usually for entertainment, not to facilitate his learning. He thought that the course instructor was very important for learning proper pronunciation. He wanted to be able to speak German without an English accent in order to be better understood. Hence, he was delighted that the course instructor was a German native speaker.

Erik treated vocabulary as the focal point for his learning of German. He believed vocabulary is terribly important in terms of expressing oneself and getting to know the culture better. His goal was to spend half an hour a day studying vocabulary. However, as described above, this plan was carried out much better at the beginning of the term. His social life distracted him from studying.

Vocabulary learning strategies reported by Erik

Erik stated in the questionnaires that, when he encountered unknown words, he generally consulted the print dictionary he owned and the online dictionaries, "although context is always a keystone." In other words, he usually turned to dictionaries directly, but sometimes, he also tried to figure out the meaning through the context. However, he also pointed out that, very often, guessing through the context was not easy for a beginner like him, because he didn't know much vocabulary, and there might be too many unknown words in the sentence which makes the context very obscure.

Babel Fish was the E-dictionary that Erik usually uses. He used it as a quick reference to find the English translation of an unknown German word or vice versa. Nevertheless, he was cautious of the electronic dictionary. He did not use it to translate a whole sentence or phrases, because he was aware that online dictionaries usually directly translate the words without regard to sense. Finally, Erik also mentioned that if he encounters unfamiliar words in class, he often asks the instructor directly for clarification, usually a translation to English.

Although studying vocabulary was the priority he set for the German course, when I asked in the interview whether he had any plans to increase his vocabulary, he answered that

there was “nothing too structured” for it, he simply tried to “sit down and memorize” (Erik, Interview 2, 89-90).

He stated in the questionnaires that he treated vocabulary memorization “with enjoyment and enthusiasm.” Hence, my questions concerning his vocabulary learning process first focused on how he memorized vocabulary. Did he do anything before he sat down to memorize or while he was working on memorization? In the interviews, he revealed that he actually had a unique way to enhance his memories, not merely sitting down and starting to learn as he claimed. Like many other students, Erik also took notes in the classroom. He basically recorded everything the instructor wrote on the blackboard. His course notes play a significant role in his learning process, especially for increasing his vocabulary size in German. The notes were composed of grammatical structures, pronunciation tips for certain consonant combinations (such as *sch*, *ch*, and *st*), and vocabulary introduced in class. Erik said that, after class, he read through his notes and wrote down new vocabulary on flash cards. The words on the flash cards were not written randomly. The words on the same card usually shared the same part of speech or were in the same semantic field. For instance, on one card, he grouped the color words (e.g., *rot*, *orange*, *blau* and so on), and all the country names (e.g., *Kanada, Mexiko, Japan, Österreich*, etc.) were listed together on another card. He also wrote sentences (e.g., *Machen Sie das Buch zu. Stehen Sie auf. Stehen Sie still*). When the German words were nouns, he usually included the definite articles (e.g., the classroom objects: *die Steckdose, der Papierkorb, der Boden*). German verbs were generally listed in the infinitive form without conjugations. On the one side of the card, he wrote the words/sentences in German exclusively. When he wanted to see the translations in English, he needed to flip over the cards.

Erik pointed out that creating the flash cards was a good reinforcement for his memory. He revealed that, when writing down the words both in German and in English on the cards, he also pronounced the words out loud. In this way, he became familiar with the spelling, the meanings, as well as the pronunciations of the words. For him, speaking the words out loud several times while memorizing them was a very natural movement and necessary too. "It creates some sort of muscle memory in your mouth," said Erik (Erik, Interview 2, 228-229). He also thought pronouncing the words accurately helped him to remember the spelling better. He stated in the questionnaires: "Once I understand the intonation of the individual letters through practice of the alphabet, spelling flows easily and naturally." Hence, knowing how to pronounce a word accurately was fairly crucial to him. In this, he was dependent on the course instructor. He was of the opinion that a good language instructor should be able to demonstrate and to teach the correct pronunciation to the students.

The flash cards did not only assist him with memorization, but also functioned as a "monitor." As described above, Erik wrote words in German on one side of the cards, and the English translation on the other side. In this way, he could easily quiz himself about the word meaning in both English and German, and quickly discover whether or not he could answer correctly. Sometimes, he also gave the flash cards to his roommates or friends, and asked them to quiz him by saying the words in English to which he would answer with the German equivalents.

As for using the words he had studied, Erik said that he tried to do homework and incorporate the words in the assignments given by the instructor. But other than that, he did not really use German much in his daily life.

6.1.5.2 Think-Aloud Protocols

Vocabulary learning strategies used by Erik in the word list study session

During the word list study session, when seeing words that he was not familiar with, Erik consulted various reference materials, such as the textbook and the print dictionary. He usually turned to the textbook first to find the word in the *Anlauftext* and to guess the word meaning from the textual context or from the pictures. If the context did not provide much information, he then looked up the word in the *Wortschatz* (Vocabulary List) at the end of Chapter Three or the print dictionary. For instance, as he saw the nouns *Kaugummi* and *Mund*, he consulted the *Anlauftext* and found the sentence "*Hat sie immer ein Stück Kaugummi im Mund?*" He looked at the sentence and the picture and said, "it seems like something to do with junk food" (Erik, TAP, 57-58). He then consulted the dictionary and discovered that *Kaugummi* actually means *chewing gum*. However, he still did not know what *Mund* is. He returned to the *Anlauftext* and looked at the picture again, and guessed *Mund* is *chips*. Then he consulted the *Wortschatz* (Vocabulary List) and found out *Mund* is mouth. Finally, he went back to the original sentence "*Hat sie immer ein Stück Kaugummi im Mund?"* and translated it as "*Does she always have chewing gum in her mouth?*" (Erik, TAP, 74-75)

Another example showing that Erik was aware of the importance of context is evident in the process of discovering the meaning of *Politik*. In the *Anlauftext*, he found the sentence in which *Politik* appears: *Versteht sie etwas von Politik?* He translated the sentence as "*Does she understand local politics?*" From his translation, it is clear he assumed *Politik* is *politics* because he recognized the similarities in sound and spelling between the two words. However, he was not certain about the word *etwas*, and thus, he thought *Politik* could have a different meaning. He looked for this word in the dictionary and found out that it does mean *politics*.

Nevertheless, he did not simply stop here. He continued to read the example sentences under *Politik* in the dictionary to understand how this word is used contextually. This was something that none of the other research participants did, although a couple of them also claim that they use the context for discovering the meaning of an unknown word. The example also reveals that Erik double checked the meanings of the known words even when he guessed the meaning correctly.

As mentioned above, Erik created flash cards. During the word list study session, he also tried to use flash cards to discover the meanings of words, such as *wandern*, but he could not find the word, although he recalled that he had written it on one of the cards.

The only two lexical items whose meanings Erik had difficulties finding were *verstehen von etwas* and *halten von etwas*. For *verstehen von etwas*, he first translated it as *to understand something or anything,* as he understood the sentence "*Versteht sie etwas von Politik?*" in the *Anlauftext.* However, he was still puzzled by the preposition *von*. He looked up *von* in the German-English vocabulary at the end of the textbook and saw that it means *from* or *by*. Thus, he guessed that it means *to understand from something, to gain knowledge, to piece things together*. Nevertheless, he was not very positive that it made much sense.

Discovering the meaning of *halten von etwas* was not easy for him either. He guessed the verb *halten* is equivalent to *halt* in English. Thus, he literally translated the phrase as *stop doing, stop everything, stop something, stop by something*.

As Erik worked through the word list, he wrote each of the lexical items in German on an extra sheet of paper. He did that mainly to "become familiar with the spelling" (Erik, Interview 2, 22-23), as he said during the think-aloud protocols. Hence, he wrote the items mostly only in German, not their equivalents in English.

In order to remember the words, he simply read the list aloud once. He did not orally repeat the words numerous times. As he reviewed the nouns, he also read the definite articles too. Basically, remembering the word list was not too hard for Erik, because he was familiar with many of the lexical items. For instance, he revealed in the think-aloud protocols that he knew *Wochenende* is *weekend* because the course instructor always said it to the students in class on Friday. Further, he also mentioned briefly that he was familiar with the word *vielleicht* previously. He knew the word from the video game "Age of Empires 2: Age of Kings" which he used to play. As for the last lexical items on the word list, *nur Bahnhof verstehen*, Erik recalled that it means *to understand nothing* because the instructor explained it in class.

Results of the quiz

Erik did well in the Quiz. He only answered the following three questions incorrectly*: probably* (*wahrscheinlich*, but he wrote: *vielleicht*), *train station* (he misspelled the word *Bahnhof* as *Bahnhoff*), and *to think of something* (*halten von etwas*, but he wrote *verstehen von etwas*). It was not surprising that he did not know *halten von* as *to think of*, because he thought *halten von etwas* means *to stop something, or to be stopped by something*.

Results of the follow-up activities

Erik did not have problems with the first two receptive activities. He recognized the following 15 words in the first activity: *Wochenende, tragen, lächeln, Schweinefleisch, Kaugummi, fernsehen, mitbringen, Bahnhof, bleiben, halten, Gepäck, wahrscheinlich, verstehen, wandern, vielleicht*. In the second activity, in the seven sentences, he recognized most of the words which he had just studied, such as *Gepäck, mitbringen, Fußball, Bier, fernsehen, wandern, lächeln,* and found the matching pictures.

For the third activity, he took out his course notes because the instructor had discussed German and American stereotypes in class. Erik thought he might be able to use some of the words he wrote down in the notes to describe Canadian stereotype as well. He also used the *Collins Dictionary* to look up words he needed. The first Canadian stereotype he thought of was "Canadians live in igloos." He guessed the igloo is spelled the same in German, but with capital letter *I* (Igloo). He added *s* to Igloo to indicate plural, but he was not sure whether it would work this way in German. Then he wrote: *wohnen in Igloos* in the first circle. Next, he added "*Alle Kanadier lieben Hockey*" and "*Alle Kanadier spielen mit Schnee*," "*alle Kanadier sagen 'Eh'*," "*lesen Pierre Berton*," "*lächeln immer*," "*fressen Hotdogs*" to the circles. Then, he consulted his notes and found the phrase "*trinken immer Bier*." He used it to describe a Canadian stereotype as well, but he stressed "*aber Kanadier sind nicht immer betrunken*." Then, he made a joke about Canadians being dumb. He looked up the German equivalent for the word *dumb* in the dictionary. There are two equivalents listed under the entry dumb – *taub* (as in *Sie ist taubstumm. She is deaf and dumb*) and *blöd* (*stupid*). He selected *taub* immediately without looking at how it is used in the context. Finally, he believed that people think it is absolutely freezing cold here in Canada. He looked up *cold* in the dictionary and saw the German noun *Kälte.* Hence, he added "*Alle Kanada ist sehr Kälte*" to the last circle.

In the fourth activity, he put together the words from the previous activity. The text reads as follows:

Alle Kanadier sagen "Eh?"

Alle Kanada ist sehr Kälte.

Alle Kanadier lesen sicher Pierre Berton auch sind taub.

Alle Kanadier spielen mit Schnee und bestimmt lieben Hockey.

Sie sind immer freundlich und lächeln immer aber wohnen in Igloos.

Alle Kanadier trinken immer Bier aber sie sind nicht immer betrunken.

The processes of carrying out the two productive activities showed that Erik did not attend to the part of speech of the word. Take the word *cold* in *freezing cold* as an example, in the *Collins Dictionary*, there are two entries for the word *cold* (see Figure 6.9 below):

Figure 6.9. The lexical entries of *cold* in the *Collins Dictionary*.

cold ADJECTIVE
(*see also* **cold** NOUN)
kalt ◊ *The water's cold.* Das Wasser ist kalt. ◊ *It's cold today*. Heute ist es kalt.
(When you talk about a person being cold, you use the impersonal construction)
◊ *I am cold.* Mir ist kalt. ◊ *Are you cold?* Ist dir kalt?

--- (Next page) ---

cold NOUN
(*see also* **cold** ADJECTIVE)
① die Kälte ◊ *I can't stand the cold.* Ich kann die Kälte nicht ausstehen.
② der Schnupfen (PL die Schnupfen) ◊ *to catch a cold* einen Schnupfen bekommen
◊ *to have a cold* einen Schnupfen haben
◊ *I've got a bad cold.* Ich habe einen üblen Schnupfen.

Although the dictionary indicates explicitly that *cold* can function both as an adjective and a noun in a sentence, Erik did not attend to this information. It is also possible that he did not know *cold* in *freezing cold* is an adjective. Thus, he just picked up the equivalent that he saw first.

6.1.5.3 Analysis of Erik's Vocabulary Learning Strategy Repertoire

In the questionnaires and interviews, Erik reported that he usually consulted a print or an electronic dictionary with caution, guessed from the context (but only when he knew

enough words in the context), and asked the instructors for a clarification when coming across an unknown word in class. Also, he reported that he took notes in class, did homework assigned by the instructor, and made flash cards. On the flash cards, words of the same part of speech or from the same semantic field were grouped together. Pronouncing the words accurately was helpful for him to remember the spelling. Oral repetition was also employed to enhance memorization. Finally, he tested himself or asked his friends to quiz him.

In the vocabulary study session, in order to discover meanings of unknown words, he consulted various reference materials including the textbook (e.g., *Anlauftext*, *Wortschatz*, German-English Vocabulary), the print dictionary, and the flash cards he had created. He also guessed from the context, and analyzed the pictures in the *Anlauftext*. Further, he recognized the similarity in spelling and/or sound between the German word and its equivalent in English and then inferred the meaning. However, he confirmed the results of guessing by consulting reference materials. For the phrases, he translated them literally and made his own translation. He took notes, wrote the German word on the extra sheet to facilitate memorization of the word spelling, and orally repeated the list one time. Table 6.5 below summarizes the vocabulary learning strategies reported by Erik as well as actually used strategies in his think-aloud protocols.

