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The effects of computer assisted language learning and specially designed academic instruction in English on second language acquisition

George Edward Williams

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THE EFFECTS OF COMPUTER ASSISTED LANGUAGE LEARNING AND
SPECIALY DESIGNED ACADEMIC INSTRUCTION IN ENGLISH ON
SECOND LANGUAGE ACQUISITION

__________________________
A Project
Presented to the
Faculty of
California State University,
San Bernardino

__________________________
In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education:
Instructional Technology

__________________________
by
George Edward Williams
June 2002
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Approved by:

John Ruttner, First Reader

Rosalie Giacchino-Baker, Second Reader
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ABSTRACT

The purpose of this study was to compare the effectiveness of two methods of instruction for second language acquisition. The first method used a computer based software program known as English Language Learning Instructional System (ELLIS). The second method used Specially Designed Academic Instruction in English (SDAIE). Each method was used in a high school classroom with similar students classified as English Language Development level three. Standardized test scores from the two classes were compared to see if one method produced a significant improvement over the other in reading or writing. The two classes were also analyzed to see if either method produced a significant difference in reading or writing scores by gender. A further comparison was conducted to see if either method produced a significant improvement in reading or writing scores for students enrolled in either class for less than six weeks.

The measuring instrument used for both the pre and post-tests was the California English Language Development Test (CELDT). The English Language Development (ELD) coordinator administered the CELDT to all English Language Learners (ELL) enrolled in the high school during September of the school year. The test was administered
the following March to only the two classes involved in this research project. The results were then compared using a two-tailed T-test.

The ELLIS program results showed a significant gain in reading scores; the SDAIE method did not. The SDAIE method showed a significant gain in writing scores for both boys and girls. The girls showed a significant gain in writing scores using the ELLIS program, while the boys using this program did not. Neither program showed a significant improvement in reading and writing scores for those students enrolled for less than six weeks.

Based on the results of this study it was recommended that the high school alternate students between the ELLIS class and the SDAIE class. This would maximize the use of the computer lab and allow more students to experience the benefits from each method. It was further recommended that the site turn off the auto correct feature of the word processor for second language learners.
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Pete Loza, Title VII Coordinator, Moreno Valley HS
Shanthini Abraham, English Teacher, Moreno Valley HS
Demetria Tillman, Assistant Principal, Moreno Valley HS
DEDICATION

I would like to dedicate this thesis to my wife Kathy for being understanding and supportive through the two years of this program. She truly became a "Master's Widow."

I would also like to thank my advisor, John Ruttnner, for guiding me through this process and helping me to focus on the problem. My second reader, Dr. Rosalie Giacchino-Baker provided invaluable help and suggestions as I delved into the field of Second Language Acquisition.
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CHAPTER ONE

BACKGROUND

Introduction

The purpose of this study was to compare the effectiveness of two methods of instruction for second language acquisition. The first method was a computer based software program known as English Language Learning Instructional System (ELLIS). The second method used the Specially Designed Academic Instruction in English (SDAIE). Each method was used in a high school classroom using similar students classified as English Language Development (ELD) level three. Standardized test scores from the two classes were compared to see if one method produced a significant improvement over the other in reading or writing. The two classes were also subdivided to see if either method produced a significant difference in reading or writing scores by gender. A further comparison was conducted to see if either method produced a significant improvement in reading or writing scores for students enrolled in either class for less than six weeks.

The high school has used the software program ELLIS for one-and-one-half school years. The ELD chair reports excellent progress by the students using the ELLIS
program. Due to this progress, the ELD department wanted to expand the program and purchase additional licenses at a cost of almost $1,000 per license. This project studied the effectiveness of the computer based instruction program and the SDAIE class. The results were compared to see if a significant difference in improvement on standardized test scores existed between students using the ELLIS program and students in the SDAIE class. The standardized test used was the California English Language Development Test (CELDT).

Two classes were formed from students classified as ELD 3. ELD 3 is defined as Intermediate Proficiency, on a five level scale, the level before Partial Academic Proficiency. Student’s classification was a result of their 2001 IDEA Proficiency Test (IPT) scores. Ninth through twelfth grade students were placed in the computer-based class, however only ninth grade students were placed in the SDAIE English One class. The ninth grade English One SDAIE class qualified under the state’s twenty-to-one ratio for students-to-teacher grant to the district. The SDAIE class is a University of California approved A-G English course while the ELD Three is offered in lieu of the English course. The class meets graduation only requirements for the school district.
All Limited English Proficient (LEP) students at the school were administered the California English Language Development Test (CELDT) at the beginning of the school year. The two classes in this study were the only students to take the same test in March as a post-test. This was done to compare effectiveness of the two methods for second language acquisition instruction.

Purpose of the Project

The purpose of the project was to determine whether the Computer Assisted Language Learning (CALL) model of ELLIS had a significant effect on second language acquisition for the high school. Would there be a significant increase in reading and writing scores by the CALL model to justify spending the extra money associated with ELLIS? The goal of this study was to determine whether ELLIS did increase second language learners reading and writing scores when compared to the SDAIE class. In addition this research compared the pre and post-tests scores of the students to see if there was a gain in reading and writing scores for either gender using the ELLIS method or the SDAIE method. Lastly, this research determined if there was a difference in the pace of second language acquisition using ELLIS compared to the
SDAIE method for newly enrolled students, those considered transient.

Context of the Problem

The context of the problem was to address the effectiveness of the ELLIS program. The expense of CALL was large enough to give one pause when compared with the SDAIE method. The high school began with a small investment in the ELLIS program. The original program began with eight computers in one classroom as enrichment to the ELD 3 classes. Based on anecdotal evidence of student performance, the program was expanded to fill a 36-seat computer lab.

The computer lab was already in existence, purchased to augment mathematical instruction. The math department determined that the lab was not making an impact on student achievement, and they were willing to give the lab up. The case at this high school was the same as at other schools. The software for the math department was in place, but the math teachers lacked the experience in a computer lab setting to feel comfortable with implementing the program.

The computers were purchased using federal Title I program funds that required the lab be used for either
math or reading instruction. The expansion of the ELLIS program was chosen and implemented. The cost factors associated included the purchase of additional seat licenses, increasing from the previous eight licenses to include the lab's additional thirty-six computers.

Significance of the Project

The difference in the two methods, the ELLIS method and the SDAIE method, was around $30,000. In the current era of student performance accountability on state tests the question arose; was one program more effective in increasing student achievement. The opinion of the ELD department was that indeed, the ELLIS program was leading to higher achievement. The high school's ELL population is about one third of the school's total student population. With numbers like these, increasing student English language acquisition should have a positive impact on the school's state testing performance.

The ELD department put in a request for thirty-six licenses at a cost of $36,000. There was also a need for a new computer server to host the program costing an additional $4,500. There were other departments that wanted to make use of the computer lab as well as before and after school access for students. Evening classes for
credit recovery for students and parent education programs were also considered.

When a school commits to spend money on purchases that have a limited shelf life, those resources should be fully utilized, not limited to a few hours a day. This ensures that taxpayer revenue is maximized. The ELLIS program has been used at several schools for students' parents second language acquisition programs at school sites. The high school received a grant to implement such a program. These factors led the site to decide to purchase the additional licenses and server.

The costs associated with CALL programs vary. This research was limited to studying only the ELLIS program. The licensing of ELLIS is about $1,000 a seat. The costs associated with the SDAIE classroom materials including, visual aids and other supplemental materials, are about $1,000 for one teacher. There is the additional expense of teacher training. The qualified teacher will have a Cross-cultural, Language and Academic Development (CLAD) certificate. A school that cannot recruit a CLAD certified teacher would need to consider training existing staff, which could run upwards of $2,000 per teacher.

