Integrating technology into the English as a second language curriculum: Computer-assisted English language learning

Ibrahem Rotha Pen

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INTEGRATING TECHNOLOGY INTO THE ENGLISH AS A SECOND LANGUAGE CURRICULUM: COMPUTER-ASSISTED ENGLISH LANGUAGE LEARNING

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
Ibrahem Rotha Pen
June 2002
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A Project Presented to the Faculty of California State University, San Bernardino

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Approved by:

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ABSTRACT

The project integrates computer technology with English as a second language curriculum and instruction. It utilizes the World Wide Web to deliver computer-assisted instruction in English grammar, reading and conversation. Moreover, the project shows the impact of computer technology in helping students develop critical thinking skills, problem-solving skills, and meaningful and applicable skills for employment.

The project hopes to demonstrate the benefits of appropriate implementation of technology in the ESL curriculum. The project shows that it can help students develop better attention for learning through motivation, confidence-building mechanism, and enthusiasm. Learning with technology can equip students with necessary skills in communication, collaboration, and the decision-making process.

The evaluation process of the project indicated positive behavior among students in the form of survey responses and observations. Out of twenty students surveyed, the majority of them ranked the project as one of the best on the Internet in a Likert scale. Students also indicated that they would recommend the use of this web project to other students learning in the ESL setting.
ACKNOWLEDGMENTS

To my wife and son, special thanks and warmest apologies for the sacrifice and heartache I had put you both through. My wife, thank you for constantly pushing me to finish my work while I was procrastinating. My son, thank you for putting up with me while I was preoccupied to play with you.

Sincerest thanks to my advisors, Dr. Amy S.C. Leh and Dr. Gary Negin, who both provided me with ideas and strong encouragement for a successful Master's Project. And of course, I could never forget my best friend, Vittaya Pongmussaya, through the course of this program. Many thanks to you for being my partner and mostly for being a supportive person in all the ETEC courses we had taken together and especially for the final product of this Master’s Project.
DEDICATION

To my darling wife, Rubina Sabah.
And to my beloved son, Tiger Mustafa.
Thanks so much for not giving up on me!

I love you both so very much.
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CHAPTER ONE

BACKGROUND

Introduction

The content of Chapter One presents an overview of the project. The contexts of the problem are discussed followed by the purpose, significance of the project, and assumptions. Next, the limitations that apply to the project are reviewed. Finally, definitions of terms are presented.

Statement of the Problem

Technology has always been in education. English as Second Language (ESL) instructors at the San Bernardino Adult School struggle to find the most efficient method for integrating technology in their instructional programs. Technology can provide a comfortable and challenging medium for effective communication if they can implement the use of technology correctly. In the adult ESL classrooms, technology is important in and outside the classrooms. Technology can function as a bridge from inside the ESL classrooms to the workplace environment. San Bernardino Adult School ESL instructors would like to integrate technology in their ESL curriculum and create a
classroom environment conducive to the workplace environment.

ESL instructors are confronted with many difficult tasks to equip these students with some knowledge of English and vocational skills. ESL instructors strive to educate their students with appropriate survival skills and life skills. They also strive to help their students build skills and competency in English necessary for employment and higher learning. The problem observed is that many students feel English is an enormous barrier to learn vocational skills, especially when they feel that they have reached an age which language acquisition becomes a major problem. They are very dependent in every aspect of learning and have yet to explore the endless possibility of lifelong learning, a necessary skill for surviving in this English-speaking country.

The knowledge of computer technology is crucial and beneficial to Adult ESL students in terms of employment and higher learning. At the San Bernardino Adult School, adult ESL students struggle with computer technology tremendously. They lack skills in keyboarding, basic computer literacy, self-paced learning modules, and Internet usage. The San Bernardino Adult School ESL Department understands that a successful implementation of
technology with the ESL curriculum will provide a constructive learning environment, helping to prepare these adult students to assimilate into a competitive work and higher educational setting.