Table 6.5. Vocabulary learning strategies reported and used by Erik.

Reported vocabulary learning strategies	• Taking notes • Making flash cards • Guessing from the context • Consulting print dictionary (bilingual) • Consulting electronic dictionaries • Asking the teacher • Reviewing notes • Reviewing flash cards • Grouping words together by semantic fields • Grouping words together by parts of speech

	• Oral repetition • Pronouncing words in German correctly to remember the word spelling • Listening to the instructor's (or native speaker's) pronunciation • Testing himself • Asking others to quiz him • Doing homework assigned by the instructor
Used vocabulary learning strategies	• Taking notes • Analyzing available pictures or gestures • Guessing from the context • Recognizing cognates or borrowing • Confirming the result of guessing by consulting the reference materials • Consulting the *Wortschatz* (Vocabulary List) • Consulting flash cards • Translating a phrase literally • Making his own translation for a phrase • Reviewing notes • Oral repetition

It is noticeable that, in the vocabulary study session, Erik used some strategies to discover meaning of unknown words that he had not reported. For instance, he analyzed available pictures, recognized the similarity in spelling and/or sound between the German word and its equivalent in English, consulted the flashcards he made, confirmed the result of guessing by consulting the reference materials. I believe that these strategies were not mentioned likely because the questions in the questionnaires and interviews were open-ended, and Erik simply mentioned the ones that he used most often or the ones he could recall at the time of filling out the questionnaires and during the interviews. On the other hand, there are also some strategies that Erik reported but were not used in the vocabulary study session, such as "consulting electronic dictionaries" and "asking the teacher." As discussed previously, I believe it is because of the design of the vocabulary activities which did not allow the participants to have access to a computer or to the course instructor. Once more, it shows that,

in order to elicit a rich body of research data, it is important and beneficial to collect both retrospective and introspective information from the participants.

Like Kenny, Erik also used exclusively the strategy "oral repetition" to memorize the lexical items in the word list study session. However, his quiz results were much better than Kenny's. Examining his performance, I believe the cause of the differences between their quiz results might be rooted in the following two points: First, the lexical items on the word list were basically not difficult for Erik, because he was already familiar with many of them. This reduced much burden of memorization.

Second, I assume that Erik's way of discovering the meanings of some words (i.e., guessing from the context, guessing from the available pictures, consulting the print dictionary, consulting the reference sections in the textbook) might have helped him remember the words better. For instance, as he saw the nouns *Kaugummi* and *Mund*, he consulted the *Anlauftext* and found the sentence "*Hat sie immer ein Stück Kaugummi im Mund?*" He looked at the sentence and the picture and said "it seems like something to do with junk food." He then consulted the dictionary and discovered that *Kaugummi* actually means *chewing gum*. However, he still did not know what *Mund* is. He returned to the *Anlauftext* and looked at the picture again, and guessed *Mund* is *chips*. Then he consulted the *Wortschatz* (Vocabulary List) and found out *Mund* is mouth. Finally, he went back to the original sentence "*Hat sie immer ein Stück Kaugummi im Mund?"* and translated it as "*Does she always have chewing gum in her mouth?*" In course of discovery, he went back and forth between the picture, the sentence in the *Anlauftext*, the *Wortschatz*, and the dictionary. He thought about the meaning and the context; he tried to match the word meanings with the picture, and to understand them within the context. Likely, this whole process is actually to a certain degree a kind of making sense of

the input, that is, an elaboration, and that made his repetition not just a maintenance, but an elaborative repetition which, according Craik and Tulving (1975), is a more efficient type of repetition.

6.1.6 Ian

6.1.6.1 Results of the Questionnaires and Interviews

Basic personal information

Ian was a 22-year-old fourth-year student majoring in environmental resource studies. His parents are originally from Belgium, where he was born. Dutch is the first language he learned. He lived in Belgium only until he was three and then the whole family moved to France and lived there for three years. He learned French while living in France, and became very fluent. When he was six, the family moved again, this time to North America. He first lived in California for several years, and then moved to Canada. He had been living in the K-W region for over a decade. He took GER 101 because he had a German girlfriend. Hence, although he did not need to fulfill the language requirement, he thought that it was very important to become proficient in German and to know the German culture better.

Language learning in general

Ian lived in several different countries before he and his family moved to Canada over a decade ago – Belgium, France, and the United States. In the interviews, he reveals that he still remembers the time very well when they just arrived in the United States. When they moved from France to California, he was very fluent in Dutch, his L1, and French, but he couldn't

speak English at all. None of the local public elementary schools in California would accept him due to his language barrier. His parents had to send him to a private elementary school.

From Grade 1 to Grade 3 at the private school, he joined the regular classes with all the English speaking children. He said he could not understand what the other pupils said, but he could guess by their body language. Meanwhile, he also had his own personal language teacher who taught him English on a one-to-one basis outside of the regular curriculum. His parents also started to speak only English to him to make him learn English and to forget French as soon as possible. "I was forced to forget French and to learn English," as Ian described it (Ian, Interview 1, 47-48). Now his English is fluent like that of a native speaker.

Because of his German girlfriend Ian thought it was very important to become proficient in German, although she could speak English. In addition, Ian regards learning foreign languages as crucial. Both of his parents are multilingual; they are familiar with at least four different languages. He commented, "I feel kind of silly that I know only one" (Ian, Interview 1, 117-118). His parents spoke Dutch to each other, but not to him. English was the only language used between him and his parents. He could still understand some Dutch, but he was not able to speak it fluently.

As for French, he said that he forgot most of it when he lived in the United States. However, since he came to Canada, he had taken several French courses at school (from Grade 4 to Grade 11) and one year at UW. But he did not enjoy the French courses very much, because, as he commented, "they (the courses) just go over the same things every year, very repetitive, such as verb conjugations. You do not really learn anything new" (Ian, Interview 1, 124-126). After taking French courses for many years, Ian was neither comfortable speaking

French nor able to have a conversation in French. Hence, he evaluated his French proficiency as poor.

Although his experience with the French courses he took before was not excellent, he pretty much enjoyed the GER 101 course, probably because he was highly motivated, but also because he thought the course instructor did a great job and the course atmosphere was relaxed and entertaining. He stated that having a good instructor was important to him, because it made learning easier. But if the instructor were not very good, it would not influence his learning motivation much. He would still study. The only difference is that he would need to invest more time in it.

Ian did not mind working in a group, but only in the language course, because then he had more opportunities to practice the language with other students. Outside of the language course, he preferred to work on his own for two reasons: First, it often turned out that he became the one who had to finish all the work for the whole group. Second, he liked to work at his own pace. As he described, "I like to set my own time and do things as I feel. If I feel like procrastinating, I'll do that. I just don't like to be under pressure by other people especially" (Ian, Interview 1, 155-158).

Ian usually studied before the exams or quizzes for the GER 101 course, and did homework only when he had to hand it in to the instructor. He explained that he was usually very busy due to his part-time job and the other courses he was also taking. He said that he did not really have a timetable for school assignments. He would finish the work when he had time for it.

In the interviews, Ian also described his philosophy about language learning which was deeply rooted in his personal learning experience with French and English. He was a strong

believer in learning the language in its widest use: “Because I have taken French for so long and I am still not confident of my French, I realize that you have to actually be there, to be forced into the culture, forced to use it. [...] I think you really need to go, to be in that environment. I think, if I take five years of German in university, it would be nothing compared to five months in Germany” (Ian, Interview 2, 258-270). Hence, he planned to go to Germany to learn the language where it is used.

Regarding the significance of vocabulary in the language learning process, Ian believed that vocabulary plays a crucial role. “Without vocabulary, you cannot express basically anything you want to say in the language” (Ian, Interview 2, 3-5), he commented. Although he recognized the importance of vocabulary, he admitted that he neither spent much time nor had a specific plan to increase his vocabulary size. He revealed that he usually invested an extra hour per week in addition to the regular class hours to review the course material in general, without always having a specific focus on vocabulary. However, he emphasized that going to Germany would definitely make him learn a lot of vocabulary that he would actually use in daily life. At the moment, he just tried to come to the German course regularly, studied for the quizzes, and did the homework whenever he could.

Vocabulary learning strategies reported by Ian

To discover meanings, Ian said that he tried to recognize words or part(s) of the unknown words from Dutch and English, as well as French, because some German words are very similar to the equivalents in the three other languages he knows. He pointed out that, if he could discover the meaning this way, it would also make it very easy for him to memorize the

meanings of the target words, because they were already, to a certain degree, well known to him.

If this strategy did not work, he would guess the meaning from the context. Ian indicated that sometimes it was not enough to apply only one strategy but that multiple strategies at a time might be needed to discover the meaning of an unknown word. Take the verb *verbringen* as an example: in this verb, Ian recognized the verb *bringen,* which is very similar to its English equivalent *to bring*. Hence, he assumed that the verb *verbringen* is related to *bringen,* but he could not realize *verbringen* actually means *to spend time* until he saw the sentence "*Dieses Jahr verbringe ich zwei Semester an der Universität in Tübingen*" (in the *Anlauftext*, Chapter 2). When none of the strategies described above were of much help, he then turned to the reference materials, either a print dictionary, the vocabulary sections in the textbook, or the electronic dictionaries (e.g., Google or Babel Fish).

Ian also took notes in class. He usually wrote down basically what the instructor had taught in class. He thought the instructor taught in a very well-organized manner and the notes were already very structured. Hence, he did not re-organize the class notes afterwards. He used the notes to review, especially before the quizzes, but not as a consultative tool when encountering unknown words.

Regarding memorizing the spelling of German words, Ian reported that his primary strategy to retain the spelling was written repetition, i.e., he wrote the words repeatedly on a paper. While he was practicing writing, he also tried to pronounce the word aloud and correctly. In this way, he not only remembered how to spell the word but also how the word sounds. Hence, in the future, if someone (e.g., a German) says the word in a conversation, he would be able to recognize it. Therefore, he always paid close attention to how the course instructor

pronounced words in class and listened carefully when his German friends were talking to each other in German.

As for strategies used for retaining the meaning of German words, Ian said that he applied various strategies depending on what word needs to be remembered. The main strategy was oral repetition with context. He said that he did not orally repeat only the target word and its translation (either in English, Dutch or French) as a word pair, but also tried to remember how the target word is used in the context. Take the German verb *verbringen* again as an example: He did not say out loud only *verbringen, to spend time* several times, but also the sentence "*Dieses Jahr verbringe ich zwei Semester an der Universität in Tübingen*," or other sentences in which the verb appeared.

Sometimes Ian also made a sound association between the target word and its equivalent either in English, Dutch or French. For example, in order to remember that *Tür* means *door* in English, he would deliberately pronounce *Tür* in a series from *Tür – dür – dur* and finally *door*. This is not much different from the strategy Anna said she applied to memorize *Tür - door* (see 6.1.1 above). Ian indicated that, in general, learning vocabulary in German had not been difficult for him, because his knowledge in the three other languages very often assisted him greatly. If he could relate the new word to English, French or Dutch, he could remember it very fast, and the memory lasted longer, too. Like Anna, he also said that when remembering the word *Fenster*, he would relate it to the equivalent in French *fenêtre* to assist his memory.

In addition, sometimes he also practices the words he had learned in the German class with his girlfriend and other German friends. Ian also mentioned that, in the emails he had been exchanging with his girlfriend, she had been writing more and more German words. Although

they were not always the words he knew, and he referred to the dictionary or asked her directly for clarification (however, rarely), he was delighted he had the opportunity to learn and practice German this way. That is an advantage that the other five research participants did not have in their vocabulary learning processes.

6.1.6.2 Think-Aloud Protocols

Vocabulary learning strategies used by Ian in the word list study session

Like Erik, Ian also remembered parts of the lexical items on the list. When seeing words that he was not familiar with, or when he was not completely sure that he knew the correct meanings of the words, Ian always consulted the *Wortschatz* (Vocabulary List) at the end of Chapter Three or the *Collins Dictionary*. For instance, as Ian saw the word *Politik,* he was very confident that it means *politics* as it sounds and looks very similar to its English equivalent. However, he was not certain about the definite article *die*. He wanted to know whether *die* signifies a feminine noun singular or the plural form of the noun. Hence, he consulted the dictionary for clarification.

The similarity in spelling and/or sound between the target word and English equivalent also helped Ian to guess the meanings of the words *Schweinefleisch,* and *Bier*. As Ian saw the word *Schweinefleisch*, like Anna, he said immediately "that sounds exactly like it is … *swine flesh*" (Ian, TAP, 31). However, similarity is not always an advantage; it could also lead to erroneous guesses. For instance, as Ian saw the verb *halten* in the phrase *halten von etwas,* he also assumed that *halten* means *halt, to stop*. He said, "*halt* that sound … sounds very much like *stop … stop something* I suppose" (Ian, TAP, 202-203). However, he referred to the *Wortschatz* (Vocabulary List) and saw the entry *halten von* translated as *to think of* (*Vorsprung*,

2002, p. 119). He realized the phrase actually means *to think of something*, not *to stop something*.

Ian immediately recognized the word *Bahnhof* as *train station* because of the idiom *nur Bahnhof verstehen*. He said, "*der Bahnhof*, that would be the *train station*. I only know that because of the strange expression in the book that means *you don't understand anything*" (Ian, TAP, 12-13).