The newly authorized Elementary and Secondary Education Act (ESEA) requires students in grades two
through eleven to take annual tests. The scores from these tests will affect how federal aid to the schools are allocated and spent. Schools need to take a critical look at expenditures and measure performance in deciding how to spend dollars and which programs are effective.

The U. S. Department of Education's new director of educational technology, John Bailey, is quoted as saying “Whereas the previous administration focused on technology as a separate initiative, the new political leadership is taking a more integrated approach, viewing technology within the context of other reforms” (Branigan, 2002). It becomes clear that a shift is under way, from purchasing technology and placing it in the classroom, to integrating technology as a means to increase student achievement.

School sites need to be aware of what programs are available and when implemented, what effect if any, they are having on their student’s standardized test scores. Each identified sub-group of student population should be viewed as an opportunity to intertwine technology into the curriculum, but measurement of student achievement should be correlated to the cost of that technology. Can we not see that day looming on the horizon (in fact already here in several areas)? Bell (2000) questions if the bonuses paid in state and national teacher certification programs
necessarily leads to better performing students. We are operating in times when we need to assure the tax-paying public that their money is well spent and any additional allocations asked for are justified based on effectiveness and demonstrating increases in student performance.

The ability to identify individual students, within large groups of students and place them according to their skill levels and needs is a task ideally situated to computerization. The quicker a student can be identified and properly placed, so that education can commence, the better chance the student has of maximizing his or her learning potential in any of the subjects the average high school student is exposed to. Streamlining the placement process from weeks to hours has the potential to impact the school sites test scores as well.

Assumptions

The following assumptions were made regarding the project:

1. Student performance on all exams represented their best efforts and was a true reflection of their abilities.

2. Students were correctly identified at an ELD 3 level for both classes, both at the beginning of
the school year and new students throughout the year.

3. The scorers for the writing portion of the CELDT were equally trained and proficient.

Limitations and Delimitations

During the development of the project, a number of limitations and delimitations were noted. These limitations and delimitations are presented in the next section.

Limitations

The following limitations apply to the project:

1. This study was limited to two English Language Development (ELD) classes.
2. Two different instructors taught the classes.
3. The SDAIE instructor was female and the ELLIS instructor was male.
4. Each class was comprised of students that were categorized as ELD 3 by the IDEA Proficiency Test (IPT).
5. The SDAIE class, met in the afternoon at 1:00 pm and the ELLIS class met in the morning at 10:15 am. The Departments based on factors including teacher availability, room constraints and
conference period preferences, determined the schedule.

Delimitations

The following delimitations apply to the project:

1. There were no assignments based on technological proficiency or familiarization with computers.
2. The SDAIE class was restricted to incoming freshmen students, allowing this class to qualify for the State of California's grant guideline of a 20:1 student-to-teacher ratio for ninth grade math and English courses.
3. The ninth grade students were chosen for the two classes, based upon length of enrollment time in the district. Those that had been in the district for two or more years were placed in the SDAIE class. Those less than two years were placed in the ELLIS class. Some students were placed due to scheduling factors as to which class time they had available for their English class.
4. The 10th, 11th and 12th grade students were placed in the ELLIS class based on their ELD testing level and the availability in their schedule for an English class.
5. The ELLIS class began with 30 students with a fairly even distribution of students across the grade levels.

6. So as not to conflict with the school's test dates, this study administered the post-test during the first week of March.

Definition of Terms

The following terms are defined as they apply to the project.

CALL (Computer Assisted Language Learning) uses the power of computers to deliver unique, individualized instruction to each learner.

SDAIE (Specially Designed Academic Instruction in English) integrates academic language development, content area instruction and explicit instruction in learning strategies for both content and language acquisition.

ELLIS (English Language Learner Instructional System) a computer assisted language learning program developed by Formavision of Rueil Malmaison, France.

CELDT (California English Language Development Test) is the new measuring instrument for English fluency, introduced by the state of California in 2001.
IPT (IDEA Proficiency Test) is the test that was in use prior to 2001 to measure an English learner's fluency and make placement recommendations in an English language development program. This test determines listening and speaking skills.

CLAD (Cross-Cultural Language and Academic Development) is a California teacher certification program required for teaching limited English proficient students.

Organization of the Thesis

The thesis portion of the project was divided into five chapters. Chapter One provides an introduction to the context of the problem, purpose of the project, significance of the project, limitations and delimitations and definitions of terms. Chapter Two consists of a review of relevant literature. Chapter Three documents the steps used in developing the project. Chapter Four presents the results and discussion of the project. Chapter Five presents conclusions and recommendations drawn from the development of the project. This study's measuring instruments were California Standardized Tests. The tests and the scoring instructions may not be duplicated or displayed within this project. There is no
appendix for this project. Finally, the project references conclude the study.
CHAPTER TWO
REVIEW OF THE LITERATURE

Introduction

Chapter Two consists of a discussion of the relevant literature. Specifically,

Methods for Second Language Acquisition

A study of the history and methods for second language acquisition finds there are four main methods at this time. These four methods may be known by different names, however they are most commonly referred to as Grammar Translation, the Direct Approach, the Audio Lingual Approach and the Communicative Approach.

The Grammar Translation (also known as the Indirect) method has its base in the teachings of Latin and Greek dating to the 17th century and was the only method at the time for teaching languages (Leask, 1999). The rules of grammar, not the language itself, were important. This method consisted of verb declensions set out with tables and vocabulary lists to be learned. Translation took place from the primary language into the target language and vice-versa. There was little or no attention paid to pronunciation. The method was built upon the assumption that language consists of written words, which exist in
isolation as though they were individual bricks, which could be translated one by one into their foreign equivalents and then assessed according to grammatical rules into sentences in the target language.

The direct method (also known as Reform Method, Natural Method, Phonetical Method, Anti-grammatical Method) appeared around the beginning of the 20th century. This method immerses a student in a class where the instructor is constantly speaking and asking questions in the target language (Hawkins, 1981). The student must listen and speak, as well as actively participate throughout the lessons. The printed text is kept away from second language learners for as long as possible. Grammar rules are not the pivotal point of this method, thus the label of the Anti-Grammatical Approach.

The 1950s and 60s gave rise to the Audio Lingual approach. Two new technological aids came into general use in the classroom and language laboratory, the portable tape-recorder and the filmstrip projector. It was now possible to bring native speaking voices into the classroom. Students could self-record their language acquisition. Tapes could be used in the classroom, at home, or in a language laboratory.
The early audio-visual courses consisted of taped dialogues, accompanied by filmstrips, which were designed to act as visual cues to elicit responses in the target language. The audio-lingual course consisted of short dialogue and sets of recorded drills (Leask, 1999). This method was based on the behaviorist approach (Brown, 1993), a psychologist’s model of the 1940s and 50s, which held that language is acquired by habit formation. The assumption was that foreign language acquisition is basically a mechanical process, and it is more effective if the spoken form precedes the written form. The focus was on oral proficiency and carefully structured drill sequences. Quality and permanence of learning were said to be in direct proportion to the amount of practice carried out.

The Communicative Approach appeared when the comprehensive secondary school changed in the 60s and 70s. School curriculum was restructured (Leask, 1999), which lead to the teaching of a foreign language for virtually all students. This restructuring created pressure for a change in teaching methods and curricula to suit the needs of the “non-traditional” groups of learners. The Communicative Approach focuses on language as a medium of communication. Prior to the this approach, language was
taught in a vacuum, for the sake of language and passing exams, rather than language for communication. The Communicative Approach is built upon students acquiring usable, everyday language and recognizes that student errors are a natural part of second language acquisition. Learners attempt their best to use the language creatively and spontaneously. The students are bound to make errors, and therefore, constant correction is unnecessary and even counter-productive. The use of visual stimuli is also important in the Communicative Approach (Brown, 1993).

