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# Academic ESL Reading : Semantic Mapping and Lexical Acquisition

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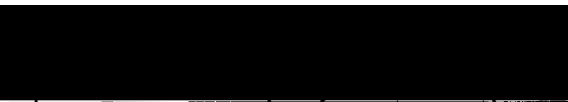
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## THESIS APPROVAL

The abstract and thesis of Jeffrey Darin Maggard for the Master of Arts in TESOL were presented October 2, 1998, and accepted by the thesis committee and the department.


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## ABSTRACT

An abstract of the thesis of Jeffrey Darin Maggard for the Master of Arts in TESOL presented October 2, 1998.

Title: Academic ESL Reading: Semantic Mapping and Lexical Acquisition

Second Language Acquisition (SLA) theoreticians and educators disagree whether vocabulary should be explicitly *taught* in second language learning classrooms. These individuals are divided about the most efficient way for L2 learners to increase the size of their lexicons. This thesis proposes that explicit vocabulary instruction may significantly facilitate lexical acquisition for adult second language learners in academic contexts.

An experimental study designed to investigate the relationship between explicit vocabulary instruction and the rate of lexical acquisition is described. It was hypothesized that metacognitive strategy training in semantic mapping activities would significantly increase the rate of lexical acquisition for upper-intermediate university level adult learners of English as a second or foreign language.

Reading materials used for the experimental and control groups were news stories from an Internet web site (NewsDEN). NewsDEN (<http://www.actden.com>) was chosen for its unique tools which facilitate the teaching of semantic mapping.

Forty-six students enrolled in an university level intensive English language program participated in this study. Subjects were divided into one treatment group (N=34) and one control group (N=12). Both groups received instruction in an integrated-skills framework via active learning methods, and both were given extensive practice using the strategy of learning new vocabulary through context clues.

The independent variable was semantic mapping training. Subjects in the control group were taught vocabulary through the Survey, Question, Read, Review, Recite (SQ3R) method. This group received instruction in a regular classroom setting. Students in the experimental group were taught the same words through the Semantic Mapping method, which included direct semantic and phonological awareness training. Subjects in this group were given the treatment via the Internet.

Immediately prior to receiving the experimental and control treatments, each group was given a vocabulary comprehension pre-test containing unknown words. To measure subjects' long-term memory of these words, modified versions of the same tests were given two weeks later, and at the end of the ten week quarter. Although the Semantic Mapping group did have higher mean scores than the SQ3R group, no statistically significant differences were found between the test scores of the experimental and the control group.

ACADEMIC ESL READING: SEMANTIC MAPPING AND LEXICAL  
ACQUISITION

by  
JEFFREY DARIN MAGGARD

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requirements for the degree of

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## CHAPTER ONE

### INTRODUCTION

#### Overview

This study attempted to discover the relative effectiveness of semantic mapping, a metacognitive vocabulary building technique. The primary questions posed by this study are whether metacognitive strategy training in semantic mapping will help academic ESL students learn vocabulary at all, and whether students who receive semantic mapping training will learn significantly more vocabulary than students who read the same materials without receiving this training. Another question, even though it plays a minor role, is to determine whether explicit phonological awareness training leads to greater lexical acquisition. Thus, the semantic mapping procedure is designed to explicitly provide subjects instruction in the phonological aspects of words (see pp. 50-51 for details). An implicit aim of this study is to determine whether computer-assisted instructional methods are as effective as traditional (paper and pen) methods for teaching new vocabulary.

#### Statement of Problem

Vocabulary acquisition is a vital component of second language acquisition (SLA); an increasing number of language researchers and teachers of English as a second language (TESOL) are interested in the field of lexical acquisition research (Carter & McCarthy, 1988; Johnson & Pearson, 1984; Krashen, 1989; Laufer, 1986; McKeown & Curtis, 1987; Nation, 1990; Seal, 1991). Since 1980 there has been a

substantial increase in the number of published works in this area; this indicates lexical acquisition research is an area of escalating importance (Seal, 1991, p. 297).

This relatively recent upsurge of interest in vocabulary is not surprising when one considers the fact that vocabulary learning is necessary for second language acquisition to occur. Laufer (1986) reminds us, “No language acquisition, whether first, second, or foreign; child or adult, can take place without the acquisition of lexis” (p. 69). For many adult L2 learners in academic contexts, increasing the size of the productive and receptive lexicon is undeniably important. The gap between the size of a second language learner’s productive lexicon and a native speaker’s productive lexicon is considerably large (Grabe, 1993; Koda, 1989; McKeown & Curtis, 1987). It is estimated that the recognition vocabularies of native speaking fluent readers is between 10,000 and 100,000 words but that second language learners have recognition vocabularies of only 1,000 to 7,000 words (Grabe, 1993).

Indeed, the possession of a large receptive and productive lexicon is one of the primary differences between native speakers and adult L2 learners in university contexts; some lexical researchers argue that vocabulary knowledge is the most critical feature of reading ability (Grabe, 1993). Barnett (1986) relates data from surveys which show that second language learners themselves cite the absence of a large vocabulary as being the main source of difficulty in reading English texts. Second language learners, researchers and theoreticians all point to the importance of vocabulary learning, yet there is no consensus about the most efficient way for L2 learners to acquire a native-like vocabulary.



Recently, SLA researchers and theoreticians have been in disagreement over whether vocabulary should be explicitly *taught* in second language learning classrooms. Some researchers assert explicit vocabulary instruction is not useful, nor is it as efficient as incidental vocabulary acquisition (Johnson, 1982; Krashen, 1989), while others argue that explicit vocabulary instruction is not only useful but that it may also increase the rate of acquisition for adult L2 learners in academic contexts (Laufer, 1994; Moore & Surber, 1992; Richards, 1976; Schreck & Schreck, 1991; Taglieber, Johnson & Yarbrough, 1988; Twaddell, 1973). Clearly, more empirical evidence is needed to show support for either position.

### **Background**

Explicit vocabulary instruction is far from being new to the field of second language education. Kelly (1969) relates that ancient Greek language instructors explicitly taught vocabulary in context. In other words, for nearly twenty-five hundred years explicit vocabulary instruction has been considered an important aspect of foreign language teaching (Celce-Murcia, 1993).

Even though the grammar translation method took prominence from the late 1940's through the early 1980's, while direct vocabulary teaching played a minor role in second language classrooms, there are recent indications that "a new era is upon us in which the place of vocabulary in the language learning process and as an area of research is being restored to respectability and prominence" (Seal, 1991, p. 296). The pedagogical pendulum appears to be swinging; Seal asserts that recent theoretical and

pedagogical shifts provide an explanation for the recent interest in vocabulary research.

Morpheme studies in the 1970's (for example, Brown, 1973; Burt & Dulay, 1973; Burt, Dulay & Hernandez-Chavez, 1975) provided strong evidence that second language learners acquire grammar in a series of predetermined stages which cannot be changed by explicit grammar instruction. Seal (1991) asserts that this has led many second language teachers to de-emphasize grammar instruction and encourage lexical acquisition. Instructors who once focused on teaching grammatical competence are now encouraging the development of communicative competence. Many second language instructors are beginning to realize that a practical way to increase students' communicative competence is to increase their vocabularies (Seal, 1991).

The need for an increased focus on vocabulary instruction in language learning classrooms does not stem only from theoretical and pedagogical sources. The command of a large, productive lexicon also influences the ways that others view us, both orally and through writing. Astika's (1993) study showed that among the five components which contribute to the assessment of ESL students' writing at the University of Hawaii, vocabulary accounted for the greatest amount of variance (83.75%) in the total scores.

Vocabulary acquisition is important for a number of reasons. First of all, research findings show that university level ESL students themselves believe that having a large vocabulary is crucial to their academic success (Barnett, 1986). Secondly, when ESL students exit academic language programs and find themselves

in regular university classes, they are often overwhelmed by their coursework due to a lack of vocabulary (Judd, 1978). Furthermore, a number of SLA researchers maintain that vocabulary is the most critical factor for success in second language comprehension (Barnett 1986; Grabe 1993; Twadell, 1972).

Krashen (1989) asserts that, on the theoretical level, the study of vocabulary acquisition can help us understand language acquisition in general. He goes on to relate that vocabulary is acquired in fundamentally the same way as the rest of language-- through incidental exposure in a language rich environment.

Supporters of Krashen's Natural Approach argue that second language (L2) acquisition is very similar to first language (L1) acquisition, and that conscious learning of vocabulary is not necessary for lexical growth to occur. Proponents of Krashen's Input Hypothesis are correct in their assertion that explicit vocabulary teaching is not a *necessary* requirement for vocabulary acquisition to occur. However, research shows that it does facilitate the expansion of a productive lexicon; furthermore, some learners prefer to receive direct vocabulary instruction (see Chapter Two for a further discussion of these arguments).

Oxford (1990) has demonstrated, through her Strategy Inventory for Language Learning (SILL) instrument, that different learners prefer to utilize different language learning strategies. In other words, some language learners might wish to consciously focus on vocabulary learning strategies, and others might not. Assuming that Oxford is correct, it seems wise to teach L2 learners a variety of vocabulary acquisition strategies,

and after doing so, leave it up to them to decide which method best helps to expand their vocabulary.

### **Pedagogical Implications**

Professional language educators not only have an obligation to help students identify learning style preferences; they also should increase the number of learning styles their students are familiar with. Once students have brought this knowledge into their level of awareness, they are better suited to choose language learning strategies that match their learning styles. Since many university level ESL students prefer to learn vocabulary explicitly, teachers of English as an international language have a responsibility to facilitate the learning strategy preferences of their students.

One way to increase the size of academic ESL students' vocabulary is by means of semantic mapping. Semantic mapping (also known as concept mapping, word webbing, semantic networking, cognitive mapping and plot mapping) is a term which describes a variety of strategies designed to show how key words or concepts are related to one another through graphic representations (Heimlich & Pittleman, 1986; Johnson & Pearson, 1984).

Research in metacognitive strategy training with ESL learners in university level reading courses (Carrell, Pharis & Liberto, 1989) demonstrates that second language learners benefit from explicit vocabulary instruction by means of semantic mapping. Semantic mapping might be a completely new way to learn vocabulary for many ESL students; however, Letteri's work (1982) indicates that learning styles can be altered through consciousness raising instruction.

Other learning style researchers (Dunn & Dunn, 1978) say that students have the ability to identify their own learning styles, but also assert that when teaching styles are compatible with students' learning styles, test scores increase.

Extralinguistic factors such as educational background, learning goals, age, and types of motivation for learning English should also be considered before determining which vocabulary learning styles and strategies best suit an individual learner's needs (Hashim & Sahil, 1994). Jack Richards (1976) holds:

What is the most desirable model theoretically may turn out to be the least effective in actual use, due to the role of extralinguistic factors. So, for example, while rote memorization may not be a justifiable strategy on theoretical grounds, there may be learners who enjoy and succeed in learning material through memorization. (p. 78)

The fact that some learners prefer to learn vocabulary via explicit instruction and rote memorization does not discount the validity of Krashen's Input Hypothesis, which asserts that the more comprehensible input a learner subconsciously receives, the more incidental language acquisition will occur (Krashen, 1989). Recent SLA research indicates that more language input equals greater language acquisition (Larsen-Freeman & Long, 1991). However, Krashen goes too far when he claims "conscious language learning does not appear to be as efficient as acquisition from input" (p. 454). SLA research in reading suggests that conscious learning does have a positive effect on the recall of printed text and aids in vocabulary acquisition (Barnett, 1986; Koda, 1989; Moore & Surber, 1992; Taglieber, Johnson & Yarbrough, 1988).

Even Krashen admits that the data he provides to support his theory do not support the strong version of the Input Hypothesis . He says that subjects who

participate in intentional Read and Test studies “make gains superior to incidental readers” (p. 454). This provides strong evidence that focusing on form has some effect.

One recent read and test study (Bess, 1994) hypothesized that subjects who read simplified stories alone would make greater gains in vocabulary acquisition over subjects who received explicit vocabulary instruction. However, the study demonstrated that subjects who received explicit vocabulary instruction outperformed subjects who only read simplified short stories. Krashen’s claim that conscious vocabulary learning is not as efficient as incidental acquisition from input was not supported by this study. This evidence clearly supports the position that explicit vocabulary instruction, combined with the teaching of vocabulary learning strategies and guessing skills, increases the rate of lexical acquisition.

Twaddell (1973) suggests that it is through extensive contact with the foreign language and skill in intelligent use of context clues, not from word-matching or laborious grammar translation, that vocabulary expands. He also states that these skills can be taught and learned. In other words, L2 readers need to develop a tolerance for ambiguity and *learn* skills that enable them to become good guessers.

Twaddell (1973) says it is through successive encounters with a word and by guessing the meaning of a word in a variety of contexts that second language learners come to know the correct meanings of the word. If it is true that meaning is mapped onto form after multiple exposures in a variety of contexts, it follows that conscious vocabulary instruction does facilitate vocabulary/language acquisition.

Explicit vocabulary instruction need not bear any resemblance to grammar translation methods; it does not need to involve a word for word matching between a learner's native language and a target language. Instead, explicit vocabulary instruction should actively engage learners in context-embedded activities which activate the schema a learner brings to the classroom.

Furthermore, vocabulary instruction should enhance students' motivation for learning the target language. Since active participation in the learning process enhances motivation, well-designed computer programs may have high motivational value.

Well-designed Internet programs motivate students by providing users individualized feedback in interactive, context-embedded environments (Johnson & Oltenacu, 1996). Therefore, explicit vocabulary instruction using semantic mapping exercises employing the Internet as a tool may be useful for facilitating the expansion of adult L2 learners' vocabularies in academic contexts.

ACT Laboratory Ltd. has created an Internet web site that is useful for explicit vocabulary instruction using semantic mapping. The web site is called NewsDEN (it is located at <http://www.actden.com>). NewsDEN is a well-designed computer program which displays authentic newspaper stories in an interactive, question-posing environment. The designers of this web site state that NewsDEN has the following aims:

- to expose students to current events at the international, national and local levels
- to encourage comprehension of news stories
- to expand vocabulary
- to improve online researching skills
- to expand analytical skills and critical thinking skills

to expand communication skills and the ability to consider various points of view to improve map-reading skills  
to use computers and the Internet to support the objectives of the 1996 Canadian Ministry of Education's Information Technology curriculum (Digital Educational Network, 1995)

Each NewsDEN article facilitates vocabulary acquisition and comprehension in a unique manner. NewsDEN provides texts that have glossed vocabulary words with hypertext links to dictionaries, semantic maps, almanacs and other sources of information (see Appendix A and B for examples of texts and semantic maps from NewsDEN).

In conclusion, Krashen and Terrell's Natural Approach, which promotes acquisition over explicit vocabulary instruction, has not been proven to be more efficient at increasing the rate of vocabulary acquisition for adult L2 learners in academic contexts. More empirical research in the field of lexical acquisition needs to be done before any conclusions are drawn.

## **RESEARCH QUESTIONS AND HYPOTHESES**

To determine whether metacognitive strategy training in semantic mapping, using the Internet as a tool, would facilitate vocabulary acquisition significantly more than incidental (passive) vocabulary acquisition through the reading of these same texts alone, the present study posed the following research questions and hypotheses.

### Research Question 1

Is there a significant difference in the rank level score on Nation's Vocabulary Levels Pre-test for the Semantic Mapping (experimental) Group versus the SQ3R (control) Group?



### Hypothesis 1A

There will be no significant difference in the rank level pre-test score for the Semantic Mapping group versus the SQ3R Group.

### Hypothesis 1B

There will be a significant difference in the rank level pre-test score for the Semantic Mapping Group versus the SQ3R Group.

### Research Question 2

After receiving the treatment, will there be a difference between the Semantic Mapping and SQ3R Groups in the percentage of individuals who increase their Nation's vocabulary levels post-test scores?

### Hypothesis 2A

There will be no difference between the Semantic Mapping and SQ3R Groups in the percentage of individuals who increase their Nation's levels post-test scores.

### Hypothesis 2B

There will be a difference between the Semantic Mapping and SQ3R Groups in the percentage of individuals who increase their Nation's levels post-test scores.

### Research Question 3

After receiving the treatment, will there be a difference between the Semantic Mapping and SQ3R Groups in the percentage of individuals who increase their NewsDen vocabulary levels post-test scores?

### Hypothesis 3A

The Semantic Mapping Group will not produce significantly greater vocabulary acquisition than the SQ3R, as measured by NewsDen vocabulary post-tests.

### Hypothesis 3B

The Semantic Mapping Group will produce significantly greater vocabulary acquisition than the SQ3R, as measured by NewsDen vocabulary post-tests.

### Brief Overview of Methods used to Test the Hypotheses

To determine whether both instructional groups were starting off with comparable vocabulary levels, Nation's (1990) "A Vocabulary Levels Test" was administered as a pre-test. Then, at the end of the quarter, this same measure was given as a post-test in order to determine whether the Semantic Mapping or SQ3R method had a significant impact on increasing the subjects' general/overall vocabulary levels.

In order to determine the effectiveness of the independent variables (semantic and phonological awareness training) on comprehending new lexical items, immediately prior to receiving the treatments, each group was given a vocabulary comprehension pre-test containing unknown words. To measure subjects' long-term memory of these words, modified versions of the same tests were given two weeks later, and at the end of the ten-week quarter.

## GLOSSARY OF TERMS AND ABBREVIATIONS

communicative competence- the aspect of a person's language competence that enables one to convey and interpret messages and to negotiate meanings interpersonally within specific contexts

comprehensible input- spoken language that is understandable to the learner, or just slightly beyond the learner's level

ESL- English as a second language

grammar translation method- characterized by its focus on grammatical rules, memorization of vocabulary in the form of lists of isolated words, reading and translating of difficult texts, doing written exercises and paying little or no attention to pronunciation

grammatical competence- the aspect of communicative competence that includes knowledge of morphological, syntactic, semantic and phonological rules as well as knowledge of lexical items

Input Hypothesis- the claim that an important condition for language acquisition to occur is that the learner understand input language (through reading or hearing) that contains sentence structure just slightly beyond their immediate level of proficiency

learning strategy- an action performed by a learner to make learning more successful.

learning style-preference for a particular learning modality, usually visual, auditory, kinesthetic, or tactile

L1- first language

L2- second language

Natural Approach- an approach to second language teaching that places heavy emphasis on ensuring that learners are relaxed and comfortable in the classroom. The approach is characterized by the following: 1) a silent period in which learners are not required to use the language productively until they are ready to do so, 2) only comprehensible input is provided, 3) natural language “acquisition” should occur, as opposed to direct learning through analysis; 4) grammatical structures are supposed to be acquired in the *natural* order if adequate amounts of comprehensible input are provided; thus, second language learners are believed to *acquire* grammatical structures similar to the way that first language learners do

productive lexical knowledge- the ability to understand and use vocabulary in speaking and writing

receptive lexical knowledge- the ability to understand and use vocabulary in reading and listening

semantic mapping- a variety of strategies designed to show how key words or concepts are related to one another through graphic representations

subvocalization- speech-related activity produced by an individual during silent reading. An example of a subvocalization activity is when electrical impulses cause an individual’s tongue to move during silent reading.

tip of the tongue (TOT) phenomenon- a state in which an individual cannot fully recall a familiar word but can recall words of similar form and meaning

## SUMMARY

An exploration of the effects of direct vocabulary instruction (through semantic mapping and phonological awareness practice using the Internet as a tool) serves two purposes. First of all, it may benefit learners who prefer to learn vocabulary by making semantic and phonological association. Secondly, it may increase these students' abilities to use technology to be successful in future academic pursuits. In what follows, the second chapter reviews the literature of vocabulary teaching, as well as some issues related the importance of verbal memory. The third chapter describes the experimental design and procedures used for data collection. The fourth chapter presents the findings of the statistical measures. The final chapter provides an analysis of these outcomes and discusses the implications for vocabulary teaching.

## **CHAPTER TWO**

### **REVIEW OF THE LITERATURE**

#### **Overview**

This chapter is divided into four sections. The first looks at the question of whether university-level second language learners should receive direct vocabulary instruction. In the second section, university-level second language vocabulary research is examined. The third section outlines what researchers (primarily L1) say about the benefits of semantic mapping. The last section analyzes the importance of the semantic and phonological aspects of words in verbal memory.

#### **SHOULD VOCABULARY BE EXPLICITLY TAUGHT?**

Krashen (1989) points to the fact that second language learners acquire grammatical rules that they have never been taught. He goes on to cite first language studies which indicate vocabulary acquisition occurs naturally without instruction and notes studies which show that L1 children acquire several thousand words per year. It is undeniable that L1 learners acquire vocabulary at a rapid rate without any instruction. However it is less apparent that second language learners can expand their vocabularies in the same manner, let alone at the same rate as L1 learners, due to a number of extralinguistic factors.

Krashen cites studies which positively correlate extensive reading with high vocabulary scores; he asserts that extensive reading has proven to be a successful way for first language learners to expand their vocabulary. However, this approach has not been proven to be the most time-efficient for second language learners. Even Krashen

would admit that many adult second language learners do not have a great deal of time to spend on reading activities (especially adult immigrants and college students who have other pressing needs). Since a great number of L2 learners are not exposed to the same amount of target-language input as L1 learners, they are at a great disadvantage. In other words, it seems unlikely that a comparable amount of incidental vocabulary acquisition will occur given the circumstances.

### **The Problem of Indirect Vocabulary Acquisition**

A large portion of the vocabulary a person learns in his or her first language (L1) is indirect; reading has traditionally been the most-frequently used method of presenting vocabulary. As mentioned in Chapter One, teaching vocabulary directly has been out of fashion for the past two decades. Recently, the pedagogical focus of vocabulary instruction has been on meaning. In particular, the focus has been on using background knowledge (schemata) and context clues surrounding a word to guess its meaning. However, there is evidence that the use of indirect vocabulary learning methods is not as efficient at expanding a second-language learners lexicon as is the use of direct learning methods (Bess, 1994).