As he saw the verb *fernsehen*, he recognized *sehen* as *to see* and recalled that *fernsehen* means *to watch TV*. However, like Kevin, he also believed that *fern* must mean *television*.

After Ian discovered the meaning of a lexical item, he immediately wrote the English equivalent. He used an extra sheet of paper and wrote the German word and its English equivalent next to each other like a word pair. When the verb was a strong verb, he also wrote down conjugations of the 3rd and 2nd person singular (e.g., *er isst, du isst; er trägt, du trägst*). For nouns, he also wrote the definite articles. While he was writing the words, he also pronounced them aloud. After he worked through the word list, he returned to the top of the list and orally repeated all of the German words and their English translation once or twice. When he repeated nouns, he also repeated the definite article.

As for the noun *Gepäck*, he made a phonetic and/or semantic (sound and/or meaning) connection to enhance memorization. In order to remember that *Gepäck* is *luggage*, he said, "*Gepäck* … gonna pack something" (Ian, TAP, 40). In this case, *gonna pack something* functions like a mediator, a bridge linking *Gepäck* and *luggage.*

Finally, it is worth mentioning how Ian tried to remember the gender of nouns in addition to simply memorizing the definite article with the noun together. Like Kevin, he also tried to make sense of the gender of nouns by finding a reason why the word is masculine,

feminine or neuter. For instance, for *das Schweinefleisch*, he said, it is "a neuter word cause we don't like discriminating against pigs" (Ian, TAP, 32-33). Also, *Kaugummi* and *Mund* are both masculine because "baseball players chew that stuff" (Ian, TAP, 56) and "*Kaugummi* goes in the mouth" (Ian, TAP, 61). As well, *Fußball* is masculine "because it is a boy sport" (Ian, TAP, 88). Finally, *das Bier*, "it's neuter [because it is] enjoyed by men and women alike" (Ian, TAP, 124).

Results of the quiz

Among the 14 questions in the quiz, Ian answered 5 of them incorrectly. The incorrect answers are shown as follows:

probably:	*wiesteinlich*
train station:	*das Bahnoff*
luggage:	*das Gëback*
to understand nothing:	*verstehen von etwas*
to think of:	*halten*

Spelling seems his weakness. He misspelled *wahrscheinlich* (which he had great difficulty recalling), *Bahnhof*, and *Gepäck*, although he pronounced these words correctly during the word list study session. He didn't recall *nur Bahnhof verstehen* for *to understand nothing*; neither did he remember *halten von etwas* for *to think of (something)*. However, he did not have much difficulty recalling the gender of the nouns. It seemed that his strategy (i.e., making sense of the gender) was helpful in this respect.

Results of the follow-up activities

In the first activity, Ian recognized the following words: *Wochenende, tragen, Bier, Politik, lächeln, Schweinefleisch, Kaugummi, fernsehen, wandern, mitbringen, Bahnhof, vielleicht, bleiben, halten, Fußball, wahrscheinlich, verstehen, Gepäck.* As he saw *wahrscheinlich*, he immediately recalled that it is the word for *probably* in the quiz and that he misspelled it. For the second activity, he did not have any difficulties comprehending the seven sentences and finding the matching pictures.

For the third activity, he consulted the textbook and the *Collins Dictionary* and wrote down the following phrases in the circles:

essen peameal Schweinfleisch
essen die Eis
trinken immer Bier
trinken Maple Syrup
immer sagen "Eh"
nur sprechen das Französisch
leben im "Eis Haus"
sicher hören "Celin Dion"
tragen Parkas, Moccasins
speilen gern hockey

With the phrase "*leben im Eis Haus*," he meant to say "live in an igloo." However, *igloo* is not included in the *Collins Dictionary*. So he wrote *Eis Haus* to refer to *igloo*. Further, when searching for the German equivalent for *live* (as in *live in an igloo*) in the dictionary, he noticed the different part of speech of this word (see Figure 6.10 below). He first saw the translation "*lebendig* (animal)," he said, "animal, oh it's live, not to live" (Ian, TAP, 431). He scrolled down and saw *to live*. However, he did not read through the content listed under *to live* and simply picked the first equivalents *leben*. Although both German equivalents *leben* and *wohnen* are adequate for the context "to live in an igloo," it seems to show that, when there is more

than one equivalent under one lexical entry in the dictionary, learners are most likely to pick the first equivalent without paying attention to the context.

Figure 6.10. The lexical entries of *live* in the *Collins Dictionary*.

live ADJECTIVE
(see also **live** VERB)
① lebendig *(animal)*
② live *(broadcast)*
♦*There is live music on Fridays*. Freitags gibt es Live-Musik.

to **live** VERB
(see also **live** ADJECTIVE)
① leben ◊ *I live with my grandmother*. Ich lebe bei meiner Großmutter.
◊ *They are not married, they are living together*. Sie sind nicht verheiratet, sie leben zusammen.
② wohnen *(in house, town)* ◊ *Where do you live?* Wo wohnen Sie? ◊ *I live in Edinburgh.* Ich wohne in Edinburgh.

For the fourth activity, Ian wrote a text as follows:

Alle Kanadierin essen nur peameal Schweinfleisch und trinken immer Bier.

Sie immer sagen "Eh" wann sprechen.

Alle Kanadierin tragen wahrscheinlich das Parkas und Moccasins.

Wir sicher hören "Celin Dion."

Sie leben im "Eis Haus" in nordlicher Kanada.

Alle Manner speilen gern hockey.

Alle Kanadierin nur sprechen das Franzosisch.

The text showed that in general, he knew how to conjugate verbs and use words in a context correctly. It seemed that he did not know what the word *Kanadierin* (female Canadian) actually means. He seemed to think that it is the plural of *Canadian* (i.e., Canadians). There were some spelling mistakes (*Schweinfleisch, speilen, hockey, Franzosisch*). In fact, close to the end of this activity, he also mentioned that "spelling is not my forte" (Ian, TAP, 462).

6.1.6.3 Analysis of Ian's Vocabulary Learning Strategy Repertoire

Through questionnaires and interviews, Ian revealed that he usually tried to recognize the similarities in spelling and/or sound between the German words and his L1 (Dutch), English or French, or recognize word parts. Also, he guessed from the context and consulted a print or an electronic dictionary, and finally, asked German native speakers he was friends with. Also, he took notes, did homework assigned by the instructor, and sometimes practiced with German native speakers. Written and oral repetitions were very often employed for studying words for exams or quizzes. Pronouncing words in German correctly was helpful for him to memorize the spelling of words. Finally, he also said that he made sound connections or connected the target German word to words in languages in Dutch or French.

In the vocabulary study session, in order to find or to confirm the meanings of the words, Ian either consulted the *Collins Dictionary* or the *Wortschatz* at the end of Chapter Three. He also guessed the meanings of words by the similarity in spelling and/or sound between the target words and the English equivalents, and recognized part(s) of a word and then guessed the meaning. Further, he took notes and wrote the German words and the equivalents in English on an extra sheet of paper. He repeated the words orally, made sense of the gender of nouns by finding a reason why the word is masculine, feminine or neuter, and memorized the definite articles together with the nouns. Table 6.6 below summarizes the vocabulary learning strategies reported by Ian as well as actually used strategies in the think-aloud protocols.

Table 6.6. Vocabulary learning strategies reported and used by Ian.

Reported vocabulary learning strategies	• Taking notes • Recognizing part(s) of a word and then guess the meaning • Guessing from the context • Recognizing cognates or borrowings • Consulting print dictionary (bilingual) • Consulting electronic dictionary • Asking the teacher or German native speakers • Reviewing notes • Placing new words in sentences • Connecting the target German words to words in languages other than German (e.g., French or Dutch that he knows) • Making sound and/or meaning connections • Oral repetition • Written repetition • Pronouncing words in German correctly to remember the word spelling • Listening to the instructor's (or native speaker's) pronunciation • Interacting with the course instructor or German native speakers • Doing homework assigned by the instructor
Used vocabulary learning strategies	• Taking notes • Recognizing part(s) of a word and then guess the meaning • Recognizing cognates or borrowing • Consulting print dictionary (bilingual) • Consulting the *Wortschatz* (Vocabulary List) • Reviewing notes • Making sense of the gender of nouns by finding a reason for why the word is masculine, feminine or neuter • Oral repetition • Orally repeating the definite article with the noun together

Like Kenny and Erik, Ian also reported more vocabulary learning strategies than he actually used in the word list study activities. For instance, he mentioned "guessing from the context," "consulting electronic dictionary," "asking the course instructor or German native speakers," "listening to the instructor's (or native speaker's) pronunciation," "interacting with the course instructor or German native speakers," and "doing homework assigned by the instructor." The fact that these strategies were not identified in his think-aloud protocols does

not mean that he did not use them for study vocabulary at all. As I have discussed before, these strategies were not used in the vocabulary study session because of the design of the vocabulary activities and of the way the lexical items were presented (i.e., without context).

Nevertheless, it is worth mentioning that the elaboration strategies, "placing new words in sentences," "making sound and/or meaning connections," and "connecting the target German words to words in languages other than German (i.e., French or Dutch),"[106] were reported but not used in the vocabulary study session, either. It is possible that these consolidation strategies were not applied because Ian was already familiar to many of the lexical items on the word list, and thus, he did not need to make extra effort to elaborate the target words to remember them.

Furthermore, the differences between Ian and the other participants are characterized by the following two points: (1) his philosophy about language learning (2) better opportunities to interact with German native speakers. His language learning philosophy was deeply rooted in his previous learning experience with French and English. He strongly believed in learning the language in its widest use, in the environment where is language is seen, heard, written, and spoken. Also, compared to the other participants, Ian had the greatest opportunity to interact with German native speakers. This was no doubt an advantage in learning the language. However, he did not produce the best results on the quiz in my study. Nonetheless, the quiz only tested memorizing the lexical items on the word list. It did not test how much vocabulary he had learned. In addition, the fact that he has known many of the lexical items on the word list might be because he had encountered those words via interaction with his German friends. On the other hand, based on his performance on the quiz, it seems to indicate that having better

[106]These strategies are regarded as elaboration strategies because the to-be-remembered information is connected to the prior knowledge to enhance memory. See 6.2 for more detail.

language learning opportunities does not necessarily mean that other efforts, such as studying and reviewing the language material and other consolidation strategies, are not needed.

6.2 Vocabulary Learning Strategy Classification

In the previous sections, I introduced the results of the questionnaires, the interviews, and the performance during the think-aloud procedures. In this section, I present a classification scheme, describe all the vocabulary learning strategies identified in my study, and compare the participants' use of each of the strategies.

In total, 49 vocabulary learning strategies are identified from the interviews, the questionnaires, and the think-aloud protocols. I divide these vocabulary learning strategies into three primary categories:

(1) Strategies for creating study aids

(2) Strategies for discovering the meaning of unknown words, and

(3) Strategies for consolidating words.

The first category "strategies for creating study aids" includes strategies such as taking notes, making flash cards and so on. In the research literature, those strategies are usually viewed as memory strategies or consolidation strategies (e.g., Stoffer, 1995, Schmitt, 1997). It is undeniable that while creating the study aids, the learner may also be trying to consolidate the information that is being recorded on the aids. However, the data from my study show that creating study aids is often the initial step of the research participants' learning process. In the classroom, students usually take notes of what is being taught by the instructor, and then use the notes later either as reference material for discovering meaning of unknown words or as a

material for review. Hence, by making "creating study aids" an additional category, I want to stress that it is a separate and starting phase of the learning processes. The second and the third categories are adopted from the basic classification scheme proposed by Schmitt (1997; see Chapter Three of the present thesis).

Except in the first primary category, individual vocabulary learning strategies in the second and the third categories are further classified into numerous subordinate categories. The codes for the subordinate categories are derived mostly from research literature, especially from Nation (1990, 2001), O'Malley and Chamot (1990), Oxford (1990), and Schmitt (1997). Tables 6.7 – 6.9 below provide an overview of the classification.

Table 6.7. Strategies for creating study aids.

Strategies for creating study aids
• Taking notes (or making notes) • Making a word list to study • Making flash cards

Table 6.8. Strategies for discovering the meaning of unknown words.

Strategies for discovering the meaning of a new word	
Guessing (Inferencing)	• Analyzing available pictures • Guessing from the textual context • Recognizing part(s) of a word and then guessing the meaning • Recognizing the similarity in spelling and/or sound between the German word and its equivalent in English or other languages (i.e., cognates or borrowings) • Connecting the target words to other German words he/she knows
Confirming	• Confirming the result of guessing by consulting reference source
Resourcing	• Consulting print dictionary (bilingual) • Consulting electronic dictionary • Consulting the *Wortschatz* (Vocabulary List) • Consulting the *Wortdetektiv* activity in the textbook • Consulting the German-English vocabulary at the end of the textbook • Consulting course notes • Consulting flash cards • Asking the teacher or German native speakers
Translating	• Translating a phrase literally • Making their own translation

Table 6.9. Strategies for consolidating a word once it has been encountered

Strategies for consolidating a word once it has been encountered	
Review study aids	• Reviewing flash cards • Reviewing notes taken from class • Reviewing word lists made from the notes
Elaboration	• Placing new words in sentences • Connecting the target German word to words in languages other than German (e.g., French, Spanish) • Connecting the target word to other words in German • Connecting the word to a real figure • Making sound and/or meaning connections through a mediator • Making sense of the meaning of words by finding what is common between the German word and its English equivalent • Making sense of the gender of nouns by making up a reason for why the word is masculine, feminine or neuter
Grouping	• Grouping words by semantic fields • Grouping words (i.e., nouns) by gender • Grouping words by parts of speech
Repetition	• Oral or silent repetition • Written repetition • Spelling the letters aloud repeatedly • Orally repeating the definite article with the noun together
Paying attention to sound of words	• Pronouncing words in German correctly to remember spelling • Listening to the instructor's (or native speaker's) pronunciation • Studying the symbolic volume of the sound
Attending to affixes and roots	• Making visual indication of the separability of the affixes and roots
Deduction/ Induction	• Remembering the gender of nouns by the semantic field • Remembering the gender of nouns by the suffix
Employing action	• Physically acting out the word
Self-evaluation	• Testing oneself • Asking friends to quiz him/her
Making use of words	• Using some simple German words with classmates in online chatting • Interacting with the course instructor or German native speakers • Saying the words in German to someone who may not understand German at all • Doing homework assigned by the instructor

Like the vocabulary learning strategy taxonomies reviewed in Chapter Three of the thesis, this taxonomy should not be viewed as "exhaustive, but rather as a dynamic working inventory" (Schmitt, 1997, p. 204) that illustrates the major strategies identified from my empirical data. In what follows, I will introduce the three major categories and their subcategories (6.2.1 – 6.2.3). I will also describe the individual vocabulary learning strategies in the categories in more detail, and compare the individual participant's use of the individual strategies.