Current practice in second language acquisition is built around the Communicative Approach but recognizes the good points from each of its predecessors. Spelling in writing is given attention as well as standard grammar. Use of the Natural Approach immerses students in the target language from the first day. The instructor speaks more in the target language rather than L1. The classroom environment is staged to reinforce the target language. Krashen (1977) defines acquisition as the development of language proficiency without conscious recourse to rules, while learning is the development of language proficiency through directly accessible knowledge of language rules. In order for speech to be useful in acquisition, there
must be a message and a need to communicate that message (Krashen and Terrell, 1983) in a low anxiety environment.

Specially Designed Academic Instruction in English

Specially Designed Academic Instruction in English is modeled on many of the same principles as Cognitive Academic Language Learning Approach (CALLA). SDAIE integrates academic language development, content area instruction and explicit instruction in learning strategies for both content and language acquisition (Chamot and O'Malley, 1994). While grammar is taught, it steps aside from being the center of attention. Content and learning strategies move to the forefront, starting with work in math and science and moving in succession to language arts and then social sciences.

The two main premises on which CALLA is built are that content should be the primary focus of instruction and that language skills are developed as the need emerges from the content (Chamot and O'Malley, 1994). SDAIE has been called a bridge between language and content. Students develop English language abilities, while the emphasis is on interaction and comprehensible input. Emphasis is on challenging and understandable subject
matter that fosters critical thinking and not watered down curriculum.

SDAIE is built upon eight blocks (Zwiers, 1999). The first of these is academically demanding content, lessons with simple language but with complex content that requires higher-level thinking (low level, high interest). Next, the teacher considers prior knowledge and student experiences, along with language proficiency, when modifying a textbook or other materials.

The instructor uses theme-based student learning where the course content and target language are integrated. The content learning must be modified to tap students' prior knowledge and experiences. Some students may need to be taught how to access and transfer knowledge that was learned in their first language. This is where the need for a bilingual instructor or teacher's aide becomes most crucial.

The most evident form of SDAIE instruction is manifest where written and oral words need situational and contextual help in order to be understood. This evidence takes the form of manipulatives, miniature objects, real items and visuals with labels such as photos, pictures, or drawings. The instructor uses cooperative learning because many language minority students have difficulty with the
competitive, context-reduced, compartmentalized and disconnected instruction in our schools. Students feel better about school when they are learning interesting content and English at the same time. Lastly, the instructor must establish a set of standards and behaviors that the student will exhibit during and at the end of each unit.

The Technological Age in Language Teaching

The rise of the Audio-Lingual approach in the mid 1950s is generally thought to have marked the start of the technological age in language teaching. This approach did introduce important new elements, however the introduction of mechanical assistance in the acquisition of second languages first occurred in 1926. Professor Oscar Russell, with help from the Bratton Corporation, installed the first mechanical phonetics lab at Ohio State University. This lab consisted of the Ediphone and Dictaphone as well as several listening tables. Native speakers of the target language would transcribe the day's lesson. This would allow the student to hear the lessons and pronunciation over and over again. The instructor was freed from tedious drill and practice instruction, and
allowed to concentrate more on the student’s reading and further studies (Collins, 1926).

While the tape player/recorder and films made their way into the general education classrooms in the 1950s and early 1960s, the computer was quickly evolving from its original military purposes to other uses. Education’s first encounter with CALL was known as Programmed Logic for Automatic Teaching Operations (PLATO), a five million dollar project that began in 1960. PLATO included a communication system in the form of note files, which could be used as a liaison between the tutor and learner, between learner groups and for bulletin board type announcements (Levy, 1997). The next piece of technology to work its way into the classroom was a bilingual Visual Display Unit or VDU and a computer-generated audio system during the later 1960s (Ahmad, et al., 1985). This machine and the early PLATO programs were essentially what we now refer to as “drill and kill.”

During the 1970s and into the 80s, Dr. C. Victor Bunderson was developing Time-shared, Interactive, Computer-Controlled Educational Television or TICCET. Dr. Frank Otto at Brigham Young University began the development of an English as a Second Language course. In a search for federal funding, he established several
contacts that eventually lead to the creation of the Computer Assisted Language Instruction Consortium or CALICO in 1982/3. TICCIT can be considered the first real multimedia project. Levy (1997) described TICCIT as a system in which the learner controls events involving "special keys" which included keys marked Rule, Example, Practice, Advice, Objective, Easy, Hard. This enabled the student to have control over both the content and the learning strategies.

The 1980s saw a shift to more mathematical uses of the computer. IBM introduced the Personal Computer (PC). Seymour Papert, Professor of mathematics and education at MIT, invented the computer language named Logo, allowing young children to program computers and design mathematical figures. In the mid 80s, Apple released the Macintosh. This revolutionary PC introduced the mouse and a graphic interface, and it made sound. Mary-Ann Lyman produced one of her first programs known as "Computerized Lessons, Rendez-Vous", to take advantage of the sound capabilities introduced by Apple. Leech & Candlin, published the first language learning text supported by the computer Computers in English Language Teaching and Research.
Products began coming out in the mid to late 90s that were aimed at taking advantage of the growth of the Internet. The Camille Consortium of five universities produced materials for self and tutor-guided learning. Software titles include: "Travailler en France", "l'Acte de Vente", "Español Interactivo" and "Español en Marcha". Pennington published The Power of CALL in 1996. Web pages were developed for language learning drills.

Computer Assisted Language Learning

Computer Assisted Language Learning (CALL) dates back to the 1960s. The early manifestations followed along the lines of the Behaviorist Approach for language learning. The first form of CALL utilized the computer’s capacity for repetitive language drills (Lee, 2000). "Behaviorist CALL" was first designed and implemented in the era of the mainframe which meant the computer was primarily used for extensive drills, explicit grammar instruction, and translation tests (Ahmad, et al., 1985).

Mirroring the change in curriculum restructuring for second language teaching, "Communicative CALL" emerged in the 1970s. This form of computer-based instruction corresponded to the Communicative Approach which recognized that learning was a creative process of
discovery, expression, and development. Grammar should be taught implicitly and students should be encouraged to generate original utterances instead of manipulating prefabricated forms (Jones & Fortescue, 1987; Philips, 1987). Price structure changes in the computer industry gave rise to the personal computer that allowed greater possibilities for individual work. CALL software in this era included text reconstruction programmers and simulations (Lee, 2000).

The 1990s saw another change in computer capabilities, and CALL adapted to use these new powerful computers. Multimedia networked computers provided a range of informational resources (the web), communicative resources (e-mail and chat rooms), and publishing tools (PowerPoint, HyperCard and desktop publishing programs). Because of these capabilities, teachers moved away from a cognitive view of communicative language teaching to a socio-cognitive view that emphasized real language used in a meaningful, authentic context (Ortega, 1997). The advances in sound reproduction on the computer enabled CALL to finally include all four forms of language instruction, listening, speaking, writing, and reading.

What are the advantages of using CALL as opposed to the SDAIE class setting? Lee (2000) points out the
ability of the language learner to become the creators not just the receivers of knowledge. The Web makes it possible for the student to experience the language and culture of the target language. The students learn by doing and experiencing for themselves. Computers are now viewed as endemic to American culture (Purdy, 1996). The English Language Learner associates computers with American success, fun and games, thus they are motivated in taking lessons on the computer. The ESL student can effectively expand their linguistic, rhetorical, and research skills through focus discipline, which is especially valuable for the potential college bound ESL student (Kasper, 1998). Lessons should be tailored to quickly gaining independence for the language-learning student.