Incidental vocabulary learning is a very slow process that does not seem to be as efficient as direct vocabulary learning. As will be shown below, the initial learning of words can be accomplished efficiently and in a relatively short amount of time using direct learning methods.

Research by Saragi, Nation, and Meister (1978) into indirect vocabulary learning via the use of contextual clues shows that it takes most first language learners

an average of *sixteen* encounters with a word before recognizing its meaning. On the other hand, research in direct vocabulary instruction shows that an explicit focus on the form and meaning of a word significantly reduced the amount of time required to recognize and comprehend a word. For example, in Lado, Baldwin and Lobo's (1967) study with first year college students learning Spanish as a L2, subjects achieved recognition scores averaging 95% and recall scores averaging 65% after encountering each word pair only once in a 100 item word list.

### **The Great Debate: Indirect versus Direct Teaching Methods**

A long standing debate in reading research is whether reading should be viewed as a holistic process or as a cluster of subskills. Supporters of the Whole Language approach argue that the use of indirect vocabulary learning methods is superior to using direct methods.

In indirect vocabulary learning, new words are acquired incidentally while reading, usually as the result of sampling the context surrounding a given lexical item. Teachers who use indirect vocabulary learning methods often promote extensive reading practice as the best way to increase the size of a learner's L2 lexicon.

In contrast, in direct vocabulary learning, a conscious effort is made to learn lexical items either in context or in isolation. Teachers using direct learning methods often teach word forms (e.g., roots, affixes, stress and intonation) as well as word meanings.

Supporters of the direct approach tend to think of reading as being a complex skill that is made up of component subskills. Fluent adult readers of English are



perceived to be individuals who have automatized these subskills, through a process of associative learning, to the point where no attentional cognitive focus is required to automatically recognize 1) shapes of individual letters; 2) letter to sound correspondences; and 3) meanings of visual words (Lagerge & Samuels, 1974). In other words, it is presumed that fluent readers have mastered (i.e., automatized) bottom-up processing subskills to the point where meaning is accessed and retrieved seemingly unconsciously.

In contrast, Whole Language proponents claim that reading is largely a top-down (knowledge-driven) affair. Mattingly (1972) reveals that to whole language proponents reading is thought of as an active process. In other words, reading is generally seen by these individuals as a *psycholinguistic guessing game* (Goodman, 1967) in that readers are believed to actively and consciously sample texts in order to confirm, reject or alter their predictions.

In general, top-down (meaning emphasis) teachers do not consider stimulus recognition to be vital for achieving vocabulary comprehension, while bottom-up (code emphasis) educators argue that automatized stimulus recognition is a prerequisite for fluent reading.

### **Current Trends in Vocabulary Instruction**

Reading researchers realize there is a need for good vocabulary teaching methods and techniques, and a great number have been developed over the past two decades. In Nation and Coady's (1988) review of lexical research, they conclude that learning vocabulary through context is the most beneficial way for learners to increase

vocabulary knowledge. They go on to say that, if the best way to increase a learner's vocabulary is through extensive reading, one problem remains: How can teachers motivate learners who lack the *reading habit* to read extensively and thereby increase vocabulary? By implication, one possibility is to teach effective vocabulary guessing strategies and vocabulary learning skills in the classroom in order for L2 learners to develop a sense of confidence in their reading abilities.

Another possibility is to teach L2 learners how to access Internet websites. In particular, ESL/EFL reading instructors could teach students how to access websites whose explicit aims are to increase vocabulary and reading skills. Enhancing students' knowledge of information technology tools such as the Internet empowers learners to read extensively and may motivate them to do so.

Since over seventy-five percent of all of the information currently available on the Internet is in English (Digital Educational Network, 1995), academic ESL learners will gain access to vast amounts of English texts. Currently, there are websites that provide free access to novels online and websites that provide free reading and writing instruction for learners of English as a second language. Once L2 readers achieve a certain amount of success using the Internet, they could be motivated to read extensively and increase their lexicon.

Using the World Wide Web (WWW) also encourages students to guess the meaning(s) of words from contextual clues; oftentimes websites have pictures and graphics that can activate second language learners' background knowledge. Generally, web pages are accessible via hypertext links. Key words, phrases, pictures

and graphics at a web site are often highlighted to indicate that there is a hypertext link to other information. Therefore, students in academic ESL programs should be encouraged to locate information using hypertext links because it may facilitate learning vocabulary by guessing from contextual clues.

If Twaddell was correct in his assertion (1973) that second language learners acquire the meaning of unknown words after multiple exposures in a variety of contexts, then reading English texts on the Internet may be an effective way to promote lexical growth for ESL/EFL students at the college level.

Nation and Coady agree with Twaddell's (1973) view that good readers are good guessers, and they outline a five-step strategy to facilitate guessing unknown words in texts. The strategy is as follows: 1) find the part of speech in the word; 2) examine the immediate context; 3) examine the wider context; 4) guess the meaning; 5) check that the meaning is correct.

It seems logical that instructors could develop activities using Nation and Coady's strategy as pre-reading and/or post-reading exercises; the teachers could specifically focus on lexical items found in the text. In this way, direct vocabulary instruction using the context of a passage would increase lexical knowledge as well as increase schemata. If college ESL students overlearn this top-down reading strategy and incorporate it into their subconscious mental framework, it could increase the automaticity of their language processing skills, which would, ultimately, result in faster lexical acquisition. Furthermore, if this strategy were used in academic ESL reading courses with digitized texts that are currently available on the Internet (e.g., at

the Digital Educational Network), and if vocabulary in these digitized texts were linked to related, meaningful information (such as dictionaries, maps, almanacs and pictures) in a hypertext format, it could increase lexical acquisition.

Nation and Coady also claim that pre-teaching vocabulary might discourage students from using strategies such as guessing, yet they cite contradictory evidence found by Taylor (1986) which suggests that pre-teaching is useful and has an important role to play. Since there is no conclusive evidence to show that pre-teaching vocabulary is not beneficial, it follows that more empirical evidence is necessary. Research with adult L2 learners in academic contexts would be one way to add to our knowledge in this area.

In a related study, Liu and Nation (1985) found evidence which may support the teaching of strategies that encourage L2 learners to guess meanings from context. These researchers contend that guessing word meanings from contextual clues is the most important strategy for dealing with low frequency vocabulary in written texts. Their study revealed that parts of speech can have an effect on guessing and found that verbs and nouns are easiest to guess and that adverbs and adjectives are the most difficult. Perhaps the most intriguing discovery they made was that learning to guess words in context is best done by the class as a whole. When groups of mixed ability learners worked together as a group, they were able to guess between 85% to 100% of the words. These findings indicate that adult L2 learners would likely benefit from learning guessing strategies, but more empirical evidence needs to be obtained before this prediction is confirmed or rejected.

Considering the methodologies and techniques presented above, one thing is clear: second language teachers should at least make attempts to diminish the difficulty of vocabulary learning. To reduce the burden, Nation (1990) also urges instructors to include an explicit phonological awareness component to their vocabulary lessons. Nation says that these exercises should have a focus on the following: a) the number of syllables a word has; b) its grammatical properties; c) its stress pattern; d) its intonation; e) its pronunciation. Nation also promotes highlighting the relationships between words graphically, discussing words that commonly recur in a text, and using semantic mapping.

By implication, the methods used for explicit vocabulary instruction should be eclectic. They should have a focus on word parts (morphology), word sounds (phonology), word meaning (pragmatics) and grammar (syntax). In short, teachers should apply methods which encourage the development of bottom-up and top-down vocabulary acquisition skills in college ESL reading courses.

### **UNIVERSITY-LEVEL L2 VOCABULARY RESEARCH**

The bulk of vocabulary research has been performed by L1 reading researchers with children as subjects. Recently, however, a number of studies have been conducted with adult L2 learners in college ESL/EFL settings.

Laufer (1994) reveals that the productive lexicon of advanced university level EFL students showed no statistically significant increase over a period of one year. The students were enrolled in twelve to sixteen hours of English language courses per week at the University of Haifa in Israel, and no explicit vocabulary instruction was

given; any increase in vocabulary was attributed to *incidental* vocabulary learning. Thus, even though the learners had extensive exposure to the target language, they *acquired* relatively few words for use in their productive lexicons; it is not known whether the subjects' receptive knowledge increased.

Laufer's findings emphasize the point that it is highly unrealistic to expect a similar lexical development in one's second language on the basis of exposure alone. Since exposure to L2 vocabulary is too limited (by comparison with L1), explicit vocabulary teaching is needed to compensate for the insufficient quantity of input.

Laufer suggests that university instructors use a variety of vocabulary activities to practice words from a selected lexical syllabus. She states that it is not enough for EFL learners to encounter words in reading passages; students should practice these words for productive purposes through systematic practice using reformulation exercises: activities which require students to produce vocabulary (through writing and oral tasks). The author hypothesizes that using this technique will result in a significant increase in the lexical profile of university level EFL students.

Other studies also indicate that academic L2 readers will benefit from explicit vocabulary instruction. Koda's (1989) study examined the effects of transferred vocabulary knowledge in the development of L2 reading proficiency. Her subjects were university level students studying Japanese as a foreign language; she not only found that limited L2 vocabulary knowledge results in slower progress in L2 word recognition skills. She also reports that "deficiency in lower-level processing operations strains short-term memory and inhibits the integration of comprehended

materials” (p. 536). Thus, Koda’s findings are similar to those of a number of other reading researchers who argue that students are word-bound precisely because they are not yet efficient in bottom-up processing skills.

### **Automaticity**

Grabe (1993) contends that beginning to upper-intermediate L2 readers often get word-bound and do not automatically recognize vocabulary because of their focus on orthography. He goes on to say that no amount of guessing will overcome this deficiency and lead to automatic word recognition. His findings indicate that incidental exposure to vocabulary through extensive reading does not always lead to comprehension. In other words, explicit vocabulary instruction which teaches word identification skills such as Greek and Latin roots found in English, the pronunciation and intonation of lexical items, and activities which focus on the syntactic and grammatical elements of specific vocabulary, may lead to an increase in automaticity and comprehension.

### **Syntactic Knowledge and Automaticity**

Barnett’s (1986) research examines the ways in which lexical and syntactic knowledge affect reading comprehension and automaticity. Her study specifically looks at how lexical and syntactic knowledge affect students’ recall of a written text. Barnett found that mean recall scores increased considerably as vocabulary scores increased, but goes on to assert that unduly stressing vocabulary building or inferencing skills may not help students who lack adequate syntactic knowledge.

Barnett's study clearly indicates that explicit vocabulary instruction facilitates recall of a text when combined with a focus on grammar. The pedagogical implications of Barnett's work are as follows: an eclectic, integrative approach that incorporates vocabulary-building activities, prediction and inferencing activities, with some focus on grammatical and phonological form, will be beneficial for adult L2 learners in academic contexts.

### **Context Effects and Vocabulary Recall**

Other research in lexical acquisition looks at the ways context facilitates the recall of vocabulary. Moore and Surber (1992) conducted an experiment with college students enrolled in German foreign language classes at the University of Wisconsin-Milwaukee. They were interested in determining whether preteaching vocabulary had any effect on recall, and whether the semantic context method for second language vocabulary learning was superior to the keyword method.

In the keyword method learners are encouraged to map meaning onto form by making arbitrary associations between their L1 and the L2, but the context method encourages the learners only to make semantically appropriate associations. Moore and Surber were surprised to find that the Context group was not better than the Keyword group for facilitating the recall of vocabulary. However, it is not surprising that both methods proved to be more effective than the control group which received no explicit vocabulary instruction. This study provides further support for the notion that explicit vocabulary instruction is beneficial for adult L2 learners in academic contexts.



Taglieber, Johnson and Yarbrough's (1988) experiment revealed that pre-teaching vocabulary resulted in increased comprehension over incidental vocabulary acquisition, and that a picture-discussion-prediction technique was the most fruitful method for increasing lexical comprehension.

In the end, Taglieber et al's findings add weight to the notion that conscious learning with an explicit focus on vocabulary results in increased language acquisition. Even though the preteaching of vocabulary was not as effective as using the picture method, it still outperformed the incidental (control) method.

### **SEMANTIC MAPPING**

As mentioned above, one way for adult L2 learners in academic contexts to expand their vocabulary is through semantic mapping activities. Semantic mapping is a term which describes a variety of strategies designed to show how key words or concepts are related to one another through graphic representations (Heimlich & Pittleman, 1986; Johnson & Pearson, 1984).

Hanf (1971) was the first to develop the mapping procedure; it was originally designed to improve the teaching of study skills. However, the notion of semantic mapping predates Hanf's publication.

In 1963, Ausubel asserted that when individuals are presented with new concepts, these concepts will not be explicitly understood until they are linked in a meaningful way to pre-existing concepts. In other words, Ausubel claimed that background information was a necessary prerequisite to the addition of new concepts and vocabulary.

Similarly, reading theorists have likened the process of reading comprehension to the building of bridges between the new and the unknown (Pearson & Johnson 1978). Since the 1970's, a number of schema researchers have demonstrated that having background knowledge of text structure helps to build comprehension (Carrell, 1989). Certainly, one of the major benefits of semantic mapping is that it helps to build schemata; however, this is only one of many possible benefits of using semantic mapping activities in reading classrooms.

During the 1980's there was an explosion in research related to semantic mapping that greatly increased our knowledge of the broad applications of mapping strategies (Atkinson, 1981; Carrell et al, 1989; Cleland, 1981; Clewell & Haidemos, 1983; Gemake, 1986; Hickerson, 1984; Heimlich & Pittleman, 1986; Johnson & Pearson, 1984; Ruddell & Boyle, 1989; Schwab & Coble, 1985; Sinatra et al, 1984; Sinatra et al, 1985; Spiegel, 1981; Widomski, 1983).

Recently, semantic mapping has been used in a variety of ways, including the following: It has been used as a technique for increasing vocabulary and improving reading comprehension (Carrell et al, 1989; Heimlich & Pittleman, 1986; Johnson & Pearson, 1984; Schwab & Coble, 1985), as a means of improving the teaching of study skills (Hanf, 1971; Heimlich & Pittleman, 1986), as a framework for identifying the structural organization of texts (Clewell and Haidemos, 1983), as a means of teaching critical thinking skills (Hickerson, 1984), as a visuospatial strategy to promote the reading comprehension of learning disabled students (Sinatra et al, 1984; 1985), as a link between reading and writing instruction (Washington; 1988), as a way of

facilitating below-level college readers' comprehension of complex conceptual relationships (Lipson, 1995) and as an assessment technique (Fleener & Marek, 1992).

There are a number of ways to create word maps. Widomski (1983) promotes a combination of semantic mapping and directed reading activities to enable readers to make use of schemata so that they might achieve a fuller understanding of a text. Widomski says her word webs always consist of the following parts: a core question (which could be the main idea of the text, for example), the web strands (the answers to the core question), the strand supports/supporting details (the facts and inferences in a text), and the strand ties (the graphic representations of connections or lines drawn between words and phrases on a semantic map).

The mapping procedure that Johnson and Pearson (1984) describe has its roots in Hanf's (1971) original mapping technique and appears to be widely used by a number of researchers. First of all, in Johnson and Pearson's method instructors choose a core concept of a text and display it visually so that all students can see it. The core concept might be written on a blackboard, on an overhead transparency, on a large sheet of paper, or even displayed from a computer which has an overhead projection system.

Next, students are encouraged to write down a series of words or phrases associated with the core concept. After brainstorming and generating lists of words or phrases relevant to the topic, students are asked to compare their lists with their peers. Then students are asked to illustrate relationships between each word on their list by linking the words or phrases together with lines.

During the process of constructing a semantic map, instructors can identify what is in and what is outside of their learners' level of awareness in regards to core ideas and supporting details (Fleener & Marek, 1992). This can provide instructors with important diagnostic information which can help them lead the class in an appropriate direction. It is only after students have completed the pre-reading maps that they read the text.

Semantic mapping activities that are carried out during the pre-reading phase of a lesson activate learners' schemata and introduce them to key vocabulary from the text. As a pre-reading activity, instructors can use core questions to enhance the comprehension of vocabulary, main ideas, supporting details, patterns of textual organization, as well as character and plot development (Widomski, 1983).

Heimlich and Pittleman also encourage postreading mapping. During the postreading phase of a lesson learners can add new words, concepts and even categories to their pre-reading maps. The final phase of map construction comes when the learners are asked to recall the details of a text and to discuss and graph new information onto their pre-existing maps.

If semantic maps are generated during both phases of a lesson plan, it is wise for students and instructors to use different colors on the second map. This makes it easier to see which lexical items are new to the learners.

Fleener and Marek (1992) contend that semantic mapping is useful for evaluating student gains in understanding throughout the learning cycle. They go on to state that the identification of misunderstandings early on allows teachers to redirect

students' misconceptions. Fleener and Marek assert that, as an assessment tool, semantic maps not only reveal student perceptions but also relate misunderstandings of core ideas. Second language acquisition researchers (Carrell et al, 1989) also support the belief that semantic maps are useful for assessing lexical and conceptual gains.

Carrell, Pharis and Liberto's (1989) study demonstrated the effectiveness of semantic mapping strategy training in an academic ESL program at the university level. They state that their original study has been replicated and the experimental group yielded significant gain scores. Furthermore, these researchers assert adult students in academic ESL programs at the university level should benefit from metacognitive strategy training, and they encourage additional studies to measure the effects of semantic mapping training.

The benefits of semantic mapping are many. Mapping activities are student-centered (learners choose which lexical items go on their maps and the manner in which the words are arranged); mapping promotes lexical acquisition and increases the reading comprehension of elementary through college aged students, and training in metacognitive mapping strategies improves both L1 and L2 readers' comprehension of texts. Semantic mapping is also useful as an evaluation tool. Furthermore, semantic mapping motivates students to take part actively in the learning process (Heimlich & Pittleman, 1986).

Other reading researchers (Gemake, 1986) claim that the reason mapping activities are inherently worthwhile is that they utilize both sides of the human brain.

She states that the right side of the brain is asked to respond to the visual representations on the maps, while the left side of the brain decodes orthographic information.

Clearly, there is a lot of support for using mapping activities in L1 reading research; however, there is a paucity of L2 studies which demonstrate the effects of semantic mapping on vocabulary learning. Also, there does not appear to be any research in the SLA literature that uses an Internet web site as a tool for delivering semantic mapping instruction for adult ESL students at the university level.

Explicit vocabulary instruction need not bear any resemblance to grammar translation methods; nor does it need to involve a word for word matching between a learner's native language and a target language. Instead, explicit vocabulary instruction should actively engage learners in context-embedded activities which activate the schema (i.e., background knowledge) a learner brings to the classroom.

Furthermore, vocabulary teaching methodology should enhance students' motivation for learning the target language. Well-designed computer programs promote active learning by providing users individualized feedback in interactive, context-embedded environments (Johnson & Oltenacu, 1996).

Since active participation in the learning process enhances motivation, computers may have high motivational value. Explicit vocabulary instruction with semantic mapping exercises, using the Internet as a tool, may be useful for facilitating the expansion of adult L2 learners' vocabularies in academic contexts.

It is important to the present experiment that NewsDEN is explicitly designed to expand students' vocabulary and improve reading skills; it is significant that each news story has a hypertext link to a semantic map of each article. Each news story also has a picture which can be used for activating schemata and for pre-reading mapping; each article has glossed vocabulary with hypertext links to definitions; each news text is linked to other sources of information.

As mentioned above, schema theorists (Johnson, 1982, Pearson & Johnson 1978) report that stimulating readers' existing knowledge prior to reading can improve reading comprehension and recall. In Johnson's (1982) study, she also found that the topic of an article and the level of vocabulary difficulty significantly influence ESL reading comprehension. Johnson's research provides evidence that cultural factors need to be considered when choosing materials for teaching vocabulary and implies that effective vocabulary instruction should include activities like semantic mapping.

Employing the semantic mapping techniques described above with the NewsDEN articles activates a student's background knowledge prior to reading, and NewsDEN's glossed vocabulary reduces the effects of unknown words on reading comprehension.

Metacognitive strategy training in semantic mapping may facilitate reading comprehension and thereby increase L2 learners' vocabularies. One schema theorist has found evidence that the size of a learner's vocabulary and second language proficiency place a limit on transference of first language reading skills.

Hudson (1982) claims:

It may be that the process of learning to read in L2 is partially a matter of first experiencing skills and strategies as usable, and then abstracting principles for successful reading. Thus, the motivational factors of having experienced, for example, finding invariants of patterns and order, and inducing rules successfully in L2 may lead the advanced level reader to utilize skills and strategies which the lower level reader has not experienced as usable. (p. 20)

If Hudson's observations are on the mark, then they provide additional support for semantic mapping as a metacognitive vocabulary learning strategy.

Due to the lack of a sufficient vocabulary, low-level second language learners do not read as extensively as L1 learners in academic contexts. Therefore, second language instructors should explicitly teach vocabulary and vocabulary learning strategies in their classrooms (at all levels) to encourage students to read extensively. These activities provide learners, especially those at the lower and intermediate levels, the tools they need for developing reading skills; the more a learner reads, the more a learner receives comprehensible input, which, in turn, translates into language/vocabulary acquisition.

Krashen (1989) claims that all that is necessary for L2 learners to massively expand their vocabulary is for them to become addicted to reading. He also asserts that the reading materials need not be authentic for L2 learners to greatly increase the size of their lexicons.

Assuming that Krashen is correct here, academic ESL instructors should encourage students to read texts on the Internet. Teaching college ESL students to use information technology tools empowers them to research and read extensively and thereby increase the size of their lexicons. Furthermore, as a result of increased



exposure to reading activities which teach metacognitive vocabulary learning strategies, ESL college students are better equipped to rapidly expand their lexicons.

## **THE IMPORTANCE OF THE SEMANTIC AND PHONOLOGICAL ASPECTS OF WORDS**

### **Overview**

To investigate the question regarding the importance of semantic and phonological aspects of words in verbal memory, two ways in which words are stored and retrieved in the mental lexicon are looked at and the various attributes of verbal memory are examined. It is expected that knowledge of the effects of attributes on word recall will shed some light on the unique role that phonological and semantic associations play in second-language vocabulary acquisition. In specific, it is hoped that this information will clarify whether direct phonological and semantic instruction is likely to facilitate lexical growth for second-language (L2) learners.

