# CHAPTER ONE
# INTRODUCTION

Data-Driven Learning (DDL) has received much attention of instructors for years, since DDL emerged as the novelty of the early 1990s to represent a new approach to language learning. Its significance is claimed to rest on the balance it has struck between the product and process approach. Specifically, DDL has found a middle ground in between two instructional focuses in language teaching. Product approach is concerned with specific linguistic aspects and learner's language production, whereas process approach stresses learner's self-discovery while they are engaged in language experiments (Hadley, 2002). As for how the DDL approach works in a language classroom, it is built on a "research-then-theory framework" that highlights a great quantity of linguistic resources or language examples (Hadley, 2002). This key attribute of a DDL setting contextualizes the target language to be acquired, so that learners are encouraged to work as linguistic researchers, aiming at regulating lexical or grammatical usage patterns (Johns, 1991a, 1991b).

Computer-based *corpus* and *concordancer* are one of the devices for DDL in language courses. Learners use a software program (or a web concordancer) as a tool to search through and analyze corpus files that collect and electronically store written texts and/or transcriptions of spoken language on different topics. Great possibilities are thus offered to the researchers to study the occurrence of a selected key term and the restrictions on how the term can be used together with other words, namely, the collocation field of the key term within the context of meaningful examples (Conrad & Rautenhaus, 1994). To be more specific, DDL or classroom concordancing presents a key term in a string of sentences that can illustrate how to use that particular word or phrase. This presents corpus researchers with the authentic, probable choices that language users actually make and therefore allows them to explore and discover common and typical patterns of word usage in various styles and genres. Generally speaking, with corpus and concordancer, researchers are likely to work out language patterns, discover how frequently-used the patterns are, and identify the contextual factors that might influence the variance of these patterns (Hadley, 2002).

This mode of discovery learning activated in a DDL setting is claimed to help students learn better and more effectively, in that once learners make the attempt to

discover the underlying language patterns on their own in corpus-based investigations, they have grown to be active participants in the process of learning (Brown, 2001; Johns, 1997; Sun, 1999). Further, in this explorative fashion of learning, students are actually engaged in a dynamic learning process where they try to draw on their own prior knowledge to examine the linguistic resources or concordance output, and then try to regulate new language rules that are to be learned. Additionally, students are placed at the center of learning while they are engaged in real, exploratory concordance-based tasks and activities to expand their language experiences (Biber & Reppen, 1998). They are no longer passive recipients of linguistic knowledge formerly constructed from the instructor's perspective. Instead, through corpus consultation, students have been developing a sense of responsibility for their own learning; they learn to work autonomously and independently in deducing or inducing linguistic rules, as well as in figuring out collocational patterns through concordance output (Chambers, 2005).

Learning strategies such as problem solving, hypothesis formation and testing are under cultivation in the meantime. The moment students start with the DDL-based linguistic research, they have already been engaged in an ongoing learning process where they encounter various learning problems, such as how to examine the target language, how to extract supportive information from concordances, how to apply the regulated usage patterns to the problem areas, and how to examine the concordance search outcome. Effective solutions are thus required, and one of the prerequisites is students' continual efforts on forming and testing different hypotheses. In corpus investigations, it has particularly been asserted that students' hypothesis-testing strategies are inspired in perceiving similarities and differences between problematic areas and illustrative concordances. Several studies lent support to concordance output in offering a unique way of stimulating inductive learning strategies (e.g., Johns, 1991b). Furthermore, all these stimulated learning strategies are reported to be transferable to any educational setting other than language learning (Kennedy & Miceli, 2001; Sun, 2003).

Obviously, all the above positive features of corpus and concordancer have been evidenced by considerable research, specifically in terms of raising learners' language awareness, building up their own profiles of usage patterns, and developing appropriate styles and strategies for language learning purposes and even for general learning purposes (Chan & Liou, 2005, Lee & Liou, 2003; O'Sullivan & Chambers,

2006). Learners themselves also show positive reactions to DDL or classroom concordancing due to their growing consciousness to the use of descriptive rather than prescriptive language (Chambers, 2005; Yeh, Liou, & Li, 2007). Nevertheless, it remains a central issue in the field of applied linguistics to probe further into how the concordancing tool influences language teaching and learning. All these efforts in further research are due to limitations in adopting DDL approach in a language classroom. Specifically, these limitations are still observed and are mainly concerned with student's difficulty in comprehending or extracting information from a great quantity of language examples. Frustration and puzzlement grow stronger in corpus investigations as it is related to learners at a low proficiency level or to learning tasks that are given without clear instructions. To address these issues, the use of corpus and concordancer is suggested being mediated by the concept of *scaffolding,* namely, an organized step-by-step guidance from the capable one or the instructor (Chambers, 2005; Thurstun, 1996).

Although the plausibility of scaffolded instruction on corpus investigation is well-received, little empirical evidence has been gathered to support it. Thus, the present study presents a series of scaffolding prompts that serve as guidelines for effective use of corpus and concordancer. To be more specific, students are asked to consult a selected corpus to accomplish proofreading tasks that focus on words and their collocates. Further support is lent to half of the students, presented in the form of computer-based help pages. The scaffolding prompts and web concordancer – these two independent variables are to be investigated, particularly in their effects on improving learners' proofreading performance. Specific research questions to be addressed are as follows:

1. How does concordancer search affect students' proofreading performances?

2. How do scaffolding prompts and concordancer search affect students' proofreading performances?

3. Do scaffolding prompts have lasting effect on students' concordance assisted proofreading performances after removal of prompts?

4. Do scaffolding prompts affect students' level of certainty about their proofreading performances?

5. What is the student's perception of the effects of web concordancer and scaffolding prompts?

It is hoped that the information presented here will draw attention to the concept of scaffolding in supporting students' corpus-based investigations. As for the detailed description about the research design, as well as the coding and analyzing procedure, they will be covered in the third chapter, whereas the following second chapter will firstly look into the trend towards the use of corpus and concordancer for language learning purposes and then introduce scaffolding as one of the plausible ways to enhance the efficacy of classroom concordancing.

# CHAPTER TWO
# LITERATURE REVIEW

## Corpus and Concordancer Support for Language Learners

*Definition and classification of corpus*

From a computational perspective to look into human language, a corpus is defined as "a collection of naturally occurring language texts, chosen to characterize a state or variety of a language" (Sinclair, 1991, p. 171). In Biber and Reppen's (1998) words, a corpus "seeks to represent a language or some part of a language" (p. 246). This computational model of linguistic phenomenon is presented in the form of a text-based electronic database, characteristic of a large capacity of language samples, both written and spoken, according to St. John (2001). Yamanoue, Minami, and Ruxton (2002) further noted that the collected language samples are carefully selected from different sources. These sources lead to a division into *native* corpora and *learner* corpora. Native speaker corpora provide users immediate access to authentic language production in various styles and genres (Chen, 2001). Thus, the most common and typical use of words are considered to be presented in native corpora with numerous examples supplied alongside (Krishnamurthy, 2001). Examples of native corpora are American National Corpus, British National Corpus, Brown Corpus, Collins Birmingham University International Language Database (COBUILD), Lancaster-Oslo/Bergen (LOB) Corpus, Survey of English Usage (SEU), and Times. On the contrary, learner corpora are collections of language learners' language, which are mainly for error analysis, as well as contrastive inter-language analysis (Granger, 1998). English Taiwan Learner Corpus (EnglishTLC) is regarded as one of the learner corpora.

*Concordancer as a corpus analysis tool*

The growing interest in the potential of corpus in language teaching and learning applications has been stimulated by the emergence of Data-Driven Learning approach (DDL) or classroom concordancing. The essence of this kind of learning**,** as it is specifically for linguistic purposes, is to acquire grammatical rules or regularities of language use through the process of analyzing the patterns of language usage of

selected items revealed through language samples contained in corpora (Johns, 1991a, 1991b). The use of concordancer allows learners to interact with a selected corpus. This computer-based language analysis tool will perform a search in the large corpora it stored after users type in a keyword or phrase, and then immediately display the occurrence of the word or phrase repeatedly about a target feature in an authentic context, along with relevant statistic information (St. John, 2001; Sun, 1999; Todd, 2001; Woolard, 2000). Based on the statistics, linguistic rules are thus allowed to be weighed, which suggests how often particular forms actually occur in everyday use (Mani, 2006). Additionally, by observing extensive naturally occurring examples in real texts, learners are allowed to discover patterns and adjust their misconceptions of language regularities (Hill, 2000).

*Relevant research on concordancing in language courses*

Peter Roe's use of concordances in English-for-Specific-Purposes (ESP) classes in Aston University, Birmingham in 1969 was confirmed the earliest (McEnery & Wilson, 1997), and then the English Department of Birmingham University continued with the Collins Birmingham University International Language Database (COBUILD) project (Sinclair, 1987). In the 1980s, a growing number of research studies began to shed some light on the potential of adapting corpus and concordancer for language teaching (Johns, 1988; Leech & Candlin, 1986). Tibble and Jones (1990) then offered a clear and informative description to evidence the strong correlation between classroom concordancing and the learning of general English, and later, Thurstun and Candlin's (1997) publication verified the effect of concordance on academic English learning. So far, corpora have clearly been consulted by both language teachers and learners, mainly because of the authentic language examples displayed by concordancers (Johns, 1991a, 1991b; St. John, 2001; Wang, 2001; Wichmann, Fligelstone, McEnery, & Knowles, 1997). Other positive features of this DDL approach include developing students' language skills and their language awareness, encouraging learning in an explorative fashion, and fostering learner autonomy by turning learners from a passive receiver to an active researcher (Johns, 1991a, 1991b; Lee & Liou, 2003; Mollering, 2001; O'Sullivan & Chambers, 2006; St. John, 2001; Wang, 2001; Yeh, 2003).

Given the explosion of studies devoted to various aspects of the use of corpora in language learning in various contexts, Chambers (2005) suggested three major areas

of research: (1) the extent to which learners actually benefit from corpus consultation and analysis (e.g., Chambers & O'Sullivan, 2004; Kennedy & Miceli, 2001, 2002; Stevens, 1991a, 1991b; Sun, 2003); (2) the type of corpora to be consulted (e.g., Aston, 1997; Bernardini, 2000; Dodd, 1997); (3) the advantages of direct access to corpora (e.g., Chambers & O'Sullivan, 2004; Kennedy & Miceli, 2002, 2001). As synthesized in Appendix A, the table further demonstrates three categories for the different research foci of relevant empirical studies – learning product, learning process, and learner perception. The table also shows that a considerable range of research has been devoted to how concordances promote students' learning products in terms of their mastery of linguistic skills, particularly in vocabulary, grammar and collocation (that involves both grammar and lexis). Generally speaking, learners are found to benefit from corpus consultation and analysis; they improve in range and appropriateness of vocabulary (e.g., Lee & Liou, 2003; Maddalena, 2001; Wang, 2001), as well as in clear understanding of grammatical points at the word, phrase, clause, and discourse level (e.g., Mollering, 2001; Smith, Butler, Griffith, & Kritsonis, 2007; St. John, 2001). Further, learners discover the patterns that collocations produce left or right of the target word; that is, they come to realize what other words are commonly used with the target word (e.g., Chan & Liou, 2005; Yeh, Liou, & Li, 2007). From this aspect of learning product to examine relevant studies, however, the extent to which learners actually benefit from concordances remains unclear, for their learning achievements in concordance-based activities are tied with several variables, such as teachers' teaching techniques, the learning materials presented, students' language proficiency, as well as their preferred learning styles and strategies.

During corpus investigation, students may receive teacher-selected or self-selected concordances, and the latter access to concordance output is reported to elicit better language performances in word usage (e.g., Yeh, 2003). In view of that, teaching techniques or the ways concordances are introduced are viewed as one of the determining factors in students' learning outcomes. Several studies have further evidenced the advantages of direct access to corpora. One of the major findings is that students are more likely to become active corpus researchers if they are provided with direct access to corpora (Cobb, 1997; Kennedy & Miceli, 2001, 2002; Stevens, 1991b; Sun, 2003). Additionally, the learning materials, specifically the type of corpora students consult, may also influence the effectiveness of using corpus and concordancer, as Chambers (2005) suggested. Previous studies have shown their

concerns for corpora that are big-sized or small-sized (Aston, 1997; Bernardini, 2000; Cheng, Warren, & Xun-feng, 2003), unedited or edited (Dodd, 1997), monolingual or parallel (Lin, 2003; St. John, 2001; Wang, 2001), as well as for corpora that are of general purposes or academic purposes (Horst, Cobb, & Nicolae, 2005; Thompson & Tribble, 2001). Nevertheless, to account for individual differences in the beneficial level of consulting a particular corpus type, learners' language proficiency also has to be taken into consideration. For instance, a small-sized native corpus is considered a better choice for less proficient learners to begin with in concordance-based investigations (Kennedy & Miceli, 2001). As for students' preferred learning styles and strategies, they also contribute to different concordance search outcomes. Several researchers have indicated that students who prefer inductive learning styles benefit more from concordances (e.g., Lee & Liou, 2003; Yeh, 2003).

With researchers' growing interests in the correlation among learning styles, strategies, and search outcomes, students' learning processes have emerged as another research focus, following the earlier concern for learning products in vocabulary, grammar, and collocation (see Appendix A). The results have evidenced that in corpus investigations, students may use their prior knowledge to examine questions in the given tasks, consult the selected corpora to extract relevant information with various cognitive skills (e.g., comparing or grouping), and then draw conclusions inductively or deductively. Valid and successful concordance outcomes are considered to be tied with students' effective use of learning strategies, including how they manipulate their existing knowledge to form hypotheses and support them with the selected information (Sun, 2003). In other words, appropriate research habits, such as an awareness of logical principles, are essential to valid search outcomes, and the habit formation even requires further training from the capable ones. In studies that focus on students' own perception of concordance experiences, the need has also been expressed for instructions on concordancing skills, which are considered an insufficient part of concordance-based activities, as opposed to the widely recognized positive side of corpus and concordancer in providing word meanings and functions in communicative contexts (e.g., Chambers, 2005; Lee & Liou, 2003).

The overall findings above have largely pointed to the advantages of classroom concordancing from either the perspective of learning outcome, learning process, or learner perception. Nevertheless, further research is still required to promote the use of corpus and concordancer in a language classroom, especially when the insufficient

part of corpus consultation has been revealed and tied with the training on students' concordancing skills. Johns (1997) has therefore suggested the use of corpus results mediated or scaffolded by the teacher as a first stage. Maddalena (2001) also lent support to supervision and guidance as key components in students' learning process during corpus investigation. He further noted that in order to successfully conduct concordancer search in the classroom, there is a need for a combination of approaches that highlight teacher's step-by-step guidance through all stages of student's learning process. Accordingly, scaffolding is regarded as a powerful tool for promoting the advantages of corpus and concordancer. In the following section, the concept of scaffolding will be reviewed, particularly its application in a web-based learning environment.

## Scaffolding in Educational Setting

*Theoretical background*

The concept of scaffolding is concerned with a significant premise of Vygotsky's (1962) social-cultural perspective in language learning – "zone of proximal development (ZPD)". Underlying this concept is Vygotsky's (1978) assumption that the development of human cognition is composed of a real level and a potential level; "the real level involves an individual's capability to solve problems independently, whereas the potential level demands collaboration with the competitive ones so that an individual's potential for problem solving will be developed" (p. 85). The term, ZPD is used to refer to the distance or discrepancy between the real level and potential level of development. In view of the significance of Vygotskian approach particularly relevant to the learning of additional languages, Hall (2002) further noted that students' learning process takes place within ZPD, and the learning is assumed to lead students to develop from their potential to a real level for problem solving. Moreover, according to Palincsar and Brown (1984), students' ZPD is the crucial area that demands guidance and instruction of a teacher, peer, or instructional aid, and thus scaffolding is developed to work within the students' ZPD and assist their learning processes.