The San Bernardino Adult School ESL department lacks technological integration in classroom instructions. Many ESL teachers still do not incorporate effective use of computer technology; therefore, students cannot fully maximize their learning potential. Students cannot reinforce their learning independently and confidently gain competence in English. ESL instructors need to go through a series of staff development sessions and build upon what they already know about technology, so they can help their ESL students build confidence in using technology as a tool to learn with in developing and constructing knowledge.

The San Bernardino Adult School poorly attempted to implement a technological ESL classroom through its development of a vocational ESL course that offers instructions in both English and technological media. The course did not have the popularity among students due to schedule conflicts and abrupt implementation without proper marketing of the course. It was unfortunate the course had to be closed due to the lack of student
attendance because the ESL instructor in charge had trainings in instructional technology. As of this moment, the San Bernardino Adult School still needs to devise a good program that would involve technology use as tools for learning with English.

Purpose of the Project

The proposed project attempted to provide a program that would show how to integrate computer technology into the ESL curriculum. The proposed project served as an example on how computer technology could be a tool to facilitate better learning for adult ESL students.

This project served as a possible solution to the problem of lagging technology integration in the ESL curriculum at the San Bernardino Adult School. This project would create and implement a vision that computer technology could serve as a major component of the ESL program. The project attempted to promote the idea of the importance of computer technology through the various levels of the ESL program, so that adult ESL students would graduate from the ESL program with proficiency in the use of computer technology. Moreover, adult ESL students would be better equipped with skills in both
English and computer technology thus, giving them more competition in the workforce.

Significance of the Project

It is obvious that technology is moving forward at a faster pace than anyone anticipates. It is necessary for every individual in a technology-rich environment to gain adequate knowledge for the sake of survival. Many adult ESL students were already at a disadvantage for not knowing the English language. Why not close the gap knowledge of computer technology by converting a typical ESL classroom into a technological classroom? Academically and vocationally, adult ESL students would benefit long term if computer technology were used along with their trainings in the ESL classrooms. It is necessary for students to develop technological skills as they are learning English to benefit their lives in this modern society. Upon graduation from the ESL program, students must possess knowledge of basic computer skills and other work technologies plus the English language to compete in the workforce.

Since research by Bowman (1996), Charp (1997), and Clovis (1997) suggested technology remains an important tool to enhance learning, adult ESL instructors and
students must recognize the importance of technology incorporated into the ESL setting. By not doing so, adult students would miss out on the opportunity to succeed in the technologically demanding society and workforce. In fact, technology is prevalent in the modern society, and it is important for adult ESL students to stay abreast if they want to function in the real society outside of the ESL classrooms.

The project was significant because it provided adult students with computer skills while learning English. The project aimed to improve these learners who fell behind in their English language skills, specifically grammar, listening, speaking, reading and writing. Exposure to the computer while learning English would prepare these adult students to become critical thinkers in all aspect of lifelong learning. In turns, they would benefit greatly in settings of higher education and work environment.

Limitations

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

The following limitations applied to the project:

1. The project developer did not have expertise in developing major software due to a lack of programming skills in html, java script, and multimedia authoring software.

2. The author of the project was present during the implementation of the survey. This suggests that his mere presence has influenced the outcome of the data, because students would be reluctant to give negative evaluation.

3. The author of the project realized the items on the student survey that he used to evaluate the software do not reflect the intent of its purpose in evaluating the software. Students were the subjects using the software to learn from; therefore, they were not the experts to suggest how well the software could function in the ESL setting. The author should have elicited expert opinions in the field of ESL instructions for a more appropriate assessment of the project.
Definition of Terms
The following terms are defined as they apply to the project.

**English as a Second Language** - or the abbreviation ESL, is the teaching of the English language to students of another language. Their primary language is not English.

**English as a Second Language Students** - or the abbreviation ESL Students is the student population with primary language not of English origin.