### **Evidence of Two Routes for Word Identification**

A number of researchers make the assertion that the phonological aspects of a word aid in its storage and retrieval from the mental lexicon. Fay and Cutler (1977) hypothesize that words in the lexicon are organized primarily by their phonological structure and secondarily by their orthographic shape.

An abundance of psycholinguistic research (for example, Coltheart, 1978; McCusker et al., 1981; Rubenstein et al., 1971) indicates that there is more than one path a learner can utilize to derive meaning from printed words. One of the most commonly used paths is the phonologically mediated route. The fact that most first

language speakers can identify the meaning of an unrelated printed word through pronouncing it provides evidence that the phonological route is available for accessing meaning.

Additionally, learners can use the visual pattern of a word to recognize it. This strategy is most obvious when individuals need to distinguish between two printed homophones in an ambiguous context. For example, the homophones “two” and “to” are likely to be recognized as being the same if readers only convert the printed letters into sounds. However, it is highly probable that most readers can distinguish the sentences “I want two too” and “I want to too” without much difficulty when these words are presented visually. Furthermore, readers are very efficient at distinguishing the difference in meaning between these homophones in isolation as well. Thus, independent evidence supports the position that the phonologically mediated and direct visual routes to word identification exist.

In addition, other experiments show that either path can be available and effective, given the right circumstances. In a famous study, Hardyck and Pertrinovich (1970) supported the effectiveness of the dual-route hypothesis by monitoring subjects’ subvocalization behavior.

In the experiment, the researchers taught an experimental group to suppress their natural subvocalization behaviors while reading. Subvocalization is speech-related activity produced by an individual during normal silent reading. An example of a subvocalization activity is when electrical impulses cause an individual’s tongue to move during silent reading. The control group did not receive training to suppress their

subvocalization behaviors but were asked to perform another task while reading. After all subjects (experimental and control) read two essays (one easy, one difficult) the results indicated that the subvocalization suppression treatment did not affect the comprehension of the easy text. However, the experimental group that received subvocalization suppression training performed significantly worse on the difficult text than did the control group. Hardyck and Petrinovich's (1970) results provide support for the existence of both visual and phonological paths. However, more importantly, their data provide strong evidence that readers adopt different recognition strategies under different task conditions. The evidence that a particular route can be selected over another, and that neither one is *required* for lexical access, has generally been taken to mean that readers chose paths that are most efficient to them at a given moment. Therefore, given the facts that both paths are available, it makes sense to next look at the attributes of verbal memories before examining the importance of the phonological attributes of words.

### Attributes of Verbal Memory

In 1966, Brown and McNeill envisioned the mental lexicon as a kind of bank filled with key-punched data cards that have been marked with semantic and phonological attributes. Underwood's (1969) theory of verbal memory supports this idea by arguing that there is no *single* memory trace for a given verbal stimulus. Underwood proposes that there are at least eleven parameters of encoding lexical items in memory. A single lexical item is conceptualized as being constructed out of 11 attributes. The attributes identified are: temporal, spatial, frequency, modality,

orthographic, associative verbal and associative nonverbal. Underwood stresses that *multiple* attributes are likely to be coded onto a given memory and further hypothesizes that differences in the attributes for different memories are essential for differentiating memories. A profile of each attribute is provided in Table I.

TABLE I  
UNDERWOOD'S ELEVEN ATTRIBUTES OF MEMORY

ATTRIBUTE	PROFILE
Temporal	Contains first to last, time-order information.
Spatial	Contains information about the location of one item in relation to another item, without the spatial-temporal dimension.
Frequency	Contains episodic memory: a major variable for learning.
Modality	Marks a memory as <i>visual</i> or <i>auditory</i> .
Orthographic	Contains visual features of letters and words in the mental lexicon.
Associative Nonverbal	There are four types: <u>Acoustic Attributes</u> contain letter-to-sound rules; <u>Visual Attributes</u> consist of images (icons); <u>Affective Attributes</u> have emotional information; and <u>Context Attributes</u> contain information about the conditions under which a memory was established.
Associative Verbal	Two types: 1) <u>Verbal Attributes</u> : antonyms, synonyms, categorical names, etc., and 2) <u>Class Attributes</u> which contain information about the class of events involved.

### **The Importance of Orthographic, Acoustic and Associative Verbal Attributes**

Brown and McNeill's famous "tip of the tongue" experiment (1966) provides strong evidence that the long-term memory of a word has orthographic attributes. The tip of the tongue (TOT) phenomenon is a "state in which one cannot quite recall a familiar word but can recall words of similar form and meaning" (p. 325).

In this experiment, Brown and McNeill induced the TOT state in experimental subjects by reading dictionary definitions (of low-frequency words) and asking the subjects to produce the word being defined. Their interest was in the words which the experimental subjects felt they knew but could not produce right away (i.e., the word was on the tip of their tongue). Of particular interest to this section of the paper is the fact that subjects were asked to provide the following information about each target word: 1) the number of syllables, 2) the initial letter, and 3) words that had similar sounds.

The data revealed that even when subjects could not recall a word, they were quite good at identifying the number of syllables it contained and were able to guess the initial letter of a word 57% of the time. Therefore, Brown and McNeill conclude that memory encodes the orthographic attribute “initial letter.”

Additional evidence for the existence of an (orthographic) initial letter attribute comes from Marchbanks and Levin’s (1965) work with young children. These researchers found that the first letter of a word is a predominant attribute in word recognition.

It is commonly considered true that memories for written letters, letter clusters, syllables, and words carry acoustic (phonemic) attributes. This is because each letter, or string of letters that form a syllable or word in a language, has a unique sound spectrum when pronounced. Further evidence for the existence of this attribute in verbal memory comes from the fact that, for the congenitally deaf, it is not a required feature of a word.

Conrad (1964) emphasizes the importance of acoustic attributes in short-term memory; his data show a clear relationship between acoustic similarity and errors in the recall of letters and digits. Even with visual presentation of the material to be memorized, short-term recall errors were similar to hearing errors when the signal was partially masked with white-noise.

Drewnowski and Murdock (1980) extended Conrad's research to vocabulary words, testing the short-term recall of lists of words from a very large and unfamiliar vocabulary. Interestingly, in their analysis of partially recalled words, they found that the subjects' errors, though apparently not related to the meanings of the target words, tended to share such auditory features as the number of syllables, the syllabic stress pattern, the identity of the stressed vowel, and the identities of initial and terminal phonemes. The features that most often served as cues to recall were syllabic stress patterns and identities of stressed vowels. To explain their data, Drewnowski and Murdock propose that in the course of vocabulary recall, the subject first relies on orthographic information and when this is insufficient, the subject turns to the available auditory trace for information that will facilitate recall.

Drewnowski and Murdock's research supports an orthographic coding/retrieval strategy over a phonological one, and earlier research (Underwood, 1969) suggests that a semantic strategy is preferred over a phonological one as well. Underwood (1969) claims that, with adults, the greater the meaningfulness of the material being stored as a memory, the greater the dominance of the verbal associative attribute;

hence, the less prominent the role of the acoustic attribute. Underwood describes the verbal associative attribute as follows:

When words make up a task to be learned, other associated words, words which are not a part of the task, may be elicited implicitly. Such implicitly elicited words are attributes of the memory for the task...Thus, the verbal attribute might consist of an antonym, or a synonym, or a category name, although sometimes a phrase may be elicited. (568)

However, with young children and beginning language learners by implication, Underwood (1969) states that the associative verbal attributes may be subordinate to other attributes in short-term memory, particularly the acoustic and spatial ones. This is similar to Baddeley and Dale's (1966) assertion that acoustic attributes are of primary importance in short-term memory whereas verbal associative attributes are of primary importance in long-term memory.

Finally, these findings are also consistent with Henning's (1973) study of recognition errors made by college-age learners of Persian at UCLA. Namely, a significant positive correlation between semantic encoding and language proficiency was found. In other words, low-proficiency learners appeared to register vocabulary in memory more by sound than by meaning.

### **More on the Importance of Acoustic Attributes**

It is widely believed that to learn foreign vocabulary for productive use, saying words out loud brings about faster learning with better retention than does learning words silently or with writing practice (Seibert, 1927).

Another study that stresses the importance of acoustic attributes of words in short-term memory is Craik and Lockhard's (1972) experiment. Their data also

revealed that verbal items are normally encoded acoustically (phonemically) in short-term memory and semantically in long-term memory. After a word is perceived, it is either held temporarily in short-term storage and quickly forgotten, or it is transferred to long-term memory and retained. Thus, it seems quite possible that the stronger a word is acoustically encoded in short-term memory, the longer that word can be rehearsed phonemically in short-term memory, and therefore the greater the likelihood is that semantic associations will be made on a given lexical item. From this, it logically follows that the more a verbal item is encoded with acoustic attributes, the greater the chance that it will be transported to long-term memory. Thus, short-term phonemic storage of an acoustic attribute is a significant first step to long-term memory storage.

There is also substantial evidence that points to the importance of phonological properties in the organization of the mental lexicon. Much of this support comes from Brown and McNeill's (1966) *tip of the tongue* study (mentioned above). The part of Brown and McNeill's analysis that is of interest here has to do with the Acoustic Attribute.

In their experiment, Brown and McNeill induced the TOT state in experimental subjects by reading dictionary definitions (of low-frequency words) and asking the subjects to produce the word that was defined. For example, the word "sextant" was defined as

"A navigational instrument used in measuring angular distances especially the altitude of the sun, moon and stars at sea" (p. 333). After hearing definitions of the target



words, subjects were asked to give the number of syllables it had, the initial letter, and words that had similar sounds. In reply to the third question, subjects came up with words that were similar in meaning (e.g., protractor ) and words that were similar in sound (e.g., sexton and secant).

Seventy percent of the responses had phonological (sound) similarities to the target words, but only 30% of the responses had meaning similarities. Brown and McNeill (1966) state that the words that were similar in sound were phonologically related in the following ways: 1) responses often had the same number of syllables and stress patterns as the target words and 2) letter matches were frequent. Moreover, matches were most frequent in word initial position--indicating a serial position effect.

To account for the fact that the acoustic attributes of word can be partially recalled when the whole word is unavailable, Brown and McNeill (1966) describe a "faint entry" theory. In this theory, the memory for a word consists of a collection of attributes. As mentioned above, they describe the mental lexicon as a data bank that is filled with words that have been key-punched (i.e., encoded with a number of phonological and semantic attributes). To account for the partial recall of words, Brown and McNeill argue that it must be possible for some phonological attributes to be encoded less completely than others. In other words, it is possible for words to be recognized without complete storage of their phonological attributes. However, if a word is to be produced or recalled, all of the attributes must be fully available.

Since a number of studies indicate that the lexicon is accessed both phonologically and semantically and that associative verbal attributes are stronger than

acoustic ones (for normal adults), it seems wise to empirically investigate Channell's (1988) prediction that "associations which are both semantic and phonological in nature are most helpful in aiding recall of vocabulary" (p. 93). Studies of incidental (indirect) versus intentional (direct) learning may be viewed as studies in which the attributes of memory are investigated.

### **Final Thoughts on Semantic and Phonological Instruction**

Both L1 children and second-language learners seem to go through some sort of developmental stage in which the acoustic (phonological) attributes of a word are more important for encoding, storage and recall than are other attributes of memory.

Therefore, it seems logical that second language instructors should emphasize the sounds and spellings of words when initially presenting vocabulary, and to follow up with vocabulary exercises which facilitate the learning of associative meanings afterward.

## **CONCLUSION**

Reading researchers generally agree that vocabulary knowledge is an essential component of comprehension (Johnson, 1986). It is widely known that the difference between the size of native speakers' and non-native speakers' lexicons is great. ESL students need large, native-like lexicons to perform well in regular university courses; the need for expanding the size of second language learners' vocabularies is important in academic contexts.

Parry (1991) asserts that most ESL students at the university level are able to study abroad for only a short time, and they are challenged by the task of building up a

large lexicon during that time. Given the time constraints of academic ESL learners at the university level, the question is, “What methodology will best benefit the rapid expansion of vocabulary?”

Recent studies (for example, Bess, 1994) have demonstrated that the passive vocabulary acquisition methods that Krashen proposes are less time-efficient than explicit vocabulary instruction methodologies. In order to rapidly expand the size of non-native speakers’ vocabularies, Nation (1991) contends that instructors should try to diminish the difficulty of learning new words by using methods and techniques that highlight commonly recurring words and relationships between those words and other vocabulary in a text.

Metacognitive strategy training in semantic mapping, using the Internet as a tool, may be a method that instructors could employ to diminish the difficulty of learning new vocabulary, and it could rapidly expand the lexicons of academic ESL learners. Furthermore, vocabulary learning strategies that focus on the semantic and phonological aspects of words could translate into rapid lexical expansion. However, further empirical evidence is needed to support this assertion.

In the next chapter, an experimental design aimed to investigate this prediction is outlined.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **Approach**

The methodology developed for this experimental study was student-centered, based on aspects from several language learning and teaching theories. It was student-centered in that the learners were active and responsible participants in the group learning process. Thus, language learning was seen as a cooperative process where students helped each other to acquire linguistic knowledge and negotiate meaning through interaction.

Because these beliefs guided the development and application of the methods used in this study, the control and experimental groups both received instruction from teachers who used an eclectic (collaborative/communicative/integrated-skills) approach.

The reading activities used with all groups were student-centered in that the learners were active and responsible participants in the learning process. Therefore, subjects were required to be involved in individual, pair and group work in both the experimental and control conditions.

An integrated skills approach was used as a framework for designing the treatment materials because the teachers believe that language is best learned when the various skills are integrated in communicative activities. Thus, in each of the

treatments, participants were required to engage in speaking, listening, reading and writing tasks. This was thought to be an effective approach because the language learners could use a variety of skills in order to acquire and understand new vocabulary. Furthermore, the integration of all of the skills was thought to have enhanced the subjects' English language abilities as a whole.

Finally, this broad approach was also utilized in order to acknowledge a variety of student learning styles and strategies.

### **Computer Controls**

At most university ESL programs in the United States, a primary curricular goal is to teach students the academic skills they will need in order to function in regular academic content courses. Within a growing number of regular academic content courses, students are required to use the Internet as a tool for conducting research and completing assignments.

As a result, an increasing number of faculty in intensive English language programs are integrating computer-assisted instructional techniques into their course curricula.

By using the Internet, students come into contact with many different types of information and must learn the techniques involved in gaining access to that information. The subjects in this study were taught academic reading skills and vocabulary learning strategies through the Internet while learning about the Internet simultaneously.

Because the Internet was the source for all of the reading materials, strict procedures were implemented to prevent limited computer knowledge from interfering with the experimental groups' results. First of all, the researcher ensured that there was always at least one proficient Internet user at each computer terminal during the administration of the (three) experimental treatments. This was not difficult because a large proportion of the experimental population were skilled internet users (approximately three out of four participants claimed to be proficient, as determined by a show of hands).

As a second control, the subjects in the experimental group were taught to use the Internet and NewsDEN (an Internet site that displays authentic, international news articles) prior to receiving the experimental treatment (semantic mapping).

As a third control, to ensure that all subjects had access to the treatment materials, printed copies of the reading materials (newspaper articles from NewsDEN) were given to both the experimental and the control groups prior to the reading activities. Additionally, subjects in the experimental group (the group that used computers) only had to glance at the large (17 inch) screens to read from. Therefore, individuals in this group did not have to be able to use computers at all to participate in this study.

As a result of these procedures, the variable of limited computer knowledge was controlled for.

## **Setting**

The setting for the semantic mapping treatment was a computer lab located at the university where this study took place. This computer lab was chosen because it is the only lab specifically designed to facilitate collaborative learning methods with computer-assisted instruction (CAI). Each computer terminal in this lab has been ergonomically designed so that three individuals may use one computer screen. Twelve Apple PowerMacs were used to present the NewsDEN text via the Internet web browser Netscape 3.01. Thus, the two intact classes (N=34) that comprised the Experimental Group could easily be accommodated in this setting.

## **OVERVIEW**

Forty-six English as a Second Language students participated in a study in which the control group (N=12) were taught lexical items through reading and reading writing exercises using the Survey, Question, Read, Review, Recite Method (see SQ3R Method), while the experimental group (N=34) were taught these same words through reading and writing exercises and the independent variable, semantic mapping (see Semantic Mapping Method).

The vocabulary lessons, semantic mapping treatment procedures, SQ3R materials and NewsDEN vocabulary comprehension tests were designed by the researcher. General principles and specific advice from several sources informed and guided the process of selecting words and developing materials and tests. These included a number of articles dealing with semantic mapping procedures (Carrell et al, 1989; Heimlich & Pittleman, 1986; Johnson & Pearson, 1984; Schwab & Coble,

1985), as well as sources of guidance for the construction of SQ3R treatment materials and tests (Call, 1991; Cohen, 1994; Henning, 1987; Madsen, 1983).

Vocabulary items on the pre- and post-tests were identical for both the control and experimental groups. In order to determine the effectiveness of semantic mapping instruction in acquiring new vocabulary, a vocabulary pre-test was given prior to each treatment to determine whether subjects had prior word knowledge. To test the subjects' short-term memory, modified versions of these vocabulary pre-tests were given as post-tests two weeks after each treatment (see Appendix C, D and E). In order to determine the effectiveness of semantic mapping instruction in long-term memory, a modified version of each of the NewsDEN vocabulary post-tests was administered again at end of the term as the Final NewsDEN Post-Test (see Appendix F).

During Fall Quarter 1996, a pilot of the semantic mapping procedures was conducted in an Upper Intermediate (Level Three) Reading class (n=16). The vocabulary learning activities used to teach students to guess the meanings of words from contextual clues were piloted at this time as well. Based on pilot study observations, and after consulting with veteran ESL reading instructors, changes were made to the original procedural design for semantic mapping.

First of all, the semantic mapping procedure was modified to include explicit phonological instruction on each of the lexical items in the vocabulary pre-tests. The changes to the original design are as follows: 1) after administering the pre-test, the researcher wrote each vocabulary pre-test word on a white board for the subjects to read; 2) the subjects were asked how many syllables each word or phrase consisted of;



3) the researcher pronounced each word and provided information about word stress and intonation; and 4) the subjects were asked to determine what part of speech each word was.

The results of the pilot test also pointed out the need for subjects in the experimental groups to work with partners. Thus, as mentioned above, in order to control for the possibility that limited knowledge of computers and the Internet could inhibit reading and vocabulary learning, it was determined that the experimental group should be put into groups of three. Furthermore, it was also deemed necessary that each of these small groups share one computer terminal. As a final precaution, the researcher made sure there was at least one person at each terminal proficient at using the Internet during the experiment. Because of these procedural changes, the pilot study test results were not included in the study.

## **SUBJECTS**

### **Description of the Intensive English Language Program**

The Intensive English Language Program (IELP), at the U.S. university where this study took place, is designed to improve the students' academic language skills for entrance into regular academic classes. The IELP takes a skills-based approach and offers classes in speaking/listening, grammar, reading and writing at five levels. The students are placed in classes according to their Test of English as a Foreign Language (TOEFL), Test of Written English (TWE) and Michigan Test of English Language Proficiency scores by the administration. Additionally, a diagnostic placement test is given on the first day of class by IELP instructors.

Full-time students, individuals registered for twelve credit hours, are usually in class four to five hours per day. Average class size in the program is fifteen students.

Along with teaching students academic English skills, time is also devoted to American culture, cultural/academic orientation and technical English. Additionally, students are expected to spend time (up to 10 hours per week) in the language and computer laboratories available on campus in order to reinforce learning in the classroom.

### **IELP Student Population**

The student population consists of individuals primarily between 19 -25 years of age. These are people who have graduated from high school, and many have at least some university level education. They expect to enroll in a university degree program either at the university where this study took place or at another four-year university in an English-speaking country. Furthermore, the student population is non-homogenous: they come from a variety of cultural and ethnic backgrounds and have different first language backgrounds.

### **Description of Subjects**

The subjects used for this study were intact groups of learners enrolled in Upper-Intermediate Reading courses in the Intensive English Language Program, a non-random sample population (see Appendix G).

### **Length/Contact Hours**

The length of each course was 10 weeks and consisted of 3.15 contact hours per week. Classes met three times per week.

### **Sampling Procedure**

Individuals in the experimental and control groups were placed in Upper-Intermediate Reading based upon English proficiency scores measured by the Michigan Test of English Language Proficiency as 65-74 or the Test of English as a Foreign Language (TOEFL) as 450-489, and with the instructors' approval based on a reading diagnostic test administered on the first day of class. Thus, because of regular placement procedures, subjects could not be randomly assigned to groups.

Since the focus of this study was vocabulary learning, the most important factor in determining the two groups' comparability was their vocabulary levels. Subjects were given Nation's (1990) "A Vocabulary Levels Test" on the first day of class (see Appendix H). To determine whether there was a significant difference between the two groups' vocabulary levels, t-tests were performed and rank scores were compared between groups. The t-tests showed that the average vocabulary levels of the experimental group and of the control group were comparable; there was no statistically significant difference between these groups. See Chapter Four for the results of the vocabulary level comparisons.

### **Upper -Intermediate Reading Exit Criteria**

The course curricula used for both the experimental and control groups were designed to prepare students to meet the Exit Criteria for Upper-Intermediate Reading courses in the Intensive English Language Program. The IELP Exit Criteria for Upper-Intermediate Reading are provided below.

Upon successful completion of this course, students are expected to have been able to:

- Score an equivalent of 75 on the Michigan Test and/or 490 on the reading and vocabulary sections of the TOEFL.
- Read an intermediate-level text at a speed of 200 words per minute at 80% comprehension.
- Demonstrate previewing, skimming, and scanning techniques; distinguish general from specific ideas; identify the audience, purpose and method of organization of a text; make inferences; paraphrase and summarize texts; draw upon their own experiences and knowledge to interpret readings.
- Expand their vocabulary by 200 words and increase vocabulary learning skills.