*Definition of scaffolding*

Although Bruner (1973) and Mead (1934) recognized the interdependent

problem-solving behaviors within the real level and potential level of cognition development, the use of scaffold in education was first brought up by Wood, Bruner, and Ross (1976). Scaffolding, by their definition, is "a process of negotiated interaction in which experts first assess the learners' levels of competence and determine the types of assistance they need to accomplish a particular task" (p. 31). Concerning the ways students are assisted and mediated, "the experts (or teachers) are reported to first take control of those portions of a task that are beyond the learners' current level of competence, gradually handing over the responsibility for completing the task to the learners as their competence grows" (Wood et al., 1976, pp. 89-100, in Chang, 2006). Anderson, Armbruster, and Roe (1990) summed up the key points of scaffolding, concluding that "appropriate scaffolding requires accurate diagnosis of the students' skill levels and the ability to provide just the right amount of support to enable the students to perform the target task" (p. 192). Rosenshine and Meister (1992) lent further support to the constructivist view of an individual's learning process that involves linking new ideas and experiences with what the learner already knows; they suggested that the support should be based on students' prerequisites or prior knowledge, so that instructors may reach understanding of the current level of students' existing knowledge and proficiency, and hence they may provide support within the students' ZPDs.

*Features of scaffolded instruction*

Beed, Hawkins, and Roller (1991) pointed out several essential features of scaffolding. One of the features is concerned with its key role that the scaffold provided for students must be supportive to their learning tasks and must be adaptable to the learners' current level of understanding (Anderson, 1989; Greene & Land, 2000; Rosenshine & Meister, 1992). Namely, the scaffold needs to work within the students' ZPDs that are built on their prerequisites or prior knowledge. Another feature of scaffolding is the learning goals set up for students. They are expected to reach the "transfer of responsibility" – to internalize the target skills, achieve higher levels of regulation, and become independent and autonomous learners (Lidz, 1991; Rogoff & Lave, 1984). By the definition of Wood et al. (1976), learning responsibility is handed over to the students as the teacher removes the support gradually and the students' competence improves in the meantime. This suggests an additional feature of scaffolding that it is a temporary framework or support, being gradually decreased

over time as the student becomes more capable and competent (Dixon, Carnine & Kameenui, 1993; Rosenshine & Meister; 1992). A last feature of scaffolding that Beed et al. (1991) proposed is related to the amount of support provided for students. It is suggested that students should be scaffolded under a carefully organized step by step guidance; that is, learners are guided to take one step in a procedure at a time and use the opportunities given to practice before they move on to the next step (Rosenshine & Meister, 1992).

These learning opportunities aim to help learners reach their own conclusions when they are scaffolded to reach understanding of the required texts and materials (Mantero, 2002). This brings out a further feature of scaffolding that is concerned with its nature of being conceptual and cognitive. In Mantero's (2002) words, the goal of or reason for scaffolding does not merely represent one single perspective. He further noted that rather than meaning and implying the idea of how to have students understand what the instructor has in mind, true scaffolding should reach mutual understanding between the instructor and students. Similarly, Yelland and Masters (2007) indicated that the aim of the scaffolding process should be the learners' own intentions as opposed to traditional forms of scaffolding that are based on the expert's view of how to solve problems. To assist novice learners in noticing, ordering, representing, and most importantly remembering their involvement in their socioculturally constructed activities, scaffolded instruction is carried out through *mediational means* that provides learners with sustaining feedback and mediation (Van der Veer & Valsiner, 1994).

*Scaffolding tools and techniques*

The various forms of mediational means lead to the divisions of instructional scaffolding. Anderson et al. (1990) suggested that hints and suggestions are two possible forms of scaffolding, and teachers may also perform parts of the task that students feel unable to handle on their own so as to offer guidance and assistance when students continue to practice. These forms of scaffold or mediational means are, by Rosenshine and Meister's (1992) definition, *techniques* or strategies that the teacher implements in order to support a learner, as opposed to scaffold as a *tool,* where a scaffolding device such as a cue card or a picture is provided for the learner. Hall (2002) further elaborated on the form of mediational means, claiming that the

means can be verbal, visual, or physical strategies and can include scaffolding tools, such as linguistic resources, computational resources (e.g., computers and counting systems), and graphic resources (e.g., maps, diagrams, drawings and writing systems). In teaching reading, for example, teachers use voiced cues and physical gestures, such as finger-pointing, gentle touches and smiles, which are designed especially for beginners (Cole, 2006). In a literature-based foreign language classroom, verbal scaffolding occurs in the form of either teacher-to-student or student-to-student dialogues, which constitute part of the ongoing classroom discourse in, for example, assisting students in appropriating and understanding a particular word (Mantero, 2002).

As Bull, Shuler, Overton, Kimball, Boykin, and Griffin (1999) indicated, the kinds of scaffolding are as many as the methods of teaching. Past research has also shown some other ways to describe and represent scaffolding tools and techniques, such as expert modeling (e.g., Palincsar, 1986), reciprocal teaching (e.g., Palincsar & Brown, 1984), guided peer questioning (e.g., King, 1991, 1992), as well as question prompting (e.g., Scardamalia & Bereiter, 1985; Scardamalia, Bereiter, & Steinbach, 1984). Apparently, scaffolding is viewed in a broad way to describe any aspect of interaction between a teacher and the student. Any tools and strategies utilized to offer guidance and supervision are considered to be the devices for scaffolded instruction. Presently, the trend towards technology-integrated instruction is clear with the use of computer hardware as a scaffold. Baron (1991) further suggested that the scaffold could be provided online via computer-based devices, such as visual cueing, links to web-pages with directions, as well as downloadable help pages.

*Application of scaffolding prompts in computer contexts*

Question prompts or scaffolding prompts are commonly embedded in computer-based support systems and presented as help pages, windows, or web-pages with directions to assist students' learning processes. For example, to develop learners' problem solving expertise, Ge and Er (2005) designed the Problem-Solving Support System, offering real-world cases and pre-determined questions to prompt the learners. In their study, prompts were classified into elaboration prompts that required students' responses to the questions given (e.g., What facts from this case suggest a problem?), and reflection prompts that encouraged reflection at a metacognitive level (e.g., What have you learned from Dr. Planas' responses?), as the question prompts

presented in Ge and Land's (2004) research. Also, in the web-based learning environment Ge, Chen, and Davis (2005) built up, the scaffolding prompts were designed to facilitate students' reasoning and problem-solving processes and were reported to be of two types: prompts as guidelines or checklists and question prompts for elaboration and responses (e.g., What kind of investigation techniques are you going to use? Why do you suggest using each of the techniques above?). Similarly, Davis and Linn (2000) categorized the prompts offered in their web-based system into activity and self-monitoring prompts. By their definition, activity prompts were designed to encourage students to reflect on their learning progress in the activity and specifically about whether they have focused attention to each aspect of their project, whereas self-monitoring prompts were to encourage students to reflect on their own learning that seldom came to their awareness.

To sum up, Ge et al. (2005) proposed three categories of scaffolding prompts: (1) *procedural* prompts that function as a structure or guideline to lead students through the problem-solving processes, (2) *elaborative* prompts that help students elaborate on their prior knowledge and articulate their reasoning processes, as well as (3) *reflective* prompts that serve as cues to provoke students' reflections and metacognitive awareness. Apparently, each type of prompt has its own specific cognitive function in influencing problem solving processes, as Ge and Er (2005) indicated, though the current studies have shown the preference for a combination of different types of scaffolding prompts (e.g., Davis & Linn, 2000; Ge & Land, 2003, 2004). A carefully sequenced procedure is thus necessitated in modeling problem solving processes with a set of scaffolds. Ge and Er (2005), for example, coded the question prompts in three scaffolding levels (i.e., low, medium, or high) and selected the prompts according to the level of students' problem solving skills. This sequenced and coordinated suite of scaffolding tools is considered to be able to fulfill the purpose of facilitating complex problem solving processes.

*Effectiveness of adopting instructional scaffolding prompts*

Considerable evidence has suggested that appropriate instructional scaffolds or support should be provided and embedded in the learning environment to guide learners during their work on complex learning tasks (e.g., Van Merrienboer, Kirschner, & Kester, 2003). Specifically in computer contexts, online scaffolding prompts have also been regarded as a powerful instructional technique in promoting

academic achievement and learning outcome, in that these prompts could be automated in web-based setting and thus leads to improved understanding of the materials to be learned (Davis & Linn, 2000; Kauffman, 2004). As it is related to students' learning processes, the use of scaffolding prompts can guide their knowledge construction and integration. In Bell and Linn's (2000) study, for example, students learned to make scientific arguments in a debate project about the propagation of light. They were encouraged to integrate knowledge around the topic from personal experiences and online evidence when embedded in a web-based environment where hints, focusing questions and sentence-starters were provided as scaffolding prompts to guide student inquiry. The results suggested that the prompts could help students link their arguments or explanations with the existing knowledge rather than simple phenomenological descriptions. In addition, the prompts were considered a device for knowledge representation, which could present the structure of an argument in a visible manner, and thus helped the students become engaged in their learning processes, refine their images of the target subject, and even provided a valuable assessment for the teacher.

Likewise, Davis and Linn (2000) investigated whether scaffolding prompts promote knowledge integration for students working on science projects. In their study, procedural and reflective prompts were also embedded in a computer context in the form of sentence-starters. The students read online procedural or activity prompts, such as "The letter says we need to…" and "The major claims made by the article include…," whereas the reflective or self-monitoring prompts included "Thinking ahead: To do a good job on this project, we need to…" and "Checking our understanding: Pieces of evidence or claims in the article we didn't understand very well included…" It was shown that these prompts let students make their own thinking visible and explicit, and thus the students became better able to recognize areas in which their own understanding was lacking and to engage in knowledge integration. Several studies have further evidenced the cognitive benefits of scaffolding prompts, particularly in eliciting learners' self-explanation, self-questioning, self-monitoring and reflection during their learning processes (e.g., Ge & Er, 2005; Ge et al., 2005). All in all, the use of scaffolding prompts is likely to direct students' attention to important aspects of the problem, activate their prior knowledge, elicit their explanations, and prompt them for self-monitoring and self-reflection. In Ge et al.'s (2005) words, a number of cognitive and metacognitive

functions can be fulfilled by scaffolding prompts, particularly in facilitating students' complex problem-solving processes.

With regard to the learning of additional languages through DDL or classroom concordancing, scaffolding prompts still play an important part, in that the use of corpus results has consistently been suggested guided and mediated by the teacher (Johns, 1997; Maddalena, 2001), and that the supportive prompts can deliver direct instruction for just-in-time training on problem-solving skills while students are performing complex learning tasks. However, little has been done so far to investigate how scaffolding prompts influence language learners that are particularly engaged in concordance-based activities. Further research is thus required to design prompts for a concoradncing context, as well as to examine how the prompts influence students' search outcomes and their language learning processes.
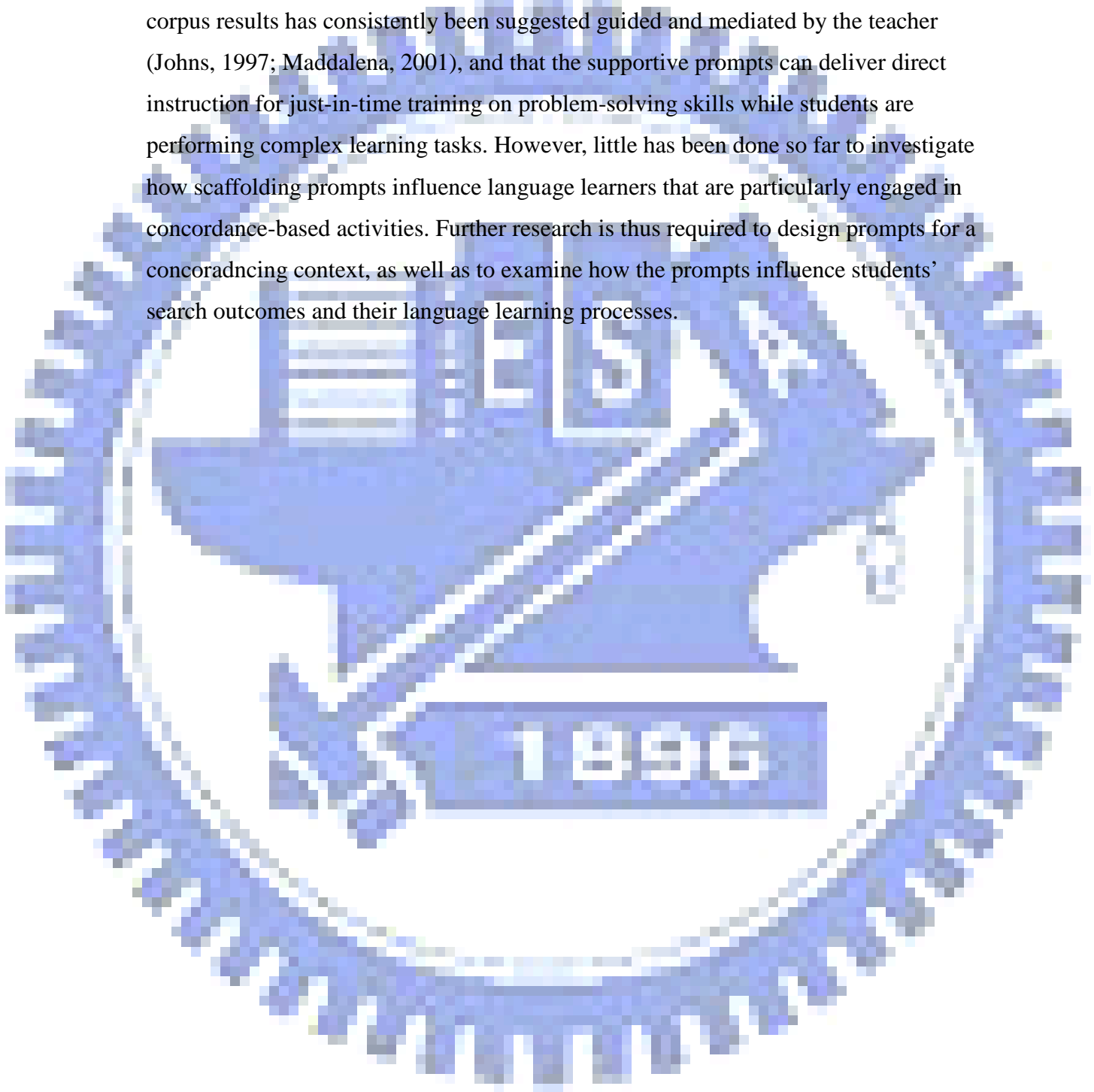
# CHAPTER THREE
# METHOD

The main purpose of this study was to evaluate the use of corpus and concordancer and to explore the effectiveness of computer-based scaffolding prompts that were intended to support the students' concordance-based investigations. Learning product and learner perception were both probed into in this present study. Specifically, student's learning outcome was measured by a series of corpus-enhanced proofreading tasks that focused on collocational issues. Further, evaluation questionnaires were used to elicit learners' feedback on the scaffolding prompts and on their concordance-based investigations.

## Participants

Participants for the study were a class of 26 second-year senior high school students at a private high school in central Taiwan. They were all native speakers of Mandarin Chinese, learning English as a foreign language (EFL). An average of 5-6 years had been devoted to EFL learning. As the study participants, these students were randomized for a division into a control group and an experimental group, with 13 students per group. The grouping was based on whether the students were assisted by computer-based scaffolding prompts while performing the assigned concordance-based proofreading tasks. An independent $t$-test was applied using the proofreading scores of the experimental group (M = 56.15) and control group (M = 53.46) in a concordance-based pre-assessment so as to confirm that the two groups were equivalent, and that no significant difference existed in ability between the students of these two groups prior to the scaffold ($t$ = -5.08, $df$ = 19.72, P = .045).

## Data Collection Procedure

The period of data collection lasted for one month. Figure 3.1 further demonstrates that a proofreading pretest (X) was firstly administered in the first week to collect all students' prior knowledge about collocation use. Soon afterwards, the students were engaged in a concordance-based context where they used a web concordancer to help them perform another proofreading task (X1). Then, in the

following two weeks, the students were divided into a scaffolded experimental group and a non-scaffolded control group. Students of the experimental group were mediated by the scaffolding prompts while using a web concordancer to complete a series of proofreading tasks, whereas those of the control group were not supported with the prompts. Proofreading performances of the scaffolded group was also examined by concordance-based revision tasks (X2a1 and X2a2) and compared with the proofreading performances of nonscaffolded group (X2b1 and X2b2), as Figure 3.1 indicates. After the removal of prompts in the fourth week, a concordance-based posttest was administered (X3) to examine students' proofreading performances after scaffold. Lastly, evaluation questionnaire was administered to elicit students' reactions to concordancer and prompts.