**Adult Students** - are the student population that is beyond the secondary level by age. Many possess minimum training in English. Many do not possess high school diplomas or equivalency in the United States.

**General Education Diploma** - or the abbreviation GED, is a High School Diploma equivalency certificate.

**Test of English for Foreign Language** - or the abbreviation TOEFL, is a College or University entrance examination to test the proficiency of English for foreign students.

**Telecommunications, Education, Career Enhancement Project** or the abbreviation Project TECH, is an excellent model for mixing technology with English as a Second
Language programs to help limited English students gain English proficiency.

**Computer-Assisted Instructions (CAI)** - Computer takes role of tutor, allowing students to interact and work independently to gain knowledge in specific subject area.

**World Wide Web (WWW)** - The abundant library of information found and interconnected on the Internet.

**Adult Basic Education (ABE)** - The student population that lack sufficient basic education due to the inability to finish high school or due to immigration into the United States of America from a different country.

**High School Diploma** - A supplementary program aimed to assist students who did not complete high school gain their graduation diploma.

**Life skills** - is a unit of study in an English as a Second Language classroom, so nonnative students can function normally in an English-speaking society.

**Secretary's Commission on Achieving Necessary Skills** - or the abbreviation SCANS, is a work readiness curriculum framework introduced by the United States Department of Labor in English as a Second Language programs, preparing non-English speaking students for possible employment.
Organization of the Thesis

The next section, Chapter Two, consists of a review of relevant literature that cited expert studies to support the project. Chapter Three documents the steps used in developing and implementing the project. This chapter explains in details the design and development process for the construction of the language software. It also indicates how effective the software was after implementation with the specified subjects. Chapter Four presents conclusions and recommendations drawn from the implementation of the language software. New questions and ideas about the project are discussed for others interested in developing this particular project.
CHAPTER TWO

REVIEW OF THE LITERATURE

Introduction

Chapter Two consists of a discussion of the relevant literature. Specifically, an explanation of technology in English as a Second Language curriculum is discussed. Also, the technology problem in English as a Second Language programs is mentioned. The rest of the literature review will focus on ESL for employment, the role of educators in technology rich classrooms, attitude of ESL students toward technology, and interactive multimedia in the classroom.

This literature review studied the effectiveness of technology as learning tools in English as a Second Language (ESL) programs. It discussed various successful applications of technology inside the classrooms, and how that success transfers outside the classrooms into a workplace environment. The success of ESL programs is attributed to the proper implementation of technology as learning tools to foster skills assimilative into the working environment. The result of this literature review supports the current paradigm or worldview of technology.
as a vehicle for improved student performance in the ESL programs.

A Technology Problem in English as a Second Language Programs

Educational perception is changing as technology continues to evolve into the twenty-first century. Educational institutions scramble to adjust learning to suit the modern technological advancement, and students are very dependent on how efficient the adjustment will be because their life and future revolve around education. "Technology and international trade have forced our educational expectations for workers up to at least the twelfth-grade level" (Gordon, 1997, p. 15). How can education be the key to their successes if the traditional approach to education does not apply to the current living arrangement? Concerns spread across educational institutions nationwide to ensure our students are getting the best quality education they can obtain. As a result, the United States Government approved a lot of money to support schools in their implementation of technology.

Since technology is currently a major emphasis in education, why is education for adult ESL students lagging behind in technology? How come there are "slashing budgets in adult education programs," (Tetreault, 1997, p. 11)? In
fact, there are demands by society for adults to integrate technology and their process of the English language acquisition. ESL students need to be challenged away from "the assembly line of the past ninety years that emphasized unvarying, rote, fixed procedural sequences that relied heavily on psychomotor skills" (Gordon, 1997, p. 16). As technology is presence in the instruction of ESL students, they are forced to utilize critical thinking and problem-solving skills to acquire and to use the English language more meaningfully. ESL students must realize there are more to learning English than just basic academics of the past approach.