### **Skills Taught in Upper Intermediate Reading**

The course syllabi for the experimental and control groups emphasized the top-down reading skills (inferencing, summarizing, paraphrasing, identifying patterns of textual organization, etc) that ESL students need to become proficient at in order to function effectively in regular university-level academic classes. However, each course also had activities which focused on improving bottom-up processing as well.

Bottom-up processing activities encourage ESL learners to increase their eye movement so they do not fixate on individual words. Therefore, prior to in-class reading tasks, several minutes each day were spent on bottom-up processing activities such as rapid word and phrase recognition exercises and skimming and scanning exercises. These activities were not performed, however, on the days that subjects read NewsDEN articles and/or took vocabulary tests.

The skills taught to the experimental and control groups were identical. Furthermore, they were taught at the same time during the ten-week quarter. The scope and sequence of the skills and activities are outlined in Table II.

### AN OVERVIEW OF THE EXPERIMENTAL DESIGN AND PROCEDURES

This study originally was designed for three groups of subjects, plus a fourth control group. During Winter Quarter 1997, a regular instructor from the Intensive English Language Program and the researcher (a graduate teaching assistant in the IELP) combined two Level Three Reading classes and team-taught the subjects who received the experimental treatment (Group 1 and Group 2).

Spring Quarter 1997, the researcher administered the SQ3R treatment and tests to the control group (Group 4), and a different instructor from the IELP gave the semantic mapping treatment to a third experimental group (Group 3). Unfortunately, due to intervening variables, the data for Group Three could not be used (see Table III).

TABLE III  
ORDER AND TYPE OF TREATMENT FOR EACH GROUP  
(ORIGINAL DESIGN, N=58)

<u>WINTER 1997</u>	<u>WINTER 1997</u>	<u>SPRING 1997</u>	<u>SPRING 1997</u>
GROUP 1	GROUP 2	*GROUP 3	GROUP 4
(n = 17)	(n = 17)	(n = 11)	(n = 12)
Semantic Mapping	Semantic Mapping	Semantic Mapping	SQ3R
Treatment	Treatment	Treatment	Control

\*As mentioned above, the data from Group 3 were not used for this study (see Limitations).

TABLE II: BREAKDOWN OF SKILLS AND ACTIVITIES BY WEEK

SKILL:	1	2	3	4	5	6	7	8	9	10
A. Using the Internet and NewsDen ( <i>Experimental Group</i> )	X	X	X		X		X			
B. Semantic mapping treatment ( <i>Experimental Group</i> )			X		X		X			
C. SQ3R treatment ( <i>Control Group</i> )			X		X		X			
D. Rapid word & phrase recognition		X	X	*	*	*	*	*	*	
E. Previewing		X	X	X	X	X	*	*	*	
F. Skimming		X	X	X	X	X	*	*	*	
G. Scanning		X	*	X	*	X	*	*		
H. Clustering		X	X							
I. Finding topic sentences		X	X	*	*	*	*	*	*	
J. Timed readings		X	X	X	X	X	X	X	X	
K. Making predictions		X	X	*	*	*	*	*	*	
L. Sentence comprehension					X	X				
M. Identifying the point of view						X	*	*	*	
N. Distinguishing facts from opinions							X	X	X	
O. Guessing vocabulary from contextual clues	X	X	*	X	*	X	*	X	X	
P. Paraphrasing			X		X	*	X	X	*	
Q. Making inferences						X	X	X	X	
R. Identifying audience & purpose						X	*			
S. Identifying elements of the plot							X	X	*	
T. Identifying main ideas in longer passages				*	*	*	*	*	X	
U. Summarizing			X	*	X	*	X	*	X	

Boxes with an “X” indicate that a significant amount of class time was spent on these activities and skills. The activities and skills with asterisks (\*) were practiced as well but given less focused time, both for the control and experimental groups.

The researcher administered all treatment and testing materials to Groups One and Two (the Experimental Group) as well as to Group 4 (the Control Group). The modification to the original experimental design is shown in Table IV.

TABLE IV  
ORDER AND TYPE OF TREATMENT FOR EACH GROUP  
(MODIFIED DESIGN, N=46)

<u>WINTER 1997</u>	<u>WINTER 1997</u>	<u>SPRING 1997</u>
EXPERIMENTAL	EXPERIMENTAL	CONTROL
GROUP 1	GROUP 2	GROUP
(n = 17)	(n = 17)	(n = 12)
<u>Semantic Mapping</u>	<u>Semantic Mapping</u>	<u>SQ3R</u>
Treatment Method	Treatment Method	Control Method

Since the subjects in experimental groups one and two were given the semantic mapping treatments by the principle researcher, they will hereinafter collectively be referred to as *the SM Group* or as *the Experimental Group*. In other words, Group 1 and Group 2 will henceforth be considered as one rather than two separate experimental groups. Likewise, the Control Group will be referred to as the *SQ3R Group*.

This design allowed for a clean comparison of the effects of the independent variable on the dependent variable. Recall from Chapter One that the independent

variable in this experiment was the explicit instruction of vocabulary using semantic mapping activities, and the dependent variable was lexical growth.

To determine whether subjects in the SM Group acquired significantly more words than those in the SQ3R Group, the dependent variable was measured through a number of vocabulary tests. Thus, Nation's, "A Vocabulary Levels Test" (1990) and a series of NewsDEN vocabulary comprehension tests were administered to subjects in both groups.

Prior to each of the treatments, a NewsDEN vocabulary comprehension pre-test was given. Two weeks after receiving treatments, subjects took the corresponding NewsDEN vocabulary comprehension post-test (see Measures Section).

The NewsDEN vocabulary pre- and post-tests were identical in content. The only difference was that the post-tests differed in format from the pre-tests. In other words, the wording of each question remained the same, but the numbering (order) of the questions changed. For example, number one on the NewsDEN vocabulary pre-test was changed to number three on the post-test, and so on.

To determine which lexical items would be on the NewsDEN pre- and post-tests, the experimental group was given a vocabulary checklist on the first day of class to determine which lexical items they thought they knew. The vocabulary items were taken from the NewsDEN stories, i.e., the reading materials (see Measures Section: NewsDEN Vocabulary Checklist).

Tables V, VI and VII show the order and type of treatment given, as well as the title of the NewsDEN article used.



TABLE V

## TREATMENT ONE (N= 46)

<u>WINTER 1997</u>	<u>SPRING 1997</u>
SM GROUP (n = 34)	CONTROL GROUP (n = 12)
Vocabulary Checklist	
+	
Nation's (1990) vocabulary levels pre-test	Nation's (1990) vocabulary levels pre-test
+	+
NewsDEN vocabulary pre-test 1	NewsDEN vocabulary pre-test 1
<u>Treatment one</u> semantic mapping method	<u>Treatment one</u> SQ3R method
+	+
<u>NewsDEN article</u> <i>Two East Van youths open gym coffee bar with help from federal government</i>	<u>NewsDEN article</u> <i>Two East Van youths open gym coffee bar with help from federal government</i>
+	+
<u>post-test 1</u> NewsDEN vocabulary	<u>post-test 1</u> NewsDEN vocabulary

TABLE VI: TREATMENT TWO (N= 46)

<u>WINTER 1997</u>	<u>SPRING 1997</u>
<u>SM GROUP</u> <u>(n = 34)</u>	<u>CONTROL GROUP</u> <u>(n = 12)</u>
pre-test 2	pre-test 2
<u>treatment two</u> semantic mapping method + <u>NewsDEN article</u> <i>Disabled girl's school fight goes to Supreme Court</i> + post-test 2 NewsDEN vocabulary	<u>treatment two</u> SQ3R method + <u>NewsDEN article</u> <i>Disabled girl's school fight goes to Supreme Court</i> + post-test 2 NewsDEN vocabulary

TABLE VII: TREATMENT THREE (N=46)

<u>WINTER 1997</u>	<u>SPRING 1997</u>
<u>SM GROUP</u> <u>(n = 34)</u>	<u>CONTROL GROUP</u> <u>(n = 12)</u>
pre-test 3	pre-test 3
<u>Treatment three</u> semantic mapping + <u>NewsDEN article</u> <i>Uganda sheds horrible past, with women leading the way</i>	<u>Treatment three</u> SQ3R + <u>NewsDEN article</u> <i>Uganda sheds horrible past, with women leading the way</i>

Three weeks after receiving the third treatment, during the regularly scheduled final exam times, Nation's vocabulary levels test was administered as a post-test to determine whether the experimental groups mean rank vocabulary scores had significantly increased over the mean rank scores of the control group.

In addition, the Final NewsDEN Post-Test which contained all of the lexical items from the three NewsDEN vocabulary comprehension tests was given at this time as well (see Table VIII). The results for both of these tests are described in detail in Chapter Four.

TABLE VIII  
VOCABULARY LEVELS POST-TEST AND FINAL NEWSDEN POST-TEST  
(N=46)

<u>WINTER 1997</u>	<u>SPRING 1997</u>
SM GROUP (n = 34)	CONTROL GROUP (n = 12)
vocabulary levels post-test (Nation) + Final NewsDEN Post-Test	vocabulary levels post-test (Nation) + Final NewsDEN Post-Test

### METHODS USED FOR COLLECTING DATA

The results of Nation's vocabulary levels pre-test were used to determine whether the groups were comparable. Subjects in the experimental group were additionally given the NewsDEN Vocabulary Checklist on the first day of class (see

Measures Section). The control group was not given this vocabulary checklist. Thus, it was the words that the experimental subjects said they did not know which became the lexical items on the NewsDEN vocabulary comprehension pre- and post-tests (see Measures Section).

During weeks three, five and seven, the experimental group received semantic mapping treatments and the control group received instruction (with the same reading materials) using the SQ3R method. Prior to reading the NewsDEN articles, each group took a NewsDEN vocabulary pre-test. Subjects were given ten minutes to complete each pre-test.

To score the pre-tests, subjects in all groups were asked to trade pre-tests with partners and to place a check mark beside each incorrect vocabulary word. Scoring took three to five minutes. The researcher collected the pre-tests immediately after they were corrected and checked each pre-test to ensure that they were scored correctly.

After taking the pre-test, the experimental group received phonological and grammatical information about each word from the researcher. Furthermore, they were asked to state which type of contextual clue could be used to guess each lexical item correctly. Ten minutes was allotted for this phase.

The control group did not receive the phonological and grammatical information about each word but *was* asked to identify the contextual clues. Ten minutes was allotted for this phase. For each of the NewsDEN pre- and post-test questions, a contextual clue could be used to guess the lexical item correctly.

Two weeks after taking each of the NewsDEN vocabulary pre-tests, the experimental and control groups took the corresponding NewsDEN vocabulary post-test. At the end of the quarter, one week after the administration of NewsDEN Post-Test Three, subjects took Nation's (1990) vocabulary levels test as a post-test. Also at this time, both groups took the Final NewsDEN Post-Test (see Measures Section). This test contained the same lexical items as the NewsDEN pre- and post-tests but it was a vocabulary/definition matching test modeled directly after Nation's vocabulary levels test. Table IX provides a detailed description of the procedures followed for this experiment.

TABLE IX: WEEKLY PROCEDURES

<u>Week One:</u>	Administered the NewsDEN vocabulary checklist to experimental group. Afterwards, chose thirty unknown words from the checklist and developed vocabulary pre- and post-tests based on these words. Administered Nation's (1990) "A Vocabulary Levels Test" to both groups as a pre-test.
<u>Week Three:</u>	Administered NewsDEN Vocabulary Pre-Test One. Gave semantic mapping treatment number one to the experimental group and SQ3R treatment number one to the control group.
<u>Week Five:</u>	Administered NewsDEN Vocabulary Post-Test One to both groups on Monday. On Friday, administered NewsDEN Vocabulary Pre-Test Two; gave semantic mapping treatment number two to the experimental group and SQ3R treatment number two to the control group.
<u>Week Seven:</u>	Administered NewsDEN Vocabulary Post-Test Two to both groups on Monday. On Friday, administered NewsDEN Vocabulary Pre-Test Three; gave semantic mapping treatment number three to the experimental group and SQ3R treatment number three to the control group.
<u>Week Nine:</u>	Administered NewsDEN Vocabulary Post-Test Three to both groups.
<u>Week Ten:</u>	Administered NewsDEN Vocabulary Post, Post-Test to both groups. Administered Nation's vocabulary levels test to both groups as a post-test.

### The Semantic Mapping Method

After each NewsDEN vocabulary pre-test was administered and scored, the researcher asked the experimental group two core questions to activate schemata. These core questions, and the corresponding NewsDEN article titles, are shown in Table X.

TABLE X  
CORE QUESTIONS

TITLE OF NEWSDEN ARTICLE	CORE QUESTIONS
<i>Two East Van youths open gym coffee bar with help from federal government</i>	Is it easy for immigrants to start businesses? Why or why not?
<i>Disabled girl's school fight goes to Supreme Court</i>	Do you believe a school has the right to deny education to anyone? Why or why not?
<i>Uganda sheds horrible past, with women leading the way</i>	What do you know about Uganda? What do you know about the role of women in Uganda?

As the subjects responded to the core questions, the researcher wrote key words from the student responses on the whiteboard. While the researcher was writing the key vocabulary on the whiteboard, the other instructor led a group discussion of the core question and clarified the meaning of unknown words.

Next, the subjects were told to look at an overhead projector display of the first page of the NewsDEN article that corresponded to the core question. Each overhead contained the title of the story and a picture representative of the story's central idea.

Subjects were asked to read the title and to look at the picture next to the title. Then the subjects were asked to brainstorm and to predict what each story would be about. The vocabulary from this brainstorming session was mapped onto the whiteboard and added to the pre-existing lexical items and phrases from the core question phase. At this time, superordinate and subordinate categories were created and links were drawn between vocabulary items (using directional arrows).

Next, the subjects were handed a paper copy of the NewsDEN article and given the choice of reading the article from the computer terminal or via the printed copy. Subjects were given ten minutes to read each article. While the students were reading the NewsDEN article, a skeleton map was drawn on the whiteboard.

After the reading phase, subjects were given a paper copy of the "Story-At-A-Glance" map. These skeleton maps contained the main idea and supporting details of the NewsDEN story.

The Story-At-A-Glance maps are visually organized to represent the textual organization pattern of each news article. For example, since the NewsDEN story "Two East Van youths open gym coffee bar with help from federal government" has a time-order (sequential) pattern, the central idea for the article is located at the top-center of the page and lines are drawn to boxes below this which contain the supporting details of the story (see Appendix B).

Upon receipt of the Story-At-A-Glance maps, subjects were instructed to read the information presented in each dialogue box. While students were reading the Story-At-A-Glance maps, they were given a copy of the "More Info" section. Each

“More Info” section contained definitions for the vocabulary from each NewsDEN article. Some of these were used as the basis for the NewsDEN vocabulary pre- and post-tests definitions.

Once all of the subjects had received the More Info definitions, they were asked to map the vocabulary from the whiteboard onto their Story-At-A-Glance skeleton maps (using either blue or black ink). This was done as a whole class activity. At this time, the skeleton map, which was drawn on the whiteboard during the reading phase, was used as a model of how to connect the vocabulary items to the details on the Story-At-A-Glance skeleton maps.

After the subjects finished mapping these pre-reading vocabulary items, they were asked to map the vocabulary items from the More Info section onto their Story-At-A-Glance skeletons. For this phase, subjects were first given time to work individually and later given time to work with partners to create the semantic maps. Students were assigned partners so that individuals who shared the same first language backgrounds were not together. This was done to ensure that the discussion would be in English.

For the words that the subjects thought they already knew (from the More Info section) they were again told to use either blue or black ink. For new vocabulary items, the subjects were told to use pencil or a different color of ink (e.g., red). This was done so that the new vocabulary items could quickly and easily be referred to when the subjects used their semantic maps to study these lexical items.



While creating their own unique maps, subjects were encouraged to ask each other and the researchers about concepts in the news articles, about difficult or new vocabulary items and about the mapping procedure.

At the end of each mapping session, subjects were asked to compare and discuss similarities and differences between their map and the semantic map of a member of a different group. Finally, they were told to take their semantic maps home and to study them for the upcoming NewsDEN vocabulary post-test. Table XI outlines the Semantic Mapping Procedure and shows the time spent on each phase.

TABLE XI  
SEMANTIC MAPPING PROCEDURE

ACTIVITY	TIME SPENT
1. Presentation and discussion of core question	5 minutes
2. Preview activity: look at the title of the NewsDEN article and picture; then discuss and map key words and phrases	5 minutes
3. Subjects read the article	10 minutes
4. Subjects map vocabulary from the whiteboard onto the At-A-Glance skeleton maps	5 minutes
5. Subjects map vocabulary from the More Info Section individually	5 minutes
6. Subjects map vocabulary from the More Info section with their groups	5 minutes
7. Subjects compare their semantic map with the map of a student from another group. They make revisions to maps as appropriate.	5 minutes

### The Survey/Question/Read/Recite/Review (SQ3R) Method

The SQ3R Method entailed five phases: 1) surveying the text, 2) questioning the text to gain a purpose for reading, 3) reading the text, 4) reciting (paraphrasing) , and 5) reviewing (summarizing the main ideas). The procedures used with the control group are described below (see Table XII for an outline of the SQ3R Procedures).

After each NewsDEN vocabulary pre-test was administered and scored, the researcher gave the subjects a printed copy of a NewsDEN story. Then, in the first part of the Survey Phase, the students were asked to read the title of the story in order to activate prior knowledge (schemata). Second, they were told to briefly look at the picture next to the title and to notice any bolded, italicized and underlined words. Thirdly, the subjects were told to read the introductory and concluding paragraphs (usually the first and last two paragraphs). Finally, the subjects were given a SQ3R handout (see Appendix I) and told to write what they already knew about the article prior to reading.

Next, in the Question Phase, subjects were asked to turn the title of the NewsDEN story into a question in order to gain a purpose for reading; they were told to write their Purpose Question in the appropriate space on the SQ3R handout. Subjects turned the title “Two East Van youths open gym coffee bar with help from federal government” into questions such as the following: 1) “Why did two Vancouver youths open a gym coffee bar?” and 2) “How did two young people get the government to help them open a business?”

After the subjects had turned the title into a Purpose Question, each student was asked to share what she or he had written with the class orally; comprehension questions were allowed during this part of the lesson. In other words, if one student had difficulty understanding what another was trying to say, then that student was encouraged to ask a clarifying question.

In the Reading Phase, subjects were given ten minutes to read each article. Prior to reading each NewsDEN story, the subjects were told to look for the answers to the purpose questions that were just discussed. After reading, subjects were told to discuss their findings with a partner. Students were assigned partners so that individuals who shared the same first language backgrounds were not together. This was done to ensure that the discussion would be in English.

Next, in the Recite Phase, the subjects were told to paraphrase the article in two to three paragraphs. Then, they were told to discuss what they had written with their partner.

In the last part of the lesson, the Review Phase, students were asked to summarize the main ideas of the article in their own words in order to lock-in information gained; they were told to write their summary under the heading “What I Now Know” on the SQ3R handout (see Appendix I).

TABLE XII  
SQ3R PROCEDURE

ACTIVITY	TIME SPENT
1. <i>Survey Phase</i> : Looking at the title of the NewsDEN article and picture; noticing bolded, italicized and underlined words; skimming the introductory and concluding paragraphs	3 minutes
2. <i>Survey Phase</i> : Writing "What I Already Know"	3 minutes
3. <i>Question Phase</i> : Turning the title of the story into a Purpose Question; writing the purpose question on the SQ3R handout	2 minutes
4. <i>Question Phase</i> : Sharing the purpose questions with the class	7 minutes
5. <i>Reading Phase</i> : Reading	10 minutes
6. <i>Reading Phase</i> : Discussing the answers to the purpose questions	5 minutes
7. <i>Recitation Phase</i> : Paraphrasing the story alone	5 minutes
8. <i>Recitation Phase</i> : Comparing the paraphrase with a partner	3 minutes
9. <i>Review Phase</i> : Summarizing in their own words	2 minutes

### SELECTION OF READING MATERIALS

All reading materials were obtained from the World Wide Web site "NewsDEN" (<http://www.actden.com>). These materials consisted of authentic, current events news articles which had themes that were similar to those being discussed in the students' regular textbooks (Reactions, 1993 and Building

Understanding, 1995). These themes are as follows: Second Language Acquisition, Education, and Stereotypes.

Thus the NewsDEN article, “Two East Van youths open gym coffee bar with help from the federal government” fit thematically into the Second Language Acquisition module because the subjects of this article were Canadian immigrants whose first language was not English; the article “Disabled girl’s school fight goes to Supreme Court” fit thematically into the Education module, and NewsDEN story, “Uganda sheds horrible past, with women leading the way” fit thematically into the Stereotypes module.

Two additional criteria were used for choosing the reading materials. First of all, the NewsDEN articles had to be nearly equal in length to ensure that subjects could read each story in the allotted reading time (ten minutes). Secondly, each article had to be at a level of difficulty that matched the ability of the Level Three Reading subjects.

To ensure that all of the NewsDEN stories were nearly equal in length, and contained less than one thousand words, a word count was performed on each article (see Table XIII).

TABLE XIII  
NUMBER OF WORDS IN EACH NEWSDEN STORY

Title of NewsDEN Article	Number of Words
<i>Two East Van youths open gym coffee bar with help from federal government</i>	655
<i>Disabled girl's school fight goes to Supreme Court</i>	629
<i>Uganda sheds horrible past, with women leading the way</i>	763

The exit criteria for Level Three Reading requires a reading rate of 200 words per minute at eighty percent accuracy as determined by multiple choice, timed reading comprehension tests. Thus, the articles above were chosen partially because a reading rate of 80 words per minute was deemed sufficient to complete the story in the allotted time for both groups and partly because they fit thematically into the regular class readings.