In case that the participants were frustrated by the use of concordancer, a tutorial on concordancing was arranged in the first week prior to the administration of all concordance-based proofreading tasks (X1, X2, X3), as Figure 3.1 presents. With reference to Sun's (2003) design of a similar tutorial, the teacher/researcher (1) began with an overview of the purpose and function of a web concordancer, then (2) demonstrated the way to use the analysis tool, and (3) ended the tutorial session with practice tasks that required the students to use a selected web concordancer as an aid for correcting collocational errors and meanwhile gained their own concordancing experiences. Another rehearsal session was arranged in the second week for the scaffolded group of students. The familiarizing purpose of performing this rehearsal session was similar to that of the concordance tutorial, though this session was intended to familiarize the experimental group with being scaffolded during corpus consultation. For this purpose, the teacher/researcher instructed the students on why the prompts were developed, how the prompts were operated, and then examined whether the students felt comfortable with the prompts.

| WK 1 | Non-concordance-based proofreading pretest (X) (20 min) |
| | Tutorial on concordancing skills (15 min) |
| | Concordance-based proofreading posttest (X1) (30 min) |

| WK 2 | Rehearsal session for scaffolding prompts (15 min) | |
| | Scaffolded, Concordance-based proofreading tasks (X2a1) (40 min) | Non-scaffolded, Concordance-based proofreading tasks (X2b1) (40 min) |

| WK 3 | Scaffolded, Concordance-based proofreading tasks (X2a2) (40 min) | Non-scaffolded, Concordance-based proofreading tasks (X2b2) (40 min) |

| WK 4 | Concordance-based proofreading posttest (X3) (30 min) | |
| | Evaluation questionnaire survey (20 min) | |

*Figure 3.1.* Data Collection Procedure

**Tools**

*VLC/NTNU web concordancer*

Two concordance programs, developed respectively by the Virtual Language Center (VLC) and by National Taiwan Normal University (NTNU), were both adopted for this research in case of any flow control problem of the servers. The participants were randomized and divided in half; 13 of them worked with the VLC web concordancer while performing the proofreading tasks, and 13 worked with NTNU. Further, these two corpus analysis tools were considered to contain appropriate data for high school students to read and generate rules or usage patterns from the concordances. The VLC web concordancer, however, exceeded NTNU in the

number of English corpora it contained (18 native corpora and 4 learner corpora). To avoid the students being distracted by corpus selection, the native Brown Corpus of Standard American English was selected from all the corpus files for both VLC and NTNU concordancer users. This selected corpus was claimed to consist of 500 texts, covering 15 different text categories, such as reviews, editorials, reports, and fictions. Figure 3.2 and 3.3 present the interface of VLC and NCNU web concordancers.
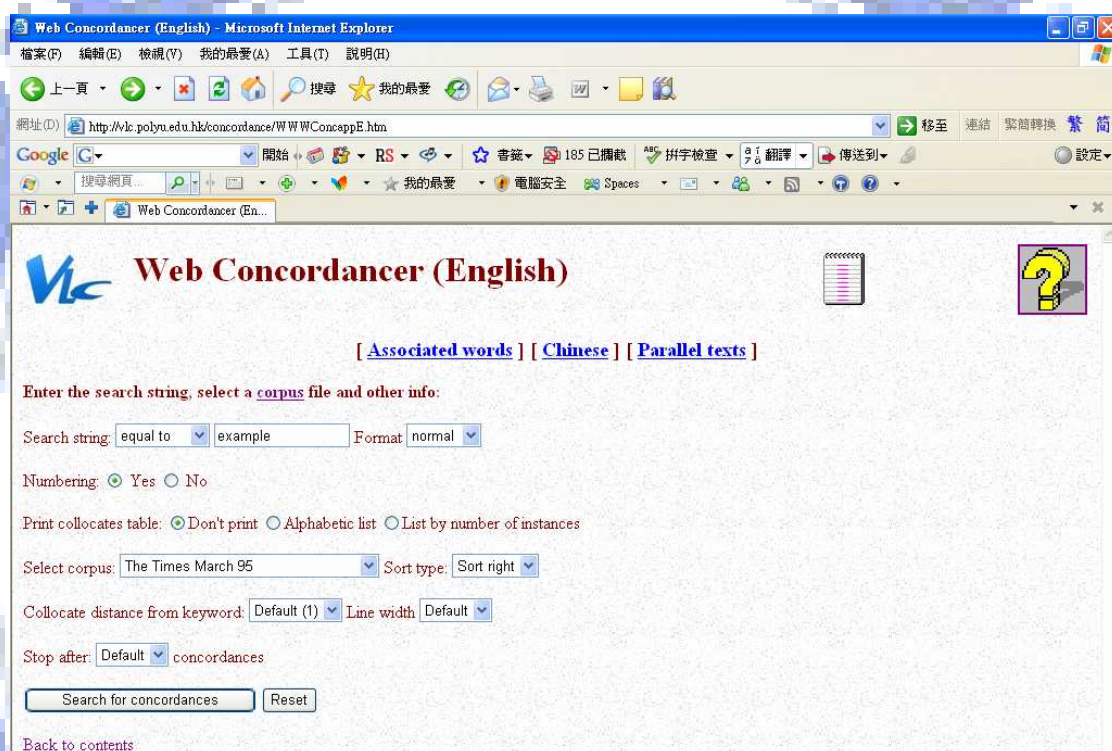


*Figure 3.2.* Screen Shot of the Search Window of VLC Web Concordancer

*Figure 3.3.* Screen Shot of the Search Window of NTNU Web Concordancer

Entry of both analysis tools was students' word or phrase, and the output were all instances of the keyword in context (KWIC) throughout the selected Brown corpus file, as illustrated in Figure 3.4 and 3.5.
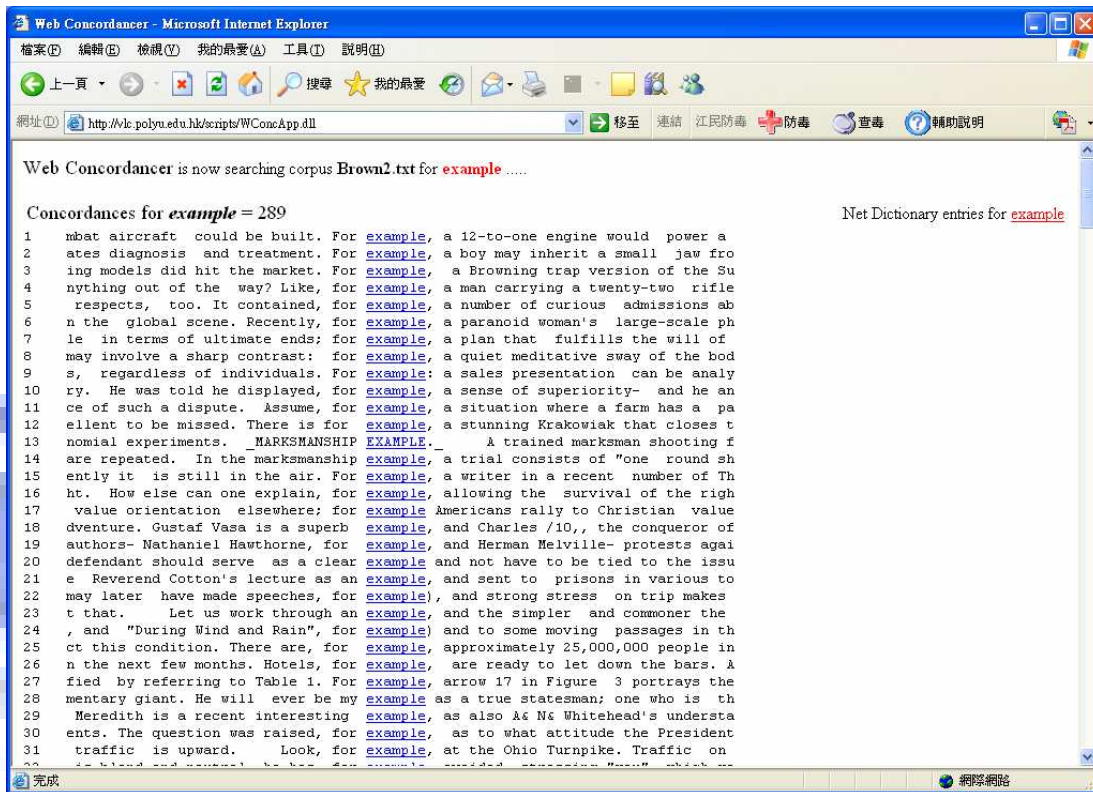
*Figure 3.4.* VLC Concordances of *Example*



*Figure 3.5.* NTNU Concordances of *Example*

VLC users might also find that the concordance search type and search results were optional. It allowed their searching for exact matches or special morphemes or parts of words, such as prefixes and suffixes. Besides, it allowed their searching for further generation of a collocates table, either alphabetically or by frequency. To avoid confusion, all the students were only introduced an additional option of concordance output amount, built in both the VLC and NTNU concordance programs. During the tutorial session that was designed to familiarize the students with these search tools, the search returned 200-500 concordances only for the warm-up practice tasks to avoid that the students get puzzled or even daunted by this new learning mode, whereas no limit was set to the number of returned concordances while they were accomplishing the main proofreading tasks.

*Scaffolding prompts*

This study presented computer-based help pages or scaffolding prompts, as shown in Figure 3.6 (for all the prompt templates, see Appendix B). The students of the experimental group encountered the step-be-step scaffolds while they were engaged in concordance-based activities. These prompts were complete sentences written by the teacher/researcher in the students' native Chinese language. They described strategies of successful corpus researchers, having been proposed in several relevant studies (Kennedy & Miceli, 2001; Sun, 2003; Thurstun, 1996). Wenden and Rubin (1987) viewed this kind of strategy description list as a first requirement of explicit strategy training or teachers' mediating tool. However, in order not to scaffold the students to solve learning problems based on the instructor's view, all the four prompts for each proofreading question were not encountered all at one time. Instead, the prompts intervened as a guide respectively at different time points so as to keep the students thinking on their own and meanwhile scaffold them to use effective strategies at different time points. These prompts were intended to offer possible problem-solving strategies only, and thus the students were never shown direct answers to the proofreading questions.

這是第1題（共5題）

The accident that he drove through the front entrance of the fast food restaurant <u>is evidence to</u> his inexperience in driving.

---

**第1題第1步**

題目中**畫底線的部份**有文法問題。

請從畫底線的字中，挑出你想要查詢的關鍵字（is、evidence、is evidence、is evidence to 等）。

**你的關鍵字越短，例句就越多。**

如果你不滿意查詢結果，你可以再**查詢不同的關鍵字**。

---

**任務1：**你查了哪些關鍵字？請**直接寫在考卷上**。

**任務2：**你看了哪些重要例句？請用滑鼠複製貼上，貼完請按鍵盤上的 Ctrl＋s 儲存。

**任務3：**你認為題目應該怎麼改寫？為什麼？請**直接寫在考卷上**。

**任務4：**你確不確定你的答案？請選擇，然後**直接寫在考卷上**。
〔1〕非常確定〔2〕蠻確定的〔3〕不知道〔不知道怎麼回答〕〔4〕蠻不確定的〔5〕非常不確定

*Figure 3.6.* Screen Shot of the Scaffolding Prompts: Step 1

The step-one scaffolding prompt was presented to the students after a problem area in a question statement was underlined and identified. This first prompt guided the students to become aware of the linguistic features of an enterable key term. Then, the second, third and the last prompt was presented one after another to scaffold the students to look for usage patterns illustrated by concordance output, to select and implement an appropriate and applicable pattern, and to evaluate the possible solution, as well as the whole learning process. Generally speaking, all these problem-solving strategies presented to the students were classified based on four major categories, representing different goals of a corpus researcher at different stages – (1) selecting a keyword, (2) analyzing concordance output, (3) specifying a usage pattern, and (4) evaluating the search outcome and concordancing process. Table 3.1 illustrates the exact series of the problem-solving steps.

Table 3.1. *Scaffolding Prompts: Four Steps and the Strategies Included*

| Step | Strategies |
|---|---|
| (1) Keyword selection | (a) Enter keywords that make a meaningful phrase (e.g., (at) that moment). <br> (b) Enter fewer keywords that guarantee more example sentences. <br> (c) Try different keywords when there is invalid search outcome. |
| (2) Concordance analysis | (a) Read the surrounding words of the key term in examples for its usage. <br> (b) Pay attention to the usage patterns that occur frequently in examples. <br> (c) Skip unclear examples, or click on the highlighted key term for keyword in a full text. |
| (3) Rule specification | (a) Look back at the key term in the question and its surrounding words. <br> (b) Compare the key term in the question with that in the examples. Meanwhile, look for what has been added/deleted in the question, and for what has been mistakenly used and how to correct it. <br> (c) Select a best usage pattern based on the surrounding words in the question. |
| (4) Outcome evaluation | (a) Evaluate the selected usage pattern in the example sentences. <br> (b) Make sure the selected usage pattern is frequently used in the examples. <br> (c) Think back on the rule(s) you just learned, and on the skills you just used for formulating rules from examples and for consulting a web corpus. Then think if all the concordancing steps can be more effective and how to do it. |

**Instrumentation**

*Proofreading tasks*

The instruments used to elicit the students' linguistic behaviors were four equivalent proofreading tasks (see Appendix C, D, E, F). In this study, the target behavior to be investigated was the students' collocational competence, namely, their mastery of the language patterns that collocations produce left or right of the target word. To assess this competence, each of the proofreading tasks contained a list of 10 collocationally

problematic sentences made by two experienced high school English teachers. Examples of the question statements are shown as follows:

1. The accident that he drove through the front entrance of the restaurant
                         A                         B
is evidence to his inexperience in driving.
        C                D

_____

2. If you are planning to buy a new computer for yourself, then you have
             A                                    B
to consider about what to do with the old one.
        C                    D

_____

As illustrated by the sentences above, each of the self-made problematic statements was intended to guide the students to look into a particular collocational issue. What preposition the target word or phrase commonly collocates with was the primary focus of all the proofreading tasks, since several studies have reported collocation to be a common error in an EFL setting (e.g., Chambers, 2005; Liou, Chang, Yeh, Liaw, Lin, Chen, You, Chuang, & Gao, 2003; Nesselhauf, 2003; Zyzo, Santome, & Heins, 2003).

With the given question statements highlighting the frequently observed EFL errors, the proofreading tasks were expected to challenge the students and thus encouraged them to get support from corpus and concordancer to address the collocational issues. However, to help the students quickly concentrate on the collocational problems, each proofreading question statement was presented with underlines, indicating four possible problem areas (as shown in the illustration above). The students chose from the four underlined parts and try to revise the chosen one. Further, based on a pilot test, the difficulty level of all the proofreading questions had been revealed and accordingly, the teacher/researcher leveled the questions out, from easy to difficult. In doing so, the students were able to begin with easier questions during the warm-up, rehearsal session when they were simply trying to gain concordancing experiences rather than being puzzled by the learning technique. Then, they continued with the main proofreading tasks that were comparatively more

challenging.

Specifically for students of the experimental group who performed tasks with the guidance of scaffolding prompts, they were provided with a Word version of proofreading questions, so that they were able to consult the web corpus online and save their proofreading answers to the computer. Students of the control group were also provided with computer-based tasks, though their question statements were not shown together with any scaffolding prompts. In other words, the proofreading tasks administered during the scaffolded training session were intended not only to collect students' English sentences after revision, but to keep a learning record of each individual student in either group, including the keywords the student entered, the concordance examples s/he read, and the usage patterns s/he figured out. What's more, Figure 3.7 and Figure 3.8 show that students of both scaffolded group and non-scaffolded group were presented with partly underlined question statements, indicating only one problematic area in each question. In doing so, the students were able to avoid spending too much time figuring out the right problematic area and start their concordancer search as soon as possible. Additionally, the proofreading tasks also required students' responses to a five-point Likert scale (1 = strongly uncertain to 5 = strongly certain) which aimed to help the students identify their level of certainty about their proofreading performances, as Figure 3.7 and Figure 3.8 demonstrate.