6.2.1 Strategies for Creating Study Aids

- Taking notes
- Making word lists to study
- Making flash cards

Taking notes is a very common strategy used by learners in all kinds of learning activities, or even in non-learning situations, such as in meetings, while reading books and so on. In my study, all of the participants reported that they took notes in the German class and used them later as important materials for review especially before exams and quizzes, as well as reference material. During the think-aloud protocols, they also took notes of the meaning of words they discovered. Schmitt (1997) indicates that "taking notes in class invites learners to create their own personal structure for newly learned words, and also affords the chance for additional exposure during review" (p. 215).

Making notes as a way of creating personal structure is particularly illustrated in the difference between the participants' way of recording the lexical items. For example, Sarah's course notes included pronunciation information because pronouncing the words accurately was very important to her. Also, during the think-aloud protocols, all of the participants wrote down the English equivalents. Anna, Sarah, Kenny and Ian all wrote English equivalents next

to the German words in a form of word pairs, while Kevin wrote the English equivalents underneath the German words only now and then.

Making flash cards and word lists is also a way of creating study aids. Schmitt (1997, p. 215) points out that flash cards have two advantages: (1) They can be taken almost anywhere and studied when one has a free moment. (2) They can be arranged to create a logical grouping of the target words. In my study, Erik was the only participant who created flash cards outside of the classroom in his spare time. As described previously, he grouped words based on semantic fields or parts of speech. He reviewed the cards and used it as a means of self-evaluation as well.

Sarah revealed in the interviews that she usually made a list of words that she needed to study for quizzes or exams. However, after the exams or quizzes, she did not usually keep the lists and study them again. In sum, my study shows that creating study aids is often the initial phase of the participants' learning/studying processes. The aids are created for multiple purposes: They are used as materials for reference or for consolidation.

6.2.2 Discovery Strategies

For the discovery category, 16 individual vocabulary learning strategies are recognized and further categorized into four subordinate categories: 1. guessing (inferencing) 2. confirming 3. resourcing 4. translating.

6.2.2.1 Guessing (Inferencing)

- Analyzing available pictures
- Recognizing part(s) of a word and then guessing the meaning
- Guessing from the textual context
- Recognizing the similarity in spelling and/or sound between the German word and its equivalent in English or other languages (cognates or borrowings)
- Connecting the target words to other words in German

Following O'Mally and Chamot (1990), *guessing (inferencing)* is defined as "using available information to guess the meaning or usage of unfamiliar language items" (p. 138). My study shows that "available information" may derive from pictures, the textual context, or even the word itself. For instance, during the think-aloud protocol, Erik tried to guess the meaning of *Kaugummi* and *Mund* from the pictures and the sentence "*Hat sie immer ein Stück Kaugummi im Mund?*" in the *Anlauftext*. However, the picture and the sentence were not of help to guess the meaning of these two words. Erik had to turn to the dictionary and the textbook to look them up.

The strategy "guessing from the textual context" was reported by five of the six participants (i.e., Anna, Kevin, Kenny, Erik, and Ian). They all stated in the questionnaires or interviews that guessing from the context was an important way for them to discover meanings of unknown words. However, when performing in real vocabulary activities in the think-aloud protocols, only Erik actually employed this strategy to find out the meanings of unknown words. This seems to echo Nation's (2001) view that what learners report they do may be not a true reflection of what actually happens when the learners tackle a word. Nonetheless, I cannot exclude the possibility that this inconsistency may be caused by the way the words/phrases were presented in the vocabulary activities: Since the words/phrases were presented on a list without context, it is probably easier and faster for the participants to turn to the dictionary or

the reference sections in the textbook directly, although they were all told that the lexical items on the list were derived from the *Anlauftext* and they could use the textbook anytime they needed to during the word list study sessions. I assume that if the words/phrases were presented within a context, for example, if I had given them the original *Anlauftext* and highlighted the words/phrases that were to be studied in a different color, the chance that the participants would have used the context to guess word meaning would have increased. Hence, the fact that the participants did not infer meaning from the context in the vocabulary activities does not necessarily mean that they never use this strategy when encountering new words. The way the words are presented plays an important role for the use of this strategy.

Participants also very often inferred the meaning of a German word by recognizing the similarities in spelling and sound between the word and its equivalent in English (mostly) or in other languages they know, such as French, Spanish, or Dutch. For instance, in Chapter 6.1, we have seen that most of the participants found the meanings of the words *Bier*, *Fußball* and *Politik* very quickly and correctly because these words look and sound very similar to their English equivalents *beer*, *football*, and *politics*. Overall, similarity in sound and spelling between two languages is an excellent resource for guessing the meaning and remembering the words (Schmitt, 1997, p. 209). However, similarity is not always an advantage and may lead to erroneous inference as well. For instance, when Kevin saw the noun *die Politik*, he believed it means *a female politician*, and he was very certain that *der Mund* is *the moon*.

It is not uncommon for the participants to recognize only part(s) (e.g., prefixes or roots, or word of a compound word) of a German word, and based on the knowledge of the part(s), they tried to infer the meaning of the word. For instance, Anna recognized *sehen* in *fernsehen*. Sometimes, the parts are helpful clues for guessing the meaning of the whole word, but not

always. For example, in the interviews, Ian illustrated that, although he recognized *bringen* in *verbringen,* this knowledge was not very useful for discovering the meaning. He did not realize the actual meaning of *verbringen* until he saw the sentence "*Dieses Jahr verbringe ich zwei Semester an der Universität in Tübingen."*

The strategy "connecting the target words to other German words" was helpful for Anna to discover the meaning of *fernsehen* in the think-aloud protocols. Anna saw the verb *sehen* in *fernsehen* and recalled the noun *Fernseher* (television) and thus inferred correctly that *fernsehen* is *to watch TV*. In fact, Anna was the only one who recalled *Fernseher* and thus inferred the meaning of *fernsehen* correctly. In contrast, Kevin and Ian misinterpreted *fern* in *fernsehen* and believed that, since *sehen* is *to watch, fern* must be *television*. It shows that, in contrast to Anna, Kevin and Ian did not remember the noun *Fernsehen* which they had already encountered in *Vorsprung*, Chapter One. Also, it indicates that knowing more vocabulary in the target language may be beneficial for guessing meaning of unknown words.

6.2.2.2 Confirmation

- Confirm the result of guessing by consulting the reference materials

This strategy was used by Sarah, Kevin (somewhat inconsistently), Kenny, and Erik in the think-aloud protocols after guessing the meanings of words they did not know. Among the three of them, Sarah and Kenny employed this strategy most consistently, while Kevin only confirmed the accuracy of his guesses occasionally. It is perhaps not surprising that Sarah applied this strategy because, as she described in the interviews, she liked to be certain that she got the right answers, and she did not like guessing.

Confirming the results of guessing is a strategy which has been neglected in the research literature of vocabulary learning strategies. However, my study shows that it plays a significant role in the process of discovering correct meanings of words. Especially in the case of Kevin whose inference of word meaning is strongly dependent upon the similarities between German and English and even on wild guesses (e.g., *wahrscheinlich = sneeze*; *nur = near*), confirming the meaning in the reference materials is necessary. However, the study also shows that confirming the guesses in the reference source does not necessarily lead to discovering the correct word meaning. The premise is that the learners know how to use the reference source properly (see below 6.2.2.3 Resourcing).

6.2.2.3 Resourcing

- Consulting print dictionary (bilingual)
- Consulting electronic dictionary
- Consulting the *Wortschatz* (Vocabulary List) at the end of the chapter of the textbook
- Consulting the *Wortdetektiv* exercise in the textbook chapter
- Consulting the German-English vocabulary at the end of the textbook
- Consulting course notes
- Consulting flash cards
- Asking the teacher or German native speakers

Another way of finding a word's meaning is resourcing. Following O'Mally and Chamot, 1990, resourcing is defined as "using available reference sources of information about the target language" (p. 138). In my study, the participants used various reference materials including dictionaries, textbooks, course notes, and flash cards to discover the meaning of unknown words. Also, Anna, Sarah, Erik and Ian all mentioned that they use electronic dictionaries as a means for word meaning discovery. I believe that with the rapid development of the internet, use of electronic dictionaries will become more and more common because they

offer a very fast and convenient way of finding meanings, as well as being free of charge, which is important for students.

Among the various reference materials, the print dictionary and the textbook are most frequently used by the participants, while flash cards are the least commonly used (only Erik made flash cards). In regard to the use of the print dictionary, data from the word list study sessions show that most of the participants simply search for the English translation of the target words without looking further at the example sentences in the dictionary entry. Erik was also the only one who paid attention to the example sentences. For instance, when he looked up *Politik* in the *Collins Dictionary* to confirm that it indeed means *politics*, he also read the example sentences listed under *Politik* to gain a better understanding of the use of the word in context.

Furthermore, participants' performances in the follow-up vocabulary activities show that many of them (especially Kevin, Kenny, and Erik) did not know how to properly use the English-German part of the dictionary to search for the German translations they needed. Neither did they know how to read the information in the lexical entry. When more than one translation was provided under the same English lexical entry, they usually picked the first translation immediately. They did not notice the different parts of speech of the words. Nor did they pay attention to how the words are used in context. Hence, I would argue that it is important to teach language learners the strategy of dictionary use already in the early stage of language learning so that they are able to use dictionaries adequately to look up words.

Besides dictionaries, all of the research participants at some point used the textbook for reference to discover the meaning of the lexical item on the word list. They either used the *Wortdetektiv* exercise at the beginning of chapters, the *Wortschatz* at the end of each chapter,

or the German-English vocabulary at the end of the textbook. It is worth noticing that Kevin missed several words in the German-English vocabulary, such as *Gepäck, verstehen*, and *halten*, although they are listed there. He saw *Verstand*, not *verstehen*, which is listed only several words below *Verstand*, and he saw *halt*, but not *halten* which stands immediately below *halt*. It seems that he was quite confused by the similarities in spelling between the words and he did not pay attention to the spelling of the words too well. It also confirms that he has problems with spelling, as he stated in the interviews.

Finally, the strategy of asking the course instructor or German native speakers directly for meaning clarification was reported by Erik and Ian, while Sarah stated that she rarely asks the course instructor any questions.

6.2.2.4 Translation

- Translating a phrase literally
- Making his/her own translation

Discovering the meaning of a phrase or expression is usually much more difficult than that of a single word. When encountering the phrases *verstehen von etwas*, *halten von etwas*, and *nur Bahnhof verstehen*, many of the research participants encountered huge difficulties in discovering the correct meanings. They tended to infer the meaning of a phrase by looking up the words of the phrase separately in the reference materials, and then translating each word of the phrase in English. When the outcome of the English literal translation did not make much sense to them, they made their own translation.

For instance, Kevin spent much time in discovering the meaning of *verstehen von etwas*. He looked up the word *verstehen* and *etwas* separately and his translations changed from *to*

think and understand somewhat, *to understand only somewhat*, and finally to *to almost understand.* Kenny looked up the words *etwas* and *verstehen* separately and decided that the phrase means *to know a bit*. Erik looked up *von* in the German-English vocabulary at the end of the textbook and saw that it means *from* or *by*. Since he already knew that *verstehen* is *to understand*, he came to the conclusion that the phrase means *to understand from something, to gain knowledge, to piece things together*.

As for the phrase *halten von etwas*, Anna believed that it means *to hold something* because she looked up *halten* in her own course notes and found that the verb means *to hold*. Sarah translated it as *to think of some/somewhat*. Kevin inferred that the phrase means *just understand*, while Kenny interpreted it as *do not have a lot.* Erik mistakenly assumed *halten* is *halt* in English, then he literally translated the phrase as *stop doing, stop everything, stop something, stop by something*.

Finally, there was the idiom *nur Bahnhof verstehen.* Sarah found the phrase in the German-English vocabulary at the end of the textbook. However, the textbook translates the phrase as *to not speak much German*, not as *to understand nothing* which was explained by the instructor in class. Kevin guessed that it means *to understand the train station*, or *no where close to the train station.* Kenny understood it as *to know where the station is.* In contrast to Sarah, Kevin, and Kenny, Anna, Erik and Ian did not have problems with this phrase because they all recalled very well that the instructor explained it as *to understand nothing*.

Participants' performance in the vocabulary activities indicates that phrases/expressions were extremely difficult for learners because they consist of multiple words, so learners are faced with multiple words concurrently. They need to find out what each single word of an expression means, as well as what the expression signifies. The difficulty of comprehension

and memorization increases tremendously. Hence, I believe that, when expression are incorporated in texts, it is important that the instructor spends time drawing learners' attention to the expressions by, for instance, developing various exercises or tasks to help learners discover the meaning of the expressions and use and practice them. This may reduce the difficulty of understanding the meaning for the learners, and help them to remember them.