Network-based instruction allows for the teacher to quickly tailor a self-instruction strategy for the student based upon their individualized needs. The student is able to work on the skills they need and bypass instruction on those that they already possess. Many language acquisition programs are now web based and offer the student the ability to continue their lessons at home or after school. Students view CALL as the chance to escape from the canned knowledge of books and discover
thousands of information sources. The more reserved student is able to interact with people in the target language and study the target language in a cultural context (Belisle, 1996).

There are three generally accepted barriers to implementing CALL in a K-12 setting. The first includes the cost of hardware, software, maintenance (also known as total cost of ownership), and extends to include staff development, which is generally calculated at about thirty percent of the total cost of ownership (Fitzgerald, 1999). Lee (2000) argued in favor of Computer-Assisted Learning stating that it could cost the same as conventional instruction because it ends up producing higher achievement in the same amount of instructional time. Herschbach (1994) stated that new technologies probably will not replace teachers, but will supplement their efforts, as has been the pattern with other technologies, thereby adding to the cost of instruction much like overhead projectors, TVs and VCRs.

The second barrier to implementing CALL is a lack of theoretical and technical knowledge. This applies not just to the classroom teacher as most think of first, but also in developing software that actually promotes learning (Lee, 2000). Staff development extends not just
to the hardware, the basic operation of hardware, similar to training to in copy machine and VCR use, but must also include training in integration. Many instructors may not understand how to use the new technologies, but even more challenging is integrating these new means of learning into an overall instructional plan. Instructors are faced with ever changing policies that compete for time and resource allocations.

The last barrier is that instructors tend not to use technologies that require substantially more preparation time. It is difficult to provide instructors access to technologies that will not require them to rethink their lessons and deliveries (Herschbach, 1994). Murphy & Terry (1998) point out that change now moves more quickly and can destroy what was considered the norm in the past, but by doing so can create new opportunities for instructors.

English Language Learner Instruction System

Formavision, of Rueil Malmaison, France, first introduced the English Language Learner Instructional System in 1992. ELLIS is a “virtual” language, computer based program for ESL and bilingual learners at all levels. The ELLIS curriculum uses graphics, streaming
video with digitized sound, voice recordings of the student, animation of subjects as well as text.

ELLIS is based on the Natural Approach theories for language acquisition and learning. The program follows Cummins' (1981) stages of communication. Stage one, consists of Cummins' Basic Interpersonal Communication Skills known as BICS. ELLIS Intro focuses on topics like shopping, using public transportation, and getting medical attention. In this module the target language acquirer receives only comprehensible input (Krashen and Terrell, 1983).

Cummins' stage two is the transition from BICS to the third stage known as Cognitive Academic Language Proficiency (CALP). The ELLIS Middle Mastery program recognizes that this proficiency is gained by interacting with native speakers in real-life situations. Translation, definition, spelling, grammar, memorization are all involved. The student works toward gaining fluency in hearing and speaking English by using the programs ability to record the student's words as they are spoken in conversations.

The ELLIS Senior Mastery program focuses on preparing students for the rigors of more advanced secondary classes and to seek higher education. The program was designed
for second language learners with prior exposure to English. CALP is the level of language competence needed for critical or abstract thinking, problem solving, and assimilating new information, and is absolutely crucial to academic success (Cummins 1981). ELLIS offers activities for vocabulary, idiomatic expressions, grammar, reading, culture, listening comprehension, pronunciation. Students watch video clips containing lesson-specific grammar, and then record those sentences.

Gender Differences in Language Acquisition

In looking at the wealth of literature concerned with gender differences in language, this report will trace the literature as it relates to second language acquisition. The bulk of the literature deals with the socialization factors regarding language acquisition. The biology of language acquisition begins with the theories put forth by Chomsky. Noam Chomsky's review of Skinner's Verbal Behavior (Chomsky, 1959) advanced the theory that children's language learning is governed by highly subtle and abstract principles, and the child does so without explicit instruction or any other environmental clues to the nature of such principles. He concluded that language acquisition, like all cognitive processes, is essentially
a "black box" and depends on an innate, species-specific module that is distinct from general intelligence. It is generally accepted that language acquisition is the result of the interplay between a cognitive mechanism and the learner's environment (Egbert, 1993).

If one accepts Chomsky's "black box", such that biology plays a part in language acquisition, then it would be reasonable to ask if gender has any influence on second language acquisition. Rubin (1975) makes a case for boys being the better second language learners by suggesting that good L2 learners are willing and accurate guessers, have a strong drive to communicate, are often uninhibited, are willing to make mistakes, focus on form by looking for patterns (logical thinking), monitor their speech as well as that of others, and pay attention to meaning.

Beiser and Hou (2000) studied Southeast Asian refugees that migrated to Canada. Canadian policy requires immigrants to learn either French or English in order to attain independent immigrant status. Their study found that men were the better language learners due to a cultural advantage in prior education and once settled, tend to work outside the home. They did find one exception however. When both men and women participated
in an ESL class, they were likely to achieve comparable levels of English proficiency. The arguments for boys still follows culture and socialization theories and do not seem to suggest a biologically related reason.

Research also supports the effectiveness of using L2 learning strategies. Oxford (1990a) argues for the girls, by synthesizing existing research on the choice of strategies used among students learning a second language. Females reported greater overall strategy use than males in their studies. It has been well documented that female students' GPAs are higher in secondary school than are boys' GPAs. In an unpublished dissertation, Gill’s (1995) findings show that the girls overall academic performance were related to their higher scores on language tests. He used data from the Bruneian Junior Certificate of Education examination to compare students' grades in their curriculum taught in L1 and their grades in English (L2). The study highlights the disparity in L2 examination performance and discovers that this inequality also exists in the students' L1 grades. His findings are consistent with the pattern of girls outperforming boys on language tests.

What about the argument for gender treatment in the classroom? Male dominance in the classroom, differential
teacher treatment of boys and textbook bias have been shown to be true in some language classrooms, but when it comes to performance on language tests, women and girls tend to obtain the better results (Arnot et al., 1996).

Does the literature show a difference between the genders in language acquisition? Rondal (1985) found different results could be found for girls or boys learning faster, whereas Phillips (1972) and Fraser (1974) found results that show no differences between girls' and boys' language acquisition. Socialization and culture play a large part in how the genders perform on language acquisition tests. Immigrants that are incorporated into society against their will have little motivation to achieve Second Language Acquisition (Diaz-Rico & Weed, 1995), but those that have a favorable view of the country they immigrated to, will have a higher level of motivation in acquiring the language of the country they immigrated to. This report agrees with Beiser and Hou, that in an ESL class setting, gender performance in second language acquisition should be comparable, and there are no studies to indicate a biological difference between genders in regards to Second Language Acquisition.
Gender Differences in Technology

Gender equity in technology has been closely scrutinized in the literature over the years. The status of gender equity and who is responsible for that status has evolved through the history of educational technology. Statistics were just released in a study commissioned by General Electric (Campbell, et al., 2002). The authors found in the fourth grade, students of different genders and ethnicities were taking similar courses. Eighth grade girls, white and Asian students were disproportionately higher enrollees in Algebra 1 courses. They also found that by eighth grade girls were half as likely to think of careers in math and technology, as were the boys. High school girls and boys are equally represented in the upper math (Algebra II, Pre-Calculus and Calculus) classes. A review of SAT examinees reveals that only a quarter of girls are now considering technology majors and less than ten percent of the girls are considering engineering majors.

High School girls' grades and test scores are equal or surpass the boys, yet they do not feel confident enough of their skills to continue their studies. The 1992 report by the AAUW was the focal point in drawing attention to girls in education. This report details that
girls were under represented in the higher mathematics courses, which of course leads to under representation in the technology courses (most of the higher tech courses have math pre-requisites). The focus of the report was on teachers and the curriculum. The report found that the teachers did not call on the girls as often as the boys. Courses were competitive in nature, which favored the boys. The report also found that curriculum was skewed in favor of the boys.