To ensure that each story was at a level of difficulty that matched the ability of the Level Three Reading subjects, NewsDEN's Teacher's Guide was consulted and it was determined that the NewsDEN articles are designed for students enrolled in Grades 6 through 12 ([http://www.actden.com/News\\_Den/t-guide.htm#rat](http://www.actden.com/News_Den/t-guide.htm#rat)). Since all subjects in Level Three Reading during Fall Quarter 1996 had no difficulty reading these texts (as judged by informal interviews and multiple choice reading comprehension tests), it was determined that the reading level matched the ability level of the subjects.

## MEASURES

### A Vocabulary Levels Test (Nation, 1990)

The scores from the first administration of this test were used to determine whether the experimental and control groups were comparable prior to the treatment. The scores from the post-test administration were used to determine whether there was a correlation between the experimental treatment and broader lexical acquisition.

This measure tests receptive knowledge of words at five levels: the 2000, 3000, 5000, university and 10,000 word levels. The words in the test were chosen from Thorndike and Lorge's The Teacher's Word Book of 30,000 Words and checked against two other well-known word lists: Wests' General Service List for the 2000 word level and Kucera and Francis' Computational Analysis of Present-Day American English for other levels. Eighteen words are matched with definitions at each level, but actually thirty-six words are tested because there are eighteen distractors to reduce the chances of guessing correctly.

To ensure validity, items put together in each section are in no way related in meaning so that test takers have no confusion over which word to choose if they know the meaning. In addition, the definitions are from a higher-frequency level than the tested words to ensure that the instrument is testing the words and not the understanding of the definitions.

### NewsDEN Vocabulary Checklist

Subjects in the experimental group (SM Group) were given a checklist of 165 words taken from five newspaper articles in NewsDEN's archive section

(<http://www.actden.com>). Each of the five articles had 30-40 vocabulary items represented on the Vocabulary Checklist. Lexical items from two of the articles, a total of 75 words, served as distractors to prevent subjects from remembering which items were on the checklist.

Subjects were asked to place a check mark beside every word they thought they knew in any way (see Appendix J). The lexical items that no one said they knew were used in the experimental vocabulary lessons. Therefore, the researcher chose a total of thirty words from the checklist to use in the experimental group's vocabulary treatments. Ten vocabulary items were used for each lesson; these were the lexical items used to measure comprehension and recall on the NewsDEN pre- and post-tests.

Thus, it was assumed that if the experimental and control groups were comparable, then the lexical items the experimental group said that they did not know (on the checklist) would be comparable to words that the control group did not know.

### **NewsDEN Comprehension Pre- and Post-Tests**

The NewsDEN comprehension pre-tests were vocabulary/definition matching tests. They were designed to measure subjects' ability to recognize vocabulary words and their definitions in written form. The items chosen for inclusion on these pre-tests were words from the Vocabulary Checklist that subjects in the experimental group said that they did not know.

Each test contained twelve lexical items and ten definitions. The two extra words served as distractors to reduce the possibility of guessing. The distractors were words from the Vocabulary Checklist that subjects in the experimental group thought



they already knew. To ensure understanding, the definitions provided in the vocabulary definition section of each NewsDEN article were adapted. Thus, the definitions were contextually related to the meaning of each NewsDEN article.

The definitions and vocabulary items were rearranged after being administered as pre-tests so that subjects did not use their memory of the pre-test to help them in the post-test.

### **Final NewsDEN Post-Test**

The Final NewsDEN Post-Test was also designed to measure subjects' ability to recognize vocabulary words and their definitions in written form. It was a vocabulary/definition matching test modeled directly after Nation's (1990) "A Vocabulary Levels Test." In each line of the test, there were six vocabulary words which had to be matched with three definitions. The three extra words served as distractors to eliminate the possibility of guessing. To ensure understanding, the definitions provided in the vocabulary definition section of each NewsDEN article were adapted. Thus, the definitions were contextually related to the meaning of each NewsDEN article.

### **Data Analysis**

The independent variables in this experiment were 1) the explicit vocabulary instruction through the semantic mapping strategy, and 2) explicit phonological awareness training. The dependent variable was lexical growth. Lexical growth was measured in two different ways. First, it was measured by the differences in pre- and post-test scores on Nation's (1990) Vocabulary Levels Test. Secondly, it was

measured by the differences in the pre- and post-test scores on the NewsDEN comprehension tests.

### **LIMITATIONS**

As previously mentioned, it was deemed necessary for this study to be limited. This is partially because the IELP instructor who administered the treatment materials to Experimental Group Three during Spring Quarter 1997 did not have previous experience using NewsDEN in an actual classroom setting. The instructor was proficient in computer-assisted teaching techniques; however, a number of intervening factors directly related to the use of NewsDEN interfered with the administration of the semantic mapping treatment.

In other words, this instructor did not lack skills in using computers or navigating the Internet, but was not offered a training session in using semantic mapping activities with NewsDEN.

Furthermore, there were potentially confounding factors related to the administration of the vocabulary tests. First of all, the researcher did not provide the instructor sufficient information regarding the testing procedures and time allotted to take the tests. Secondly, a large number of subjects were absent on the days that the treatments were given and on days that post-tests were administered. Therefore, the data from these subjects could not be used.

## **CHAPTER FOUR**

### **RESULTS**

In this chapter the results of the various measures used during the research are reported: those from the Nation's levels tests, and those from the NewsDen comprehension tests. Results will be described in terms of the research questions and hypotheses.

#### **Operationalization of the General Research Question**

In Chapter One, the following general research question was posed: "Will explicit vocabulary instruction given by a semantic mapping approach result in a greater vocabulary acquisition than a SQ3R method which contains no explicit vocabulary instruction?"

To answer this question, vocabulary acquisition was operationalized in two different ways. First, it was measured by the differences in pre- and post-test scores on Nation's (1990) Vocabulary Levels Test. Secondly, it was measured by the differences in the pre- and post-test scores on the NewsDEN comprehension tests.

#### **Research Questions and Hypotheses for Nation's Vocabulary Levels Tests**

##### **Research Question 1**

Is there a significant difference in the rank level score on Nation's Vocabulary Levels Pre-test for the Semantic Mapping Group versus the SQ3R Group?

### Hypothesis 1A

There will be no significant difference in the rank level pre-test score for the Semantic Mapping Group versus the SQ3R Group.

### Hypothesis 1B

There will be a significant difference in the rank level pre-test score for the Semantic Mapping Group versus the SQ3R Group.

### Research Question 2

After receiving the treatment, will there be a difference between the Semantic Mapping and SQ3R Groups in the percentage of individuals who increase their Nation's vocabulary levels post-test scores?

### Hypothesis 2A

There will be no difference between the Semantic Mapping and SQ3R Groups in the percentage of individuals who increase their Nation's levels post-test scores.

### Hypothesis 2B

There will be a difference between the Semantic Mapping and SQ3R Groups in the percentage of individuals who increase their Nation's levels post-test scores.

### Results for Research Question One

In order to test the null hypothesis (Hypothesis 1A), "There will be no significant difference in the rank level score for the Semantic Mapping Group versus the SQ3R Group," a Mann-Whitney U-test was performed using SPSS 7.5 for Windows. The results of the test are presented in Tables XIV and XV.

The following is a summary of the procedures used for the Mann-Whitney. Results from both groups were pooled and all individuals were ranked according to their scores on Nation's Pre-Test. The sum of ranks for both groups is presented in Table XIV along with the mean ranks for each group.

TABLE XIV

## MANN-WHITNEY U-TEST RANKINGS FOR NATION'S PRE-TEST

Experimental Vs Control Group	N	Mean Rank	Sum of Ranks
SM Group	34	23.06	784.00
SQ3R	12	24.75	297.00
Total	46		

The Mann-Whitney focuses on the "U" statistic. The U statistic indicates the frequency of times in which individuals in the SQ3R Group were ranked higher than the individuals in the SM Group. The total number of times that this would be possible would be four hundred and eight (408). If the null hypothesis were true, the U statistic would be two hundred and four (204). That is, if Hypothesis 1A were true, it would be expected that the number of times individuals in the SQ3R Group were ranked higher than individuals in the SM Group would be equal to the number of times that the members in the SQ3R Group were ranked lower than the SM Group.

The U statistic in Table XV was one hundred eighty nine (189). The significance statistic indicates the probability of getting an actual score of 189 when the true score was actually 204. The decision criteria that was set for rejecting the null hypothesis was  $p < .05$ . Since the significance level was .664, the null hypothesis was

accepted. There was no significant difference between the two groups on the Nation's Vocabulary Levels Pre-Test.

TABLE XV

## RESULTS OF MANN-WHITNEY U-TEST ON NATION'S PRE-TEST

	Nation's Pre-Test
Mann-Whitney U	189.000
Wilcoxon W	784.000
Z	-.434
Asymp. Sig. (2-tailed)	.664

### Results for Research Question Two

The Wilcoxon Signed Rank Test, a commonly used test for pre/post test designs with ordinal level data, was used. However, this test compares those who gain in rank over the tests versus those who regress; it ignores those who receive the same score for both tests. In the present study, no one regressed and no one gained more than one level. This made the Wilcoxon Signed Rank Test inappropriate. Instead, a new variable was calculated in SPSS. The variable was called *learning*. For all individuals who received the same level score on Nation's pre- and post-test, a zero was entered. For all individuals who increased their score, a one was entered. If Hypothesis 2A were true, then the proportion of people who gained versus not gained in their level would be equivalent for the two groups.

In order to examine this a simple cross-tabs was generated and a Chi-Square test was performed. The results are given in Tables XVI and XVII. A decision criteria of  $p < .05$  was used. Since the Chi-Square significance level was .77, Hypothesis 2A

(the null hypothesis) was not rejected. In other words, there was no significant difference between the two groups in the proportion of individuals who gained versus not gained on their vocabulary levels post-test scores.

### Analysis of NewsDen Comprehension Test Data

As previously mentioned, vocabulary acquisition was operationalized in two different ways. After determining that there were no significant differences between the vocabulary levels between groups, vocabulary acquisition was next measured by the differences in the pre- and post-test scores on the NewsDEN comprehension tests using an analysis of variance (ANOVA) model. A two by three (2 x 3) design was used. The cell and marginal descriptives for the design are presented in Table XVIII.

TABLE XVIII

#### BASIC DESIGN FOR THE ANOVA.

Cell 1 Mean=9.65 Var.=10.78 N= 34	Cell 2 Mean=25.85 Var.=16.49 N=34	Cell 3 Mean=27.68 Var.=8.16 N=34	Mean= 21.06 Var.= 77.90 Sum N= 102
Cell 5 Mean=9.75 Var.=13.30 N= 12	Cell 6 Mean=23.08 Var.=12.99 N=12	Cell 7 Mean=25.92 Var.=22.45 N=12	Mean= 19.58 Var.= 66.42 Sum N= 36
Mean=9.67 Var.=11.16 Sum N=46	Mean=25.13 Var.=16.28 Sum N=46	Mean=27.22 Var.=12.09 Sum N=46	Grand mean=20.67 Var.=74.82 Total Sum N=138

In an ANOVA model, the sources for variance in the scores are identified; four main sources for variance are compared. The potential sources of variance in the scores are as follows: variance may be due to learning, due to the method of instruction used,

TABLE XVI

CROSSTABULATION: CHANGE IN NATION'S LEVELS SCORE  
FROM PRE- TO POST-TEST

No Change in Rank	Experimental versus Control		Total
	Semantic Mapping	SQ3R	
Count	24	9	33
Expected Count	24.4	8.6	33.0
% within change in Nation's Level score from Pre- to Post-Test	72.7%	27.3%	100%
% within Experimental versus Control group	70.6%	75.0%	71.7%
% of total	52.2%	19.6%	71.7%
<b>Gained in Rank</b>			
Count	10	3	13
Expected Count	9.6	3.4	13.0
% within change in Nation's Level score from Pre- to Post-Test	76.9%	23.1%	100%
% within Experimental versus Control group	29.4%	25.0%	28.3%
% of total	21.7%	6.5%	28.3%
<b>Totals</b>			
Count	34	12	46
Expected Count	34.0	12.0	46.0
% within change in Nation's Level score from Pre- to Post-Test	73.9%	26.1%	100%
% within Experimental versus Control group	100%	100%	100%
% of total	73.9%	26.1%	100%



TABLE XVII  
CHI-SQUARE TESTS

	Value	df	Asymp Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.085	1	.770		
Continuity Correction	.000	1	1.000		
Likelihood Ratio	.087	1	.769		
Fisher's Exact Test				1.000	.543
Linear-by-Linear Association	.083	1	.773		
N of Valid Cases	46				

due to interaction, or due to general error. The amount of error variance for cells 1-7 was calculated and summed (using the Type III sum-of squares method in SPSS). Roughly speaking, this reflects the amount of error variance in the data. In other words, this is the amount of variance that is unrelated to the difference in the scores which could be due to the learning that happened between the tests, or the difference in the scores due to the difference between the method or due to the interaction between learning and the method.

For each of the other potential effects, the amount of variance due to that effect is compared to the amount of error variance. If the null hypothesis is true for any effect, then the amount of variance due to that effect will not be significantly different than the amount of error variance. For example, if the method of instruction made no difference, then the amount of variance found in looking at the method effect will not be greater than the amount of general error variance.

Generally speaking, in ANOVA results the given F statistic represents the average variance due to an effect over the average error variance (Jaeger, 1990):

$$F = \frac{\text{Effect Variance}}{\text{Error Variance}}$$

In other words, if the null hypothesis is true for an effect, this should equal one (1). If the actual F statistic is significantly different than 1, then the null hypothesis is rejected.

A Repeated Measures ANOVA was performed on the data. Descriptive statistics are presented in Table XIX.

TABLE XIX

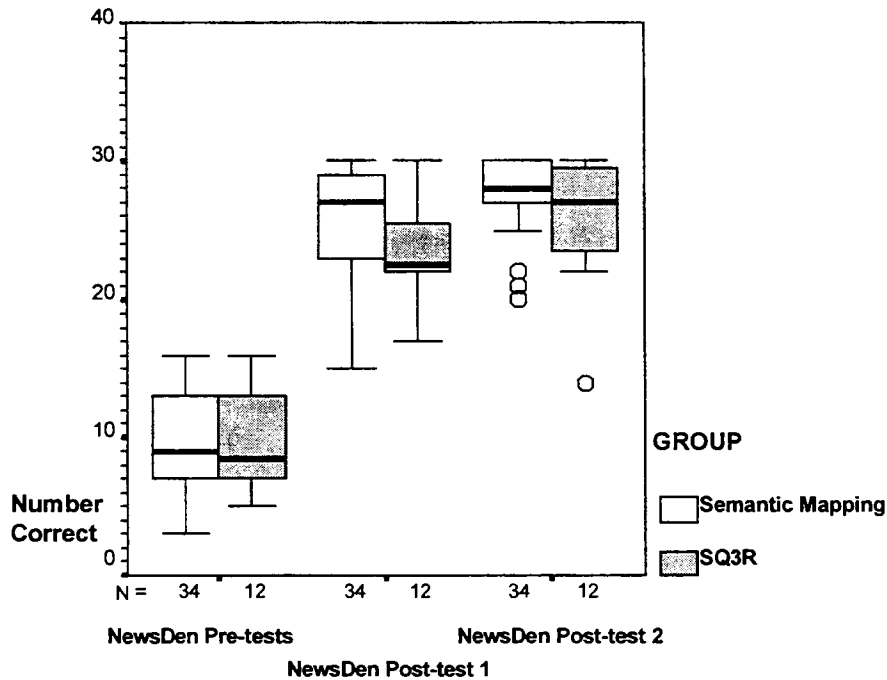
DESCRIPTIVE STATISTICS FOR NEWSDEN VOCABULARY TESTS

Tests	Instructional Group	Valid N	Missing N	Mean	Std. Dev.	Variance
Pre-test 1	SM	34	0	9.65	3.28	10.78
Pre-test 1	SQ3R	12	0	9.75	3.65	13.30
Post-test 1	SM	34	0	25.85	4.06	16.49
Post-test 1	SQ3R	12	0	23.08	3.60	12.99
Post-test 2	SM	34	0	27.68	2.86	8.16
Post-test 2	SQ3R	12	0	25.92	4.74	22.45

The boxplots in Figure One show that the means for both groups increase with each NewsDen Comprehension Test.

FIGURE 1

## BOXPLOTS OF MEAN SCORES FOR NEWSDEN COMPREHENSION TESTS



It also appears that the mean score for each group is different on the individual tests. In particular, the Semantic Mapping Group has higher scores on the Post-Tests. The ANOVA procedure was performed to test whether any of these differences were statistically significant.

One assumption of using a repeated measures ANOVA is that the variance between the groups is equal. To test this assumption, Mauchly's Test of Sphericity was performed. The results are presented in TABLE XX. Since the significance level was less than .001, the null hypothesis of no difference between variance was accepted, making unadjusted univariate results appropriate.

TABLE XX

## MAUCHLY'S TEST OF SPHERICITY

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.
Learning	.940	2.654	2	.265

**Hypotheses for NewsDen Comprehension Tests**

As mentioned above, three effects can be tested using a Repeated Measures ANOVA: a learning effect, a method effect, and an interactional effect. The following hypotheses were generated to measure these effects.

**Hypothesis 3: Learning Effect**

There is no significant difference between the means on each test.

**Hypothesis 4: Method Effect**

There is no significant difference between the means on each test between the instructional groups.

**Hypothesis 5: Interactional Effect**

There is no significant interaction between the learning and the method effects.

**Results for Hypotheses 3-5**

The results of the test of the Learning Effect (Hypothesis 3) are presented in Table XXI. A decision criteria of  $p < .05$  was used.. Since the significance level for F was less than .001, Hypothesis Three was rejected. There was a significant Learning Effect.

TABLE XXI

## TEST OF LEARNING EFFECT

Source	Sum of Squares	df	Mean Square	F	Sig.
Learning	6101.147	2	3050.574	410.586	<.001
Error	653.824	88	7.430		

However, this result does not tell us exactly which test revealed significant learning differences. In order to determine this, tests of within subjects contrasts were used, and two new variables were calculated. Learning One represents the difference between Post-Test 1 and the Pre-Test. Learning Two represents the difference between Post-Test 2 and Post-Test 1. If there were no differences between the scores of two tests, then the mean of those different scores should be zero. The Tests of Within Subjects Contrasts determines whether the means are significantly different than this expected null hypothesis result. A decision criteria of  $p < .05$  was used. The results are given in TABLE XXII.

TABLE XXII

## LEARNING EFFECT: TESTS OF WITHIN SUBJECT CONTRASTS

Source	Transformed Variable	Sum of Squares	df	Mean Square	F	Sig.
Learning	Learning 1	5185.910	1	5185.910	660.781	<.001
	Learning 2	915.238	1	915.238	130.534	<.001
Error	Learning 1	345.319	44	7.848		
	Learning 2	308.505	44	7.011		

Both learning effect for the differences between Post-Test 1 and the Pre-Test and for the differences between Post-Test 2 and Post-Test 1 were significant at less than

.001. Therefore, there were significant differences in the means between each of the three tests.

The results of the test of the Method Effect (Hypothesis 4) are presented in Table XXIII. A decision criteria of  $p < .05$  was used. Since the significance level for F was .127, the null hypothesis was accepted. There were no differences between the mean scores of the two instructional groups. In other words, there was no Method Effect.

TABLE XXIII  
TEST OF METHOD EFFECT

Source	Sum of Squares	df	Mean Square	F	Sig.
Method	57.929	1	57.929	2.424	.127
Error	1051.730	44	23.903		

The results of the test of the Interaction Effect (Hypothesis 5) are presented in Table XXIV. A decision criteria of  $p < .05$  was used. Since the significance level for F was .085, the null hypothesis was accepted. There was no significant Interaction Effect.

TABLE XXIV  
TEST OF INTERACTION EFFECT

Source	Sum of Squares	df	Mean Square	F	Sig.
Interaction	37.669	2	18.835	2.535	.085
Error	653.824	88	23.903		

To further confirm this, a test of within subjects contrasts was done. The results for this test are given in Table XXV.

TABLE XXV

## INTERACTION EFFECT: TESTS OF WITHIN SUBJECTS CONTRASTS

Source	Transformed Variable	Sum of Squares	df	Mean Square	F	Sig.
Interaction	Learning 1	15.388	1	15.388	1.961	.168
	Learning 2	22.281	1	22.281	3.178	.082
Error	Learning 1	345.319	44	7.848		
	Learning 2	308.505	44	7.011		

The variables used were the same as in Table XXII. The significance level was .168 for Learning 1 and .082 for Learning 2. Therefore, the null hypothesis was accepted. There was no significant interaction between learning and the method of instruction. That is, the Semantic Mapping Group did not show a significantly greater increase in their score over the SQ3R Group between either Pre-Test 1 and Post-Test 1 or between Post-Test 1 and Post-Test 2. The findings for the null hypotheses of this study are summarized on the next page in Table XXVI.

### SUMMARY

This chapter reported the outcomes of the experimental procedures described in Chapter Three. In brief, the results show the following: 1) the experimental and treatment groups started off with the same vocabulary levels, as measured by the rank vocabulary levels pre-test scores; 2) both groups learned a significant amount of vocabulary, as measured by the mean scores of the NewsDen Comprehension Tests; 3) the SM Group's mean scores were higher, overall, than the SQ3R Groups' mean scores on the NewsDen Comprehension Tests; and 4) neither groups' rank level scores on Nation's Vocabulary Levels Post-test significantly increased.

TABLE XXVI

## SUMMARY OF NULL HYPOTHESES FINDINGS

<p><u>Hypothesis 1A</u> There will be no significant difference in the rank level score for the Semantic Mapping Group versus the SQ3R Group on Nation's Vocabulary Levels Pre-test.</p>	NS	Hypothesis accepted
<p><u>Hypothesis 2A</u> There will be no difference between the Semantic Mapping and SQ3R Groups in the percentage of individuals who increase their Nation's Vocabulary Levels Post-test scores.</p>	NS	Hypothesis accepted
<p><u>Hypothesis 3: Learning Effect</u> There is no significant difference between the means on each test.</p>	SIG.	Hypothesis rejected: a significant amount of learning occurred.
<p><u>Hypothesis 4: Method Effect</u> There is no significant difference between the means on each test between the instructional groups.</p>	NS	Hypothesis accepted
<p><u>Hypothesis 5: Interactional Effect</u> There is no significant interaction between the learning and the method effects.</p>	NS	Hypothesis accepted
<p>SIG. = Significant at <math>p &lt; .001</math> NS = Not significant at <math>p &lt; .05</math></p>		



## CHAPTER FIVE

### DISCUSSION

This final chapter will discuss the results of the five hypotheses posed in the previous chapter. Each hypothesis will be discussed separately based upon the results presented in the Chapter Four. This chapter will conclude with suggestions for future research and a discussion of the implications of the results on the teaching of ESL.