這是第1題〔共5題〕↵

・The accident that he drove through the front entrance of the fast food restaurant
is evidence to his inexperience in driving. ↵

第1題第1步↵

題目中畫底線的部份有文法問題。↵

請從畫底線的字中，挑出你想要查詢的關鍵字〔is、evidence、is evidence、is evidence to 等〕。↵

你的關鍵字越短，例句就越多。↵

如果你不滿意查詢結果，你可以再查詢不同的關鍵字。↵

任務1：你查了哪些關鍵字？請直接寫在考卷上。↓
evidence, drive, drive through, ↵

任務2：你看了哪些重要例句？請用滑鼠複製貼上，貼完請按鍵盤上的 Ctrl＋s 儲存。↓
This is　full evidence of your support for my principles.↵

任務3：你認為題目應該怎麼改寫？為什麼？請直接寫在考卷上。↓

The accident that he drove through the front entrance of the fast food restaurant is

evidence of his inexperience in driving.↵

任務4：你確不確定你的答案？請選擇，然後直接寫在考卷上。↵
〔1〕非常確定〔2〕確定〔3〕不知道〔4〕不確定〔5〕非常不確定↵
1↵
若「非常確定」請按我，跳至第2題；其他請按我，跳至第1題第2步。↵

*Figure 3.7.* Screen Shot of Scaffolded Students' Search History and Certainty Level

這是第1題〔共10題〕↵

・The accident that he drove through the front entrance of the fast food restaurant
is evidence to his inexperience in driving. ↵

題目中畫底線的部份有文法問題。↵

請利用索引工具幫助你改寫句子。↵

任務1：你看了哪些重要例句？請用滑鼠複製貼上。↓
These are all evidence of a continuing interest of the schools in furthering educational opportunities
for out-of-school youth.↵

・任務2：你認為題目應該怎麼改寫？為什麼？請直接寫在考卷上。↓
The accident that he drove through the front entrance of the fast food restaurant
is evidence of his inexperience in driving. ↵

Evidence　後是名詞的話應該加 of 而非 to↵

任務3：你確不確定你的答案？請選擇，然後直接寫在考卷上。↵

（1）非常確定（2）確定（3）不知道（4）不確定（5）非常不確定↵
2↵

*Figure 3.8.* Screen Shot of Non-scaffolded Students' Search History and Certainty
Level

*Evaluation questionnaire*

A second instrument was presented as evaluation questionnaires, administered to all the participants to analyze their reactions to the process of corpus consultation with/without the guidance of scaffolding prompts (see Appendix G). As suggested by O'Sullivan and Chambers' (2006) design of a similar survey, two major parts were included. The first contained 8 items, intended to collect students' personal information, particularly about their computer literacy and comments on any previous experience of learning with a web concordancer and learning with further support from computer-based scaffolding prompts. Specific items contained in the first part of the questionnaire included:

1. There is easy access to computers.
2. There are places for me to use computers, such as home and dormitory.
3. The teachers offer me online resources or computer-aided programs to assist language learning in English courses.
4. I consult online resources or computer-aided programs to learn English.
5. I have difficulties in consulting online resources or computer-aided programs to learn English.
6. I consult online resources or computer-aided programs to learn English with the support of teachers or some learning aids.
7. I have ever used web concordancer in addition to VLC and NTNU.
8. I have ever used web concordancer with the support of teachers or some learning aids.

The second part of the questionnaire consisted of 8 items and served a different purpose to assess students' attitudes toward their concordancing experiences, in particular the extent to which corpus consultation helped them address collocational issues. Specifically for students of the experimental group who were mediated by the scaffolding prompts, they were also asked in the second part of the questionnaire about their perception of corpus consultation under supervision and guidance, in terms of the extent to which the prompts helped them extract information from concordance output and address collocational issues that were presented as the proofreading tasks. A five-point Likert scale was provided to help the students identify their reactions (1 = strongly disagree to 5 = strongly agree). Specific items contained in the second part of the questionnaire included:

1. I enjoyed leaning English collocation through corpus and concordancer.
2. I think the web concordancer was helpful to my performances in the proofreading tasks.
3. I think the web concordancer was user friendly.
4. I think the prompts were helpful in guiding me to consult web corpus and perform proofreading tasks.
5. I think the scaffolding prompts helped me solve problems with concordancer search.
6. I think I'll consult web corpora to learn about English collocation in the future.
7. I can list out the advantages and disadvantages of web concordancer and scaffolding prompts.
8. I think I'll recommend others to seek help from the prompts during corpus consultation.

### Data Analysis

The collected data were analyzed from the perspective of both learner product and learner perception. The students' scores on the pre- and post-assessments of proofreading performances were analyzed statistically to compare their learning achievements with and without the aid of a web concordancer, as well as to investigate the effectiveness of computer-based scaffolding prompts. These statistical analyses were carried out with the assistance of the Statistical Package for the Social Science software (SPSS). As for students' responses to the questionnaire, they were analyzed for evidence of students' perception of web concordancer and scaffolding prompts. This use of more than one data collection and analysis approach was for the purpose of cross-examining or triangulating the results.

*Proofreading performance*

The two experienced high school English teachers who had designed all proofreading tasks worked as two raters to calculate separately the performance score for each student on each task. The total score for each task was 100 points, with ten points per question. A ten-point credit was given partly for a correct choice among the four underlined parts of each question and partly for exact statement after revision.

The agreement between raters was later taken into consideration. This inter-rater analysis was adopted to ensure the reliability of the coding process. After the rater agreement was achieved, mean scores of the non-concordance-based pretest (X) and concordance-based pretest (X1) were computed and compared to show any progress in the students' proofreading performances with the aid of concordancer search. Similarly, to learn if the students performed significantly better in proofreading tasks as a result of concordance use, a within-group paired *t*-test was also applied using the scores of non-concordance-based pretest (X) and concordance-based pretest (X1).

As to raw scores of the concordance-based pretest (X1), the concordance-based non/scaffolded tasks (X2), and the scores of the concordance-based posttest (X3), they were converted into percentages for the researcher to calculate the mean (M) and standard deviation (SD). Based on the computed results, comparison was made between the scaffolded group and non-scaffolded group. An independent *t*-test was also applied using mean scores of the concordance-based non/scaffolded tasks so as to show whether the scaffolded group performed the concordance-based proofreading tasks significantly differently from the non-scaffolded group. Further, to see if there was significant difference between the pretest (X1) mean score and posttest (X3) mean score within the experimental group and control group, a paired *t*-test was applied respectively to these two groups. Afterwards, the lasting effect of scaffolding prompts was examined by running an independent *t*-test using the posttest mean scores (X3) of the scaffolded group and non-scaffolded group. Particularly in analyzing the results of *t*-test, *t* value is taken into consideration. If the calculated *t* value was above the 0.05 level for statistical significance, the null hypothesis that the two paired or independent groups do not differ would be rejected in favor of an alternative hypothesis, stating that the two groups do differ and thus evidence the positive effects of concordancer and scaffolding prompts.

*Certainty level*

Students' level of certainty about their proofreading performances was also analyzed using the students' learning records that contained a five-point rating scale, with one representing the state of being strongly uncertain to five representing strongly certain. Although students of the experimental group and control group were asked to rate their certainty level at both scaffolded training phases (X3), mean scores were calculated to reveal an average certainty level of scaffolded group and

non-scaffolded group respectively. An independent *t*-test was also applied using the certainty level mean scores of scaffolded group and non-scaffolded group. In doing so, the results of the independent *t*-test were expected to show whether there was significant difference in certainty level between the scaffolded group and non-scaffolded group. After the certainty level of these two groups was put under comparison, the results were related to their proofreading scores to see if the students' performances showed a positive correlation with their certainly level.

*Learner perception*

　　Students' responses collected from the first part of the evaluation questionnaire were analyzed to figure out their computer literacy and to see whether they had learned English in a computer-assisted setting and whether they had learned under the guidance of instructors or computer programs. If the students had experienced online learning or even the supervision from the instructors or any capable ones, their responses to the open-ended questions were further analyzed to reveal how they felt about such learning experiences. As for the second part of the questionnaire, it was intended to elicit the students' reactions to the use of web concordancer with/out the scaffold of computer-based prompts. By computing the students' responses in the five-point Likert scale and converting the results into percentages, their attitude toward web concordancer and scaffolding prompts was revealed. Students' open-ended responses to the second part of questionnaire were also analyzed to find their comments on the use of both learning tools, particularly about the advantageous and disadvantageous sides of their new learning experiences.

# CHAPTER 4

# RESULTS & DISCUSSION

The results of each research question are addressed in the following section.

## RQ 1: How does Concordancer Search Affect Students' Proofreading Performances?

Table 4.1 shows that in comparison with students' proofreading mean scores (M = 43.65) in a context where there was no use of concordancer, the students' mean scores in proofreading tasks were higher when they were allowed to use a concordancer (M = 54.81). Fewer variations were also found in the students' proofreading scores when concordancer search was allowed (SD = 13.30), unlike the greater variations in the students' proofreading scores in a non-concordance-based context (SD = 15.59). The results of a paired *t*-test, as shown in Table 4.1, further indicates significant difference in the students' proofreading performances between the concordance-based group and non-concordance-based group ($t = -3.65$, $df = 25$, P = .001). All these findings lent support to the positive effects of web concordancer on students' collocation use in the proofreading tasks, and the findings were in consistent with the results of several prior studies on the use of web concordancer for language learning, particularly about students' significant collocation improvement (Chan & Liou, 2005; Yeh, Liou, & Li, 2007).

Table 4.1. *Results of the t-Test for Mean Scores of Non-concordance-based Group and Concordance-based Group*

| Pretests | N | Mean | SD | *t* | *df* | P |
|---|---|---|---|---|---|---|
| Non-concordance-based | 26 | 43.65 | 15.59 | -3.65 | 25 | .001** |
| Concordance-based | 26 | 54.81 | 13.30 | | | |

**p<.01

**RQ 2: How do Scaffolding Prompts and Concordancer Search Affect Students'**
**Proofreading Performances?**

Results of an independent *t*-test had confirmed that no significant difference existed in ability between the experimental group and control group prior to the scaffold ($t = -5.08$, *df* = 19.72, P = .045). In view of that, comparison was made between the two groups of students to see if the proofreading performances of the experimental group were significantly different from the control group. Table 4.2 indicates that the mean score of scaffolded group in proofreading task (M = 96.54) was higher than the mean score of non-scaffolded group (M = 90.00). Fewer variations were also found in the proofreading scores of scaffolded group (SD = 5.16) than in the scores of non-scaffolded group (SD = 8.90). Table 4.2 further presents the results of an independent *t*-test, suggesting that the mean scores in the concordance-based proofreading tasks were significantly different between the experimental group and control group ($t = -2.29$, *df* = 19.25, P = .03). This positive effect of scaffolding prompts on students' proofreading performances was in consistent with the results of several previous studies on scaffolded instruction, though the prior research was mostly concerned with learner performances in other subject areas (such as science) rather than language learning (e.g., Bell & Linn, 2000; Davis & Linn, 2000).

Table 4.2. *Results of the t-Test for Mean Scores of Scaffolded Group and*
*Non-Scaffolded Group Aided with Concordancer Search*

| Concordance-based proofreading task | N | Mean | SD | *t* | *df* | P |
|---|---|---|---|---|---|---|
| Scaffolded (Experimental) | 13 | 96.54 | 5.16 | | | |
| | | | | -2.29 | 19.25 | .03* |
| Non-scaffolded (Control) | 13 | 90.00 | 8.90 | | | |

*p<.05

**RQ 3: Do Scaffolding Prompts Have Lasting Effect on Students' Concordance Assisted Proofreading Performances After Removal of Prompts?**

Table 4.3 shows that the concordance-based posttest scores of non-scaffolded group (M = 81.54) were higher than their concordance-based pretest scores (M = 53.46). The results of a paired *t*-test further indicated that the non-scaffolded group's pretest and posttest mean scores were significantly different (*t* = -6.22, *df* = 12, P = .00), as illustrated in Table 4.3. As for the scaffolded group, the prompts were removed after two rounds of concordancer search aided with scaffolding prompts. Table 4.4 suggests that the scaffolded group's posttest scores (M = 91.54) were significantly higher than pretest scores (M = 56.15). Table 4.4 further reports that the mean scores of scaffolded group in the concordance-based pretest and posttest were significantly different (*t* = -6.97, *df* = 12, P = .00). Additionally, given that no significant difference was found in ability between scaffolded group and non-scaffolded prior to scaffold (*t* = -5.08, *df* = 19.72), an independent *t*-test was applied using the posttest mean scores of scaffolded and non-scaffolded groups. Table 4.5 reveals the results of the independent *t*-test, indicating that there was significant difference in the posttest mean scores between the two groups of students (*t* = -2.12, *df* = .04, P = .04).

Table 4.3. *Results of the t-Test for Pretest and Posttest Mean Scores of Non-scaffolded Group*

| Non-scaffolded group | N | Mean | SD | *t* | *df* | P |
|---|---|---|---|---|---|---|
| Concordance-based pretest | 13 | 53.46 | | | | |
| | | | 16.27 | -6.22 | 12 | .00** |
| Concordance-based posttest | 13 | 81.54 | | | | |

**p<.01

Table 4.4. *Results of the t-Test for Pretest and Posttest Mean Scores of Scaffolded Group*

| Scaffolded group | N | Mean | SD | *t* | *df* | P |
|---|---|---|---|---|---|---|
| Concordance-based pretest | 13 | 56.15 | 18.31 | -6.97 | 12 | .00** |
| Concordance-based posttest | 13 | 91.54 | | | | |

**p<.01

Table 4.5. *Results of the t-Test for Posttest Mean Scores of Scaffolded Group and Non-scaffolded Group*

| Concordance-based posttest | N | Mean | SD | *t* | *df* | P |
|---|---|---|---|---|---|---|
| Scaffolded (Experimental) | 13 | 91.54 | 8.26 | -2.12 | 18.73 | .04* |
| Non-scaffolded (Control) | 13 | 81.54 | 14.91 | | | |

*p<.05

Based on the findings, there was considered to be significant improvement in the proofreading performances of both scaffolded group and non-scaffolded group. The result echoed prior discussion in research question one on the positive effects of using a web concordancer to facilitate students' collocation use. The mediating scaffolding prompts were also considered to contribute to the significant improvement of scaffolded group in their proofreading scores, consolidating the results of previous discussions in research question two and the results of several previous studies on the facilitating scaffolding prompts (e.g., Davis & Linn, 2000; Kauffman, 2004). Additionally, the use of scaffolds might further contribute to the fewer variations in the scaffolded group's posttest scores (SD = 8.26) than in the pretest (SD = 16.35), as opposed to the variations in the pretest scores (SD = 9.87) and posttest scores of non-scaffolded group (SD = 14.91). This finding suggested that in a concordancer search without any supervision of scaffolds, students' proofreading performances might still improve with their accumulated learning experiences. Thus, the posttest

scores of the non-scaffolded group might be higher than pretest scores, but the standard deviation of their scores did not necessarily decline.

To be more specific, based on researcher's observation, some students of the control group were indeed progressing with their increasing opportunities of corpus investigations; these students successfully learned from their prior concordancing experiences and modified their search habits the next time they conducted a concordancer search. On the contrary, the other students in the control group also gained learning experiences, but these students did not seem to learn from the experiences, or they were not even aware of the experiences. In that case, these students of non-scaffolded group were actually regressing in their proofreading performances, which caused the greater variations in their posttest scores than in the pretest scores. Concerning the experimental group, they were found to steadily progress in their proofreading performances, even after the removal of scaffolds. Results of the independent *t*-test lent further support to the lasting positive effects of scaffolding prompts, indicating that in spite of the removal of the mediating prompts, the scaffolded group still performed significantly better than the non-scaffolded group when both groups were asked to complete the concordance-based proofreading tasks. This sustaining effect of scaffolding prompts has also been highlighted in several previous studies on students' growing competence after the decrease of scaffolds (Dixon, Carnine & Kameenui, 1993; Rosenshine & Meister; 1992).