Something has changed since 1992. Girls are now equally represented in the higher math courses. Bailey and Campbell (1999), as researchers and authors of the 1992 American Association of University Women report, would like to see the educational gender wars cease. Their more recent research finds that teachers and parents are working together to implement polices and programs that work for girls and for boys. General society has made progress in reducing some of the barriers that confront girls and women in traditionally male post secondary courses or in the work force.

Why are girls not thinking of technology careers and math majors in college in similar numbers to boys? There is one more piece of the secondary educational puzzle, administration and guidance. Secondary schools in Canada
were contacted by email and regular mail (Bryson, et al., 2001) regarding local, school-based initiatives designed to increase the participation by female students in technology-intensive courses. Thirteen schools (3.4%), out of 375 that were surveyed, responded to the request for information concerning any programs they might have, to introduce the girl students to technology classes and careers. The conclusion of the survey reports that administrators at British Columbia secondary schools are not addressing the problem of under-representation of female students in technology-intensive studies. This report agrees that career counseling of female students does not adequately inform them of options in technology. This would explain how boys and girls could be represented equally in the preparatory classes, but girls do not consider technology as a career field or worthy of pursuing in higher education.

Summary

The literature important to the project was presented in Chapter Two. ELLIS and SDAIE are both founded on accepted principles of Second Language Acquisition teaching theories and strategies. SDAIE and CALLA are based on many of the same principles. The two main
premises on which CALLA is built are that content should be the primary focus of instruction and that language skills are developed as the need emerges from the content. ELLIS is modeled on the Natural Approach. The literature does not indicate superiority in results for one method over the other; rather it supports a blending of methods.

The literature does not support the theory that either gender has an advantage over the other in second language acquisition. Female students could have had less exposure to technology with CALL instruction in the early 1990s, however that gap disappeared by the late 1990s. The literature suggests the use of technology will have no advantage or disadvantage on scoring outcomes for either gender.
CHAPTER THREE

METHODOLOGY

Introduction

Chapter Three documents the steps used in developing the project. Specifically,

Development

This study will find that there is a significant difference in post-test scores in reading between the two methods, CALL and SDAIE, as measured by the CELDT. The null hypothesis is that there is no significant difference between the two methods’ post-test scores. This study will also find that there is no significant difference in post-test scores in writing between the two methods as measured by the CELDT. The null hypothesis is that there is a significant difference in writing scores between the two methods’ post-test scores. This study will find that there is no significant difference in post-test scores between the genders in reading or writing, using SDAIE or CALL, as measured by the CELDT. The null hypothesis is that there is a significant difference between the genders in post-test scores for reading and writing. Lastly, this study will find that there is no significant difference in post-test scores for reading and writing, between the two
methods, for students new to the school, as defined as six weeks or less. The null hypothesis is that there is a significant difference in post-test scores, for reading and writing, between the two methods.

Resources and Content Validation

The instrument used for both the pre-test and the post-test was the CELDT Level Four for grades nine through twelve. All Limited English Proficient students had been placed in the ELD program based upon their previous year's score on their IPT. The students tested in this study were placed as ELD 3, and the two courses covered the California content standards for this level of high school student.

Design

The CELDT consists of a reading section, which has 45 multiple-choice questions. Students read a passage and choose the appropriate answer that correctly fills in the blank. Each question counts as one point towards their raw score for a total of 45 points possible on the reading section of the CELDT. The writing section consists of 18 questions with multiple-choice answers of correct usage of grammar, each question contributing one point of the writing score. There is also a section that has four pictures. The student writes a couple of sentences
describing the scene. The description is graded on a scale of zero to three, contributing 12 points to the writing score.

The last section of the writing test consists of a writing prompt. The student has one page to write an essay that covers the prompt. The essay contributes five points to the writing score. The point total for the writing section of the CELDT is 35 points. The listening and speaking portion of the test consists of a proctor conducting an interview with the student. They are graded on following oral directions, phonemic awareness, oral vocabulary and phonemic control. The oral directions section is worth 15 points, the other three sections are worth 10 points each.

The student then listens to a tape-recorded passage and explains what the passage was about to the proctor, who then scores the student on a four-point scale. The score of the story retelling section is then multiplied by five, contributing up to twenty points to the student’s raw score. The listening and speaking section contributes 65 points to the student’s raw score.

The data that was collected and analyzed in this research was the students’ raw scores from the reading and writing portions only. Those familiar with the process
recognize that the raw score is then converted into a scaled score for the three sections. The reading scale begins at 340 and runs to a high of 650. The writing score begins at 280 and tops the scale at 700. The listening and speaking section begins with a score of 220, and the scale tops out at 710.

Population Served

The entire school's ELL population was tested as part of the CELDT administration process. The two classes mentioned in this study were the only two classes that took the post-test, which was the same CELDT that was administered in September of 2001. The English Language Development (ELD) specialist ran a query of the school's database (NCS Pearson's SASI) during the first week of September, to identify those students that required testing. This query provided her with the class schedules of all those to be tested. The students in the English Language Development (ELD) classes took the test as a whole class in their classroom. Some students were in the SDAIE English classes and also took the test in their classroom as a whole class. The remaining students requiring testing, that did not comprise the majority of
their classes, were pulled out and tested in the school’s lecture hall.

The reading and writing tests were administered to students in the above-mentioned format across a three-day period. The ELD specialist rotated the classes through the testing process over the course of two weeks. This ensured she was available to assist in correct test proctoring for all classes. The CELDT also requires a listening and speaking test. A team of aides, from the district, administered this portion of the test. They had been specially trained to administer the listening and speaking portion of the test. This portion took four weeks to complete. The post-test consisted of just the reading and writing sections. The site did not have access to district personnel to conduct the listening and speaking sections for the post-test.

Treatment

The pre-test data was collected from the school’s results of the CELDT exam administered in the fall, which was provided by the state in March. The school followed all of the state guidelines for proctoring the test. The post-test was administered using the same procedures and the same personnel as the pre-test. The only difference
CHAPTER FOUR
RESULTS AND DISCUSSION

Introduction

Included in Chapter Four is a presentation of the results of completing the project.

Presentation of the Findings

Table 1 is a compilation of the pre and post-tests results for the SDAIE students. This table is only a presentation of the raw scores for reading and writing. Those students that left the school before the conclusion of the study are so marked as left under the scores categories.
Table 1.

Specially Designed Academic Instruction in English Raw Score Results

<table>
<thead>
<tr>
<th>Student ID</th>
<th>Grade</th>
<th>Gender</th>
<th>Pre Read</th>
<th>Post Read</th>
<th>Pre Write</th>
<th>Post Write</th>
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<td>M</td>
<td>39</td>
<td>41</td>
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<td>31</td>
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<td>29</td>
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</table>

Table 2 is a compilation of the pre and post-tests scores for the ELLIS class. This table is only a presentation of the raw scores for reading and writing.
Table 2.

English Language Learner Instructional System Raw Score Results

<table>
<thead>
<tr>
<th>Student ID</th>
<th>Grade</th>
<th>Gender</th>
<th>Read Pre</th>
<th>Read Post</th>
<th>Write Pre</th>
<th>Write Post</th>
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</table>

As a result of this study, it was discovered there was a lapse of about seven weeks where new incoming ELL students were not administered the CELDT upon arrival at
the school. This time frame covered the second week of September through the end of October. By the first of November, all incoming ELL students were administered this test and all staff involved were retrained to eliminate this error. There were some students from both classes that were dropped from the study because they entered during this seven-week period. No pre-test data exists for these students. Those students that are indicated as having left before the study concluded were not included in subsequent tables. They are represented here to highlight the turnover for this school. The SDAIE class had a 25% turnover and the ELLIS class had a 40% turnover.