#### Discussion of Hypotheses Results

##### **Hypothesis 1A: Comparable Vocabulary Levels Assumed**

To determine whether the experimental and control groups were starting off with the same vocabulary levels, the experimental and control groups were given Nation's (1990) Vocabulary Levels Test as a pre-test. The results of the Mann-Whitney U test showed that the vocabulary levels of both groups were not significantly different prior to receiving the treatments. In other words, there was no statistically significant difference in the rank level scores for the Semantic Mapping Group versus the SQ3R Group (at .05).

This was the anticipated result. One possible reason for this can be attributed to the rigorous levels placement tests administered to the students at the beginning of each quarter by the ESL program at the university. However, there were potentially confounding factors related to the administration of the Nation's pre-tests that make this result unclear.

First of all, the vocabulary levels pre-tests were given to each group immediately after the subjects had taken a forty minute diagnostic exam. Therefore, students were only given 15 minutes to complete the levels pre-tests. Nation states that most second language learners should be able to complete the levels test in 15-20 minutes and that a maximum of fifty minutes should be allowed. Thus, the rank scores that the subjects received may not have been representative of the subjects' true vocabulary levels due to fatigue and time limitations.

Although not discussed in the previous chapter, to further confirm the finding of comparable vocabulary levels assumed, independent t-tests were performed on both groups' data from the NewsDen comprehension pre-tests. The results from the t-tests showed that any differences in the mean scores for the vocabulary levels of the experimental and control groups were due to random variation; the mean difference between groups was -.10. In other words, the findings of the Mann-Whitney U test were supported. The results of these t-tests are presented below in Tables XXVII and XXVIII.

TABLE XXVII

## INDEPENDENT SAMPLES TEST

	Levene's Test for Equality of Variances	
NewsDen Pre-Tests	F	Sig.
Equal Variances Assumed	.615	.437

TABLE XXVIII

## T-TEST FOR EQUALITY OF MEANS

						95% Confidence Interval of the Mean	
NewsDen Pre-Tests	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal Variances Assumed	-.091	44	.928	-.10	1.13	-2.39	2.18
Equal Variances Not Assumed	-.086	17.713	.932	-.10	1.19	-2.61	2.41

**Hypothesis 2A**

In order to determine whether explicit vocabulary instruction using the Semantic Mapping Method is more efficient at increasing the rate of L2 lexical acquisition than is incidental vocabulary learning (via the SQ3R Method), all subjects took Nation's levels test as a post-test at the end of the quarter. A simple crosstabulation was generated and a Chi-Square test was performed on the data. The results showed that there was no significant difference in the proportion of individuals who gained in their rank level scores on the Nation's levels post-test (at .05). In other words, there was no significant difference between the experimental and control groups in the proportion of individuals who gained versus not gained in their vocabulary levels post-test scores.

One possible explanation for this unexpected result may be that Hypothesis 2A itself was ill-conceived. In Chapters One and Two, the researcher argues that incidental vocabulary learning is not as efficient as direct vocabulary learning. And

since the only way the subjects would have acquired the vocabulary from Nation's levels test was through incidental exposure to these words, it would have been more consistent for the researcher to argue that neither group would significantly increase their rank level scores on the post-test.

However, other important factors related to the administration of the post-test could have contributed to this result as well. First of all, Nation's test was given on final examinations day, after the subjects had completed a two-hour reading exam. Also, in order to be consistent with the pre-test administration, subjects were given only fifteen minutes to complete the vocabulary levels post-test. Secondly, it was explained to the subjects that their vocabulary levels scores would in no way affect their final course grades. Thus, the variables of fatigue, time limitations, and low motivation may have skewed the subjects' scores. Thus, it is quite possible that the rank scores earned may not have been representative of their true vocabulary levels. Due to these potentially intervening variables, the experiment needs to be repeated and tighter controls put in place for the administration of the vocabulary levels tests.

### **Hypothesis 3: Learning Effect**

It was found that there was a significant difference between the means of each NewsDen comprehension pre- and post-test (at .001). In other words, both groups (experimental and control) learned a significant amount of the target vocabulary as measured by tests of within subject contrasts.

Since there was no significant Method Effect (Hypothesis 4), and since both instructional groups received instruction via active learning techniques, it is possible

that it was the active learning techniques that led to the significant Learning Effect (see Chapter 3 for details regarding active learning techniques).

However, two other important factors need to be considered when interpreting these results. The first relates to the nature of the vocabulary instrument. Lui and Nation (1985) report that nouns and verbs are the easiest lexical items to learn and adjectives and adverbs are among the most difficult. An analysis of the vocabulary items on the NewsDen comprehension tests reveals that fully fifty percent (50%) of the target words were nouns and twenty five percent were verbs (20% were adjectives and 5% were idiomatic expressions). Thus, it seems that one reason both groups learned a significant amount of the target vocabulary may be on account of the high probability that the subjects would have had little difficulty in acquiring a large proportion of the words. That is, subjects may have had little difficulty learning the low-frequency nouns and verbs through incidental exposure to these words in the contexts that they were presented in.

Nation's findings lead the researcher to speculate that a higher percentage of more "difficult" words (e.g., adjectives and adverbs) should have made up the majority of the target vocabulary on the comprehension test instruments. In other words, it may be that adjectives and adverbs are more difficult to acquire through incidental exposure. This invites empirical testing and will be further discussed below (see Suggestions for Further Research).

The final factor that needs to be addressed when interpreting this result is the fact that both groups received extensive instruction in the reading subskill of guessing vocabulary from context. To be specific, the context clues that were taught were:

1) definition, 2) example-illustration, 3) contrast, 4) logic, 5) Latin and Greek word parts, 6) grammar, and 7) punctuation. Not only were these subskills taught and practiced, but the NewsDen pre- and post-tests were explicitly designed so that the subjects could make use of guessing vocabulary from contextual clues. Furthermore, subjects in both instructional groups were encouraged to use these skills when taking the comprehension tests. This leads to the speculation that even if the students did not actually know the target words, they may have made use of their guessing from context skills in order to obtain significantly higher post-test scores.

If this study were to be repeated, it would perhaps be wise to include an experimental group which received no explicit instruction in guessing from context. This data would potentially clarify the question of whether instruction in the use of contextual clues led to this result.

#### **Hypothesis 4: Method Effect**

Although on each NewsDen post-test, the SM Group's mean scores were slightly higher than those of the SQ3R Group, and even though the mean total score for the Semantic Mapping Group was slightly higher than that of the SQ3R Group, it was found that there was no significant difference between the means on these tests between instructional groups (see Table XXIX). Thus, the result was that subjects who received the Semantic Mapping treatment did not acquire a significantly greater

amount of vocabulary compared to those in the control group. In other words, there was no Method Effect.

Table XXIX

## MEAN SCORES FOR NEWSDEN POST-TESTS 1-3

Experimental vs Control Group Post Tests	N		Mean	Std. Deviation	Variance	Range
	Valid	Missing				
<u>SM Group</u>						
ND Post 1	34	0	8.41	1.60	2.55	5
ND Post 2	34	0	8.44	1.89	3.59	9
ND Post 3	34	0	9.00	1.63	2.67	5
Final ND Post-T	34	0	25.85	4.06	16.49	15
<u>SQ3R Group</u>						
ND Post 1	12	0	7.75	1.22	1.48	4
ND Post 2	12	0	6.92	1.88	3.54	6
ND Post 3	12	0	8.42	1.83	3.36	5
Final ND Post-T	12	0	23.08	3.60	12.99	13

\*ND Post-tests 1-3 were ten points maximum each and the Final ND Post-test was 30 points maximum.

On the surface this result seems to suggest that instruction in semantic mapping techniques and in the phonological aspects of words does not facilitate greater lexical acquisition than methods which do not explicitly teach these aspects of words. Therefore, the present study does not appear to support Channell's claim that associations which are both phonological and semantic will be most beneficial in facilitating the long term comprehension of new vocabulary. In other words, the results seem to indicate that direct vocabulary instruction using the semantic mapping method described in Chapter 3 (with its emphasis on the semantic and phonological

features of words) is not more time-efficient than incidental vocabulary learning methods with upper-intermediate L2 learners.

However, these findings are consistent with Underwood's (1969) assertion that acoustic features of words are less important for storage in memory when the meaningfulness of the words is great for non-beginners. In addition, results of Hypothesis 4 do not appear to provide clear support for Henning's (1974) findings that learners in the intermediate stages of language acquisition store words according to their meanings rather than according to their phonological features.

However, before making any strong conclusions about this result in comparison to other bodies of evidence, it is appropriate to first examine the nature of similarities between the Semantic Mapping and the SQ3R methods.

In regards to similarities between the instructional methods, the result of no significant Method Effect could have been obtained because the SQ3R method was not a purely passive reading method. In other words, subjects in the SQ3R Group received reading instruction using active learning techniques not via purely passive reading instruction. While any semantic and phonological associations made by subjects in the control group were due to incidental exposure to the target NewsDen vocabulary, it may be that the SQ3R Group had a sufficient number of exposures to the various features of these new words to have acquired them.

As mentioned in Chapter Three, both groups received instruction in active learning methods in an integrated skills framework. Thus, all subjects were required to engage in speaking, listening, reading and writing tasks to acquire the lexical items.



Therefore, it may be that the use of an integrated skills approach in which subjects are exposed to the target vocabulary and required to use the various skills may be sufficient to have increased their receptive knowledge of the NewsDen vocabulary.

Another factor may have been that the independent variable of phonological awareness was not sufficiently controlled for in the SQ3R Group. The teacher observed that during the SQ3R treatment, students verbally asked each other the meanings of unknown words and how to pronounce them. Thus, the control group *did* have practice using the phonological aspects of the target vocabulary. Thus, this incidental exposure to the target vocabulary may have also contributed to this result.

In addition to the insufficiently controlled for variable of phonological awareness, it seems likely that the independent variable of learning semantic associations was not sufficiently controlled because of the decision to use the SQ3R Method. That is, one important component in the SQ3R treatment is to have students practice making connections with what they know about the content of the reading materials. The subjects were asked to make a number of associations verbally and in writing (see Table XII in Chapter Three for details). In other words, the control group *did* spend a large amount of time making semantic connections with the target vocabulary. Thus, even though the control group did not receive the Semantic Mapping Treatment, they were given direct vocabulary instruction in learning the semantic and phonological aspects of the target vocabulary. Given these considerations, it seems that a replication of the present study with a purely passive reading method would be more likely to produce the expected result of a significant

Method Effect (Note: A *purely passive reading method* is one in which students are given a text to read; they are not supplied with any reading or vocabulary instruction). This speculation invites further empirical testing.

One final factor that needs to be addressed when interpreting this result is the problem of having a low number of subjects in the control group. In order to get a normal distribution, the minimum number of subjects needed in a given group is thirty. Thus, because of the small sample size of the control group, it is quite possible that this result could have been different if there had been at least 30 subjects. Therefore, the fact that there were only twelve (12) subjects in the control group lessens the generalizability of this null hypothesis finding. This suggests that the results need to be verified by further study.

#### **Hypothesis 5: Interaction Effect**

It was found that there was no significant interaction between the Learning and the Method Effect ( $p.05$ ). In order to interpret this result, it seems prudent to first discuss what it takes to learn new vocabulary and then to examine the nature of words.

Nation (1990) relates that intermediate-level L2 students probably need, on an average, to see and/or hear new words ten to twelve times to learn them fully. Furthermore, Nation encourages language instructors to teach the various components of words (phonetic, morphologic, syntactic and semantic elements) in a variety of contexts.

Richards (1976) states that full knowledge of a lexical item includes:

- 1) knowing it in speech and in print;

- 2) knowing its collocations (the probability that the word will go together with another word or group of words);
- 3) knowing the limitations on the use of the word;
- 4) knowing its syntactic properties (e.g., that the verb break takes an object);
- 5) knowing its semantic value;
- 6) knowing its phonological features (e.g., phonemes, syllables and stress).

Thus, it seems reasonable to say that for an individual to fully acquire a new word (to have receptive and productive knowledge), it seems essential to learn most, if not all, of its features. To have receptive knowledge of a word means individuals are able to understand a word in listening and reading; to have productive knowledge means to be able to use a lexical item in speaking and writing.

The present study measured only receptive (reading) knowledge of the target vocabulary. But is it sufficient to say that the students have learned a new lexical item when they can recognize it in a sentence receptively? Or, rather, does knowing a word mean that students need to be able to also demonstrate how to use it productively (in writing and speaking)? Since this experiment did not measure productive knowledge of the target vocabulary, it is impossible to know whether the Semantic Mapping Treatment, which included phonological and semantic association training, is superior for teaching the productive use of newly acquired vocabulary. Thus, more empirical investigation is needed to clarify this.

One final factor that may have contributed to this result relates to the learning style preferences of the L2 students in this study. It may be that the subjects (in both

instructional groups) did not make use of the vocabulary learning strategies taught because these strategies did not suit their learning preferences. There is currently an abundance of literature on learning styles which supports this claim. For example, one recent study by Stevens (1998), conducted with a highly comparable subject population as the present study, shows that a wide variety of strategies are accepted and used by upper-intermediate, academic ESL students. Her research discovered that, out of thirteen commonly used and accepted strategies, *association of vocabulary with original context* was the most preferred. The other (12) strategies most often employed by Stevens' subjects, listed in order of declining preference, were written rehearsal, graphic imagery, silent rehearsal, personal context, oral rehearsal, semantic category associations, orthographic form, picture imagery, emotion, word analysis, L1 sound link, and movement.

Stevens' finding that the "original context" strategy was the number one vocabulary learning preference (compared to phonological practice and semantic associations which ranked 7th and 8th on the list), adds weight to the assertion made by the present researcher in the discussion of the results for Hypothesis 3 (above). In other words, it is quite possible that the subjects in the present study made extensive use of context clues to understand and learn the target vocabulary and that this led to the significant Learning Effect result. Since both instructional groups received extensive instruction in guessing vocabulary from context, and the SQ3R Group did not receive explicit semantic and phonological strategy instruction, it is possible that

individuals in both groups may have used their guessing from context skills to achieve the high scores on the NewsDen post-tests.

Of course, more descriptive statistics are needed to substantiate this speculation. In order to determine whether there is any real validity to these assertions, it would have been necessary to have administered a learning styles and strategies questionnaire and/or to have conducted interviews with students. Unfortunately, the present study does not have this data to analyze.

### **SUGGESTIONS FOR FURTHER RESEARCH**

It is recommended that the primary part of this study on the effect of explicit vocabulary teaching using the Semantic Mapping Method be replicated with the following improvements:

- a) A language vocabulary learning style questionnaire should be administered or extensive interviews should be conducted with all subjects before and after receipt of experimental treatments.
- b) Based upon the data from the questionnaires or interviews, subjects should be assigned to experimental and control groups based upon whether they prefer to learn new vocabulary by sounding out the words, through the use of semantic associations, or by using context clues.
- c) The SQ3R treatment should be replaced by a purely passive reading treatment. The Passive Reading Control Group should not be given explicit instruction on the use of context clues to guess vocabulary.

- d) The Semantic Mapping Group should not receive instruction on the use of context clues to guess vocabulary.
- e) Careful controls should be put into place to ensure that subjects in the Passive Reading Group do not receive instruction in the phonological or semantic aspects of the target words.
- f) Subjects in the Semantic Mapping Group should be required to practice pronouncing the words in isolation and be required to create novel utterances of their own using the target vocabulary.
- g) Productive as well as receptive knowledge of the target vocabulary should be measured for both instructional groups. This may help to determine whether direct phonological and semantic vocabulary instruction has a greater impact on productive acquisition of new vocabulary than do incidental/passive methods.
- h) A minimum number of thirty subjects should be included in all instructional groups to ensure that there will be a normal distribution.
- i) Subjects should be given up to forty minutes to complete the vocabulary levels pre- and post-tests.
- j) The vocabulary measures should include a higher proportion of “difficult” low-frequency lexical items (e.g., adjectives and adverbs).

These suggestions are primarily aimed at improving the current study’s experimental design to better measure the effects of direct versus indirect (passive) vocabulary learning methods. However, another aim of this study was to investigate

whether direct phonological instruction and semantic association training would lead to significantly more vocabulary acquisition. Therefore, an alternative experimental design is proposed in the next section.

### **Alternative Experiment: Background**

As previously discussed, the Semantic Mapping method used in the present study, with its focus on direct phonological and meaning associations, was not found to be significantly more efficient at increasing the size of the upper-intermediate level L2 students' vocabulary. However, Henning (1974) found that low-proficiency second-language learners encode vocabulary stronger acoustically and high-proficiency learners encode vocabulary stronger semantically, through verbal associations. The outcomes of this master's thesis seem to provide contradictory evidence to Henning's findings. That is, the experimental group in the current study, upper-intermediate learners of ESL, received extensive semantic association training but did not learn a significantly greater amount of vocabulary as compared to a control group who did not receive this training. Therefore, since there were several potentially confounding factors related to this experiment, an alternative experimental design is proposed to further investigate this question empirically. It is hoped that this new experimental design will more clearly isolate the independent variables of phonological instruction from the independent variable of semantic mapping. Furthermore, it is also hoped that the suggested experimental design will isolate the variable of the use of context clues to learn new vocabulary.

### **Alternative Experiment: Hypotheses**

The primary question this alternate study would ask is whether the direct teaching of the phonological forms of a word will significantly improve vocabulary recall and comprehension. A second question is whether semantic mapping is more effective than incidental learning methods for L2 lexical expansion. A third question is whether the combination of semantic mapping and context clues leads to greater vocabulary comprehension and recall. Based on these questions, the following hypotheses could be proposed:

1. Mean scores for the subjects who receive direct instruction in the phonological aspects of words will be significantly greater than for subjects who do not receive this instruction.
2. Subjects who receive direct instruction in the phonological aspects of words and in semantic mapping techniques will have significantly greater mean scores than subjects who receive direct phonological instruction and study words in the Word Listing format (see WL Group 1 below).
3. Subjects who receive direct instruction in the phonological aspects of words, plus instruction in semantic mapping techniques and guessing vocabulary with context clues, will significantly increase their mean scores over all other subjects.



### **Alternative Experiment: Procedures**

Low-level subjects should be randomly assigned to six instructional groups. Thirty subjects should be assigned to each group. These groups would study three (tightly, moderately, and loosely related) groupings of 30 words. Two groups of learners would study the words under the “Semantic Mapping” method, whereby maps will display the relationships among words. One of the Semantic Mapping Groups would receive explicit phonological information about the target vocabulary and the other SM Group would not. A third SM Group would receive explicit instruction in learning vocabulary using context clues; this group would also receive explicit phonological instruction.

Additionally, three groups of subjects would study the words in the traditional “Word Listing” (i.e., alphabetical) format under three separate conditions. For the first two instructional groups, the target vocabulary should simply be presented alongside the words’ definitions. Word Listing (WL) Group 1 would receive explicit phonological information about the target vocabulary. WL Group 2 would not receive explicit phonological information; they would read the words silently and receive no other information about the words. In addition to the traditional word listing format, WL Group 3 should receive explicit instruction in the learning of new vocabulary using context clues. However, WL Group 3 should not receive direct phonological instruction.

### **Alternative Experiment: Developing and Administering the Measures**

A vocabulary checklist consisting of several hundred words should be given to subjects at least one week prior to the treatments. Words that the subjects say they do not know should be chosen to create lists consisting of three (tightly, moderately, and loosely related) groupings of 30 words. Next, post-tests should be designed to measure the productive and receptive knowledge of the target vocabulary items. The vocabulary tests should contain a large proportion of “difficult” low-frequency words (e.g., adjectives and adverbs) to make it harder for subjects to guess the correct meanings from context clues.

The first post-test should be given immediately after the first treatment (within a few minutes); a second post-test should be given two weeks later, a third post-test should be administered at the end of the fifth week, and a final post-test should be given at the end of the tenth week. Finally, careful controls should be put into place to ensure students have a sufficient amount of time to complete the vocabulary tests.

### **Recommendation for Qualitative Research**

The primary question the present study investigated was whether students who received semantic mapping training learned significantly more vocabulary than students who read the same materials without receiving this training. Furthermore, an implicit aim of the present study was to determine whether the use of computer-assisted instructional methods was equally as effective as traditional methods. As previously mentioned, partially because of the low number of subjects in the control group, it was difficult to determine the answers to these questions with any certainty.

Perhaps a more fruitful way to investigate these questions would be to do a qualitative study. If a qualitative study were to be done, the researcher could collect data from classroom observation and questionnaires, and conduct extensive oral interviews with subjects about the impact of semantic mapping and computer-assisted instructional techniques on their language acquisition. Furthermore, the semantic mapping method and testing materials developed for the present study could be used again.

Data from the oral interviews could be collected in a similar fashion to the way information is collected for an ethnography; it is recommended that the interviews be taped. Because experience with technology varies widely among individuals and across cultures, the thick, rich, descriptive nature of data collected from observation, interviews and questionnaires may be particularly useful for showing the impact that technology has on non-native speakers of English in academic contexts.

## **IMPLICATIONS FOR TEACHING ACADEMIC ESL**

### **Primary Implication**

The study discovered that the use of direct vocabulary instruction using the Semantic Mapping Method (with its focus on direct phonological instruction and semantic association training) does not *in and of itself* appear to be more efficient at helping upper-intermediate L2 readers to rapidly increase the size of vocabulary. After all, the SQ3R method, which did not include these components, was found to be equally as effective. Since both groups learned a significant amount of the target vocabulary, the primary implication of this study for teachers of English to academic

ESL students is that they should teach vocabulary using active learning methods in an integrated-skills framework.