6.2.3 Consolidation Strategies

For the group of consolidation strategies, 30 individual vocabulary learning strategies are identified and grouped into ten subcategories: 1. reviewing study aids 2. elaboration 3. grouping 4. repetition 5. paying attention to the sound of words 6. paying attention to affixes and roots 7. deduction/induction 8. employing action 9. self-evaluation 10. making use of words.

6.2.3.1 Reviewing Study Aids

- Reviewing notes
- Reviewing word lists made for study
- Reviewing flash cards

As illustrated previously, all of the participants said they review the study aids (i.e., course notes, flash cards, word lists), especially before quizzes and exams. In the think-aloud protocols, the strategy "reviewing notes" was applied by all of the participants to consolidate the lexical items on the word list. Also, Sarah demonstrated how she made the list and used it for review. As illustrated above, she grouped the words of the same part of speech and words of the same gender together to study them, she orally repeated the meaning of the words, she spelled each and every letter of the words out loud, and finally, she quizzed herself. Again, her

performance confirms that she was a person who does not like to take a chance. She liked to make sure that she has remembered all the target words. Finally, participants' performances confirm my argument that creating study aids is usually the initial phase of learners' learning processes, and that the study aids serve not only as reference sources, but also as significant materials for review.

6.2.3.2 Elaboration

Elaboration is generally defined as connecting new information to prior knowledge in memory, or connecting different pieces of information to each other. The key point is that the connections must be meaningful for the learners. Following O'Malley and Chamot's (1990) and Oxford's (1990) definitions and classifications (see Chapter 4.3 in the present thesis), I identify the following vocabulary learning strategies involving elaboration in my study:

- Placing new words into sentences
- Connecting the target German words to words in languages other than German (e.g., French, Spanish, or Dutch)
- Connecting the target German words to other words in German
- Connecting the word to a real figure
- Making sound and/or meaning connections through a mediator
- Making sense of the meaning of words by finding what is common between the German word and its English equivalent
- Making sense of the gender of nouns by making a reason for why the word is masculine, feminine or neuter

Placing new words into sentences was evidenced in both Anna's and Kevin's think-aloud protocols: Anna created the sentence *Alle Deutschen tragen Lederhosen* when studying *tragen* (to wear), while Kevin made an imperative sentence *Bringen Sie mit!* to facilitate remembering the meaning of *mitbringen* (to bring alone). However, although they both used this strategy for consolidation, both of them did not recall the words in the quiz correctly:

While Anna recalled *tragen* as the German equivalent for *to wear* correctly, Kevin wrote *mitwoch* as the German equivalent for *to bring alone*. It seems that Kevin's memory of *mitbringen* was interfered by the noun *Mittwoch* (Wednesday) which he encountered in *Vorsprung*, Chapter Two. The cause of the interference may lie in the sound of the first syllable of *Mitbringen* and *Mittwoch* (or *mitwoch*, as Kevin spelled it) – both words start with the sound [mɪt]. The sound similarity might lead to the interference in Kevin's case.

Connecting the target German words to words in French, Spanish, or Dutch is not uncommon among the participants due to the fact that all of them have learned at least French for some years. Both Anna and Ian stated that when memorizing the German word *Fenster*, they thought of its equivalent in French *fenêtre*. Since they already remembered *fenêtre* means *window*, it was easy for them to remember *Fenste*r means *window* in English. Their knowledge of French or of other languages functions as a mediator or bridge connecting the target word and its equivalent in English. Kenny also said that if he could relate the new word to French with which he is very familiar, he can remember it very quickly. However, none of the participants actually used this strategy in the vocabulary activities. In my opinion, this inconsistency between participants' reports and actually use of strategies may be rooted in the German words being studied. Maybe Anna, Kenny, and Ian were not able to relate any of the German words on the word list to French. Once more, it does not necessarily mean that they never used this strategy to remember German words.

The strategy "connecting the target German word to other words in German" was mentioned and actually used by Anna during the word list study session. In the think-aloud protocols, she related *Bahnhof* to *Autobahn*, and *lächeln* to *lachen* to enhance memorizing

Bahnhof and *lächeln*. This again indicates that having a larger vocabulary size in the target language could be an advantage for remembering new words through elaboration.

The strategy "connecting the new word to a real figure" was demonstrated by Kevin when he connected the word *Politik* to Hillary Clinton based on the mistaken guess that *die Politik* means *a female politician*. This example implies that elaboration could be effective for memory, but only when the original inference is correct. The confirmation strategy needs to be carried out properly before the learners move on to memorization. Otherwise, what they remember may not be correct, and the effort of elaboration will not be successful.

Making sound connections was reported by Anna and Ian during the interviews. They both revealed that in order to remember the word-pair *Tür – door,* they tried to pronounce *Tür* or its L1 equivalent *door* like *dur*/*dür*. *Dur*/*dür* functions as a sound mediator leading them from *Tür* to *door* or vice versa. As for making sound *and* meaning connections, it was evidenced in the word list study sessions when Anna and Kevin tried to make sense of the word pair *Gepäck* – luggage. Anna made the connection *Gepäck – pack – luggage*, while Kevin linked *Gepäck,* to *pack* and *backpack,* and then to *luggage*. The mediators *pack* and *backpack* share to a certain extent sound and spelling similarities with *Gepäck*, and are also semantically related to *luggage*. This strategy seemed helpful for both participants: Anna answered the question *luggage* in the quiz correctly. As for Kevin, although he made a spelling mistake (he wrote *das gepäck*), his answer shows that he remembered the phonetic and semantic association between *luggage* and *Gepäck.*

As for the strategy of making sense of the meaning of words by finding what is common between the German word and its English equivalent, Anna was the only person who tried to make a connection between *Kaugummi* and *chewing gum* in the word list study session.

She noticed *gum* is incorporated in *Kaugummi* (she was also the only participant that noticed it), and thus, she thought it made sense that *Kaugummi* means *chewing gum*. Anna is also the participant that used the elaborative strategies most often (i.e., five of the seven strategies in this group were applied by her to memorize the word list). It shows that making connections and making sense of the target words play an important role in Anna's memory processes.

Finally, the last strategy in this group, making sense of the gender of nouns by finding a reason for why the word is masculine, feminine or neuter, was clearly demonstrated by Kevin and Ian in the think-aloud protocols. For instance, to remember *Schweinefleisch* is neuter, Kevin said that *Schweinefleisch* is neuter, because the pork is dead, doesn't have a gender, while Ian explained that it is "a neuter word cause we don't like discriminating against pigs." Also, both of them relate *Fußball* to masculine article *der* by thinking of football as a masculine sport. Nonetheless, these two German nouns were not included in the quiz, thus, it is difficult to judge whether this strategy was helpful for the two participants or not.

6.2.3.3 Grouping

Grouping refers to the process of ordering or classifying words based on common attributes (O'Malley & Chamot, 1990, p. 119, 138). In sum, three types of grouping are identified from the data:

- Grouping words by semantic fields
- Grouping words (i.e., nouns) together to study them, based on gender
- Grouping words together to study them, based on parts of speech

Grouping was a way for Erik to organize the words he wrote on his flash cards. For instance, he wrote words of the same semantic fields (e.g., classroom objects) or words sharing the same part of speech on the same card. Grouping also played a significant role in Sarah's

memorization process. She grouped words of the same part of speech and words of the same gender together to study them during the think-aloud protocols.

6.2.3.4 Repetition

- Oral or silent repetition
- Written repetition
- Spelling the letters aloud repetitively
- Orally repeating the definite article with the noun together

> Nation (2001) points out that
>
> repetition is essential for vocabulary learning because there is so much to know about each word that one meeting with it is not sufficient to gain this information, and because vocabulary items must not only be known, they must be known well so that they can be fluently accessed. Repetition thus adds to the quality of knowledge and also to the quantity or strength of this knowledge. (pp. 75-76)

Schmitt (1997) also states that "written and verbal repetition, repeatedly writing or saying a word over and over again, are common strategies in many parts of the world" (p. 215). In his survey study, the Japanese ESL learners reported that they use oral and written repetition most frequently to consolidate meaning.

In my study, all of the six participants employed oral repetition during the word list study session. Particularly, Kenny and Erik both used this strategy exclusively to memorize words. Also, each time after Kenny orally repeated the word pair, he always returned to the top of the word list and repeated the preceding pairs. Thus, he is the one who orally repeated the word list most often. However, his results on the quiz are the poorest. I do not intend to argue that using oral repetition as the only strategy is the only cause for his poor performance in the

quiz. As Nation (2001) stresses, "repetition is only one of a number of factors affecting vocabulary learning." Nevertheless, his case suggests that oral repetition alone may not be an efficient consolidation strategy. Reviewing Kenny's memorization processes during the word list study session, it shows that he paid attention neither to the structural nor the semantic aspects of the input. Although he orally repeated the word pairs so many times, he did not attend to, for instance, the spelling of the words or whether the letter is capitalized, nor did he think about the meaning of a word or elaborate it. In other words, he carried out the maintenance rehearsal, not the elaborative rehearsal. In general, his quiz results echo the fundamental view of the level of processing framework that rehearsal per se would not enhance long-term memory retention.

The code "written repetition" is assigned to the data only if the participant repeatedly practiced writing words on a paper during the think-aloud protocols. Writing down the English equivalents or the words in German on paper one time is not viewed as written repetition. Based on this code definition, only Anna and Sarah used this strategy during the word list study session. However, Anna did not repeatedly write every German word, but only *wahrscheinlich* and *vielleicht*, while Sarah wrote every word at least three times during the process of self-testing.

Sarah was also the only one who memorized the spelling of the German words by spelling out loud every letter of the word. As she revealed in the interviews, she had been using this strategy for a long time. She felt comfortable using it and she thought it worked fairly well for her.

The last strategy in this group, orally repeating the definite article with the noun together, concerns remembering the gender of nouns. It was used by every participant, except

Kenny. While he orally repeated the word list, he focused only on the translation of the words. He did not repeat the definite article together with the noun at all. His ignorance of the gender aspect was also shown in his quiz performance: He did not write down any definite article to the nouns although it was explicitly required in the quiz. His performance in the follow-up vocabulary activities further confirmed that he neglected the gender aspect of the noun. When he wrote nouns in German in the circles for the activity of writing about Canadian stereotypes, he simply wrote down the nouns without the definite articles (e.g., *hut, hockey, Biber* … etc).

6.2.3.5 Paying Attention to the Sound of Words

- Pronouncing words in German correctly to remember the spelling
- Listening to the instructor's (or native speaker's) pronunciation
- Studying the symbolic volume of the sound

Vocabulary learning strategies in this category concern the phonetic aspects of words. As Nation (2001) points out, knowing what a word sounds like (receptive) and being able to pronounce it accurately (productive) are two of the key aspects of word knowledge (see Chapter One of this thesis).

All of the participants mentioned that they paid very close attention to word pronunciation and listened to the instructor's pronunciation carefully in class to try to mimic it. Particularly, Anna, Sarah, Erik, and Ian all emphasized that pronouncing the word accurately is significant for them, not only because they want to be able to be understood when they speak German, but also because it helps them greatly in remembering the spelling of words. However, I also noticed that pronouncing the word accurately alone may not guarantee that the word will be spelled correctly. For instance, in the follow-up vocabulary activity, Ian pronounced the verb *spielen* (to play) accurately but he wrote it as *speilen*.

In addition to paying attention to word pronunciation, Kevin revealed that he is also aware of the symbolic volume of the sound (or the "pitch of words" as Kevin called it). For instance, to him, the definite article *der* sounds a bit harsher and thus more masculine, while the article *die* is a higher-pitched sound and thus more feminine.

6.2.3.6 Paying Attention to Affixes and Roots

- Making visual indication of the separability of the verbs

For the two verbs *mitbringen* and *fernsehen*, Anna and Kevin both inserted a dot or a bracket between *mit* and *bringen*, and between *fern* and *sehen*. This explicitly shows that they noticed the separability of the verbs and tried to consolidate them through making visual indication.

However, as mentioned previously, in the quiz, Kevin did not recall *mitbringen* for the question *to bring along* (he wrote *mitwoch*), although he applied various strategies to remember *mitbringen-to bring along* (i.e., paying attention to affixes and roots and making visual indication, placing it in a sentence, and frequent oral repetition). It seems to indicate that, although attention is the fundamental condition for information to be remembered (see 4.3.1 of this thesis) and that elaboration is helpful, in order to maintain the correct information in the long-term memory, it is also important to avoid interference (see also 6.2.3.2 of this thesis).

6.2.3.7 Deduction / Induction

- Remembering the gender of nouns by the semantic field
- Remembering the gender of nouns by the suffix

O'Malley and Chamot (1990) define deduction/induction as "consciously applying learned or self-developed rules to produce or understand the target language." Anna's descriptions of how she tried to discover the rules of the gender of German nouns and then applied the rules to facilitate her memorization are an example of deduction/induction. She noticed that, for instance, sometimes nouns in the same semantic field have the same gender. She also figured out that sometimes suffixes, such as *-chen* or *-in*, are a useful indicator for the gender of the nouns. Applying these rules helped her to deal with the gender of nouns more easily.