On that note, one must consider also there are various technology problems that the San Bernardino Adult School ESL Department faces. The first problem is that one computer technology laboratory is being shared among all the other programs the adult school offers. These various programs include ESL, ABE, GED, High School Diploma, and Vocational Education. As you can see, the multitude of programs offered affects their potential to install good computer technology media. This is due to basically the lack of facility to accommodate the technology needed. Moreover, instructors at the adult school level do not have extensive technology training as part of their
professional growth. Many traditional instructors lack technology skills to teach their adult ESL students with technology. Surely, they cannot integrate computer technology into the ESL curriculum. Moreover, adult ESL students have a high turnover rate, absences, and erratic attendance pattern making it very difficult to teach them computer technology. One can understand the quality of technology instruction is affected through the inconsistency of student attendance and enrollment. In the next section of the literature review, the role of educators is discussed in more detail to further clarify the technology problems that the San Bernardino Adult School is currently experiencing.

The Role of Educators

The proper implementations of technology as learning tools depend on what type of role educators are willing to play. Educators create the appropriate classroom environment for effective learning. They choose the software that would facilitate critical thinking and problem solving. It is their responsibility to obtain competency in technology to better teach their students in the classroom. The degree of student success is attributed to the organization of instructors in developing a strong
and integrated technological classroom. Educators are responsible for the success of technology implementation. The following sections explain why it is necessary for educators to have appropriate technology trainings to integrate technology in their instructions and to have a good knowledge in reviewing and assessing software for their students to use.

Software Review/Assessment

Educators are the primary resource people to determine appropriate software for students. The comparison of multimedia software is essential to meet the needs of the multicultural classroom. Lu et al. (1999) performed a study of software evaluation in Taiwan and the United States to understand cultural differences between the Asian and American software. The research team found that cultural differences between Asian and American software is minute and insignificant. They concluded that educational software produced for the global market catered to the Western culture. However, stereotypical representations were absent despite the lack of programs that are sensitive to non-mainstream cultures. They suggested a development of software in the non-mainstream languages in the future for students to understand other cultures besides their own.
Calderon-Young (1999) emphasized the usage of computers for practice in a foreign language program. She reviewed software on the basis of how well it could reinforce "problem-solving and simulation, drill and practice, videotape lessons, trivia games, and computer-animated books" (1999, p. 163). The project coincides with what Calderon-Young had mentioned. The project has these various components Calderon-Young based her software evaluation on. The developed software aims to reinforce the English skills already pre-taught in the classrooms. It provides more practice for the adult ESL students by giving them the opportunity to study independently, to interact with other students in the class and outside the class from around the world, and to apply their knowledge in a technology-rich lab setting. Moreover, the adult ESL students demonstrate their cognitive ability and critical thinking skills as they learn to solve problems independently and collaboratively with their peers while they are using the software.

Calderon-Young indicated that many software developers faced challenges of designing software to meet the various learning styles of foreign language students. The efficiency of using technology in language instruction is difficult to determine since there are factors, such as
"lack of resources for controlled groups, the Hawthorne effect, bias of the software manufacturer who conducts the study, and so on" (1999, p. 161). In this respect, she pointed out the difficulty of assessing the foreign language students due to mixed results of the effectiveness of technology in the instruction. Since the project is specifically designed for supplementing instructions for a known student population, there is no encounter with this problem of "manufacturer bias" as she pointed out in her study. The author of the project was able to assess his student population effectively on the basis of attendance, informal observation, understanding of concepts already taught, written tests, interactivity, and the amount of participation versus off-task behavior.