### **Other Implications: The Importance of Context**

Another contribution that this study has made for the field of teaching academic ESL relates to the learning of vocabulary using context. Judd (1978) says that most L2 instructors agree that vocabulary should be taught in context and that context is essential in interpreting the meaning of a word. However, the bulk of the experimental literature indicates that vocabulary is not best learned initially in context. For this reason, Nation (1982) reveals that nearly all experiments which compare learning vocabulary in context to learning word pairs “have not produced results which favour learning in context” (p. 24). Nation (1982) takes Judd’s argument one step further and says that it is not enough to simply teach target vocabulary in just one context. Nation argues that words should be presented in a “number of different contexts” in order to help the learners grasp their full meaning (p. 22).

In the present experiment, students in both instructional groups were given extensive instruction and practice with using contextual clues to guess the meanings of the target NewsDen vocabulary. Thus, since there was a significant learning effect for both groups, the results of this study add weight to the notion that teaching upper-intermediate academic ESL students to learn new vocabulary by using context clues is perhaps the most efficient way to rapidly expand academic ESL students’ vocabulary.

### **Final Implications: The Importance of CALL**

The last two contributions that this study has made to the field of academic ESL instruction are related to the use of computer-assisted language learning methods.

Recently, there has been much debate over whether the use of computer-assisted language learning methods (CALL) to teach reading and vocabulary is as efficient as traditional teaching methods (Schreck & Schreck, 1991). To many teachers of ESL, computer-assisted instruction has been a great challenge and disappointment. Rather than develop effective educational approaches which might be enhanced by computers, the trend has been just the opposite. Technology has often stood in the way of effective vocabulary instruction due to poorly designed software and ineffective methodologies (Schreck & Schreck, 1991).

Prior to the running of this experiment, a needs analysis was conducted during Fall Quarter, 1996, at the university where this study took place. The results indicated that the student population strongly desired to learn computers and the Internet (see Appendix K for a complete version of this Needs Analysis). Therefore, the teachers in the current study considered it important to use technology to teach reading strategies and skills that would enable their students to rapidly acquire new vocabulary and improve their reading skills.

This background is provided because one aim of this experiment was to investigate whether the Semantic Mapping Method using the Internet would be as efficient at increasing the receptive knowledge of new vocabulary as methods which use textbooks, pens and paper. And since the subjects who used computers to learn

the NewsDen vocabulary were not found to have relatively lower vocabulary comprehension scores than those in the control group, the implication for the teaching of second language vocabulary is that the Semantic Mapping (CALL) method can facilitate an equal amount of learning as traditional vocabulary/reading methods.

Another important implication of this study is that the teachers were able to simultaneously increase their students' general language proficiency and increase their ability to use technology. This is important because at many university ESL programs, including the university where this study took place, a primary curricular goal is to teach students the academic skills they will need in order to function in regular academic content courses. Furthermore, within some of these regular academic content courses, students are being required to use the Internet as a tool for conducting research and completing assignments. In fact, at the university where this research was performed, all freshmen and newly admitted students are required to learn basic technology skills: these abilities include being able to use word processing programs and the Internet.

Given these considerations, one implication for this study is that technology can and should be effectively incorporated into the language learning curriculum at university level ESL programs. This will provide non-native English speaking students the language and technology skills they need to be successful in their careers at U.S. institutions of higher education.

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**APPENDIX A**

**SAMPLE NEWSDEN TEXTS**

## **“Uganda sheds horrible past, with women leading the way”**

**Originally published in the Southam News**

**By Maria Jimenez**

Asumini Mupalya is an uneducated farmer who shares her husband with six other wives. But along with working the family's 15 acres of tropical crops, she manages fish ponds and a recently opened hotel, and chairs a credit union for women. Mupalya is a symbol of all that's old and new about Uganda.

“Five years ago, we lived in grass huts; we couldn't afford to send our children to school,” says

the tall, graceful 30-year-old, sitting under a mango tree in front of her sugarcane fields.

“Today we grow many crops and every one of our 28 kids goes to school.”

Even five years ago the family's economic success would have been unimaginable.

Uganda was famous in the west for its protracted civil war, poverty, and brutally corrupt leader, Idi Amin. Amin, now in exile in Saudi Arabia, ruled from 1971 to 1979 and left the country bankrupt.

Today, Uganda is a rising economic star in Africa. The lush and landlocked country is the darling of the international financial community.

President Yoweri Museveni -- returned to power this spring in the first democratic election in years -- has privatized state industries, liberalized the economy and brought inflation under control.

This economic and political stability and the country's six-per-cent annual economic growth have attracted millions of dollars in aid and investment. Asians -- exiled by Amin in the 1970s -- are returning. Corporate head offices are moving out of neighboring Kenya and setting up shop in Kampala, Uganda's capital. And forgotten backwaters like Mupalya's home town, 300 kilometres west of Kampala, are being integrated into the rest of the country.

Kagadi has grown from a dusty village with no electricity and makeshift homes to a town with a solar generator, a renovated hospital and a new road to the capital.

“Kagadi used to be a closed place. Now, it's becoming connected to the rest of the country,” says Abbas Zebiiha, an economist working in the area with Uganda Rural Development and Training (URDT), a non-governmental organization that has helped rebuild the town.

For the Mupalyas, peace and stability mean they can now transport their wares to market and run a hotel without worrying about theft and looting.

“In the old days, a guerrilla might kill you just for building a house,” says Mupalya’s husband Mustafa, 43, a slight, shy man in a blue and white fez, cotton trousers and thongs. “Now I’m free to do what I want.”

The country’s attitudes towards women are also changing. As recently as a decade ago, women couldn’t address a public crowd, enter politics, run a business or own land.

Even now, about 20 per cent of Ugandans are in polygamous marriages, which are still legal. But Museveni has done much to promote women. There are female politicians at every level of government, including the vice-president. There are also programs to help women get loans and open small businesses.

“Women in Uganda are now on the map,” says Zebiiha.

Mupalya -- along with her husband and several co-wives -- have taken gender education courses run by URDT in Kagadi.

“I’ve gained the confidence to talk in public,” says Mupalya, slicing off a piece of sugar cane with her machete and thoughtfully chewing the treat. Other wives gather round to listen. Some drop to their knees in a traditional display of deference.

Mupalya remains seated and talks proudly about her new volunteer jobs: chairing a credit union for women and teaching other women about the importance of educating girls. One colleague calls her a feminist in the making who represents her country’s new entrepreneurial spirit.

Mupalya’s husband says he supports his wife’s new advocacy role because he believes it helps unite the family.

There used to be acrimony among the wives. Two left. But now they all co-operate, pooling their money in an education fund for the 28 children.

The wives live in separate mud homes that stand in a row near their pineapple plantation. They take turns having their husband over.

“I didn’t grow up thinking I’d be one of many wives,” says Mupalya. “But, in my case, it worked out.”

It seems the country Winston Churchill once called the pearl of Africa is finally realizing its potential. Yet despite the tremendous progress, some changes come slowly.

While Mupalya and her husband both favor monogamous marriages for their children, two daughters have already married polygamous men. And Mupalya still doesn't have title to her own land.

If her husband dies, her two-room home, fields, fish ponds and the hotel she's so proud of all go to his brothers.

## **“Two East Van youths open gym coffee bar with help from federal government”**

**Originally published in the Vancouver Echo**

**By Steve Braverman**

A pair of enterprising East Vancouver youths were warmed-up by the federal government before they opened a fitness centre coffee bar on the weekend.

Now Paul Figurelli and Nuno Antunes are in good shape for the daily grind of serving steamy espressos, cold drinks and low-fat sandwiches to Fitness Quest Gym members in the Mean Bean Cafe and Energy Bar.

It all started a few months ago when Paul was put on-call at his building maintenance job for the city of Vancouver which qualified the 23-year-old for unemployment insurance. While he was at the U.I. office filing his papers, Figurelli read a notice on the wall promoting the pilot project of the Youth Entrepreneur Program, a 16-week course that gives 18- to 29-year-olds with hot business ideas the tools and coaching needed to draft a business plan.

Coincidentally, the high school friends and regular Fitness Quest workout companions had the coffee bar idea brewing and thought it might be in their interest for Figurelli to take the course. He signed up and passed on the lessons he learned to Antunes who didn't qualify for YEP because he's not on government assistance. Together they mapped out a plan, priced equipment and last week purchased a high-end espresso machine and coffee bean grinder made in the 1970s that they found at a local second hand store for \$2,000. Now firmly fixed behind the cafe counter, it's fully functional along with the stairmasters, treadmills and weightlifting machines in the storefront gym at 41st Avenue and Main Street.

Though there's hardly any applications in the cafe for the bio-technology diploma he earned from BCIT, Figurelli finds plenty of practical use for the stuff he learned from YEP.

"It's excellent," he said. "When you're as young as us and still living at home, you need something like that."

Unlike his parents' generation of mostly Italian immigrants who played it safe by working for other people, he's encouraged by programs such as YEP to take risks and run his own business. And given the competitive and unstable nature of today's job market, both agree the way to go these days is to be your own boss and work for yourself.

"No one will do it for you," said Antunes, a former Langara College arts student. "It's too easy to procrastinate and to wait for things to happen. You have to make things happen."

A little help from the feds doesn't hurt either given the complications running a business brings to the work table from the goods and services tax to worker's compensation contributions - things you don't really consider when you get caught up in the excitement of not having a boss.

"But we do have a boss," said Antunes. "It's the business. We are responsible to the business." And that means making sure the sub-lease is paid on time each month to Fitness Quest Gym owner Guido Cantagallo who didn't mind vacating his office to make room for the coffee bar venture. His desk is now in the open only a few feet from the grunt-filled free weight section.

"In this day and age you have to use every square foot," said Cantagallo who owns two other gyms - one on the westside and the other in New West. By that he recognizes his old office space will be better used providing more services to his members.

"Now they don't have to go out and get a sandwich," Cantagallo said. "And they can get a coffee before their workout."

And to make sure new businesses work out, Heather Workman - the program manager for YEP- says youths should run their ideas through the program first.

"Say someone has an idea," said Workman. "Well we'll teach them to do a market analysis to find out if it has been done before."

They'll also learn to figure out how much capital is needed to start a business and where to get it.

## **APPENDIX B**

### **EXAMPLE AT-A-GLANCE MAPS**

## How two East Vancouver youths opened their own business

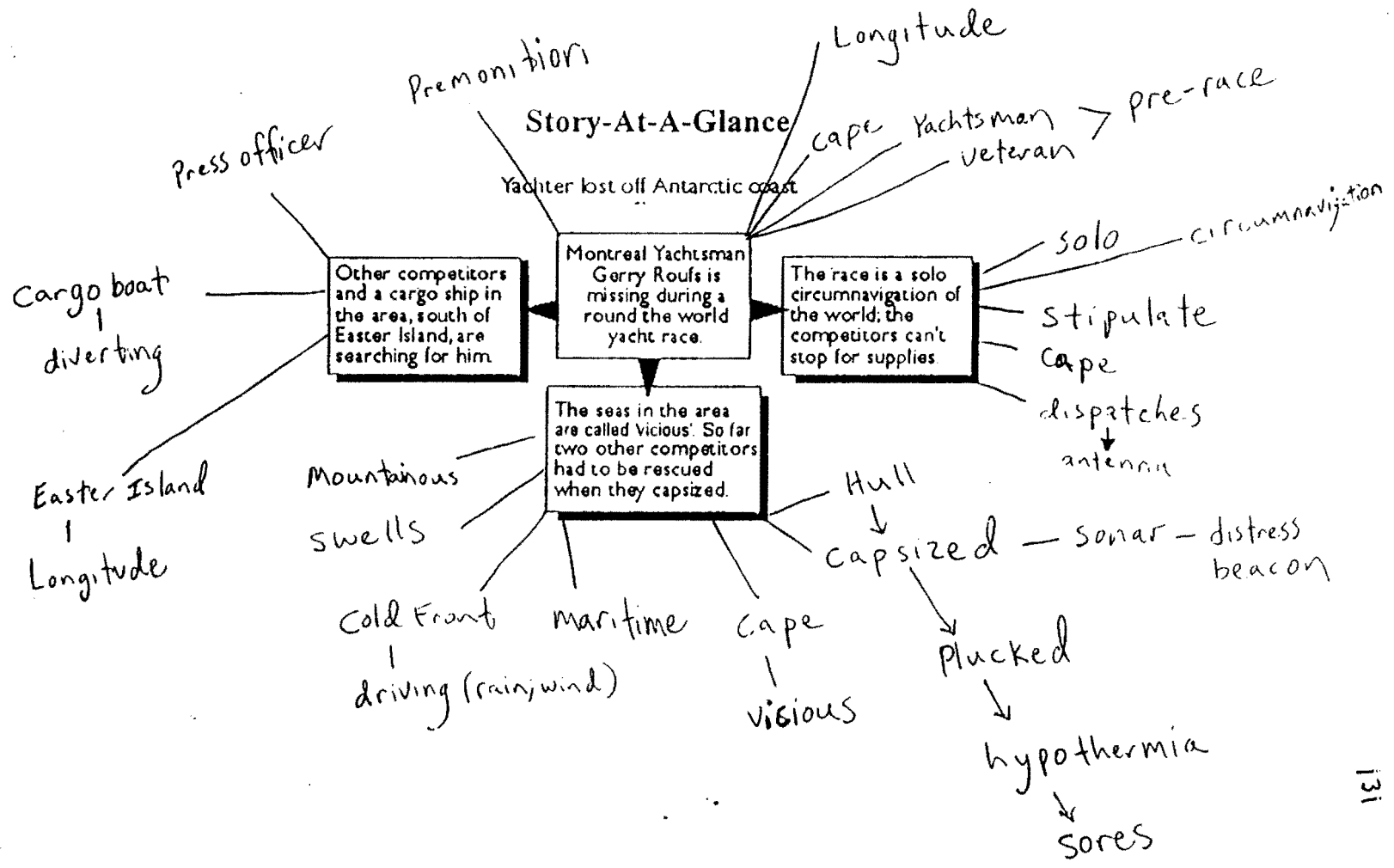
Paul Figurelli was put on-call at work. He found out about the Youth Entrepreneur Program and enrolled.

Figurelli shared the course info with his friend Nuno Antunes. Earlier, the two had discussed ideas for a business.

The youths made a business plan, bought equipment and made an agreement with the gym owner

The youths opened the Mean Bean Cafe and Energy Bar in Main Street's Fitness Quest Gym.





**APPENDIX C**

**NEWSDEN POST-TEST ONE**

**Vocabulary Test 1: "Two East Van youths open gym coffee bar with help from federal government"**

Name \_\_\_\_\_

Section: 3A or 3B

<b>venture</b>	<b>sub-lease</b>	<b>high-end</b>	<b>daily grind</b>
<b>procrastinate</b>	<b>the feds</b>	<b>vacating</b>	<b>unemployment</b>
<b>workers' compensation</b>	<b>fully functional</b>	<b>put-on-call</b>	<b>immigrants</b>

1. It's too easy to \_\_\_\_\_ and to wait for things to happen. You have to make things happen if you are going to be successful in business.
  
2. Every weekday I get up, get dressed for work, drive to Portland State University and do the \_\_\_\_\_.
  
3. Police officers who work for the federal government are sometimes called \_\_\_\_\_.
  
4. Two young Canadian businessmen, Paul and Nuno, made arrangements to \_\_\_\_\_ part of the Fitness Quest Gym in order open their new business.
  
5. To \_\_\_\_\_ something is to risk something.
  
6. The owner of Fitness Quest Gym didn't mind \_\_\_\_\_ his office to make room for the Mean Bean Cafe and Energy Bar.
  
7. Paul and Nuno purchased a \_\_\_\_\_ espresso machine, it is supposed to be the best machine that money can buy. It cost them about \$2,000.

8. Paul and Nuno's espresso machine was broken for a while. However, they fixed the machine and now it is \_\_\_\_\_ (it works every day without problems).

9. If you are \_\_\_\_\_ this means that you must wait at home for your employer to phone and tell you to come to work.

10. In Canada, employees who are injured or become sick resulting from work may receive \_\_\_\_\_. This is money paid to an individual to cover expenses resulting from work related injuries or illnesses.

**APPENDIX D**

**NEWSDEN POST-TEST TWO**

Name \_\_\_\_\_ Section:   A   or   B  

**Vocabulary Test: “Disabled girl’s school fight goes to Supreme Court”**

*Complete each of the following sentences with words from the list below. Use each word only once. There are two words from the list that you should not use.*

obscure	machinations	cavernous	mainstream	integrate
impairment	segregated	judgment	hearing	appealed
cerebral palsy	Down syndrome			

1. The Supreme Court hearing followed \_\_\_\_\_ rules that were hard to understand.
2. \_\_\_\_\_ is another word for schemes or plans.
3. The Supreme Court of Canada’s lobby is \_\_\_\_\_; it is extremely large and empty.
4. Three provincial governments and almost a dozen disabled groups joined yesterday’s Supreme Court \_\_\_\_\_ to present legal arguments.
5. People with \_\_\_\_\_ tend to have problems using their muscles, talking and learning.
6. People with \_\_\_\_\_ have some degree of mental retardation, or lowered intelligence. Many are capable of learning, living on their own and working at non-complicated jobs.
7. Emily has problems seeing properly; she has a visual \_\_\_\_\_.
8. The Ontario Court of Appeal decided that disabled children (such as Emily) should not be \_\_\_\_\_ from “normal” children just because of different physical abilities.
9. The Court of Appeal also ruled that these children should be \_\_\_\_\_ into classes which have normal students.
10. In a sense, Emily has already won her court battle. She is a twelve year old sixth grader who attends \_\_\_\_\_ classes with regular students at a Catholic school.

**APPENDIX E**

**NEWSDEN POST-TEST THREE**

Name \_\_\_\_\_

Section: 3A 3B**NewsDEN Vocabulary Test 3: "Uganda sheds horrible past, with women leading the way"**

*Complete each of the following sentences with words from the list below. Use each word only once. There are two words from the list that you should not use.*

<b>bankrupt</b>	<b>corrupt</b>	<b>lush</b>	<b>landlocked</b>
<b>protracted</b>	<b>advocacy</b>	<b>renovated</b>	<b>polygamous</b>
<b>economist</b>	<b>looting</b>	<b>wares</b>	<b>guerrilla</b>

- About twenty percent of Ugandan men have more than one wife; \_\_\_\_\_ marriages are an accepted and legal part of Ugandan society.
- Attitudes towards women are rapidly changing in Uganda. Ten years ago a woman could not become a politician, own a business or possess land. Today, however, the vice-president of the country is a woman, and women are considered to be the main reason for Uganda's economic success. Women are teaching each other the importance of educating girls, and their husbands support their \_\_\_\_\_.
- Located in eastern Africa, Uganda is surrounded by five countries (Kenya, Rwanda, Sudan, Tanzania and Zaire). Uganda has no access to the Indian Ocean. It is \_\_\_\_\_.
- The jungles of Uganda are \_\_\_\_\_, green and have a wide variety of tropical plant life.
- In the 1970's, the western press considered Idi Amin to be a \_\_\_\_\_ dictator because of his dishonest and immoral actions.
- A \_\_\_\_\_ is a person engaged in irregular warfare.
- The war was \_\_\_\_\_ for six long years because the stubborn dictator (Idi Amin) didn't want to end it.
- During Uganda's civil war, it was dangerous for farmers to transport their \_\_\_\_\_ to the marketplaces; it was also difficult for store owners to keep businesses open because of thieves \_\_\_\_\_ their shops.
- After the civil war in Uganda ended, a lot of buildings needed to be \_\_\_\_\_ because they were damaged by the fighting.



**APPENDIX F**

**FINAL NEWSDEN POST-TEST**

Name \_\_\_\_\_

Section: 3A 3B

**This is a vocabulary test. You must choose the right word to go with each meaning. Write the number of that word next to its meaning. Here is an example:**

1. business      2. clock    3. horse    4. pencil      5. shoe    6. wall

6 part of a house      3 animal with four legs    4 something used for writing

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**“Disabled Girl’s School Fight Goes to Supreme Court”**

1. obscure    2. cavernous    3. machinations    4. private    5. original    6. total

\_\_\_\_\_ hard to understand    \_\_\_\_\_ schemes or plans    \_\_\_\_\_ large and empty

7. impair    8. elect    9. melt    10. hearing    11. cerebral palsy    12. manufacture

\_\_\_\_\_ a type of brain damage    \_\_\_\_\_ diminish in strength    \_\_\_\_\_ part of a trial

13. flesh    14. integrate    15. invite    16. mainstream    17. spoil    18. segregate

\_\_\_\_\_ bring people together    \_\_\_\_\_ keep people apart    \_\_\_\_\_ regular; the prevailing current

19. debt    20. pride    21. Down syndrome    22. roar    23. appeal    24. judgment

\_\_\_\_\_ ask for a case to be retried by a higher court    \_\_\_\_\_ a disability    \_\_\_\_\_ a decision

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**“Two East Van Youths Open Gym/Coffee Bar with Help from Federal Government”**

1. sub-lease    2. venture    3. angel    4. daily grind    5. administration    6. herd

\_\_\_\_\_ the job you do every day    \_\_\_\_\_ to rent to another    \_\_\_\_\_ daring new business

7. high-end    8. the feds    9. bench    10. charity    11. province    12. procrastinate

\_\_\_\_\_ good quality    \_\_\_\_\_ put off something    \_\_\_\_\_ federal employees

13. fully functional    14. darling    15. echo    16. unemployed    17. put-on-call    18. slice

\_\_\_\_\_ wait for employer to contact you by phone    \_\_\_\_\_ working properly    \_\_\_\_\_ out of work

19. worker's compensation    20. palm    21. vacate    22. scheme    23. immigrants    24. thrill

\_\_\_\_\_ people who leave their native country    \_\_\_\_\_ leave    \_\_\_\_\_ helps employees who get injured on the job

### “Uganda Sheds Horrible Past with Women Leading the Way”

1. bankrupt    2. apron    3. lush    4. mess    5. phase    6. polygamous

\_\_\_\_\_ with abundant, healthy plant life    \_\_\_\_\_ out of money    \_\_\_\_\_ having more than one wife

7. corrupt    8. renovate    9. economist    10. sermon    11. stool    12. trumpet

\_\_\_\_\_ someone who studies monetary affairs    \_\_\_\_\_ dishonest, immoral    \_\_\_\_\_ rebuild, fix

13. apparatus    14. compliment    15. revenue    16. landlocked    17. guerrilla    18. advocacy

\_\_\_\_\_ a type of soldier    \_\_\_\_\_ speaking out on behalf of causes and ideas

\_\_\_\_\_ surrounded on all sides; with no access to the ocean

19. loot    20. protract    21. ledge    22. mortgage    23. wares    24. bruise

\_\_\_\_\_ steal    \_\_\_\_\_ draw out over a long time    \_\_\_\_\_ products

**APPENDIX G**  
**CONSENT FORM**

## INFORMED CONSENT FORM

I, \_\_\_\_\_, agree to help Jeff Maggard in his research project on vocabulary teaching methods.