6.2.3.8 Employing Action

- Physically acting out the word

Employing action is listed in both Oxford's (1990) and Schmitt's (1997) classifications as a memory strategy (see Chapter 4.3). Oxford (1990) defined it as "physically acting out a new expression (e.g., going to the door), or meaningfully relating a new expression to a physical feeling or sensation (e.g., warmth)" (p. 43). However, it is not very clear whether the process of elaboration is involved, and whether it could be categorized under elaboration group. Thus, I classify it as an individual strategy subcategory to separate it from elaboration.

Kevin is the only participant who used physical action to enhance his memory. In the think-aloud protocols, in order to remember that *Kaugummi* is *chewing gum*, he exaggeratedly moved his mouth slowly as if he was really chewing gum in his mouth, and said "*Kaugummi*"

by lengthening the sound of the diphthong *au*. Later in the quiz, Kevin did recall very well that *chewing gum* is *Kaugummi* in German. He spelled the word correctly. However, he forgot to capitalize the letter *K* and wrote *kaugummi*.

6.2.3.9 Self-Evaluation

- Testing oneself
- Asking friends to quiz him/her

O'Malley and Chamot (1990, p. 119) describe self-evaluation as "checking the outcomes of one's own language learning against a standard after it has been completed." However, in my opinion, self-evaluation does not always occur only after the learning (or studying) is completed. It could happen at more than one moment during a study session as well. For instance, during the think-aloud protocols, Sarah tested herself multiple times: She first worked on the group of nouns, and then she tested herself to ensure that she remembered all the nouns that she had studied, including the meanings, spelling and definite articles. Later, after she finished studying the verbs, she tested herself again. Finally, before she wrote the quiz, she returned to the noun group and tested again.

Anna tested herself too after studying the word list. Compared to Sarah, Anna focused more on the meaning of words rather than on the spelling or the gender of the nouns. Nevertheless, both Anna and Sarah employed the testing strategy consistently. If they could not recall certain words during self-testing, they always returned to the word list and worked more on the problem words. They tested themselves repeatedly until they could recall the target words correctly.

During the interview, Erik also reported that he sometimes quizzed himself by giving the flash cards he had created to his friends and asking them to test him on the information recorded on the cards.

6.2.3.10 Making Use of Words

- Using some simple German words with classmates in online chatting
- Interacting with German native speakers (or the instructor)
- Saying the words in German to someone who may not understand German at all
- Doing homework assigned by the instructor

The vocabulary learning strategies identified in this category concern the productive aspects of language learning: speaking and writing. Doing homework assigned by the course instructor was the most common way for the research participants to actually use the words they had encountered. Most of them did homework regularly, even when they did not need to submit it to the instructor. Homework could be writing the exercises in the workbook, or writing a short essay for a topic related to the textbook chapter. For instance, after introducing the vocabulary of family members in Chapter Two to the class, the course instructor asked the students to write a short text to introduce themselves or their families.

In addition to doing homework, Kenny said that he also used some simple German words when chatting online with his classmates; Kevin stated that, when studying at home, he liked to practice saying German words to his sister who does not understand the language at all. Saying words out loud helps him remember the words. He also liked to say some simple words in German to the instructor when he could, such as *Entschuldigung* to apologize for attending the class late.

In general, making use of words is not only a good approach for consolidating words, but also helpful for learning vocabulary; particularly the strategy of interaction with native speakers, and writing an essay for homework. This is because, during the communication or in the process of writing, learners may hear more new words, or they may look for words they need to carry on the conversation or finish the essay. However, for most of the participants in my study, the only German native speaker they knew or were able to talk to was the course instructor. Ian had the greatest opportunity to interact with German native speakers. Compared to the other participants, this was no doubt an advantage in learning the language. However, he did not produce the best results on the quiz in my study. It indicates that *having* the advantage of interacting with German native speaker does not mean that other efforts, such as studying and reviewing the language material and other consolidation strategies, are not necessary.

In the end of this section, I would like to present the results of the study in a summarized table format. Tables 6.10 – 6.12 below demonstrate the results of each individual participant from the questionnaires, interviews, and think-aloud protocols.

Table 6.10. Results of individual vocabulary learning strategies reported and used by the participants. Category 1.

Strategies for creating study aids	Anna 1*	Anna 2	Sarah 1	Sarah 2	Kevin 1	Kevin 2	Kenny 1	Kenny 2	Erik 1	Erik 2	Ian 1	Ian 2
Taking notes	x	x	x	x	x	x	x	x	x	x	x	x
Making flash cards									x			
Making word lists for study			x	x								

* Columns marked 1 behind the names of the participants refer to the questionnaire and interview, and columns marked 2 refers to the think-aloud protocols.
x: The symbol x is marked for vocabulary learning strategy reported in the questionnaires or in the interviews, or used in the think-aloud protocols.

Table 6.11. Results of individual vocabulary learning strategies reported and used by the participants. Category 2.

Strategies for discovering the meaning of a new word		Anna 1	Anna 2	Sarah 1	Sarah 2	Kevin 1	Kevin 2	Kenny 1	Kenny 2	Erik 1	Erik 2	Ian 1	Ian 2
Guessing (Inferencing)	• Analyzing available pictures or gestures										x		
	• Recognizing part(s) of a word and then guess the meaning	x	x									x	x
	• Guessing from the context	x				x		x		x	x	x	
	• Recognizing cognates or borrowing		x		x		x	x	x		x	x	x
	• Connecting the target words to other German words he/she knows		x										
Confirming	• Confirming the result of guessing by consulting the reference materials				x		x		x		x		
Resourcing	• Consulting print dictionary (bilingual)	x	x				x	x	x	x		x	x
	• Consulting electronic dictionary	x		x						x		x	
	• Consulting the *Wortschatz* (Vocabulary List) at the end of the chapter of the textbook		x	x		x		x			x		x
	• Consulting the *Wortdetektiv* activity in the textbook chapter		x										
	• Consulting the German-English vocabulary at the end of the textbook			x	x	x	x	x					
	• Consulting course notes	x	x					x					
	• Consulting flash cards										x		
	• Asking the teacher or German native speakers	x						x		x		x	
Translating	• Translating a phrase literally		x		x		x		x		x		
	• Making their own translation						x		x		x		

Table 6.12. Results of individual vocabulary learning strategies reported and used by the participants. Category 3.

Strategies for consolidating a word once it has been encountered		Anna 1	Anna 2	Sarah 1	Sarah 2	Kevin 1	Kevin 2	Kenny 1	Kenny 2	Erik 1	Erik 2	Ian 1	Ian 2
Reviewing study aids	• Reviewing notes	x	x	x	x	x	x	x	x	x	x	x	x
	• Reviewing flash cards									x			
	• Reviewing word list made from the notes			x	x								
Elaboration	• Placing new words in sentences		x				x					x	
	• Connecting the target German words to words in languages other than German (e.g., French, Spanish, or Dutch)	x						x				x	
	• Connecting the target German words to other words in German	x	x										
	• Connecting the target word to a real figure						x						
	• Making sound and/or meaning connections through a mediator	x	x				x					x	
	• Making sense of the meaning of words		x										
	• Making sense of the gender of nouns						x						x
Grouping	• Grouping words together to study them, based on semantic fields									x			
	• Grouping words (i.e., nouns) together to study them, based on gender				x								
	• Grouping words together to study them, based on parts of speech				x					x			
Repetition	• Oral or silent repetition	x	x	x	x		x	x	x	x	x	x	x
	• Written repetition		x		x	x						x	
	• Spelling the letters aloud repetitively			x	x								
	• Orally repeating the definite article with the noun together		x		x	x	x						x
Paying attention to sound of words	• Pronouncing words in German correctly to remember the word spelling	x		x						x		x	
	• Studying the symbolic volume of the sound					x							
	• Listening to the instructor's (or native speaker's) pronunciation	x		x		x		x		x		x	
Attending to affixes and roots	• Making visual indication of the separability of the affixes and roots		x				x						
Deduction/Induction	• Remembering the gender of nouns by the semantic field	x											
	• Remembering the gender of nouns by the suffix	x											
Employing action	• Acting out the words						x						
Self-evaluation	• Testing oneself	x	x	x	x					x			
	• Asking others to quiz him/her									x			
Making use of words	• Using some simple German words with classmates in online chatting							x					
	• Interacting with the course instructor or German native speakers					x						x	
	• Saying the words in German to someone who may not understand German					x							
	• Doing homework assigned by the instructor	x		x		x		x		x		x	

In Chapter Seven, the final chapter of the present thesis, I will summarize the study, discuss the implications for vocabulary instruction and foreign language teaching, and make suggestions for future research.

Chapter Seven: Summary, Conclusions and Implications

In this final chapter of the thesis, I summarize the study, draw conclusions from the results, discuss limitations of the study, and make suggestions for future research.

7.1 Summary of the Study

The goal of the present study is to shed light on adult students' German vocabulary learning processes and to make contributions to vocabulary instruction and foreign language teaching. I have argued that, before making suggestions for vocabulary teaching and/or strategy instruction, one should take a step back and explore learners' learning processes. As Hosenfeld (1976) point out, "Too often our focus has been on what students should be doing; we must begin by asking what students are doing" (p. 128; also cited in Schmitt, 1997). Hence, I conducted a multiple case study to explore individual learners' vocabulary learning processes, and focus on learners' use of vocabulary learning strategies. By using multiple data collection methods – questionnaires, interviews, and think-aloud protocols – I not only investigated *what* strategies the individual research participants use to study vocabulary, but also looked at *how* they actually employ the strategies during a vocabulary study session.

All of the six research participants reported that they enjoy the German language course and like the way the instructor delivers the lessons – interesting, amusing, and relaxing. They think that vocabulary is very important for language learning, but they do not spend much time studying German vocabulary and the language. On average, they spend about two hours a week in total outside the classroom. This is far less than what is suggested in the course guidelines: six hours per week.[107] The two hours per week is spent mostly in doing homework

[107] In the German 101 course guideline, it is written that students "should expect to do about 1.5 hours of homework for every hour spent in class." The course meets 4 hours per week.

assigned by the instructor. Doing homework is usually the only thing the participants do to actually make use of the vocabulary or the language they have learned in class. Although a couple of the participants reported that they watch German movies or listen to music in German (which does not happen very often), it is usually only for entertainment, not for the purpose of learning German. This indicates that the course itself, including the textbook package and the instructor, is the primary source of learning German for the participants. Most of them do not have any other contact with the German language outside of the classroom. In other words, the participants rarely learn vocabulary incidentally (e.g., by reading books or listening to music in German outside of the classroom), but mostly through formal instruction in class.

With regards to *which* vocabulary learning strategies are used by the participants to tackle vocabulary, 49 strategies in total are identified from the empirical data. I divide the identified strategies into three major groups: (1) strategies for creating study aids, (2) strategies for discovering the meanings of unknown words, and (3) strategies for consolidating the words once they have been encountered. Based on the activities, strategies in the second and the third groups are further categorized into numerous subgroups. The discovery strategies are subcategorized into four groups: guessing, confirmation, resourcing, and translation, while the consolidation strategies are classified into ten subgroups: reviewing the study aids, elaboration, grouping, repetition, paying attention to the sound of words, paying attention to affixes and roots, deduction/induction, employing action, self-evaluation, and making use of words.

In the category of creating study aids, the most commonly reported and used strategy is note-taking. All of the participants take notes in class and in the word study session in the

think-aloud protocols. Only Erik reorganizes the course notes and makes flash cards out of the notes.

In the second category, the most commonly used discovery strategies are consulting print dictionaries and consulting the textbook *Vorsprung* (particularly the reference sections: *Wortschatz* at the end of each chapter and the German-English vocabulary at the end of the textbook). This shows that the textbook is important for the students not only as a learning resource but also as a reference material. Nevertheless, the study also shows that not every participant can use the dictionary properly to find the target words. They simply search for the English translation of the target words without looking further at the example sentences in the dictionary entry. They do not know how to search for the German translations they need. Neither do they know how to read the information in the lexical entry and notice the different parts of speech of the words. When more than one translation is provided under the same English lexical entry, they usually pick the first translation without further looking into the context.

With regard to using the textbook for reference, Kevin cannot find several words in the German-English vocabulary, although they are listed there. In my opinion, the reasons for the incorrect use may be as follows: It could be that the participant is not very focused and does not pay careful attention to the spelling of the target word. It is also possible that the participant does not know how to use the reference sections properly. Another possibility is that the design of the reference sections is problematic, i.e., the way that the lexical items are presented in the reference sections makes it difficult for the participants to find the target words rapidly and accurately.

Recognizing the similarity in spelling and/or sound between the German word and its equivalents in English or other languages (i.e., recognizing cognates or borrowing) is also a strategy that the participants often apply in the think-aloud protocols, especially for the words *Fußball, Bier, Politik, Schweinefleisch.* Participants recognize the similarities and correctly infer the word meanings most of the time. However, the data also show that erroneous inferences can occur due to the similarities. Hence, I argue that it is important to confirm the guesses and that confirmation strategies should be stressed, especially for students who infer word meaning merely based on the sound and spelling similarities, like the participant Kevin. There are many ways to confirm the inferences, for instance by consulting the reference materials, asking native speakers or the instructor and so on. Nevertheless, for most of the participants in my study, the only German native speaker they know is the course instructor whom they meet only four hours a week in class. Again, this shows the importance of using reference materials and of knowing how to use them properly.

As for the strategy of guessing from the context, five of the participants mention in the interviews or questionnaires that they often use this strategy when they encounter unknown words. However, during the think-aloud protocols, only one of them (i.e., Erik) actually refers to the *Anlauftext* and uses the context to infer meanings of unknown words, although all of the participants are told that the words on the word list originate from the *Anlauftext* and that they can use the textbook anytime they need to during the word list study sessions. This basically proves that what learners believe and say they usually do for studying vocabulary "may be not a true reflection of what actually happens" when they tackle a word (Nation, 2001, p. 224), however, I assume that the design of the vocabulary activities may also be the cause of the inconsistency. Since the lexical items are presented on the list without a context, it would be

comprehensible that the participants simply consult the reference materials without looking at the context. Consulting the reference materials directly is certainly quicker and much easier than opening the textbook, looking for the target words in the text, and then guessing the meaning.