**RQ 4: Do Scaffolding Prompts Affect Students' Level of Certainty about Their Proofreading Performances?**

During the scaffolded sessions for the experimental group mediated by the prompts to use a concordancer, both scaffolded group and non-scaffolded group were examined by a five-point Likert scale (1 = strongly uncertain to 5 = strongly certain) about whether they were confident in their proofreading performances. Table 4.6 demonstrates that the mean certainty ratings of scaffolded group fell in the middle ground between four and five (M = 4.19), while on the contrary, the mean certainty ratings of non-scaffolded group fell in between three and four (M = 3.75). Table 4.6 also indicates the results of an independent *t*-test, suggesting that there was significant difference in certainty level between the scaffolded group and non-scaffolded group (*t* = -2.80, *df* = 20.85, P = .01). Nevertheless, students' level of certainty about their proofreading performances did not seem to correlate with their accumulated experiences in concordancer search and scaffolded training, in that the mean certainty ratings of scaffolded group appeared to be lower in the posttest (M = 4.17) than in the pretest (4.19). Likewise, the mean certainty level ratings of non-scaffolded group also appeared to be lower in the posttest (M = 3.68) than in the pretest (M = 3.78). Even so, both scaffolded group and non-scaffolded group showed high level of certainty. Further, in comparison with the non-scaffolded group, the scaffolded group was found to be significantly more confident in their proofreading performances, as discussed in prior studies on students' enhanced confidence as a result of scaffold (e.g., Torgerson, Blasko, Kazmerski, & Cornwell, 2003). Most importantly, the certainty level of the scaffolded group was positively correlated with their proofreading performances (r = .437, P = .045), suggesting that with the mediation of scaffold, students' confidence in concordancer search strengthened their proofreading scores.

Table 4.6.  *Results of the t-Test for Mean Certainty Ratings of Scaffolded Group and*
*Non-scaffolded Groups*

| Concordance-based proofreading task | N | Mean | SD | *t* | *df* | P |
|---|---|---|---|---|---|---|
| Scaffolded (Experimental) | 13 | 4.19 | .30 | | | |
| | | | | -2.80 | 20.85 | .01* |
| Non-scaffolded (Control) | 13 | 3.75 | .45 | | | |

*p<.05

## RQ5: What is the Students' Perception of the Effects of Web Concordancer and Scaffolding Prompts?

*Student experiences of computer-assisted learning*

The first part of the questionnaire collected students' personal information on computer literacy. The results are shown in Table 4.7, indicating that all of the 26 students (100%) had easy access to computers, and over half (63%) of the students had experienced computer-assisted language learning. Among these 15 students who had consulted online resources or computer-aided programs to learn English, 14 students indicated that they learned with online dictionaries, such as *Dict, Yahoo,* and *Dr. Eye. Dict* is a website (http://dict.tw/), designed mainly for dictionary search. Users are allowed to look for exact matches or words that match the prefixes or suffixes of the key term. The word bank is also optional, and thus users are able to look up keywords in an English dictionary for general purposes or for specific purposes (such as law and medical science). *Yahoo* and *Dr. Eye* offer free online dictionary search as well (http://tw.dictionary.yahoo.com/; http://www.dreye.com:8080/axis/ddict.jsp). Both users are displayed with word definitions in their mother tongue, together with a Chinese-English version of example sentences. Synonyms and antonyms of the key term can also be found in both online dictionaries.

Generally speaking, according to students' reports on their use of online resources and computer-aided programs, dictionary search was a major purpose of the

students. They looked up words and phrases in the online dictionaries for meanings and usage patterns. In addition, the responses of students in the first questionnaire section also revealed that none of them had the chance of online learning in English classes at school. Neither had the students ever been supervised or mediated by the instructors or by any computer-based programs during their language learning process. As a result, the students were found to learn English mostly with particular type of online resources or computer-based programs. Also, the students were considered to have restricted learning experiences in a computer-assisted context, even though the students reported that they had an easy access to computers and online resources. Corpus investigation as well as scaffolded instruction was thus considered to be a relatively new learning experience for the students.

Table 4.7. *Students' Responses to the Questionnaire about Personal Information (N = 26)*

|  | Yes (%) | No (%) |
|---|---|---|
| 1. There is easy access to computers. | 100 | 0 |
| 3. The teachers offer me online resources or computer-aided programs to assist language learning in English courses. | 0 | 100 |
| 4. I consult online resources or computer-aided programs to learn English. | 63 | 37 |
| 5. I have difficulties in consulting online resources or computer-aided programs to learn English. | 20 | 80 |
| 6. I consult online resources or computer-aided programs to learn English with the support of teachers or some learning aids. | 0 | 100 |
| 7. I have ever used web concordancer in addition to VLC and NTNU. | 0 | 100 |
| 8. I have ever used web concordancer with the support of teachers or some learning aids. | 0 | 100 |

*Positive comments on concordancer search*

Table 4.8 shows students' responses to the second part of the questionnaire, indicating their reactions to the use of web concordancer. The collected data revealed that 74% of the students found the web concordancer helpful to their performances in the proofreading tasks, and 54% of the students indicated that they enjoyed learning English collocation with corpus and concordancer. Moreover, the majority of the students (84%) were willing to consult web corpora for word meanings and usage patterns in the future.

Table 4.8. *Students' Responses to the Questionnaire about Web Concordancer (%)*

| (N = 26) | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|---|
| 1. I enjoyed leaning English collocation through corpus and concordancer. | 0 | 8 | 38 | 50 | 4 |
| 2. I think the web concordancer was helpful to my performances in the proofreading tasks. | 0 | 0 | 26 | 62 | 12 |
| 3. I think the web concordancer was user friendly. | 4 | 4 | 54 | 38 | 0 |
| 6. I think I'll consult web corpora to learn about English collocation in the future. | --- | 12 | 4 | 84 | --- |

Students' open-ended responses to the questionnaire further indicated that web concordancer was considered to be helpful and supportive due to the following attributes of concordancer that the students recognized during their corpus consultation. One important attribute of classroom concordancing that came to the awareness of 62% of the students was that they acquired language usage patterns through the process of analyzing a great quantity of language samples displayed in concordance output, which has been pointed out in prior discussions on concordancer

search (e.g., Hadley, 2002). The following are excerpts of students' positive comments:

"Concordancer provides me a lot of language examples" (Subject A).

"After I entered a key term, there were always lots of examples of how to use it" (Subject B).

Additionally, according to students' open-ended responses, 58% of the students also attributed the supportive role of concordancer to its repeated display of the occurrence of the keyword or phrase on the subject of a target feature in an authentic context, along with relevant statistic information. The following are excerpts of students' open-ended responses to the questionnaire, indicating that with such display of language samples, the students reported that they were able to observe naturally occurring examples in real texts and then discover typical language patterns or evaluate particular language forms and rules to see how often the forms and rules actually occurred in everyday use. This important feature of concordancer presenting authentic language choices and preferences strengthened the results of several prior studies on concordancer (e.g., Hill, 2000; Mani, 2006; St. John, 2001; Sun, 1999; Todd, 2001; Woolard, 2000).

"The amount of concordance output helps me judge if the key phrase I entered is commonly used" (Subject C).

"The language examples show me real language choices, unlike those in textbooks" (Subject D).

In addition that the students were conscious of the positive side of concordancer in offering authentic language samples, the students' open-ended responses also revealed their attempts to compare new learning experiences with previous learning experiences. Specifically, in the data-driven learning environment, the students working as active corpus researchers to experiment with concordancer, and during this learning process, the students came to notice that they had been exposed to contextualized language, as opposed to the artificial language examples largely contained in their textbooks. Accordingly, with the support of concordancer search, the students were encouraged to examine their learning processes, particularly about their learning materials. Most importantly, after comparing the two different learning experiences, the students were able to identify concordancer search as an

advantageous approach to learning a foreign language, in that they realized concordance output consisted of real and frequently-used language samples. Previous studies has also been highlighting students' growing consciousness to the use of descriptive rather than prescriptive language as a result of concordancer search (Chambers, 2005; Yeh, Liou, & Li, 2007).

Other positive comments from the students on concordancer search, as shown in the following excerpts, further indicated that concordancer also helped 46% of the students become aware of contextual factors that might influence the variance of key terms. The students reported that concordance output made the collocation patterns apparent, and thus they were able to easily recognize what other words were commonly-used with the keyword, as discussed in several prior studies on the effects of concordancer on students' collocation use (e.g., Chan & Liou, 2005; Yeh, Liou, & Li, 2007). Moreover, the students' awareness of collocation patterns during concordancer search also suggested that their perceptions of language were not simply at word level, but extended to phrasal level. With this broad insight into language, the students were further encouraged by their experiments with concordancer to refer back to their existing linguistic knowledge and to make adjustment or modification if they found that there were any misconceptions about language forms or usage patterns. Several prior studies have also evidenced the expanded language experiences of the students as a result of concordancer (e.g., Hill, 2000).

"The display of concordances helps me figure out what words the keyword usually collocates with" (Subject E).

"Concordance output helps me eliminate my assumptions about words and their collocates" (Subject F).

Generally speaking, the students had positive reactions to corpus and concordancer, particularly about their effects on learning English collocation. These findings from the present study were in consistent with the questionnaire results discussed in several prior studies (e.g., Chambers, 2005; Lee & Liou, 2003; O'Sullivan & Chambers, 2006).

*Negative comments on concordancer search*

Even so, some disadvantages of concordancer were still mentioned in the students' open-ended responses, including their (1) confusion in analyzing

concordance output to extract and integrate illustrative information for the proofreading tasks (23%), (2) frustration in dealing with too much unfamiliar vocabulary in the concordance output (12%), (3) difficulty in selecting a proper key term to enter web concordancer (8%), and (4) uncertainty in assessing the formulated rules and eliminating inapplicable ones (4%). All these disadvantages of concordancer consolidated students' need of being mediated or supervised during corpus consultation, as discussed in several previous studies (e.g., Thurstun, 1996; Maddalena, 2001; O'Sullivan & Chambers, 2006). Scaffolding guidelines were thus provided in the present study in the form of a combination of procedural, elaborative, and reflective prompts.

*Positive comments on scaffolding prompts*

Table 4.9. *Students' Responses to the Questionnaire about Scaffolding Prompts (%)*

| (N = 13) | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|---|
| 4. I think the prompts were helpful in guiding me to consult web corpus and perform proofreading tasks. | 0 | 0 | 7 | 93 | 0 |
| 5. I think the scaffolding prompts helped me solve problems with concordancer search. | 7 | 15 | 15 | 63 | 0 |
| 8. I think I'll recommend others to seek help from the prompts during corpus consultation. | --- | 15 | 0 | 92 | --- |

Table 4.9 reveals students' reactions to the scaffolding prompts, indicating that most students of this scaffolded group (93%) found the prompts helpful in guiding them to conduct the concordancer search and to complete the proofreading tasks. Over half of the students (63%) thought the prompts were supportive to their problems with concordancer search. In addition, almost the whole scaffolded group (92%) would recommend other students to be mediated by the prompts so as to become more

strategic and efficient in investigating a web corpus. Students' responses to the open-ended questions in the second part of the questionnaire also suggested advantages of scaffolding prompts as synthesized in the following. First, 54% of the students of the scaffolded group reported that scaffolding prompts were helpful, in that the prompts provided explicit guidance on the use of corpus and concordancer. To be more specific, with the supervision of scaffolding prompts, concordancer search was perceived as a series of question-and-answer activity, and thus the students were instructed one step after another by answering the imbedded questions in each prompt so as to conduct concordancer search and to complete the proofreading tasks.

"I answered the proofreading questions step by step" (Subject G).

"We were shown one step after another of how to consult the corpus to answer the proofreading questions" (Subject H).

Second, in addition that the students commented on the form of scaffolding prompts and indicated that the step-by-step prompts presented explicit guidance on concordancer search, 31% of the students of the scaffolded group further elaborated on the function of scaffolding prompts, indicating that the scaffolding prompts brought the students a comprehensive perspective of DDL search in analyzing the concordance output. The following is one of the students' comments.

"If I follow the steps, I won't miss any key information" (Subject I).

Additionally, the following comments from 23% of the students also revealed a third benefit that the prompts were able to show the students definite goals in each investigation step, and thus the students were brought a clear view of the whole concordancing process, during which the students knew exactly what they had to accomplish and what were the reasons behind, or they helped themselves monitor the concordancing process. This awareness of definite goals in concordancer search also enabled the students to realize their role of a learner, as well as the sense of learner responsibility. In other words, with the notion, the students became more engaged in their learning process, which was very likely to enhance their efficacy in concordancer search and even in language learning. Results of several prior studies have also evidenced the correlation between students' engagement in activities and their learning efficacy (e.g., Brown, 2001; Johns, 1997).

"There were clear directions for me to follow" (Subject J).

"I wouldn't get lost in the concordancing process. I knew what I was trying to search for" (Subject K).

"The prompts gave me a big picture of what I was doing with the concordancer, and they let me know what I had to look up" (Subject L).

A fourth advantageous side of scaffolding prompts was related to the problem-solving strategies that the prompts suggested, including testing hypotheses, finding connection, identifying global information, and so on. According to the following comments from 23% of the students of the scaffolded group, these suggested strategies were also considered to contribute to their effectiveness in concordancer search, in that the students perceived the strategies as "the right way to consult a web corpus," and the students indeed benefited from the strategies, so that the scaffolded group performed significantly better than the non-scaffolde group in proofreading tasks. Specifically at the stage when the students were supposed to analyze concordance output, the following excerpts revealed that scaffolding prompts enabled the students to avoid distraction from trivial details, particularly the local semantic information of the keyword and of other word meanings in the concordances. In other words, the scaffolding prompts stimulated the students' strategic use of their search outcome, which also strengthened other relevant studies that had regarded concordancer search as a problem-solving activity that required effective strategy use (Johns, 1991b; Kennedy & Miceli, 2001).

"The prompts showed me the right way to consult a web corpus" (Subject M).

"I know how and where to get started, and what is important for me to look up" (Subject N).

Positive comments from 15% of the students of the scaffolded group, as shown in the following, revealed the last function of scaffolding prompts, suggesting that the prompts also encouraged the students to conduct concordancer search with metacognitive awareness. That is to say, the students were guided by the prompts to reflect on their prior learning experiences before they were about to start a new concordancer search for a new proofreading question. In doing so, concordancer search became an ongoing learning process, rather than individual language experiments in a data-driven learning environment with different key terms. Further, during this ongoing learning process, the students were able to adopt and evaluate

their previous learning experiences so as to extract useful skills or information to help with their next language experiment. This adoption of prior experiences was also labeled as strategy employment and thus was evidence of students' strategic use of concordancer as a result of scaffolding prompts, as discussed in the previous section. On the other hand, the comments suggested that owing to the prompts, the students put an equally high premium on concordancer search process as on the search outcome. This balance between learning process and product evidenced that the prompts indeed encouraged the students to value both their concordance outcome and concordancing experiences, as revealed in several previous studies on the DDL approach (e.g., Hadley, 2002).

"I was asked to think back and figure out some concordancing skills that could be applied in a similar setting next time. I think I did know better because of this" (Subject O).

"I seldom stop and think, but the scaffold made me so, and I think this helped me review what I'd done and what I'd learned" (Subject P).

*Negative comments on scaffolding prompts*

Negative comments were also included in 23% of the students' open-ended responses to the questionnaire, suggesting that scaffolding prompts were still at its preliminary stage of development and thus required future modification. Specific suggestions for future improvement are as follows.

"There seemed to be too many prompts for each proofreading question" (Subject Q).

"Too much had to be done for one question. It's supposed to be friendlier" (Subject R).

These negative comments from the students might be related to their proficiency level that made the students capable of completing the proofreading tasks or performing concordancer search with little help from the prompts. The students' negative comments might also be related to their familiarization with the learning tools, or to the internalization of concordancing skills, which enabled the students to skip the prompts but still keep the suggested strategies in mind for later use. Even so, a positive attitude was discovered in the students' overall response to the questionnaire, including their written comments on the prompts. This students'

favorable perception of being scaffolded to consult a web corpus consolidated previous studies on the effects of learning with prompts (Bell & Linn, 2000; Davis & Linn, 2000; Ge et al., 2005), even though the majority of the prompts were developed for learning different subject matters. Also, the scaffolded group' positive perception strengthened the effects of scaffolds, as discussed in RQ 2, RQ 3, and RQ 4, from a different perspective of learner product.

# CHAPTER FIVE
# CONCLUSION

## Major Findings

The objective of this present study was to explore the effects of web concordancer and scaffolding prompts as support to language learning. The overall results reveal students' significant improvement in their proofreading performance as a result of concordancer search and scaffold mediation. Specifically from the perspective of learner product, discussions on the effect of concordancer search in the previous section indicate that students' scores in proofreading tasks are significantly higher when the students are allowed to use web concordaner to gain illustrative information. In other words, concordancer search indeed affects students' proofreading performances in terms of their learning achievements. As these achievements are related to a comparison between the proofreading performance of the scaffolded group and the performance of the non-scaffolded group, prior discussions on the joint effect of concordancer search and scaffolding prompts indicate that even though students of both groups are allowed to use web concordancer, proofreading scores of the scaffolded group are significantly higher than the scores of the non-scaffolded group. This finding suggests that students' proofreading performances are actually affected by concordancer search and further supported by scaffolding prompts.