Table 3 results show a significant difference in reading scores was found for those students using the ELLIS program, while no significant difference was found for those students in the SDAIE class.
Table 3.

Reading Baselines for All Students

<table>
<thead>
<tr>
<th>Definition</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Reading Pre-Test</td>
<td>Reading Post-Test</td>
<td>Reading Pre-Test</td>
<td>Reading Post-Test</td>
</tr>
<tr>
<td>Number of Scores</td>
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<td>14</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>13</td>
<td>13</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Sum of Scores</td>
<td>442</td>
<td>437</td>
<td>330</td>
<td>356</td>
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<td>Square Total Scores</td>
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<td>190,969</td>
<td>108,900</td>
<td>126,736</td>
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<td>Correction Factor</td>
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<td>13,640.6</td>
<td>7,778.6</td>
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<td>Square Scores &amp; Total</td>
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<tr>
<td>T-Distribution</td>
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</tr>
</tbody>
</table>

S = Specially Designed Academic Instruction in English
E = English Language Learner Instructional System

It had been predicted that the ELLIS class would have an increase in their reading scores. The SDAIE class did in fact go down slightly in their reading scores. This difference may be attributable to two students. One student had a fifteen-point drop in his/her score and the other had twelve-point drop. A drop of this level is usually attributed to students not taking the test results seriously enough to warrant a best effort on his/her part.
The research presented in Table 4 found that there was a significant increase in the writing scores for the SDAIE class, while there was not a significant increase in the writing scores of the ELLIS class.

Table 4.

Writing Baselines for All Students

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definition</td>
<td>Writing</td>
<td>Writing</td>
<td>Writing</td>
<td>Writing</td>
</tr>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Number of Scores</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>13</td>
<td>13</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Sum of Scores</td>
<td>385</td>
<td>414</td>
<td>341</td>
<td>406</td>
</tr>
<tr>
<td>Square Total Scores</td>
<td>148,225</td>
<td>171,396</td>
<td>116,281</td>
<td>164,836</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>10,587.5</td>
<td>12,242.6</td>
<td>7,752.1</td>
<td>10,989.1</td>
</tr>
<tr>
<td>Square Scores &amp; Total</td>
<td>10,699</td>
<td>12,346</td>
<td>8,319</td>
<td>11,234</td>
</tr>
<tr>
<td>Mean</td>
<td>27.50</td>
<td>29.57</td>
<td>22.73</td>
<td>27.07</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>2.93</td>
<td>2.82</td>
<td>6.36</td>
<td>4.18</td>
</tr>
<tr>
<td>Variances</td>
<td>8.58</td>
<td>7.96</td>
<td>40.50</td>
<td>17.50</td>
</tr>
</tbody>
</table>

Independent Test | 5 VS 6 | 7 VS 8 |
T-Test Results    | 18.818 | 1.991  |
T-Distribution    | 2.160  | 2.145  |

S = Specially Designed Academic Instruction in English
E = English Language Learner Instructional System

The prediction was that there would be no increase in the writing scores for either class. The ELLIS class in fact had a much larger increase in their mean score, but that increase was factored by the standard deviation;
which reflects a large range of the scores. It is worth noting at this time that you would expect the pre-test scores of the students to be fairly consistent within a small range. These students were placed into the class because of scores from another standardized test. The SDAIE class does show a fairly close grouping of pre-test scores. The ELLIS class has a much larger range in the pre-test scores for both reading and writing.

The research presented in Table 5 indicates that there was not a significant difference between the genders in reading using the ELLIS program, however in Table 6 there was a significant increase by the girls in writing scores using the program. The boys actually had the higher increase in their mean score for writing, but again they had a wide range in scores reflected in their standard deviation scores.
Table 5.

English Language Learner Instructional System Reading Baselines by Gender

<table>
<thead>
<tr>
<th>Definition</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reading</td>
<td>Reading</td>
<td>Reading</td>
<td>Reading</td>
</tr>
<tr>
<td></td>
<td>Pre-Test</td>
<td>Post-Test</td>
<td>Pre-Test</td>
<td>Post-Test</td>
</tr>
<tr>
<td>Number of Scores</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Sum of Scores</td>
<td>173</td>
<td>182</td>
<td>157</td>
<td>174</td>
</tr>
<tr>
<td>Square Total Scores</td>
<td>29,929</td>
<td>33,124</td>
<td>24,649</td>
<td>30,276</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>3,741.1</td>
<td>4,140.5</td>
<td>3,521.3</td>
<td>4,325.1</td>
</tr>
<tr>
<td>Square Each Score &amp; Total</td>
<td>4,217</td>
<td>4,782</td>
<td>3,783</td>
<td>4,506</td>
</tr>
<tr>
<td>Mean</td>
<td>21.16</td>
<td>22.75</td>
<td>22.43</td>
<td>24.86</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>8.25</td>
<td>9.57</td>
<td>6.60</td>
<td>5.49</td>
</tr>
<tr>
<td>Variances</td>
<td>67.98</td>
<td>91.64</td>
<td>43.62</td>
<td>30.14</td>
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</tbody>
</table>

Independent Test

<table>
<thead>
<tr>
<th>T-Test Results</th>
<th>1 VS 2</th>
<th>3 VS 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.205</td>
<td>2.189</td>
<td></td>
</tr>
<tr>
<td>2.365</td>
<td>2.447</td>
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</tr>
</tbody>
</table>

Dependent Test

<table>
<thead>
<tr>
<th>T-Test Results</th>
<th>2 VS 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.517</td>
<td></td>
</tr>
</tbody>
</table>

T-Distribution

<table>
<thead>
<tr>
<th></th>
<th>2.447</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 VS 4</td>
<td></td>
</tr>
</tbody>
</table>
Table 6.

English Language Learner Instructional System Writing Baselines by Gender

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Female</td>
<td>Male</td>
<td>Male</td>
</tr>
<tr>
<td>Definition</td>
<td>Writing Pre-Test</td>
<td>Writing Post-Test</td>
<td>Writing Pre-Test</td>
<td>Writing Post-Test</td>
</tr>
<tr>
<td>Number of Scores</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Sum of Scores</td>
<td>181</td>
<td>209</td>
<td>160</td>
<td>197</td>
</tr>
<tr>
<td>Square Total Scores</td>
<td>32,761</td>
<td>43,681</td>
<td>25,600</td>
<td>38,809</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>4,095.1</td>
<td>5,460.1</td>
<td>3,657.1</td>
<td>5,544.1</td>
</tr>
<tr>
<td>Square Each Score &amp; Total</td>
<td>4,341</td>
<td>5,615</td>
<td>3,978</td>
<td>5,619</td>
</tr>
<tr>
<td>Mean</td>
<td>22.63</td>
<td>26.13</td>
<td>22.86</td>
<td>28.14</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>5.93</td>
<td>4.70</td>
<td>7.31</td>
<td>3.53</td>
</tr>
<tr>
<td>Variances</td>
<td>35.13</td>
<td>22.13</td>
<td>53.48</td>
<td>12.48</td>
</tr>
<tr>
<td>Independent Test</td>
<td>5 VS 6</td>
<td>7 VS 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-Test Results</td>
<td>2.846</td>
<td>1.397</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-Distribution</td>
<td>2.365</td>
<td>2.447</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependent Test</td>
<td>6 VS 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-Test Results</td>
<td>1.718</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-Distribution</td>
<td>2.447</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7 finds that the genders in the SDAIE class had no significant difference between their pre and post-tests scores for reading, while Table 8 indicates that both genders had significant increases in their writing scores. The prediction was that there would be no significant difference between the genders in either their reading or writing scores. The results of this research were consistent with the literature in that there is no
difference documented for second language acquisition between the genders.