On the other hand, even if the participants did consult the context, they may not be able to infer the meanings of unknown words successfully. For instance, although Erik tries to guess the meaning of *Mund* and *Kaugummi* from the sentence in the *Anlauftext* "*Hat sie immer ein Stück Kaugummi im Mund*?" and from the picture which illustrates the sentence, he does not discover the meanings of the two German words until he looks them up in the reference materials. As Schmitt (1997) and Nation (1990, 2001) both point out, to use this strategy properly, there are some prerequisites: a certain level of language proficiency, adequate background knowledge of the topic, sufficient knowledge of how to use this strategy effectively, and a rich context (Schmitt, 1997, p. 209). Nation (2001, p. 233) explicitly indicates that at least 95% of the running words need to be already familiar to the learners. For language beginners like the participants of my research, it is difficult to guess the meaning correctly when there are too many unknown words in the text.

In regard to discovering the meanings of collocations and idioms (*verstehen von, halten von*, and *nur Bahnhof verstehen*), the study shows that most of the participants have difficulties with this process. They often look at the words in the phrase separately, and translate the phrase literally. When the result of the literal translation does not make much sense, they make their own translations. The only phrase that some of the participants can recall is *nur Bahnhof verstehen*. They recall the meaning because the instructor has particularly explained it in class due to its oddness. This indicates that collocations and idioms are especially confusing and

difficult for language learners, and that it is helpful when the instructor spends extra time explaining them in class.

In the category of consolidation strategies, the most commonly used strategy in my study is verbal repetition. This echoes the findings in Lawson and Hogben (1996), O'Malley et al. (1985), and Schmitt (1997). According to memory research, there are two types of repetition – maintenance and elaborative. The former is supported by multi-store memory theorists who argue that simply repeating the material over and over again is sufficient to keep information in working memory as well as in long-term memory, while the latter is suggested by the levels of processing framework which propose that rehearsal leads to long-term retention only when the new information is linked to existing knowledge (see Chapter Four of this thesis). Examining the think-aloud data in my study, maintenance repetition is best represented by how Kenny memorizes the word list. Kenny's poor performance in the quiz seem to support the view of the levels of processing framework that merely repeating the words without elaboration is not an effective strategy to register information in our memory, although it is possibility that other factors, such as motivation, anxiety, or the effect of the empirical study affect Kenny's performance that day.

The memory research also emphasizes the role of distributed repetition (or spaced repetition). Due to the design and the focus of the study, the think-aloud data do not convey any information about the efficiency of distributed repetition. However, the questionnaire and interview data reveal that the participants usually study before quizzes and exams. This suggests that massed repetition rather than distributed repetition is more common to the participants. In my opinion, a possible reason for why massed repetition is more common is that the participants may not be knowledgeable about the spacing effect. This assumption is

grounded in the data. During the interviews, I briefly mentioned the concept of distributed practice. Not surprisingly, none of the participants had ever heard about it.

Elaboration, although not most commonly used by the participants in my study (i.e., used only by Anna, Kevin, and Ian), seems to be an effective method of vocabulary memorization. However, I would like to emphasize the importance of the correctness of the to-be-remembered information. Kevin's elaboration on the words *Politik* and *Mund* shows that no matter how much effort toward elaboration is made, if the information is not correct, the effort will not be rewarded.

Further, the data also show that the participants do not employ traditional mnemonics at all (such as the keyword method, the pegword method, and the loci method which are usually viewed as elaborative strategies). This result is similar to that shown in the study by Schmitt (1997). From my point of view, this again may be due to the reason that the participants do not know about these mnemonics, or, that they have heard about them, but have never been instructed on how to use them efficiently.

In addition, the study shows that participants use a variety of vocabulary learning strategies to tackle vocabulary. It is neither useful nor possible to determine the strategy that works best for memorizing German vocabulary because how the strategy is employed also plays a role in the study outcome (see below). That there can be a single best strategy for every learner is a myth that should be dispelled. In addition, as Ian points out in the interview, it is often not enough to use only one strategy. More commonly, a combination of strategies has to be employed to tackle the task.

The study shows that applying many strategies does not necessarily equal a good learning outcome. *How* and *how well* the individual uses the strategy also plays a significant

role. In my study, among the six participants, Kevin uses the second most strategies (Anna used the most strategies); however, the way he uses the strategies is unstructured, inconsistent, and inefficient. His case shows that employing the strategies in a sophisticated and efficient way is as important as (or even more important than) *what* and *how many* strategies are being used. The "quality" aspect of strategy use should be looked into and considered a focal point when researchers conduct a study of vocabulary learning strategies or language learning strategies and when teachers teach the strategies.

Finally, the study shows that knowing the meaning, the spelling, and/or the grammatical gender of the words does not necessarily mean knowing how to use the words accurately in a context. As Nation's (2001) word knowledge model suggests, knowledge of form, meaning, and use are equally important in the vocabulary learning process (see Chapter Two of the present thesis). Thus, it is also crucial to know the grammatical functions of the words and the constraints on their use. Although the present thesis focuses on vocabulary, it does not mean that grammar should be neglected. In fact, I do not view vocabulary as more important than grammar or vice versa. I believe vocabulary and grammar are both crucial in learning a foreign language. Nevertheless, for learners at the beginner's level, learning vocabulary is the fundamental step. Vocabulary is a prerequisite for making grammar learning possible.[108]

[108]Hockett (1959) said that learners "require drill, drill, and more drill, and only enough vocabulary to make such drills possible" (cited in Kamaravadivelu, 2006, p. 102).

7.2 Conclusions

Based on the findings from the present study, I draw the following conclusions which are outlined in four points:

1. Vocabulary should not be left to the learners alone.
2. Learners should be well informed about vocabulary learning strategies and develop a strategy inventory through strategy training.
3. Language instructors should be well informed about vocabulary learning strategies as well.
4. The language textbook should play an active role in strategy training.

First, vocabulary should not be neglected in the language instruction and left for the students to handle on their own. One way of assisting learners to learn vocabulary is to inform them about vocabulary learning strategies and to help them to develop a vocabulary learning strategy inventory. The study shows that participants are not well informed about the vocabulary learning strategies and language learning strategies in general. They do not know what strategies they can use and how to use them in an efficient and sophisticated way. As Kenny and Ian reveal, their primary and only strategy for memorization is repetition because they do not know any other strategies. Further, even though repetition is the most commonly used strategy, none of the participants knows about the advantages of the spacing effect. This indicates that more information about learning strategies should be provided to language learners.

Second, the study shows that language learners may not use the strategy when they are introduced only briefly to it. For instance, in my study, the participants' instructor had briefly introduced the color-coding strategy for memorizing the gender of German nouns in class. Several vocabulary learning strategies are also mentioned in the textbook preface. However,

none of the participants use these methods in their studies because they either do not think that they work for them, or they may not have read the preface of the textbook.

The findings above imply that introducing learning strategies only verbally and briefly to students may not be sufficient, and that well-organized and planned learning strategy training should be provided to language learners. As Nation (2001) emphasizes, "As with all major vocabulary learning strategies, learners need to be brought to a level of skill and confidence where they find it just as easy to use the strategy as not. If their grasp of the strategy is unsure, then it will be rarely used" (p. 314).

Nation (2001, p. 222) proposes a guideline for planning training in vocabulary strategy choice and use. The guideline involves four major steps:

1. deciding which strategies to be taught
2. deciding how much time to spend on training the learners in strategy use
3. working out a syllabus for each strategy that covers the required knowledge and provides plenty of opportunity for increasingly independent practice
4. monitoring and providing feedback on learners' control of the strategies

In deciding which strategies should be taught (the first step above), in my opinion, learners' proficiency level should be taken into account.[109] As I have pointed out previously, for discovering the meaning of unknown words, guessing from the context may not be very easy for the language learners at the beginner's level. It is a strategy that may be more useful for learners at a higher level. Learning how to use reference materials (especially dictionaries) accurately is more urgent and relevant for beginners than guessing from the context. Dictionaries are important not only for comprehension, but also for production (Nation, 2001,

[109]Other factors such as learners' cultural background should also be considered (McDonough, 1995; Schmitt, 2000).

p. 281). They help the learners greatly to clarify uncertainty when the teachers are not around. Last but not least, I would also like to suggest that learners should be warned about the possible errors of guessing word meaning merely on the similarity in sound and spelling and should be introduced to the concept of false friends.

As for consolidation strategies, stressing the effect of distributed practice, and teaching the learners the ideas of elaboration to enhance their memory will be helpful not only for the language beginners, but learners of all levels. Elaborative strategies consisting of several cognitive steps, such as the keyword method, should be carefully taught because of their complexity. In addition, teaching the learners how to take notes and organize their notes is fundamental as this is usually the initial step of their learning process and the notes play a significant role as a material for review and reference.[110]

With regard to deciding how much time to spend on strategy training, Nation (ibid.) indicates that "there is little research to guide teachers in deciding how much time to spend on strategy training, but it is certainly not sufficient to demonstrate and explain a strategy to learners and then leave the rest to them" (p. 223). He suggests that "learners need to spend a total at least four or five hours per strategy spread over several weeks" (p. 223).

As for working out a syllabus for teaching strategies, Nation emphasizes that a syllabus is necessary for every single vocabulary learning strategy, especially for the complex ones. He listed the following options for instructors to choose and sequence to fit learners' needs when designing a syllabus (Nation, 2001, p. 223):

- The teacher models the strategy for learners.
- The steps in the strategy are practiced separately.

[110]Refer to Kramsch (1979), Carroll and Mordaunt (1991), McComish (1990), Nation (2001), Schmitt and Schmitt (1995) for more information and discussions on how to record words and monitor the recording, and how to make vocabulary notebooks.

- Learners apply the strategy in pairs supporting each other.
- Learners report back on the application of the steps in the strategy.
- Learners report on their difficulties and successes in using the strategy outside class time.
- Teachers systematically test learners on strategy use and give them feedback.
- Learners consult the teacher on their use of the strategy, seeking advice where necessary.

Obviously, the instructor plays a crucial role in strategy training. Hence, I want to stress the importance that the language instructor also be well-informed about vocabulary learning strategies. I agree with Takač (2008) that "teachers need to know which vocabulary learning strategies exist and what form of knowledge and skills learners need to acquire in order to successfully use each of them" (p. 78). After all, teachers are primarily responsible for presenting the information.

The fourth conclusion from the study is concerned with the role of learning materials. As the research results show, the participants rely heavily on the textbook *Vorsprung* as a primary resource for learning German. In my opinion, learning materials should also play an active role in developing learners' inventory of vocabulary learning strategies. The author(s) of the language textbook should introduce a variety of vocabulary learning strategies to students, and more importantly, integrate a series of activities in the book for the learners to practice them. It is not enough to merely mention the strategies briefly in the preface, a section that learners usually ignore. It will not only help the language learners, but will also assist the language instructors when teaching strategies to the learners.

Certainly, it is also crucial to bear in mind that teaching strategies to learners does not guarantee that they will definitely use the strategies in their learning processes afterwards. However, in my opinion, this does not decrease the importance of ensuring that learners are

well informed about the various options they have and that learners should develop an inventory of strategies to facilitate vocabulary and language learning.

7.3 Limitations of the Study

My study aims to explore the processes of vocabulary learning and provide a detailed account of individual learners' use of vocabulary learning strategies. However, it does not aim to look into every aspect that may affect the use of vocabulary learning strategies. There are certainly limitations.

First of all, the study is not a longitudinal research. The research participants were drawn only from the beginner's level (i.e., GER 101) and the empirical data were collected only within the Fall term 2006. Investigating individual learners' use of vocabulary learning strategies throughout a long period of time was not practically feasible. It would be of interest to look at learners' development of vocabulary learning strategies as their language proficiency level progresses.[111] In fact, such a study has not been conducted in this field. In my opinion, it could also be carried out in a case study framework with either a single case or multiple cases.

The second limitation of the present study is that it focuses mainly on the cognitive aspects of vocabulary strategy use, and does not particularly examine the affective strategies involving emotions, attitudes and motivations such as "lowering anxiety," "motivating oneself." However, this does not mean that my study intends to deny the role of affect in the learning process. For future research, it would certainly provide more insight into the vocabulary learning processes to explore what learners do to lower their anxiety or motivate themselves, and how these strategies affect their learning processes.

[111]Nevertheless, in my opinion, one of the difficulties of carrying out a developmental research in a university language classroom context lies in being able to recruit research participants who are sure to continue to take more advanced language courses in the future. This was also a reason why I did not conduct a longitudinal study.

The third limitation stems from the design of the vocabulary activities. The to-be-studied lexical items are presented on a list without context. This may have decreased the chance that the strategy "guessing from the context" is used and be the reason why only one participant actually uses this strategy.

Furthermore, the study does not show how the participants use vocabulary learning strategies to study vocabulary and in their private residence, although I try to create a study environment as close as possible to the participants' real study environment (e.g., the lexical items derive from the *Anlauftext*; the participants are allowed to use the textbook, the dictionary, and the course notes; no time limits is set for the study session … and so on).

Finally, I am aware of the limitations of using think-aloud protocols for my study. For instance, participants may not report cognitive processes that are difficult to translate verbally or mental operations that are done automatically, such as perceptual processes. Also, their performance may be influenced due to the simultaneous demands of thinking and attending to the task at the same time. However, so far, a "perfect" method for investigating the cognitive processes has not been found. Every method has its strengths and limits. I chose to use think-aloud because its merits outweigh the limitations and because it is the best option for my study.