Discussions on scaffolding prompts in the previous section further investigate the sustaining effect of scaffold so as to provide a thorough aspect of effective analysis from the perspective of learner product. The results strengthen the positive effects of prompts, suggesting that even though the prompts have been removed, students of the scaffolded group still perform significantly better than students of the non-scaffolded group in proofreading tasks. That is, even after removal of prompts, scaffolding prompts are still considered to have lasting effect on students' effective use of concordancer. Also, prior discussions highlight the connection between scaffold and students' certainty level in performing proofreading tasks, which brings an additional aspect to examine the effects of scaffolding prompts. As the results indicate, students of the scaffolded group perform tasks with significantly greater confidence in their performances than the non-scaffolded group. Scaffolding prompts are thus considered

to actually affect students' level of certainty about their proofreading performances, and the certainty level also shows its positive correlation with the students' proofreading scores.

Apart from the perspective of learner product, discussions in the previous section also provide learners' own perception of web concordancer and scaffolding prompts to help with this present effectiveness analysis. A favorable perception was reported from the students' responses, suggesting that concordancer and prompts are both perceived as supportive tools to language learning. As the students' reactions are specifically related to their written comments on the use of concordancer, the disadvantages of concordancer search are also mentioned, including students' confusion in analyzing concordance output, frustration in dealing with unfamiliar vocabulary in concordances, difficulty in selecting a proper key term for search, and their uncertainty about the formulated rules. All these unfavorable sides of concordancer search discover students' actual need of being mediated by scaffolding guidelines, as discussed in several previous studies (Chambers, 2005; Johns, 1997; Maddalena, 2001; Thurstun, 1996). Positive reactions of the scaffolded group further strengthen the effects of scaffold, suggesting that the prompts indeed guide students to become strategic and effective corpus researchers, who are consciously aware of their engagement in a data-driven learning activity and are capable of elaborating and reflecting on their prior knowledge so as to help monitor and evaluate their search behaviors and search outcomes.

Generally speaking, concordacner search improves students' language production, particularly in their collocation use in proofreading tasks. Prior research has also evidenced that with the aid of concordancer, students figure out common and typical collocates with the target word (e.g., Chan & Liou, 2005; Yeh, Liou, & Li, 2007). Nevertheless, with further supervision of prompts in students' concordancer search, students' improvement in language production is more likely to be reached, and their improvement carried on even after the removal of prompts. The target concordancing skills mentioned in the prompts are thus considered to become students' internalized skills, helping them working independently and autonomously in concordancer search. In view of that, the transfer of responsibility, as discussed in previous studies on scaffolds (Lidz, 1991; Rogoff & Lave, 1984), has successfully been reached by students of the scaffolded group. In addition, given that with the support of prompts, students show more confidence in their concordancer search, and

the search outcomes also turn out to be valid and helpful, the influence of prompts in students' proofreading performances appears to be even clearer and more evident. This positive effect of scaffolding echoes the results of prior studies, indicating that students become more capable and competent with the temporary scaffolds being gradually decreased over time (Dixon, Carnine & Kameenui, 1993; Rosenshine & Meister; 1992).

Most importantly, with the support of scaffolding prompts, students themselves become consciously aware of the positive effects of concordancer search. That is, students realize that the use of web concordancer places them at the learning center, encouraging them to expand language experiences and to discover possible explanations for descriptive language use. Further, owing to the nature of being conceptual and cognitive, scaffolding prompts also help the students discover their own intentions, as discussed in several previous studies on scaffolding (e.g., Yelland & Masters, 2007), and this enables the students to perform self-discoveries in their concordancer search and thereby develop self-monitoring and self-evaluating strategies. Likewise, researchers have also asserted that a number of cognitive and metacognitive functions can be fulfilled by scaffolding prompts, particularly in facilitating complex problem-solving processes (Ge et al., 2005). All in all, scaffold does not simply maintain the benefits of concordancer search. This powerful tool also promotes the influence of concordancer on students' learning product and learning process, with its gradual guidance on the students that helps them reach learner efficacy in learning for language purposes, and even for general purposes. Consequently, as reported in prior studies on the effects of instructional scaffolds (Kauffman, 2004; Van Merrienboer, Kirschner, & Kester, 2003), the new learning experience to experiment with web concordancer under the supervision of scaffolding prompts becomes a practical and replicable experience for the students.

### Limitation of the Study

Although the present study has evidenced the benefits of concordacner and scaffolding prompts, the effects of these two language learning tools may still be underestimated, in that this research is conducted at a rather small scale. To be more specific, one class of students appears to be a small sample size, and thus the data from this study may be insufficient to help the researcher discover all the possible variations in the students' proofreading performances in concordancer search with/out

the support of scaffolding prompts. Further, this small number of samples represents a particular proficiency level and thus provides limited cases as evidence of the temporary effect and lasting effect of scaffold on the students, or as limited evidence of the connection between the students' proofreading performances and their certainty level. In addition to the population issue, a one-month period of data collection may also be too short for an effectiveness analysis, even though both the students' learning outcome and their perception are taken into consideration in the present study. Even the presentation of mediating tools (including concordancer and prompts) may cause the underestimation of students' achievements, since the students are asked to consult a selected corpus, and they are mediated by the prompts, of which the suggested skills and strategies are easy to be comprehended and internalized.

## Recommendation for Future Research

To extend the present research and further investigate the effects of web concordancer and scaffolding prompts, future studies are suggested probing into the following issues. First, the research may involve a larger population of participants who are at a lower proficiency level or a combination of low achievers and high achievers so as to project greater variations in ability and to provide more cases and possibilities for discussion. Second, proofreading tasks may contain more question items or questions at higher difficulty level and of greater diversity in language focus, so that the tasks may better challenge the students and thus provoke greater variations in their performances. Third, a longer period of time (such as one semester) to engage the students in their experiments with concordacner and prompts is also likely to help assess the effects of both language learning tools. Fourth, scaffolding prompts may become more adaptable to the students' changing level of understanding, so that how the prompts scaffold the students will vary with the proficiency level of the students, and thus the students may not feel uncomfortable with the intervention of scaffolds. Last, to complete an effectiveness analysis, students' thoughts and behaviors during their concordancer search and their scaffolded process are worthy of being further explored and thus provide an additional perspective of learner process as support to the perspectives of learner product and learner perception in examining the use of web concordancer and scaffolding prompts.

# REFERENCES

Anderson, L. (1989). Classroom instruction. In M. Reynolds (Ed.), *Knowledge base for the beginning teacher* (pp. 101-115). Oxford: Pergamon Press.

Anderson, R. C., Armbruster, B. B., & Roe, M. (1990). Improving the education of reading teachers. *Daedalus, 119*, 187-210.

Aston, G. (1997). Small and large corpora in language learning. In B. Lewandowska-Tomaszczyk & J. P. Melia (Eds.), *Practical applications in language corpora* (pp. 51-62). Lodz, Poland: Lodz University Press.

Baron, L. (1991). Peer tutoring, microcomputer learning and young children. *Journal of Computing in Childhood Education, 2*(4), 27-40.

Barr, M., & Davenport, T. (2007). Effective problem solving. *Learning Connection.* Retrieved July 22, 2007 from: <http://www.unisanet.unisa.edu.au/learningconnection/student/counselling/problemsolving.asp#seven>

Beed, P., Hawkins, M., & Roller, C. (1991). Moving learners toward independence: The power of scaffolded instruction. *The Reading Teacher, 44*(9), 648-655.

Bell, P., & Linn, M. C. (2000). Scientific arguments as learning artifacts: Designing for learning from the web with KIE. *International Journal of Science Education, 22*(8), 797-817.

Bernardini, S. (2000). Systematising serendipity: Proposals for concordancing large corpora with language learners. In L. Burnard & T. McEnery (Eds.), *Rethinking language pedagogy from a corpus perspective* (pp. 225-234). Frankfurt: Peter Lang.

Biber, D., Conrad, S., & Reppen, R. (1998). *Corpus linguistics: Investigating language structure and use.* Cambridge: Cambridge University Press.

Block, E. (1986). The comprehension strategies of second language readers. *TESOL Quarterly, 20*(3), 463-495.

Brown, H. D. (2001) *Teaching by Principles: An Interactive Approach to Language Pedagogy (second edition)*. Longman.

Bruner, J. (1973). *Beyond the information given: Studies in the psychology of knowing.* New York: W. W. Norton.

Bull, K., Shuler, P., Overton, R., Kimball, S., Boykin, C., & Griffin, J. (1999). Processes of developing scaffolding in a computer mediated learning

environment. In *Rural special education for the new millennium* (ERIC Document Reproduction Service No. ED 429765).

Chambers, A. & O'Sullivan, Í. (2004). Corpus consultation and advanced learners' writing skills in French. *ReCALL, 16*(1), 158-172.

Chambers, A. (2005). Integrating corpus consultation in language studies. *Language Learning & Technology, 9*(2), 111-125.

Chan, T. P., & Liou, H. C. (2005). Effects of web-based concordancing instruction on EFL students' learning of verb-noun collocations. *Computer Assisted Language Learning, 18*(3), 231-251.

Chang, Y. L. (2006). Visual organizers as scaffolds in teaching English as a foreign language. (ERIC Document Reproduction Service No. ED 494210).

Chen, H. J. (2001). Taiwanese EFL learner corpus and interlanguage analysis. *Selected Paper from the Tenth International Symposium on English Teaching* (pp. 288-299). Taipei: Crane.

Cobb, T. (1997). Is there any measurable learning from hands on concordancing? *System, 25*(3), 301-315.

Cole, A. D. (2006). Scaffolding beginning readers: Micro and macro cues teachers use during student oral reading. *Reading Teacher, 59*(5), 450-459.

Conrad, B., & Rautenhaus, H. (1994). Innovations in teachers' education: Using the concordancer as a means for students at university and at school level. In *the Meeting of EUROCALL* at Karisruhe, Germany.

Davis, E. A., & Linn, M. C. (2000). Scaffolding students' knowledge integration: Prompts for reflection in KIE. *International Journal of Science Education, 22*(8), 819-837.

Dixon, R., & Carnine, D. (1993). Using scaffolding to teach writing. *Educational Leadership, 51*, 100-101.

Dodd, B. (1997). Exploiting a corpus of written German for advanced language learning. In A. Wichmann, S. Fligelstone, T. McEnery, & G. Knowles (Eds.), *Teaching and language corpora* (pp. 131-145). London: Longman.

Ericsson, K. A., & Simon, H. A. (1980). Verbal reports as data. *Psychological Review, 87*, 215-251.

Ge, X., & Land, S. M. (2003). Scaffolding students' problem-solving processes in an ill-structured task using question prompts and peer interactions. *Educational Technology Research and Development, 51*(1), 21-38.

Ge, X., & Land, S. M. (2004). A conceptual framework of scaffolding ill-structured problem solving processes using question prompts and peer interactions. *Educational Technology Research and Development, 52*(2), 5-22.

Ge, X., Chen, C. H., Davis, K. A. (2005). Scaffolding novice instructional designers' problem-solving processes using question prompts in a web-based learning environment. *Journal of Educational Computing Research, 33*(2), 219-248.

Ge, X., & Er, N. (2005). An online support system to scaffold real-world problem solving. *Interactive Learning Environments, 13*(3), 139-157.

Granger, S. (Ed.). (1998). *Learner English on computer.* London: Longman.

Greene, B. & Land, S. (2000) A qualitative analysis of scaffolding use in a resource-based learning environment involving the World Wide Web. *Journal of Educational Computing Research, 23*, 151-180.

Hadley, G. (2002). An introduction to data-driven learning. *RELC Journal, 33*(2), 99-124.

Hall, J. K. (2002). *Methods for teaching foreign languages: Creating a community of learners in the classroom.* Upper Saddle River, NJ: Prentice-Hall.

Hill, J. (2000). Revising priorities: From grammatical failure to collocational success. In M. Lewis (Eds.), *Teaching collocation* (pp. 47-69). England: Language Teaching Publications.

Horst, M., Cobb, T., & Nicolae, I. (2005). Expanding academic vocabulary with an interactive on-line database. *Language Learning & Technology, 9*(2), 90-110.

Johns, T. (1988). Whence and whither classroom concordancing. In T. Bongaerts, P. De Haan, S. Lobbe, & H. Wekker (Eds.), *Computer applications in language learning* (pp. 9-27). Dordrecht, The Netherlands: Foris.

Johns, T. (1991a). From printout to handout: Grammar and vocabulary teaching in the context of data-driven learning. In T. Johns & P. King (Eds.), *Classroom concordancing*, *ELR Journal 4*, 27-45. Birmingham: University of Birmingham.

Johns, T. (1991b). Should you be persuaded: Two samples of data-driven learning. *English Language Research Journal, 4*, 1-13.

Johns, T. (1997). Contexts: The background, development, and trialling of a concordance-based CALL program. In A. Wichmann, S. Fligelstone, T. McEnery, & G. Knowles (Eds.), *Teaching and language corpora* (pp. 100-115). London: Longman.

Kauffman, D. F. (2004). Self-regulated learning in web-based environments:

Instructional tools designed to facilitate cognitive strategy use, metacognitive processing, and motivational beliefs. *Journal of Educational Computing Research, 30*(1&2), 139-161.

Kennedy, C., & Miceli, T. (2001). An evaluation of intermediate students' approaches to corpus investigation. *Language Learning & Technology, 5*(3), 77-90. Retrieved May 20, 2006, from http://llt.msu.edu/vol5num3/kennedy/.

Kennedy, C., & Miceli, T. (2002). The CWIC project: Developing and using a corpus for intermediate Italian students. In B. Kettemann & G. Marko (Eds.), *Teaching and learning by doing corpus analysis* (pp. 183-192). New York: The Edwin Mellen Press.

King, A. (1991). Effects of training in strategic questioning on children's problem-solving performance. *Journal of Educational Psychology, 83*(3), 307-317.

King, A. (1992). Facilitating elaborative learning through guided student-generated questioning. *Educational Psychologist, 27*(1), 111-126.

Kletzien, S. B. (1991). Strategy use by good and poor comprehenders reading expository text of differing levels. *Reading Research Quarterly, 1*, 67-86.

Krishnamurthy, R. (2001). Language corpora: How can teachers and students use these valuable new resources? *Selected Paper from the Tenth International Symposium on English Teaching* (pp. 59-65). Taipei: Crane.

Lee, C. Y., & Liou, H. C. (2003). A study of using web concordancing for English vocabulary learning in a Taiwan high school context. *English Teaching & Learning, 27*, 35-56.

Leech, G., & Candlin, C. (1986). *Computers in English language teaching and research.* London: Longman.

Lidz, C. (1991). *Practitioner's guide to dynamic assessment.* New York: Cuilford.

Lin, C. C. (2003). Learning collocations in a bilingual corpus. *The Proceedings of 2003 International Conference and Workshop on TEFL & Applied Linguistics* (pp. 250-256). Taipei: Crane.

Liou, H. C., Chang, J., Yeh, Y., Liaw, M., Lin, C., Chen, H., You, G., Chuang, C., & Gao, Z. (2003). Using corpora and computational scaffolding to construct an advanced digital English learning environment: the CANDLE project. *Proceedings of APAMALL 2003 and ROCMELIA 2003* (pp.62-77). Taipei: Crane.

Maddalena, S. R. (2001). An investigation into how corpus analysis may be used in the second language classroom to solve some of the problems surrounding non-native speakers' understanding of seemingly synonymous words. (ERIC Document Reproduction Service No. ED 458795).

Mani, I. (2006). Computational linguistics. In R. Fasold & J. Connor-Linton (Eds.), *Introduction to linguistics.* Cambridge: Cambridge University Press.

Mantero, M. (2002). Scaffolding revisited: Sociocultural pedagogy within the foreign language classroom. (ERIC Document Reproduction Service No. ED 459623).

Mollering, M. (2001). Teaching German modal particles: A corpus-based approach. *Language Learning & Technology, 5*(3), 130-151.

Nesselhauf, N. (2003). The use of collocations by advanced learners of English and some implications for teaching. *Applied Linguistics, 24*, 223-242.

Olson, G. M., Duffy, S. A., & Mack, R. L. (1984). Thinking-out-loud as a method for studying real-time comprehension processes. In D. Kieras & M. A. Just (Eds.), *New methods in reading comprehension research* (pp. 253-286). Hillsdale, NJ: Erlbaum.