Table 7.
Specially Designed Academic Instruction in English Reading Baselines by Gender

<table>
<thead>
<tr>
<th>Definition</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Scores</td>
<td>5</td>
<td>5</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Sum of Scores</td>
<td>153</td>
<td>142</td>
<td>289</td>
<td>295</td>
</tr>
<tr>
<td>Square Total Scores</td>
<td>23,406</td>
<td>20,164</td>
<td>83,521</td>
<td>87,025</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>4,681.8</td>
<td>4,032.8</td>
<td>9,280.1</td>
<td>9,669.4</td>
</tr>
<tr>
<td>Square Each Score &amp; Total</td>
<td>4,769</td>
<td>4,634</td>
<td>9,767</td>
<td>10,051</td>
</tr>
<tr>
<td>Mean</td>
<td>30.60</td>
<td>28.40</td>
<td>32.10</td>
<td>32.78</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>4.67</td>
<td>12.26</td>
<td>7.80</td>
<td>6.91</td>
</tr>
<tr>
<td>Variances</td>
<td>21.60</td>
<td>150.30</td>
<td>60.86</td>
<td>47.69</td>
</tr>
</tbody>
</table>

Independent Test

<table>
<thead>
<tr>
<th>T-Test Results</th>
<th>1 VS 2</th>
<th>3 VS 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Distribution</td>
<td>0.290</td>
<td>0.764</td>
</tr>
<tr>
<td>T-Distribution</td>
<td>2.160</td>
<td>2.145</td>
</tr>
<tr>
<td>T-Test Results</td>
<td>2 VS 4</td>
<td></td>
</tr>
<tr>
<td>T-Distribution</td>
<td>2.160</td>
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</tr>
</tbody>
</table>

T-Distribution 0.819
Table 8.

Specially Designed Academic Instruction in English Writing Baselines by Gender

<table>
<thead>
<tr>
<th>Definition</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Pre-Test</th>
<th>Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Scores</td>
<td>5</td>
<td>5</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Sum of Scores</td>
<td>132</td>
<td>143</td>
<td>253</td>
<td>271</td>
</tr>
<tr>
<td>Square Total Scores</td>
<td>17,424</td>
<td>20,449</td>
<td>64,009</td>
<td>73,441</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>3,484.8</td>
<td>4,089.8</td>
<td>7,112.1</td>
<td>8,160.1</td>
</tr>
<tr>
<td>Square Each Score &amp; Total</td>
<td>3,526</td>
<td>4,119</td>
<td>7,173</td>
<td>8,227</td>
</tr>
<tr>
<td>Mean</td>
<td>26.40</td>
<td>28.60</td>
<td>28.11</td>
<td>30.10</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>3.21</td>
<td>2.70</td>
<td>2.76</td>
<td>2.89</td>
</tr>
<tr>
<td>Variances</td>
<td>10.30</td>
<td>7.30</td>
<td>7.61</td>
<td>8.36</td>
</tr>
</tbody>
</table>

| Independent Test                  | 5 vs 6   | 7 vs 8    |
| T-Test Results                    | 4.322    | 15.308    |
| T-Distribution                    | 2.776    | 2.306     |
| Dependent Test                    | 6 vs 8   |
| T-Test Results                    | 7.895    |
| T-Distribution                    | 2.306    |

The research presented in Table 9 found that there was not a significant difference between the pre and post-tests reading scores for either the SDAIE or ELLIS programs. The research results in Table 10 found that there was not a significant difference between the pre and post-tests writing scores for either program. The prediction was that there would not be a significant
difference in post-test gains for either of the two programs.

Table 9.

Reading Baselines for Transience

<table>
<thead>
<tr>
<th>Definition</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Scores</td>
<td>4</td>
<td>4</td>
<td>3</td>
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<tr>
<td>Degrees of Freedom</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sum of Scores</td>
<td>110</td>
<td>100</td>
<td>63</td>
<td>65</td>
</tr>
<tr>
<td>Square Total Scores</td>
<td>12,100</td>
<td>10,000</td>
<td>3,969</td>
<td>4,225</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>3,025.0</td>
<td>2,500.0</td>
<td>1,323.0</td>
<td>1,408.0</td>
</tr>
<tr>
<td>Square Each Score &amp; Total</td>
<td>3,174</td>
<td>2,722</td>
<td>1,505</td>
<td>1,507</td>
</tr>
<tr>
<td>Mean</td>
<td>27.50</td>
<td>25.00</td>
<td>21.00</td>
<td>21.67</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>7.05</td>
<td>8.60</td>
<td>9.54</td>
<td>7.02</td>
</tr>
<tr>
<td>Variances</td>
<td>49.67</td>
<td>74.00</td>
<td>91.00</td>
<td>49.33</td>
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</tbody>
</table>

Independent Test 1 VS 2 3 VS 4
T-Test Results 1.613 0.266
T-Distribution 3.182 4.303
Dependent Test 2 VS 4
T-Test Results 2.108
T-Distribution 4.303
Table 10.
Writing Baselines for Transience

<table>
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<tr>
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<td>SDAIE</td>
<td>SDAIE</td>
<td>ELLIS</td>
<td>ELLIS</td>
</tr>
<tr>
<td>Definition</td>
<td>Writing</td>
<td>Writing</td>
<td>Writing</td>
<td>Writing</td>
</tr>
<tr>
<td>Number of Scores</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sum of Scores</td>
<td>113</td>
<td>120</td>
<td>60</td>
<td>81</td>
</tr>
<tr>
<td>Square Total Scores</td>
<td>12,769</td>
<td>14,400</td>
<td>3,600</td>
<td>6,561</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>3,192.3</td>
<td>3,600.0</td>
<td>1,200.0</td>
<td>2,187.0</td>
</tr>
<tr>
<td>Square Each Score &amp; Total</td>
<td>3,263</td>
<td>3,626</td>
<td>1,416</td>
<td>2,241</td>
</tr>
<tr>
<td>Mean</td>
<td>28.25</td>
<td>30.00</td>
<td>20.00</td>
<td>27.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>4.86</td>
<td>2.94</td>
<td>10.39</td>
<td>5.20</td>
</tr>
<tr>
<td>Variances</td>
<td>23.58</td>
<td>8.67</td>
<td>108.00</td>
<td>27.00</td>
</tr>
</tbody>
</table>

Independent Test 5 VS 6 7 VS 8
T-Test Results    0.911  1.348
T-Distribution    3.182  4.303
Dependent Test    6 VS 8
T-Test Results    1.330
T-Distribution    4.303

Discussion of the Findings

The resultant increase in reading scores was consistent with the predictions based upon the review of literature. The CALL model of today is able to immerse students in a reading program that is fully multi-sensory in its delivery. The computer is able to tailor a program for the learner based on their unique skill set, not the combined needs of the class. This specialization in the
delivery "virtually" creates a one-to-one student to teacher ratio in the delivery of the reading program.

The ELD specialist found the reading results to be what she expected would be found. The students placed into the ELD 3 program tell her that they feel privileged to study in a computer lab. The students feel that learning English is like an ice cream sundae and being able to learn on the computer is like the whipped cream, nuts and cherry on top. This perception agrees with what was found in the literature. The ELL students view computer learning to be a privilege of our society and put forth a worthy effort.

Writing scores for the SDAIE class went against the predictions for this research project. The classes' recorded satisfactory gains in their respective mean scores from pre to post-test, however only the SDAIE class recorded a significant gain in their post-test scores.

The respective teachers were interviewed after the tests were given and all results recorded. The SDAIE instructor reported that she utilizes extensive writing assignments in her class, while the ELLIS instructor reports that he follows the assignment load in the text. The text used by both instructors was the Making Connections An Integrated Approach to Learning English.
(Bonner 1996). The additional assignments in the SDAIE class could account for their improvement showing up in the writing test. These assignments came from the English One textbook *Timeless Voices, Timeless Themes* (Prentice-Hall 2000).