7.4 Suggestions for Future Research

In regards to research methodologies, my study shows that the learners employ vocabulary learning strategies differently, and vocabulary learning strategies are an area where individual differences show. It supports Takač's (2008) view that "learning strategies are indeed one of the individual learner characteristics, i.e., an area where language learners may differ to a great extent" (p. 132). Takač (2008) also argues that "Vocabulary learning strategies

are highly idiosyncratic and need to be regarded accordingly" (p. 150). In my opinion, this idiosyncrasy would be much more explicitly and fully explored if the researchers use a combination of methods to collect data. Questionnaires and interviews are useful to elicit data on what students think they do to learn vocabulary. Nevertheless, the study shows that retrospective data explore only learners' beliefs which may not be a true reflection of what they actually do when studying. Hence, it is important to have students complete vocabulary activities and to see what they do during the activities. In my opinion, the purpose of making students actually perform vocabulary activities is not to view learners as "suspects" and to examine whether they did "tell the truth" or not. After all, as shown in my study, their use of vocabulary may be affected by various factors such as the design of the vocabulary activities and the lexical items they need to study, etc. The point of looking at how they actually study vocabulary is to elicit a wealth of data, to gain more insights into how learners actually use vocabulary learning strategies, and to shed more light on strategic characteristics. Thus it is important to use a combination of data collection methods to make the data as complete as possible.

As for prospective subjects for the future research, in addition to the suggestions of conducting longitudinal developmental research and research on the role of affective strategies described above, there are still many questions that need to be addressed. A few of these are:

- The role of reference tools, particularly print dictionaries and electronic dictionaries: My study does not focus to any great extent on learners' use of reference tools in various learning situations, such as in reading activities. Investigation into this issue will help us gain broader insight on the role of dictionaries in learners' learning processes. Also, using online dictionaries is more and more common to language learners. There are many

websites offering these tools. They are easy to access and usually free of charge. It would be interesting to investigate for instance: How do learners use the electronic dictionaries? Which dictionary do they usually use? Why do they prefer using it? What do they do if the dictionary offers more than one equivalent in English?

- Strategy training: As I have indicated above, training is important for learners so that they know what options there are and how to use the strategies effectively. It would be of interest to explore how the training is carried out, what difficulties the learners and instructors encounter during the training processes, the outcomes of the training, whether the learners find the training useful at all, and if not, why not…. etc.

Finally, I want to make an appeal that it is important to continue conducting research on vocabulary learning strategies. It will certainly lead to better understanding of the complex processes of vocabulary learning and contribute to second/foreign language learning and teaching.

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Appendix A: Questionnaire 1

Language Learning Questionnaire 1

I. Personal information

Name: _____ Age: _____ Sex: ☐ F ☐ M

Email address (for contact purposes):

_____

II. Your language background

1. What is your mother tongue? ☐ English ☐ French ☐ Other: _____
2. Besides German, are you also taking other language courses in this term? ☐ yes ☐ no

   If yes, please specify which language course it is: _____

3. Before taking this German course, have you ever learned any other foreign languages in a classroom setting? How long have you learned the language(s)? How fluent are you in the language(s)?

Language Classes Taken	**Overall Proficiency** (excellent–good–fair– poor)	**For how long?**
i)		
ii)		
iii)		

4. Other languages spoken (learned outside of a classroom setting):

Language	**Overall Proficiency** (excellent–good–fair– poor)	**Ho did you learn it?**

III. Your language learning profile.

1. Why did you decide to take German 101? (check all that apply)

   ☐ interested in the language
   ☐ interested in the culture
   ☐ have friends who speak the language
   ☐ required to take course to graduate
   ☐ need it for my future career
   ☐ need it for travelling purposes
   ☐ other (please specify): _____
   _____

2. I believe learning a foreign language is:

   ☐ very important ☐ important ☐ not so important ☐ not important at all

3. It is …. for me to become proficient in German.

   ☐ very important ☐ important ☐ not so important ☐ not important at all

4. I have had … with language learning in the past.

   ☐ bad experiences ☐ OK experiences ☐ good experiences

5. I am … of speaking a foreign language. ☐ scared of ☐ not scared

6. In general, I would say that I am a **…** language learner.

   ☐ very good ☐ above average ☐ average ☐ below average ☐ very weak

7. I usually study: ☐ alone ☐ with friends/family members

8. In the language classroom, I prefer: ☐ to work in a group ☐ to work on my own.

9. I use paper and pens/pencils/markers to write down notes while learning. ☐ Yes ☐ No

10. The textbook is usually my only resource of language learning. ☐ Yes ☐ No

11. I use computer programs to facilitate language learning. ☐ Yes ☐ No

12. I have other contact with the German language outside this German 101 course, such as listening to German music, watching German movies….etc.? ☐ Yes ☐ No

    If yes, please specify: _____

13. I study ☐ regularly ☐ only before the quizzes/exams.

14. I do the homework

    ☐ all the time ☐ sometimes ☐ only when I need to hand it in to the instructor.

15. I think that having a good instructor for learning a language is:

    ☐ important, because ☐ not important, because

_____

_____

Appendix B: Questionnaire 2

Language Learning Questionnaire 2

NAME: _____

1. My experience of learning German vocabulary so far has been:

☐ difficult ☐ not so difficult ☐ easy ☐ very easy

Please explain why:

_____

_____

2. How do you **discover the meaning** of unknown words in German?

_____

_____

3. How do you **memorize the meaning** of the German words?

_____

_____

4. How do you memorize the **spelling** of German words?

_____

_____

5. How do you memorize **the gender of German nouns**?

_____

_____

6. How do you learn the **pronunciation** of German words? How do you improve your pronunciation?

_____

_____

7. How do you improve your German vocabulary size? (E.g., reading German newspapers/books, have a German pen pal, practice with Germans…and so on)

_____

_____

Appendix C: Materials for the Vocabulary Activities

Word list study

You have been introduced to the words/phrases below in the *Anlauftext* of Chapter 3 in *Vorsprung*. You are now asked to study those words, and remember their meaning and spelling. If it is a noun, you also need to remember its gender.

You can use the dictionary, the textbook and your notes.

01. essen* (*er isst*)
02. der Bahnhof
03. wahrscheinlich
04. das Schweinefleisch
05. das Gepäck
06. wandern
07. bleiben
08. der Kaugummi
09. der Mund
10. tragen* (*er trägt*)
11. lächeln
12. der Fußball
13. die Schuhe
14. das Bier
15. mitbringen
16. fernsehen* (*er sieht fern*)
17. die Politik
18. das Wochenende
19. vielleicht
20. verstehen von (etwas)
21. halten* von (etwas) (*er hält*)
22. nur Bahnhof verstehen

The * sign indicates that the verb is a strong verb. Its conjugation for the 3rd person singular is provided in parentheses in italic.

Quiz

Write the German equivalents in the blank. If it is a noun, write the gender as well.

to eat	_____
to wear	_____
probably	_____
train station	_____
chewing gum	_____
to smile	_____
luggage	_____
to stay	_____
to understand nothing	_____
to hike; go hiking	_____
weekend	_____
to think of (something)	_____
to bring along	_____
mouth	_____

Folow-up activity 1

Do you see the words that you have just studied? Find at least 10 of them!

A	W	O	C	H	E	N	E	N	D	E	B	C	B	F	M
S	T	C	F	I	N	U	I	A	O	T	H	E	L	Ä	G
G	E	Ä	Ö	F	V	R	ß	G	T	R	A	G	E	N	H
H	S	C	H	U	H	E	I	E	I	V	L	Ö	I	H	B
N	W	E	T	ß	E	V	D	P	ß	Ü	T	E	B	F	V
K	A	Q	G	B	M	Ö	O	Ä	I	F	E	T	E	H	I
V	H	U	E	A	N	F	T	C	N	G	N	U	N	O	E
E	R	P	O	L	I	T	I	K	Ä	Q	B	I	E	R	L
R	S	T	Q	L	Ä	C	H	E	L	N	F	T	Q	E	L
S	C	H	W	E	I	N	E	F	L	E	I	S	C	H	E
T	H	I	ß	K	A	U	G	U	M	M	I	G	Ü	B	I
E	E	S	S	B	Ü	R	O	V	Q	U	W	T	Q	O	C
H	I	F	E	R	N	S	E	H	E	N	A	R	T	F	H
E	N	A	Ü	C	D	B	S	M	ß	D	N	Ä	V	ß	T
N	L	G	H	H	T	D	S	J	B	T	D	O	E	P	G
M	I	T	B	R	I	N	G	E	N	K	E	R	Ä	Ö	M
D	C	Ä	Ö	H	J	A	N	L	H	G	R	T	ß	B	H
C	H	G	J	E	K	O	M	B	A	H	N	H	O	F	D

Follow-up activity 2

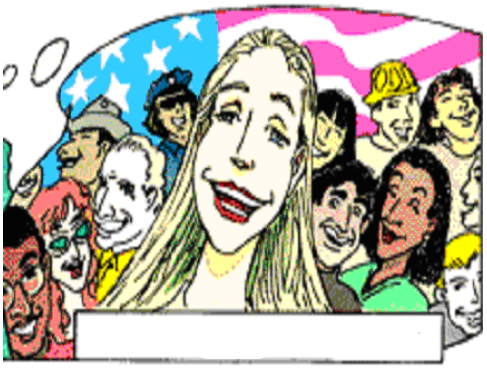
Find the match! Which sentence describes the picture correctly? Write the number of the picture in the blank.

1. Muslime essen kein Schweinefleisch. Bild _____
2. Die Deutschen spielen gern Fußball und trinken gern Bier. Bild _____
3. Das kleine Mädchen trägt gern T-Shirts und Shorts. Bild _____
4. Der Mann bringt viel Gepäck mit. Bild _____
5. Der Junge sieht den ganzen Tag nur fern. Bild _____
6. Laura und Bill wandern sehr gern. Bild _____
7. Anna ist sehr freundlich. Sie lächelt immer. Bild _____

1

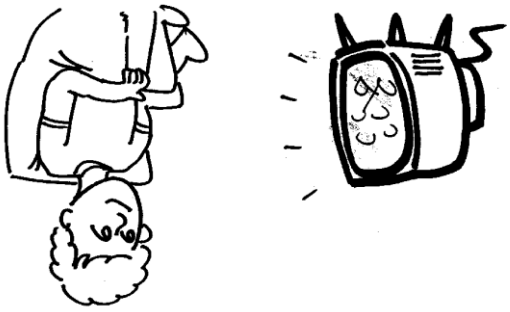
2

3



4

5



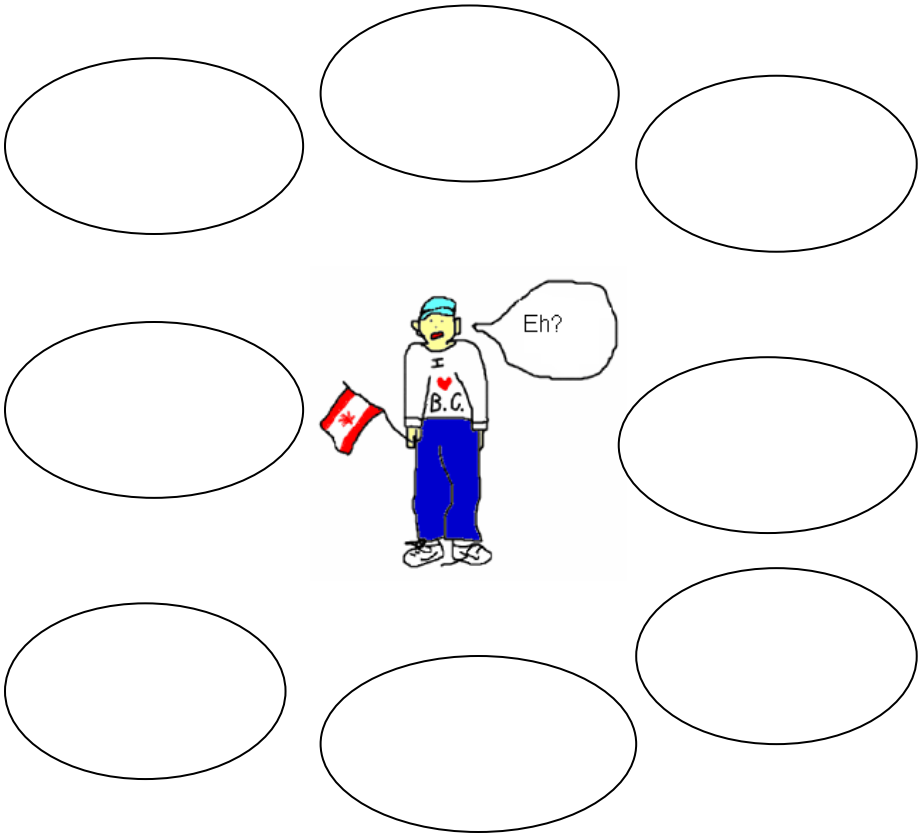
6

7

Follow-up activity 3

Typischer Kanadier/Typische Kanadierin

What comes to your mind when you think of "typischer Kanadier/typische Kanadierin" ? For example, what does a typical Canadian eat, drink, wear, and read? What about sports and music? The language(s) he/she speaks?
Write down as many words or phrases as possible in the circles below.



Follow-up activity 4

Typischer Kanadier/Typische Kanadierin

Use the words/phrases that you wrote in Activity 3 to write a short text about "typical Canadians."