O'Sullivan, Í., & Chambers, A. (2006). Learners' writing skills in French: Corpus consultation and learner evaluation. *Journal of Second Language Writing, 15*, 49-68.

Palincsar, A. S. (1986). The role of dialogue in providing scaffolded instruction. *Educational Psychologist, 21*(1&2), 73-98.

Palincsar, A. S., & Brown, A. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction, 2*, 117-175.

Pearson, J. (1996). Electronic texts and concordances in the translation classroom. *The Irish Yearbook of Applied Linguistics,* (16), 85-95.

Pickard, V., Chan, K., & Tibbetts, J. (1994). Concordancing for schools: Problems and potential. (ERIC Document Reproduction Service No. ED 386056).

Rogoff, B., & Lave, J. (Eds.). (1984). *Everyday cognition: Its development in social contexts.* Cambridge, MA: Harvard University Press.

Rosenshine, B., & Meister, C. (1992). The use of scaffolds for teaching higher-level cognitive strategies. *Educational Leadership, 49*(7), 26-33.

Scardamalia, M., Bereiter, C., & Steinbach, R. (1984). Teachability of reflective processes in written composition. *Cognitive Science, 8*(2), 173-190.

Scardamalia, M., & Bereiter, C. (1985). Fostering the development of self-regulation

in children's knowledge processing. In S. F. Chipman, J. W. Segal, & R. Glaser (Eds.), *Thinking and learning skills: research and open questions* (Vol. 2, pp. 563-577). Hillsdale, NJ: Lawrence Erlbaurn Associates.

Schraw, G. (2001). Promoting general metacognitive awareness. In H. J. Hartman (Ed.), *Metacognition in learning and instruction : Theory, research and practice* (pp. 3-16). Boston : Kluwer Academic Publisher.

Sinclair, J. (Ed.). (1987). *Looking up: An account of the COBUILD project in lexical computing.* London and Glasgow: Collins.

Sinclair, J. (1991). *Corpus, concordance, collocation.* Oxford: Oxford University Press.

Smith, C., Butler, N. L., Griffith, K. G. (2007). The role of communication context, corpus-based grammar, and scaffolded interaction in ESL/EFL instruction. *Lamar University Electronic Journal of Student Research, 4.*

St. John, E. (2001). A case for using a parallel corpus and concordancer for beginners of a foreign language. *Language Learning & Technology, 5*, 185-203.

Stevens, V. (1991a). Classroom concordancing: Vocabulary materials derived from relevant, authentic text. *English for Specific Purposes, 10*, 35-46.

Stevens, V. (1991b). Concordance-based vocabulary exercises: A viable alternative to gap-fillers. In T. Johns & P. King (Eds.), *Classroom concordancing: English Language Research Journal 4* (pp. 47-63). Birmingham, England: Centre for English Language Studies, University of Birmingham.

Sun, Y. C. (1999). Web-based concordancing: Challenges and opportunities for English language teaching. *Proceedings for the English International Symposium on English Teaching* (pp. 517-526). Taipei: Crane.

Sun, Y. C. (2003). Learning process, strategies and Web-based concordancers: A case-study. *British Journal of Educational Technology, 34*(5), 601-613.

Thompson, P., & Tribble, C. (2001). Looking at citations: Using corpora in English for academic purposes. *Language Learning & Technology, 5*(3), 91-105.

Thurstun, J. (1996, March). Teaching the vocabulary of academic English via concordances. In *the Annual Meeting of the Teachers of English to Speakers of Other Languages* at Chicago, IL.

Thurstun, J., & Candlin, C. N. (1997). *Exploring academic English: A workbook for student essay writing.* Sydney: National Centre for English Language Teaching and Research.

Todd, R. W. (2001). Induction from self-selected concordances and self-correction. *System, 29*(1), 91-102.

Torgerson, C. N., Blasko, D. G., Kazmerski, V. A., & Cornwell, J. A. (2003). Scaffolding students from knowing to applying: Using COR to teach observational research methods. *Interactive Multimedia Electronic Journal of Computer-Enhanced Learning, 5*(2). Retrieved June 26, 2008, from http://imej.wfu.edu/articles/2003/2/02/printver.asp.

Tribble, C., & Jones, G. (1990). *Concordances in the classroom: a resource book for teachers.* Harlow: Longman.

Van der Veer, R., & Valsiner, J. (Eds.). (1994). *The Vygotsky Reader.* Cambridge, MA: Blackwell Publishers.

Van Merriënboer, J. J. G., Kirschner, P. A., & Kester, L. (2003). Taking the load of a learners' mind: Instructional design for complex learning. *Educational Psychologist, 38*(1), 5-13.

Vygotsky, L. S. (1962). *Thought and language.* Cambridge, MA: The MIT Press.

Vygotsky, L. S. (1978). *Mind in society.* Cambridge, MA: Harvard University Press.

Wang, L. (2001). Exploring parallel concordancing in English and Chinese. *Language Learning & Technology, 5*, 174-184.

Wenden, A., & Rubin, J. (Eds.), (1987). *Learner strategies in language learning.* Hertfordshire: Prentice Hall.

Wichmann, A., Fligelstone, S., McEnery, T., & Knowles, G. (Eds.). (1997). *Teaching and language corpora.* London: Longman.

Wood, D., Bruner, J. S. & Ross, G. (1976). The role of tutoring in problem-solving. *Journal of Child Psychology and Psychiatry, 17*, 89-100.

Woolard, G. (2000). Collocation: Encouraging learner independence. In M. Lewis (Ed.), *Teaching collocation: Further developments in the lexical approach* (pp. 28-46). London: Language Teaching Publications.

Yamanoue, T., Minami, T., & Ruxton, I. (2002). Web-based concordancer to learn usage of English expressions. *Proceedings of the 1st International Conference on Information Technology and Applications* (pp. 217-9). Bathurst, Australia.

Yeh, Y. L. (2003). Vocabulary learning with a concordancer for EFL college students. *Proceedings of 2003 International Conference on English Teaching and Learning in the Republic of China* (pp. 467-476). Providence University, Department of English language, literature & linguistics, Taichung County, May.

Yeh, Y., Liou, H. C., & Li, Y. H. (2007). Online synonym materials and concordancing for EFL college writing. *Computer Assisted Language Learning, 20*(2), 131-152.

Yelland, N., & Masters, J. (2007). Rethinking scaffolding in the information age. *Computers & Education, 48*, 362-382.

Zyzo, W., Santome, K., & Heins, D. (2003). *1001 common Chinese errors in English.* Taipei, Taiwan: Crane.

**APPENDICES**

**Appendix A: Empirical Studies on Corpus and Concordancer**

| Research focus and studies cited | Target | Instruments | Major findings |
|---|---|---|---|
| **(A)Learning product** | | | |
| **(1) Vocabulary** | | | |
| Lee & Liou (2003) | EFL high school students in Taiwan | Error correction tasks as vocabulary tests focusing on word usage | (1) Potential of using DDL approach to help students at low vocabulary level, namely, less proficient learners (2) More improvement found in students who preferred inductive learning style |
| Maddalena (2001) | EFL high school students in Japan | A series of synonymic words exercises (matching, cloze, sentence-making, and rule-formulating), firstly aided by the dictionary and then concordances | (1) Helpfulness of using concordances in discovering and learning unknown word meanings in context (2) Need for supervision and guidance on concordancing from the competent and capable ones |
| Wang (2001) | Chinese students in the University of Birmingham | Reports on the results of contrastive analysis on a Chinese item (i.e., *xian4zai4*) after consulting an English-Chinese parallel corpus | (1) Students' development of in-depth knowledge of lexical meaning and use in context (2) Potential of using parallel concordance data as teaching materials |
| Yeh (2003) | EFL college students in Taiwan | Comparison between the effectiveness of using teacher- and student-selected concordances in vocabulary learning, plus two tests (a pretest and a posttest) | (1) Greater assistance from self-selected concordances in lexical growth, particularly in word use (2) More improvement found in students who preferred inductive learning style |

| Research focus and studies cited | Target | Instruments | Major findings |
|---|---|---|---|
| **(A)Learning product** | | | |
| **(2) Grammar** | | | |
| Conrad & Rautenhaus (1994) | English texts from a learner corpus | Analysis of a written corpus of email texts with focus on the features of grammatical structures in comparison with sentences in commonly-used English textbooks | (1) Commonly-used language patterns, such as infinitive constructions and modifying constituents<br>(2) Concordances as access to learning in an explorative fashion about colloquial English in social contexts |
| Mollering (2001) | German texts from native corpora | Analysis of spoken corpora of telephone conversations with focus on the use of a modal particle, *eben* | (1) Discovery of language structures, patterns and predicable features through real-language analysis<br>(2) Effectiveness of using corpus examples to expose learners to language in context<br>(3) Worksheets as the basis for the concordance-based creation of teaching materials |
| O'Sullivan & Chambers (2006) | English-speaking learners of French | Proofreading tasks as tests on grammatical elements, lexical and stylistic issues, words and phrases in standard written French | (1) Positive changes in correcting grammatical, lexical and mechanical writing errors via corpus consultation<br>(2) More idiomatic use of expressions, less native language interference |
| St. John (2001) | An English-speaking student of German | Tasks on vocabulary use and the formulation of grammatical rules | (1) Potential of concordancer as an appropriate tool for teaching beginners<br>(2) Growing linguistic insights into language structures and functions through the use of parallel corpora |

| Research focus and studies cited | Target | Instruments | Major findings |
|---|---|---|---|
| **(A)Learning product** | | | |
| **(3) Collocation** | | | |
| Chan & Liou (2005) | EFL students in Taiwan | A pretest and two posttests to assess students' online practice on verb-noun collocations | Significant collocation improvement immediately after the online practice which still remained better than students' entry level |
| Thurstun (1996) | ESL university students | Guided research, exercises, and improvisation activities on how to use frequently-used academic words to collocate with appropriate adjectives or prepositions | (1) Potential of concordance-based teaching materials focusing on the overlapping areas of vocabulary and grammar (2) Need for guidelines for concordance use to beginners |
| Yeh, Liou, & Li (2007) | EFL college students in Taiwan | A pretest and two posttests to assess students' performances in synonymous adjectives and their collocates after online instructional units on overused adjectives | Improvement in word knowledge for synonym use which still retained and thus improved overall writing quality |

| Research focus and studies cited | Target | Instruments | Major findings |
|---|---|---|---|
| **(B)Learning process** | | | |
| Kennedy & Miceli (2001) | Italian learners in Australia | Videotaped, information searching and problem solving tasks through corpus consultation | (1) Causes of invalid search outcomes – (a) lack of rigor in observation and reasoning, (b) ignorance of common pitfalls and techniques for avoiding them <br> (2) Necessity of appropriate research habits (e.g., awareness of logical principles) that improve the efficacy of step-by-step corpus investigations |
| Sun (2003) | EFL students in Taiwan | Introspective reports on mental activities while performing concordance-based proofreading tasks | (1) Factors that influence the learning process: prior knowledge, concordancing skills, cognitive skills, teacher intervention <br> (2) Transferable strategies from concordancing activities to all learning contexts (e.g., inductive learning, hypothesis testing, problem solving) |

| Research focus and studies cited | Target | Instruments | Major findings |
|---|---|---|---|
| **(C)Learner perception** | | | |
| Chambers (2005) | English learners in Ireland | Making comments by essay writing to evaluate the concordance-based activity | (1) Positive reactions, particularly for encouraging learner autonomy and discovery learning <br>(2) Suggestions for increasing the corpus size and availability, and training students' analytical skills |
| Kennedy & Miceli (2001) | Italian learners in Australia | Retrospective interviews and questionnaires on perceptions of corpus induction experience | (1) Positive reactions due to students' better understanding of grammatical structure and growing confidence in correcting their own writing <br>(2) Categories of defining corpus as a useful resource: presenting examples of real language, providing various word uses in different contexts, illustrating words and expressions for specific purposes |
| Lee & Liou (2003) | EFL high school students in Taiwan | Evaluation questionnaires on attitudes toward the use of corpus and concordancer | (1) Positive reactions to the effectiveness of concordances, particularly in providing word meanings and functions in communicative contexts <br>(2) Suggestions for further training on concordancing skills |

| Research focus and studies cited | Target | Instruments | Major findings |
|---|---|---|---|
| **(C)Learner perception** | | | |
| O'Sullivan & Chambers (2006) | English-speaking learners of French | Questionnaires to investigate students' attitudes toward the process of corpus investigation and their evaluation of concordance-based activities | (1) Positive attitudes due to the improved writing skills, such as checking the context of a word, checking sentence structure, identifying the exact difference in meaning between words, and checking idiomatic expressions <br> (2) Recommendations for more assistance and training |
| Yeh, Liou, & Li (2007) | EFL college students in Taiwan | Questionnaires on students' attitudes toward online learning units about synonym use | (1) Benefits of inductive learning style in corpus investigations <br> (2) Difficulty of students in verbalizing differences among semantically similar adjectives |

**這是第1題（共10題）**

She has moved to Canada since childhood, but she still <u>keeps in contact of her friends</u> by telephone.

---

第1題第1步

題目中**畫底線的部份有文法問題**。

請從畫底線的字中，挑出你想要查詢的關鍵字（keep、in contact、keep in contact等）。

你的**關鍵字越短，例句就越多**。

如果你不滿意查詢結果，你可以再**查詢不同的關鍵字**。

---

**任務1**：你查了哪些關鍵字？請按照順序寫出來。

**任務2**：你看了哪些重要例句？請用滑鼠複製貼上，貼完請按鍵盤上的Ctrl + s

**任務3**：你認為題目應該怎麼改寫？**為什麼**？請寫下來。

**任務4**：你確不確定你的答案？請選擇。
（1）非常確定（2）蠻確定的（3）不知道（不知道怎麼回答）（4）蠻不確定的
（5）非常不確定

若「非常確定」<u>請按我</u>，跳至第**2**題；若想知道如何閱讀例句，<u>請按我</u>，跳至第**1**題第**2**步。

**這是第1題（共10題）**

**She has moved to Canada since childhood, but she still <u>keeps in contact of her friends</u> by telephone.**

<div style="border:1px solid black">

第1題第2步

關鍵字在**例句中的前後字詞搭配**是你改寫的重要線索。

請根據關鍵字在例句中的前後用字，找出關鍵字的用法。

你可以多留意**出現次數較多**的關鍵字用法。

如果例句不清楚，你可以跳過，或是**點選藍色的關鍵字詞**，等待索引工具給你完整的段落。

</div>

**任務1**：你看了哪些重要例句？請用滑鼠複製貼上，貼完請按鍵盤上的Ctrl＋s儲存。

**任務2**：你認為題目應該怎麼改寫？**為什麼**？請寫下來。

**任務3**：你確不確定你的答案？請選擇。
（1）非常確定（2）蠻確定的（3）不知道（不知道怎麼回答）（4）蠻不確定的（5）非常不確定

若「非常確定」請按我，跳至第2題；若想知道如何歸納用法，請按我，跳至第1題第3步。

**這是第1題（共10題）**

**She has moved to Canada since childhood, but she still <u>keeps in contact of her friends</u> by telephone.**

---

第1題第3步

關鍵字在**題目中的前後字詞搭配**是你解題的另一個重要線索。

請比較關鍵字在題目中的前後用字，與例句中的前後用字有哪些相同或不同。

你可以一邊比較，一邊想想看（1）題目**多了或少了哪些字**？

（2）題目**哪些字用錯了地方**？應該**怎麼代換**？

如果你發現關鍵字在例句中有好多種用法，你可以**從題目上下文來判斷**哪種用法比較好。

---

**任務1**：你看了哪些重要例句？請用滑鼠複製貼上，貼完請按鍵盤上的Ctrl＋s儲存。

**任務2**：你認為題目應該怎麼改寫？**為什麼**？請寫下來。

**任務3**：你確不確定你的答案？請選擇。

（1）非常確定（2）蠻確定的（3）不知道（不知道怎麼回答）（4）蠻不確定的（5）非常不確定

若「非常確定」請按我，跳至第**2**題；若想知道如何檢查答案，請按我，跳至第**1**題第**4**步。

**這是第1題（共10題）**

**She has moved to Canada since childhood, but she still <u>keeps in contact of her friends</u> by telephone.**

第1題第4步

**例句**可以幫助你檢查答案是不是合用。

請你套用你歸納出的關鍵字文法到例句上試用。

你套用的文法規則必須**符合關鍵字在大多數例句中的使用方式**。

如果你決定了答案，你可以再想想看（1）你學到哪些**文法規則**？

（2）你學到哪些**看例句找規則的技巧**？

（3）你學到哪些**操作索引工具的技巧**？

（4）你**覺不覺得下一次你可以改寫得更快更好**？

怎麼做？

**任務1**：你看了哪些重要例句？請用滑鼠複製貼上，貼完請按鍵盤上的Ctrl＋s儲存。

**任務2**：你認為題目應該怎麼改寫？**為什麼**？請寫下來。

**任務3**：你確不確定你的答案？請選擇。

（1）非常確定（2）蠻確定的（3）不知道（不知道怎麼回答）（4）蠻不確定的（5）非常不確定

**任務4**：關於索引工具的使用，你有沒有特別想要分享的心得？如果有，請寫下來。

改寫完成後<u>請按我</u>，跳至第2題。

# Appendix C: The Non-/Concordance-based Pretest

姓名：＿＿＿＿＿＿＿＿                                    日期：2007/12/18

請選出下列問題中使用錯誤的詞句（A、B、C或D），並改寫錯誤的部份。
（註：共10題。錯誤部份不含拼字問題，因此訂正時不需要列入考慮。）

例題：

（ *D* ）  It is uncomfortable to have someone that you have no idea about
                        A                                        B
stand beside you and watch on every move you take.
            C                        D
       *watch every move you take*

（    ）1.  The accident that he drove through the front entrance of the restaurant
                                    A                            B
is evidence to his inexperience in driving.
            C              D

（    ）2.  If you are planning to buy a new computer for yourself, then you have to
                        A                            B
consider about what to do with the old one.
            C                  D

（    ）3.  You know she can never keep secrets to herself, so you ought to make sure
                                    A                            B
you don't mention about our plans to her, or she will tell everyone in the
                    C                                        D
company.