The ELLIS instructor was asked about the format in which his students complete their writing assignments. The question was asked if they do more of their writing assignments on the computer or written by hand. He responded that the students use the computer for slightly more than half of their writing assignments. The word processing program was checked to see if the auto-correct feature was turned on or off. It was turned on, so that as the students wrote, the program was correcting spelling and capitalization. The program also suggests grammar changes as the students write.

Boyd and McDowall (2000) found that students edit differently on computers with auto-correct than those that hand write. The students on the computers edit while they are writing, whereas those that hand write edit after their writing is completed. The writing portion of the CELDT is done by hand, which could favor the SDAIE students over the ELLIS students. This does not explain
how the female students in the ELLIS class were able to make a significant gain on their writing scores.

A discussion with both teachers and the ELD specialist was held to see if possible other factors could account for the writing differences. One factor not considered in the study was how long the students had been in the country. The ELD specialist has found that recent immigrants have lower writing skills than those ELL students that have been here for a longer time period. There is a gender difference in attitude towards writing that was noted by both instructors and the ELD specialist. This is consistent with the findings of Knudsen (1993) and a study conducted by Maximino Plata in 1995. Both authors found a negative attitude by male students, particularly Hispanic male students towards writing. The ELD specialist reports that writing is not viewed as a "manly" activity and many of her new immigrant students have to overcome this perception.

Family background and financial status from the immigrant's country of origin also have an effect on their reading and writing background. All three interviewed reported that those students from a higher economic background have greater English proficiencies, particularly in writing. Interviewees also stated that
they thought these students are quicker to learn additional higher-level reading and writing skills. Additionally, those students from Central and South America generally are more skilled in language acquisition. Any or all of these factors could have played a role in the writing score results.

The scores by gender were as predicted by the review of the literature. The lone exception was for the previously mentioned writing gains by the girls in the ELLIS program. English teachers have known for years that reading improves writing mechanics. Did the instructor see a difference in the writing process between the girls and the boys in the ELLIS class? When asked this question the instructor reports that the female students would ask more questions in the editing process. Do girls edit differently than the boys do when they compose their writing on a computer? The study by Boyd and McDowall (2000) does not explore to see if there are editing style differences between the genders. The ELLIS instructor feels that the boys were more apt to trust the computer’s editing than the girls. He also noted that when the computer disagreed with spelling, for example on i before e corrections, the girls would ask for the reason, whereas the boys would “click” the correction and not question.
These differences between the genders are interesting and it is recommended that further research be completed to find out why the female students scored significant gains, using the computer, in writing and the male students did not.

The ELD specialist was asked about the emphasis placed on writing in the ELD program and the ELLIS program. She feels the state ELD guidelines emphasize writing in equal proportion to reading, but that the district has not placed an emphasis on writing in the recent past. This may account for the gains in writing made by the SDAIE English One class. The district is sending the ELD and SDAIE instructors to a writing seminar. This seminar is geared to emphasize writing equally to reading in the ELD programs. She predicts this writing emphasis change will place the ELL students on a better pathway towards the English Standards.

The school site recognizes that the ELLIS program is weighted towards reading. They are looking at ways to blend the two classes, SDAIE English One and the ELLIS program, on a weekly basis. There also is a concern that the writing portion of the ELD 3 course was scheduled in the second semester, which would also place these students at a disadvantage on the writing portion of the CELDT.
The second semester began just a month before the post-test was administered. They also realize that there is not an emphasis on editing in the ELLIS program as well.

There was no difference in scores for the transient students between the two programs. A review of the literature found no stand taken as to which method would assist students in quickening the pace of their acquisition of a second language. There were advertising claims by some programs that featured full immersion in a program that utilizes the natural approach, but no independent research results were found. Should a student enrolling in the middle of a school year be placed in one program over another? The results would indicate that neither program has an advantage over the other. Placement should be viewed as which would be easier for the student to "drop into" the middle of. The CALL model would make it easier for a student to "drop into" the middle of the semester, whereas there is no difference at the beginning of a semester for either program.

One last area for additional study would be the potential for learning disabilities among the ELL student. The ELLIS instructor reports that his own son has been diagnosed with Attention Deficit Disorder (ADD), and he feels that some of his own students might have a learning
disability as well. The school site does not feel they are trained to recognize learning disabilities in ELL students. The literature proves this is not an easy task. There are many factors to consider, linguistic and cultural background as well translating tests into the L1 of the ELL student (or not to translate). Shafer (1999) suggests a triangulating method may lend greater validity to test results for ELL students. She recommends combining standardized intelligence tests (SIT), with staff documented pre-referral interventions, and assessment based on actual classroom instruction.

Summary

The research hypothesis for the reading scores proved to be correct, in that the CALL model did lead to a significant increase between the students' pre and post-tests reading score results. This result was what the school site expected, as the ELLIS program is able to tailor the reading instruction for the individual student. The ELLIS students were more receptive to reading instruction because they were using computers.

The null hypothesis proved correct as the post-test writing scores did significantly increase over the post-test writing scores for the students in the SDAIE course.
Interviews with the instructors and the ELL specialist, point to several possibilities for this outcome. The SDAIE class had more instruction in writing and editing. The test was hand written, giving an advantage to the SDAIE class. The writing instruction for the ELD 3 class was contained in the second semester too close to the post-test administration to allow for increased results from instruction. In reviewing the editing habits of the boys and girls in the ELLIS class the instructor realizes there was a difference. Also, there was not an emphasis placed on writing in the current ELD curriculum at the site.

The research hypothesis proved correct for the transients’ scores as neither method led to a significant increase in post-test scores for either reading or writing. There is no support in the literature for a superior method in fast paced second language acquisition. The result is also what the site expected to see returned from this study.
CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Included in Chapter Five is a presentation of the conclusions of the project. Further, the recommendations extracted from the project are presented. Lastly, the chapter concludes with a summary.

Conclusions

The conclusions extracted from the project follows.

1. The ELLIS program was successful for the high school in improving the reading gains ELD 3.

2. The SDAIE English One class showed a significant increase in writing scores over the ELLIS students that used the computer for their writing assignments.

3. There was no significant difference between the genders in using ELLIS to improve reading.

4. There was a significant improvement in post-test writing scores for the girls using ELLIS.

5. There was no significant difference for either method improving the reading and writing scores of students that enter during mid-term.
6. The site was not trained to determine learning disabilities among their ELL population.

Recommendations

The recommendations resulting from the project follows.

1. The school should look to expand the ELLIS program to include more of their second language learners.

2. To experience similar gains in writing, the school should turn off the auto-correct feature of their word processor and spend more time on teaching editing to the ELLIS students.

3. The school site should alternate the instruction of the two classes to take advantage of the gains seen from both programs.

4. The ELD staff should receive training to recognize potential learning disabilities among their ELL population.

Summary

Chapter Five reviews the conclusions extracted from the project. Lastly, the recommendations derived from the project are presented. The school should alternate the schedule of classes so that students have access to both
programs. This will allow both sets of students to experience computers in their educational process. The ELLIS students looked favorably upon computer instruction. This could be accomplished by alternating the students in both classes either by the quarter or by the week. The ELLIS class would concentrate on reading skills while the SDAIE class would concentrate on writing skills. These classes then would switch. This also would allow a greater number of students to benefit from the ELLIS instruction and should lead to an increase overall in the student’s reading scores for the school.

The use of the computer for writing in the workplace cannot be ignored. The school should ensure that all of the ELL students benefit from a computer applications course that covers instruction in word processing format. The ELD department would need to address the auto correcting features with their students to ensure they do not regress in their editing skills. The regular education classes taking computer application classes use the auto correct feature. They are not however attempting to learn a second language while learning proper computer techniques.
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