I understand that Jeff will ask me to read news articles from the Internet, to make semantic maps, and to take several vocabulary tests. I expect to be involved in this study one hour per week, for five weeks (during regular classtime).

Jeff has explained to me that the purpose of the study is to find out which of two vocabulary teaching methods is better.

I may not receive any direct benefit from taking part in this study. But the study may help to increase knowledge that may help others in the future.

Jeff has offered to answer any questions I may have about the study (*Jeff's telephone number is 503/725-8257*). He has told me that there is no danger to me in this research project because my name and identity will be kept private when this study is talked about and published.

I understand that helping with this research project will not affect my grade in this class, and I am free to stop participating in this study at any time. I understand that my participation is voluntary.

I have read and understood the above information and agree to participate in this study.

Date \_\_\_\_\_ Signature \_\_\_\_\_

*If you have any concerns or questions about this study, please contact the Chair of the Human Subjects Research Review Committee, Research and Sponsored Projects, 105 Neuberger Hall, Portland State University, 503/725-3417.*

**APPENDIX H**

**VOCABULARY LEVELS TEST**

**Level Three Reading**  
**Winter 1997**  
**A Vocabulary Levels Test**

**Name** \_\_\_\_\_  
**Date** \_\_\_\_\_

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This is a vocabulary test. You must choose the right word to go with each meaning. Write the number of that word next to its meaning. Here is an example:

1. business
2. clock                    \_\_\_\_\_ part of a house
3. horse                    \_\_\_\_\_ animal with four legs
4. pencil                    \_\_\_\_\_ something used for writing
5. shoe
6. wall

You answer it the following way.

1. business
2. clock                    \_\_\_\_\_ part of a house
3. horse                    \_\_\_\_\_ animal with four legs
4. pencil                    \_\_\_\_\_ something used for writing
5. shoe
6. wall

Some words are in the test to make it more difficult. You do not have to find a meaning for those words. In the example above, these words are *business, clock, shoe*.

Try to do every part of the test.

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**The 2,000-word level**

1. original

2. private \_\_\_\_\_ complete

3. royal \_\_\_\_\_ first

4. slow \_\_\_\_\_ not public

5. sorry

6. total

1. apply

2. elect \_\_\_\_\_ choose by voting

3. jump \_\_\_\_\_ become like water

4. manufacture \_\_\_\_\_ make

5. melt

6. threaten

1. blame

2. hide \_\_\_\_\_ keep away from sight

3. hit \_\_\_\_\_ have a bad effect on something

4. invite \_\_\_\_\_ ask

5. pour

6. spoil

1. accident

2. choice \_\_\_\_\_ having a high opinion of yourself

3. debt \_\_\_\_\_ something you must pay

4. fortune \_\_\_\_\_ loud, deep sound



5. pride

6. roar

1. basket

2. crop \_\_\_\_\_ money paid regularly for doing a job

3. flesh \_\_\_\_\_ heat

4. salary \_\_\_\_\_ meat

5. temperature

6. thread

1. birth

2. dust \_\_\_\_\_ being born

3. operation \_\_\_\_\_ game

4. row \_\_\_\_\_ winning

5. sport

6. victory

### The 3,000-word level

1. administration

2. angel \_\_\_\_\_ managing business and affairs

3. front \_\_\_\_\_ spirit who serves God

4. herd \_\_\_\_\_ group of animals

5. mate

6. pond

1. bench
2. charity \_\_\_\_\_ part of a country
3. fort \_\_\_\_\_ help the poor
4. jar \_\_\_\_\_ long seat
5. mirror
6. province

1. coach
2. darling \_\_\_\_\_ a thin, flat piece cut from something
3. echo \_\_\_\_\_ person who is loved very much
4. interior \_\_\_\_\_ sound reflected back to you
5. opera
6. slice

1. marble
2. palm \_\_\_\_\_ inner surface of your hand
3. ridge \_\_\_\_\_ excited feeling
4. scheme \_\_\_\_\_ plan
5. statue
6. thrill

1. discharge
2. encounter \_\_\_\_\_ use pictures or examples to show the meaning
3. illustrate \_\_\_\_\_ meet
4. knit \_\_\_\_\_ throw up into air
5. prevail
6. toss

1. annual
  2. blank \_\_\_\_\_ happening once a year
  3. brilliant \_\_\_\_\_ certain
  4. concealed \_\_\_\_\_ wild
  5. definite
  6. savage
- 
- 

### The 5,000-word level

1. alcohol
  2. apron \_\_\_\_\_ cloth worn in front to protect your clothes
  3. lure \_\_\_\_\_ stage of development
  4. mess \_\_\_\_\_ state of untidiness or dirtiness
  5. phase
  6. plank
- 
1. circus
  2. jungle \_\_\_\_\_ speech given by a priest in a church
  3. nomination \_\_\_\_\_ seat without a back or arms
  4. sermon \_\_\_\_\_ musical instrument
  5. stool
  6. trumpet
- 
1. apparatus
  2. compliment \_\_\_\_\_ set of instruments or machinery
  3. revenue \_\_\_\_\_ money received by the government
  4. scrap \_\_\_\_\_ expression of admiration

5. tile

6. ward

1. bruise

2. exile \_\_\_\_\_ agreement using property as security for a debt

3. ledge \_\_\_\_\_ narrow shelf

4. mortgage \_\_\_\_\_ dark place on your body caused by hitting

5. shovel

6. switch

1. blend

2. devise \_\_\_\_\_ hold tightly in your arms

3. embroider \_\_\_\_\_ plan or invent

4. hug \_\_\_\_\_ mix

5. imply

6. paste

1. desolate

2. fragrant \_\_\_\_\_ good for your health

3. gloomy \_\_\_\_\_ sweet-smelling

4. profound \_\_\_\_\_ dark or sad

5. radical

6. wholesome

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**The University Word List Level**

1. affluence
2. axis \_\_\_\_\_ introduction of a new thing
3. episode \_\_\_\_\_ one event in a series
4. innovation \_\_\_\_\_ wealth
5. precision
6. tissue

1. deficiency
2. magnitude \_\_\_\_\_ swinging from side to side
3. oscillation \_\_\_\_\_ respect
4. prestige \_\_\_\_\_ lack
5. sanction
6. specification

1. configuration
2. discourse \_\_\_\_\_ shape
3. hypothesis \_\_\_\_\_ speech
4. intersection \_\_\_\_\_ theory
5. partisan
6. propensity

1. anonymous
2. indigenous \_\_\_\_\_ without the writer's name
3. maternal \_\_\_\_\_ least possible amount
4. minimum \_\_\_\_\_ native

5. nutrient
6. modification

1. elementary

2. negative \_\_\_\_\_ of the beginning stage

3. static \_\_\_\_\_ not moving or changing

4. random \_\_\_\_\_ final, furthest

5. reluctant

6. ultimate

1. coincide

2. coordinate \_\_\_\_\_ prevent people from doing something they want to do

3. expel \_\_\_\_\_ add to

4. frustrate \_\_\_\_\_ send out by force

5. supplement

6. transfer

### The 10,000-word level

1. acquiesce

2. contaminate \_\_\_\_\_ work at something without serious intentions

3. crease \_\_\_\_\_ accept without protest

4. dabble \_\_\_\_\_ make a fold on cloth or paper

5. rape

6. squint

1. blaspheme
2. endorse \_\_\_\_\_ give care and food to
3. nurture \_\_\_\_\_ speak badly about God
4. overhaul \_\_\_\_\_ slip or slide
5. skid
6. straggle

1. auxiliary
2. candid \_\_\_\_\_ full of self-importance
3. dubious \_\_\_\_\_ helping, adding support
4. morose \_\_\_\_\_ bad-tempered
5. pompous
6. temporal

1. anterior
2. concave \_\_\_\_\_ small and weak
3. interminable \_\_\_\_\_ easily changing
4. puny \_\_\_\_\_ endless
5. volatile
6. wicker

1. dregs
2. flurry \_\_\_\_\_ worst and most useless parts of anything
3. hostage \_\_\_\_\_ natural liquid present in the mouth
4. jumble \_\_\_\_\_ confused mixture
5. saliva
6. truce

1. auspices
2. casualty            \_\_\_\_\_ being away from other people
3. froth                \_\_\_\_\_ someone killed or injured
4. haunch             \_\_\_\_\_ noisy and happy celebration
5. revelry
6. seclusion



## **APPENDIX I**

### **EXAMPLE SQ3R HANDOUTS**

## SQ3R

### Survey/Question/Read/Recite/Review

#### SURVEY

1. Look at the title (and subheadings) to get a mental outline of the story and to activate your prior knowledge.
2. Briefly check vocabulary words, look at any pictures, and notice any **bolded** or *italicized* words.
3. Read the introductory and summary paragraphs (the first two and the last two paragraphs).

#### QUESTION

1. Turn the title/heading of the story into a question (**Purpose Question**) .
2. Turn each subtitle into a question. (Writing these questions will activate background knowledge about a story and will help you gain a purpose for reading)

#### READ

1. Read to answer your *purpose question*.

#### RECITE

1. Paraphrase what you have just read.

#### REVIEW

1. Summarize the main ideas of the story.



NAME: \_\_\_\_\_

ARTICLE TITLE: “Disabled Girl’s School Fight Goes to Supreme Court”

PURPOSE QUESTION: \_\_\_\_\_

\_\_\_\_\_

**What I already know:**

**What I now know:**

**What I don’t know**

**APPENDIX J**

**NEWSDEN VOCABULARY CHECKLIST**

NAME \_\_\_\_\_

SECTION 3A OR 3B

## VOCABULARY CHECKLIST

Directions: Please place a check next to every word or phrase that you think you know.

- |                           |                         |                               |
|---------------------------|-------------------------|-------------------------------|
| 1. ___ authorities        | 26. ___ solo            | 51. ___ unemployment          |
| 2. ___ quandary           | 27. ___ ironic          | 52. ___ promoting             |
| 3. ___ the remains        | 28. ___ flunked         | 53. ___ pilot project         |
| 4. ___ the mainland       | 29. ___ seaplane        | 54. ___ a draft               |
| 5. ___ plea               | 30. ___ bush pilot      | 55. ___ in their interest     |
| 6. ___ sole survivor      | 31. ___ took flight     | 56. ___ government assistance |
| 7. ___ interred           | 32. ___ toddler         | 57. ___ high-end              |
| 8. ___ seat (not a chair) | 33. ___ dashboard       | 58. ___ fully functional      |
| 9. ___ fled               | 34. ___ aviation        | 59. ___ biotechnology         |
| 10. ___ officials         | 35. ___ confident       | 60. ___ practical use         |
| 11. ___ suburbs           | 36. ___ flight center   | 61. ___ immigrants            |
| 12. ___ pending           | 37. ___ ground training | 62. ___ procrastinate         |
| 13. ___ recovery          | 38. ___ defying         | 63. ___ the feds              |
| 14. ___ propaganda        | 39. ___ cloud nine      | 64. ___ worker's comp         |
| 15. ___ patriarch         | 40. ___ commercial      | 65. ___ sub-lease             |
| 16. ___ on the outskirts  | 41. ___ responsibility  | 66. ___ to vacate             |
| 17. ___ recognition       | 42. ___ focused         | 67. ___ venture               |
| 18. ___ status            | 43. ___ trendy          | 68. ___ market analysis       |
| 19. ___ retained          | 44. ___ self-esteem     | 69. ___ capital investment    |
| 20. ___ insist            | 45. ___ skyrocketed     | 70. ___ oblivious             |
| 21. ___ provincial        | 46. ___ enterprising    | 71. ___ constitutional        |
| 22. ___ woo               | 47. ___ daily grind     | 72. ___ disabled              |
| 23. ___ objectivity       | 48. ___ put on call     | 73. ___ obscure               |
| 24. ___ flying high       | 49. ___ maintenance     | 74. ___ machinations          |
| 25. ___ pilot's license   | 50. ___ qualified       | 75. ___ Supreme Court         |

76. \_\_\_ cavernous  
77. \_\_\_ blossomed  
78. \_\_\_ guidelines  
79. \_\_\_ hearing  
80. \_\_\_ cerebral palsy  
81. \_\_\_ impairment  
82. \_\_\_ landmark case  
83. \_\_\_ violated  
84. \_\_\_ integrate  
85. \_\_\_ segregated  
86. \_\_\_ exclusionary  
87. \_\_\_ mainstream  
88. \_\_\_ appealed  
89. \_\_\_ down syndrome  
90. \_\_\_ judgment  
91. \_\_\_ tropical  
92. \_\_\_ to chair  
93. \_\_\_ credit union  
94. \_\_\_ sugarcane  
95. \_\_\_ protracted  
96. \_\_\_ civil war  
97. \_\_\_ corrupt  
98. \_\_\_ exile  
99. \_\_\_ bankrupt  
100. \_\_\_ economic star  
101. \_\_\_ lush  
102. \_\_\_ landlocked  
103. \_\_\_ darling  
104. \_\_\_ democratic  
105. \_\_\_ privatized
106. \_\_\_ liberalized  
107. \_\_\_ inflation  
108. \_\_\_ economic growth  
109. \_\_\_ head offices  
110. \_\_\_ backwaters  
111. \_\_\_ integrated  
112. \_\_\_ renovated  
113. \_\_\_ economist  
114. \_\_\_ wares  
115. \_\_\_ looting  
116. \_\_\_ guerrilla  
117. \_\_\_ fez  
118. \_\_\_ polygamous  
119. \_\_\_ on the map  
120. \_\_\_ gender  
121. \_\_\_ machete  
122. \_\_\_ deference  
123. \_\_\_ feminist  
124. \_\_\_ entrepreneurial  
125. \_\_\_ advocacy  
126. \_\_\_ acrimony  
127. \_\_\_ pearl  
128. \_\_\_ monogamous  
129. \_\_\_ title  
130. \_\_\_ school board  
131. \_\_\_ require  
132. \_\_\_ ridiculed  
133. \_\_\_ avant-guardist  
134. \_\_\_ restricted  
135. \_\_\_ shied away
136. \_\_\_ aversion  
137. \_\_\_ dropout rates  
138. \_\_\_ anglophone  
139. \_\_\_ elementary  
140. \_\_\_ drastic  
141. \_\_\_ held back  
142. \_\_\_ deem  
143. \_\_\_ essential  
144. \_\_\_ percent  
145. \_\_\_ transition  
146. \_\_\_ individualized  
147. \_\_\_ fundamentals  
148. \_\_\_ prerequisites  
149. \_\_\_ key areas  
150. \_\_\_ diploma  
151. \_\_\_ complimentary  
152. \_\_\_ detriment  
153. \_\_\_ promoted  
154. \_\_\_ stigmatized  
155. \_\_\_ motivated  
156. \_\_\_ appropriate  
157. \_\_\_ diminish  
158. \_\_\_ mastered  
159. \_\_\_ sector  
160. \_\_\_ tendency  
161. \_\_\_ skeptical  
162. \_\_\_ quick-fix  
163. \_\_\_ focusing  
164. \_\_\_ preschool  
165. \_\_\_ crucial

**APPENDIX K**  
**NEEDS ASSESSMENT**

## **TECHNOLOGY NEEDS ASSESSMENT FOR XYZ UNIVERSITY'S INTENSIVE ENGLISH LANGUAGE PROGRAM**

### **Overview**

During the construction of the needs analysis it was determined that five groups (of stakeholders) associated with the English as a Second Language program at XYZ University should be surveyed. The stakeholders included 1) students enrolled in Reading, Writing, and Speaking & Listening courses in an intensive English language program (IELP); 2) a group of international students enrolled in a Japanese university exchange program; 3) the IELP faculty at XYZ University; 4) the IELP Coordinator; and 5) instructors from various departments outside of the ESL program (e.g., Engineering, Economics and Business).

Three separate questionnaires were developed and administered. One for ESL students, one for IELP faculty and one for XYZ University faculty outside of the IELP department. Each survey provided factual data as well as information describing attitudes towards the use of computers.

### **Student Questionnaire**

Ninety-two questionnaires were distributed and eighty-six were returned. All upper intermediate reading students (N=38); one group of lower level writing students (N=7); a group of low-intermediate listening/speaking students (N=17), and all of the students from the Japanese university exchange program (N=24) were surveyed. The questionnaire utilized the five point scale (below). Students were asked to circle the number that best described their feelings:

5= Strongly Agree, 4= Agree, 3= No Opinion, 2= Disagree, 1= Strongly Disagree

### **Overview Of ESL Student Responses**

Students from the following countries (N=17) participated in the survey: Bahrain, Brazil, China, Germany, Hong Kong, Indonesia, Japan, Korea, Kuwait, Libya, Romania, Russia, Saudi Arabia, Spain, Taiwan, Thailand and Vietnam. The responses indicate that 1) the ESL population at XYZ University's IELP strongly wish to learn about computers and the Internet, and 2) that they would like to learn English using the computers (see Table 1 on the next page).



**Table 1: Summary of Student Responses (mean scores)**

Class Name	Do Students want to learn to use computers?	Do Students want to learn to use the Internet?	Do Students want to learn to use computers to learn English?
Writing	5.0	5.0	4.71
Speaking	4.64	4.76	4.11
Reading (A)	4.5	4.43	3.79
Reading (B)	4.85	4.76	4.0
Reading (C)	4.5	4.5	4.0
Japanese university SS	4.33	4.66	4.20
Sum of Means=	4.636	4.685	4.135

**Overview Of ESL Faculty Responses (N=13)**

Fourteen full-time faculty members were given surveys and thirteen were returned. The respondents of this group consisted of two males and twelve females. All instructors own personal computers and 76.9 % percent reported that they use the Internet. However, only twenty-three percent reported that they are currently using computers in the classroom. Responses indicated that there was a strong interest in learning more about using computers ( $x= 4.57$ ) and the Internet ( $x= 4.42$ ) in language classrooms. Responses also indicated that these instructors wanted to learn how to use computers to teach university ESL courses ( $x= 4.30$ ). Furthermore, responses indicate the faculty strongly believe their students need to be able to use computers in order to be successful in their regular college classes ( $x= 4.69$ ). However, these instructors were not strongly interested in adding an Internet component to the classes that they teach ( $x= 3.38$ ).

**IELP Coordinator Interview**

In an informal interview, the IELP Coordinator commented that she was in favor of using computers and the Internet in the ESL program at XYZ University. She also stated that the Internet had been used in IELP writing courses in the past very successfully. The Coordinator declared support for increasing the number of IELP courses that use computers and the Internet. However, she indicated that she was

concerned about the lack of keyboarding skills that the students at the lower levels tend to have; she stated that this was a constraint. The Coordinator also reported that relatively few members of the core ESL instructors currently use computers in their classrooms and that teacher training is another constraint that needed to be dealt with if a curriculum using the computers and the Internet was ever to be adopted by the ESL department. However, the Coordinator encouraged the development of teacher training workshops related to using computer software and the Internet in ESL classrooms.

### **Summary Of IELP Responses: Student and Faculty**

There is a strong interest in using computers in language classrooms at XYZ University. Responses to the questionnaires by ESL students indicate that they want to learn English using computers, ESL faculty responses indicate that they would like to use computers to teach English ( $x = 4.30$ ), and the IELP Coordinator supports the integration of computers and the Internet into the curriculum. Currently, however, only twenty-three percent of the ESL faculty are using computers in the classroom (as of November 1996).

### **Overview of PSU Faculty Responses**

Questionnaires were given to faculty members in various departments outside of the IELP (75 were distributed and 26 returned). In addition, six interviews with non-ESL faculty members were conducted based on the questionnaire. The results of the responses are listed below (see Tables 2 and 3).

**Table 2: Summary of Faculty Questionnaires**

Questions:	Yes	No	Future Plans
Do you require students to communicate with you via email?	25/26	1/26	25/26 will continue
Do you require students to gather information using the Internet?	24/26	2/26	24/26 will continue

**Table 3: What kinds of activities do non-ESL faculty assign which require students to use the Internet and email?**

Top ten Responses:	<ol style="list-style-type: none"> <li>1. Gather info. for financial statements</li> <li>2. Review current business articles</li> <li>3. Check current financial index</li> <li>4. Check class homepage for assignments</li> <li>5. Send weekly updates via email</li> <li>6. Group work</li> <li>7. Internet article reviews</li> <li>8. Research projects</li> <li>9. Students create homepages</li> <li>10. Q/A forms associated with selected topics</li> </ol>
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### **Summary**

Responses from XYZ University faculty clearly show that there is a necessity for students enrolled in the Engineering, Economics, Business, English, and Foreign Language Departments to have some computer/Internet skills (as of November, 1996). Moreover, there seems to be a growing trend to include Internet-type activities in future class curriculums.

### **Conclusion**

Considering the information presented above, a strong implication for this needs analysis is that technology should be incorporated into the IELP curriculum at XYZ University. Doing so would provide non-native English speaking students with the language and technology skills they need to be successful once they exit the IELP program.