（    ）4.  I'll go back to home before six to help my mother prepare a farewell
              A              B                                    C
party for my brother. He's going to fly to France to study there next week.
                                            D

71

(    ) 5. <u>Ever since last year</u> when the doctor suggested my parents <u>take exercise on</u>
             A                                                  B

<u>a regular base</u> to prevent elderly disease, they've started <u>taking a walk in the</u>
                                                                                           C

<u>sports park</u> <u>on every Sunday morning</u>.
                            D

(    ) 6. I recommend that you <u>apply your visa</u> <u>as soon as possible</u> because
                                      A                  B

<u>it takes several weeks to have it done</u>. You'll never know what will happen
                                 C

<u>in the last minute</u>!
                  D

(    ) 7. My neighbors threw a party <u>right in their house</u> last night. The noise was
                                             A

<u>killing me to death</u> because <u>in that moment</u>, I was <u>working on my paper</u>.
         B                        C                     D

(    ) 8. I know time is never <u>a big problem to us</u>, but <u>with regard of money</u>, we'd
                             A                       B

better be <u>careful about it</u>. If not, we'll <u>get kicked out of this place</u>.
              C                             D

(    ) 9. <u>To my opinion</u>, <u>the price of this product is</u> <u>too high for people to afford</u>. We
              A                  B                          C

should <u>cut down the price</u>.
              D

(    ) 10. We've just received <u>the invitation to your wedding party</u> at the end of this
                                 A                             B

<u>month</u>. We <u>are looking forward to</u> <u>attending to it</u>.
                  C                  D

姓名：＿＿＿＿＿＿＿＿　　　　　　　　　　　　　日期：**2007/12/19**

請選出下列問題中使用錯誤的詞句（**A、B、C或D**），並改寫錯誤的部份。
（註：共**10**題。錯誤部份不含拼字問題，因此訂正時不需要列入考慮。）

例題：

（ *D* ）　It is uncomfortable to have someone that you have no idea about
　　　　　　　　　A　　　　　　　　　　　　　　　　　B
　　　　stand beside you and watch on every move you take.
　　　　　　　C　　　　　　　　　D
　　　　　*watch every move you take*

（　）1.　John asked Claire to marry with him, but she turned him down because she
　　　　　　　　　　　　　　　A　　　　　　　　　　B
　　　　still felt insecure about their relationship. Poor John, this is the third time he
　　　　　　　　　C
　　　　has been refused by Claire!
　　　　　　　D

（　）2.　It is not easy dealing clients from different countries because sooner or later,
　　　　　　　　　　　　A　　　　　　B
　　　　the difference in culture will turn out to be a problem.
　　　　　　　C　　　　　　　　　D

（　）3.　To be a good salesclerk, you are supposed to take a friendly attitude at every
　　　　　　　A　　　　　　　B　　　　　　　　C
　　　　customer you give service to.
　　　　　　　　D

（　）4.　Even though it was only one hour after the devastating earthquake, the
　　　　　　　　　　　　　　A
　　　　rescue team sent by the government went to the disaster area without delay,
　　　　　　　　　B　　　　　　　　　　　　　　　　　C
　　　　regardless to the aftershocks there might be.
　　　　　　　D

(    ) 5.  As part of this company, you are required to call to all your clients
            A                                          B                    C
         personally and say happy New Year to them.
                           D

(    ) 6.  We are interested at buying several items from your store and being your
                A                        B
         agents to promote the items in different areas. How much cut-down can you
                                       C
         offer us on the price?
                    D

(    ) 7.  Even though his wife left him without a word, he doesn't want to show out
                             A                                                  B
         his feelings in front of others. He thinks he has to be tough.
                C                                    D

(    ) 8.  Every year, when it's Chris's birthday, he'll bring his colleagues back home
                A                                         B
         and share to them a nice chocolate cake that his wife makes for him.
                C                                                D

(    ) 9.  His family had tried to convince him not to make a fool of himself, but he
                                   A                         B
         still decided to take revenge for the drunken driver who had killed his father
                          C                                              D
         by accident.

(    ) 10. I need someone to walk home with me after work because the only access
                          A                B                          C
         of my place is along a really narrow and dark road.
                           D

姓名：＿＿＿＿＿＿＿　　　　　　　　　　　日期：2007/12/26

請選出下列問題中使用錯誤的詞句（A、B、C或D），並改寫錯誤的部份。
（註：共10題。錯誤部份不含拼字問題，因此訂正時不需要列入考慮。）

例題：

（ *D* ）　It is uncomfortable to have someone that you have no idea about
　　　　　　　　　A　　　　　　　　　　　　　　　B
　　　　stand beside you and watch on every move you take.
　　　　　　　C　　　　　　　　　D
　　　　　　*watch every move you take*＿＿＿＿＿＿＿＿＿＿＿＿＿＿

（　　）1.　She has moved to Canada since childhood, but she still keeps in contact of
　　　　　　　　　　A　　　　　B　　　　　　　　　　　C
　　　　her friends by telephone.
　　　　　　D
　　　　　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

（　　）2.　The boy in a baseball cap is a frequent visitor at the science museum. He
　　　　　　　　A　　　　　　　　　　　B
　　　　goes there with his parents once a week and stays there from morning
　　　　　　　　　　C
　　　　till the museum closes.
　　　　　　D
　　　　　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

（　　）3.　Contrary with expectation, he didn't beat other runners in this year's race.
　　　　　　　A　　　　　　　　　　　　　　　　　　　　　　B
　　　　He said that his leg was badly injured at that time, so he lost to the others.
　　　　　　　　　　　　　　　　　C　　　　　　　　D
　　　　　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

（　　）4.　We dread of seeing the lady living in our neighborhood again because we
　　　　　　　A　　　　　　　　　B
　　　　ran down her bike this morning and ran away. She was very mad at us.
　　　　　　　C　　　　　　　　　　　　　　　　　　　　　D
　　　　　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

(　) 5. The bestseller of this week is a book entitled as "The Great Romans".
　　　　　　　　A　　　　　　　　　　　　　　　　B
　　　　　It is about the Roman Empire and is written in English.
　　　　　　　　　　C　　　　　　　　　　　　　D

(　) 6. In the past, the East was viewed strange and even a little dangerous land
　　　　　　　A　　　　　　　　B
　　　　　by Westerners. It was because they didn't really understand people in Asia.
　　　　　　　C　　　　　　　　　　　　　　　　　　　　　　　　D

(　) 7. It goes without saying that the relationship of them is much closer than ever.
　　　　　　　A　　　　　　　　　　B　　　　　　　　　　C
　　　　　They've never been this close before others' very eyes.
　　　　　　　　　　　　　　　　　D

(　) 8. At the present time, people across the West are taking in Eastern foods,
　　　　　　　A　　　　　　　B　　　　　　　　C
　　　　　practices, and beliefs that used to be thought as rather strange.
　　　　　　　　　　　　　　　　　　　　D

(　) 9. The speech that I attended on Monday morning was a bit of boring, even
　　　　　　　　　A　　　　　　B　　　　　　　　C
　　　　　though I was really looking forward to it.
　　　　　　　　　　　　D

(　) 10. Today, a lot Westerners act according to the rules of *feng shui* as they
　　　　　　　　A　　　　　　B　　　　　　C
　　　　　decorate their houses and offices, or arrange any piece of furniture.
　　　　　　　　　　　　　　　　　　　　　　　D

# Appendix F: The Concordance-Based Posttest

姓名：_____ 日期：2007/01/02

請選出下列問題中使用錯誤的詞句（**A、B、C或D**），並改寫錯誤的部份。
（註：共10題。錯誤部份不含拼字問題，因此訂正時不需要列入考慮。）

例題：

（ *D* ） It <u>is uncomfortable to</u> have <u>someone that you have no idea about</u>
　　　　　　　　　A　　　　　　　　　　　　　B
<u>stand beside you</u> and <u>watch on every move you take</u>.
　　　　C　　　　　　　　　　D
　　*watch every move you take*_____

（　） 1. I've been <u>waiting this opportunity</u> <u>all my life</u>. Now is <u>the moment to open</u>
　　　　　　　　　　　A　　　　　　　B　　　　　　　　C
<u>a company of my own</u>.
　　　D

（　） 2. I just <u>handed in</u> <u>all of my documents</u> <u>in this morning</u>, so my passport will be
　　　　　　　A　　　　　B　　　　　　C
ready <u>in about one week</u>.
　　　　D
_____

（　） 3. After the client team <u>arrived in Taiwan</u>, they <u>visited to the National Palace</u>
　　　　　　　　　　　A　　　　　　　　　　　　B
Museum, <u>as well as the National Dr. Sun Yatsen Memorial Hall</u> <u>in the north</u>.
　　　　　　　　C　　　　　　　　　　　　　　　　　　　　D
_____

（　） 4. Before we <u>go any further on this promotion project</u>, we need to
　　　　　　　　　A
<u>discuss about</u> <u>the special price of the products</u> first because we haven't
　　　B　　　　　　　C
<u>reached agreement on this</u> yet.
　　　　D
_____

77

(     ) 5. <u>In spite what your contractors tell you</u> and how they <u>give their word to you</u>,
                       A                                   B
make sure they <u>sign on the contract</u> before you start <u>working on the project</u>.
                  C                                   D

(     ) 6. <u>Since when</u> did <u>the young lady living in our neighborhood</u> <u>start dating with</u>
              A                      B                     C
<u>him</u>? I thought he <u>was married to her best friend</u>!
                        D

(     ) 7. I need someone to <u>walk home with me</u> <u>after work</u> because <u>the only access</u>
                       A            B                    C
of my place is <u>along a really narrow and dark road</u>.
                        D

(     ) 8. My supervisor <u>agreed to me</u> that I was <u>one of the most qualified students to</u>
                       A                              B
<u>be present at</u> <u>the conference in London</u>.
        C              D

(     ) 9. <u>Women of legal age</u> were <u>denied of the right</u> to <u>vote for their ideal</u>
              A                   B               C
<u>candidates</u> <u>in the past</u>.
              D

(     ) 10. Some people <u>feel it unnecessary to</u> <u>compete for superiority</u>, for <u>death comes</u>
                      A                       B               C
<u>to all</u> <u>without regardless to any social status</u>.
                   D

# Appendix G: The Evaluation Questionnaire

各位同學大家好：

線上語料庫索引工具的使用活動已經告一段落，非常感謝各位同學的參與。

請同學依據自己實際的學習經驗填寫此份問卷，並在適當的□中打∨。

問卷結果僅供研究參考，不會影響該科成績，請同學放心作答。感謝您的配合。

國立交通大學英語教學所 張文俐

**第一部分：我的電腦輔助學習經驗**

1. 平時是否有電腦可以上網？　　　□ 是　　　□ 否

2. 平時使用電腦的地方？　　　□ 家中　□ 宿舍　□ 其他＿＿＿＿＿

3. 老師曾在英文課中透過電腦來幫助我學習？
   □ 是，請簡述學習經過＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   □ 否

4. 平時會使用網路資源學習英文？
   □ 是，請簡述使用的資源類型＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   □ 否

5. 使用網路資源或電腦輔助學習的過程中，是否曾經遭遇任何的問題或困難？
   □ 是，請簡述問題或困難，並簡述解決方法＿＿＿＿＿＿＿＿＿
   ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   □ 否

6. 使用網路資源或電腦輔助學習的過程中，有無老師或其他媒介從旁協助？
   □ 是，請簡述協助的方式與過程＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   □ 否

7. 除了課程中介紹的VLC及NTNU，是否曾經使用過其他線上語料庫索引工具？
   □ 是，請寫下使用的工具名稱，以及使用的目的與經過＿＿＿＿＿
   ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   □ 否

   **（若選擇「是」，請繼續答第8題；若「否」，請跳過第8題）**

8. 之前使用線上語料庫索引工具的過程中，有無老師或其他媒介從旁協助？
   □ 是，請簡述協助的方式與過程＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
   □ 否

－ **這是第一面。請繼續回答第二面，謝謝** －

**第二部分：我對使用線上語料庫索引工具及操作步驟提示的感覺**

（如果你使用索引工具做練習題的過程中，**沒有讀到類似**「第1題第1步」、「第1題第2步」等字句，請跳過所有提到「操作步驟提示」的問題。）

1. 我對使用**線上語料庫索引工具**學習英語字詞搭配的感覺？
   □ 非常不喜歡　　　□ 不喜歡　　　□ 普通　　　□ 喜歡　　　□ 非常喜歡

2. 我認為使用**線上語料庫索引工具**對於完成英語詞搭練習題的幫助？
   □ 完全沒幫助　　　□ 沒有幫助　　　□ 普通　　　□ 有幫助　　　□ 非常有幫助

   我曾經受到幫助的地方？
   _____
   _____

3. 我使用**線上語料庫索引工具**的過程中，是否感到困難或不順手？
   □ 完全沒困難　　　□ 沒困難　　　□ 還好　　　□ 有困難　　　□ 相當困難

   我感到有困難的地方？
   _____
   _____

4. 我認為使用**操作步驟提示**與**線上語料庫索引工具**，對於完成英語詞搭練習題的幫助？
   □ 完全沒幫助　　　□ 沒有幫助　　　□ 普通　　　□ 有幫助　　　□ 非常有幫助

   我曾經受到幫助的地方？
   _____
   _____

5. 我使用**操作步驟提示**，對於使用**線上語料庫索引**工具時遇到的困難，是否有幫助？
   （若沒有困難，請跳過第5題）
   □ 完全沒幫助　　　□ 沒有幫助　　　□ 普通　　　□ 有幫助　　　□ 非常有幫助

   我曾經受到幫助的地方？
   _____
   _____

6. 未來若有上網機會，是否會再利用**線上語料庫索引工具**學習英語詞搭？
   □ 是　　　　　　□ 否
   為什麼？_____
   _____

− 這是第二面。請繼續回答第三面，謝謝 −

**（續）第二部分：我對使用線上語料庫索引工具及操作步驟提示的感覺**

7.　整體說來，我認為使用**線上語料庫索引工具**學習英語詞搭的優點為？

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　可以改進的地方為？

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　至於能夠輔助索引工具使用過程的**操作步驟提示**，我認為其優點為？

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　可以改進的地方為？

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

8.　是否建議其他同學在學習英語詞搭的過程中，可以先利用**操作步驟提示**來幫助他們使用線上語料庫索引工具？

　　□ 是　　　　　　　□ 否

　　為什麼？＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

　　＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

**－ 這是問卷底端，非常感謝您的配合 －**