There are many dilemmas that a software designer faced in creating multimedia software for ESL and EFL learners. In the project, the dilemmas were diminished because the target population is his own classroom. The author understands their needs, and the design specifically targeted certain areas of study for improvement. Beckett, McGivern and Gulbahar (1999) outlined,

The problems encountered involved such basic notions as location or setting, characters and their interactions, language, and pedagogical
approach to best promote academic and linguistic competence. For discussion purposes, we have selected four clusters of interconnected dilemmas related to pedagogical approaches to academic writing, language, cultural sensitivity, and program engagement. (p. 300)

In designing multimedia software for ESL/EFL learners, the challenges need to be addressed and designs must be defined to produce appropriate content, educational focus, etc. for the ESL/EFL learners. Beckett and his research team had carefully pointed the issues and the guideline for resolutions to make the design of the multimedia software efficient for the ESL/EFL learners.

Professional Growth

Keith-Wetzel et al. (1998) performed an evaluation of technology integration in teacher education for ESL pre-service teachers. They developed and implemented two courses: BLE/ESL Language Arts and Computers in Education for education majors. Based on the two courses, they issued questionnaire to participants of thirty-four BLE and ESL education majors/pre-service teachers. They wanted to find out what constitute good uses of technology in the language arts through the observation and recording of integrated learning activities, which included creating multimedia-based stories and email writing opportunities. The research team found out that as a result of
participants taking the two courses, they increased their confidence for software selection and usage of computers to teach. The participants also indicated that they valued the course objectives for technology integration in the classroom. Keith-Wetzel concluded,

Regarding objectives one (software evaluation), two (role of technology in multicultural classroom), and three (management of technology), a majority of students thought they accomplished these course goals, while [above] 90% rated the importance of the goals very highly. (1998, p. 397)

Keith-Wetzel and his research team (1998) concluded that the implementation of the two courses was essential for the preparation of pre-service teachers in the usage of technology in their classroom. More training for teachers similar to the one by Keith-Wetzel and his research team are necessary for better classroom instruction of ESL students. This is the most important role yet by educators, to take the initiatives and improve themselves with technology. The next section of the literature review shall focus on how ESL instructional programs strive to improve employment potential among their adult ESL students.
English as a Second Language and Employment Prospect

People make technology extremely dynamic, requiring every individual to stay abreast of it. People have created advanced technology that demands the evolution of thinking to higher knowledge and understanding. As a result of their higher order thinking, the rest of the people must get proper schooling to catch up with the fast-moving technology. ESL students must be trained also to keep up with the changing technology. ESL students must learn to adapt to the modern technological society. This is the human adjustment to maximize the efficiency of technology, and ESL students are not exempted if they want to survive and function normally in society.

Critical Thinking Through Technology

It is the goal of the adult ESL programs to have students begin acknowledging technology for the benefit of English language acquisition and for application of independent life skills and work skills. In other words, ESL instruction should move away from the traditional root of academia to a more suitable purpose of “improving employee productivity while teaching functional, job-specific English words and phrases” (Kavanaugh, 1999, p.15). The practice of technology in a typical ESL
classroom should reinforce the strength of these ESL workers in a workplace. They would have been trained to use critical thinking and extensive problem-solving scenarios within the context of proper English words and phrases. Lozada (1998) expressed, "Teachers must be prepared to reach these students (2.2 million foreign-born children) despite communication problems or risk losing them when they drop out of school due to feelings of helplessness and frustration" (1998, p.12). It is not any different from adult ESL students. The adult ESL students drop out due to feelings of despair, frustration, and intimidation. Adult ESL instructors must prepare in the same manner to reach their student population, and computer technology vocational instructors can get acquainted with ESL instructors to meet the challenges of educating their students. "So instead of despairing over their mounting teaching challenges, vocational educators might take the opportunity to become better acquainted with the ESL staff" (Lozada, 1998, p.13). Vice versa ESL educators should be better acquainted with the vocational staff.

For adult ESL students to gain these important skills, they must realize the inevitability of learning English with technology. They must be ready to face the
challenge inside the classroom in preparation for the workplace environment. They must learn to use critical thinking and problem solve with technology while they are obtaining functional English skills. The reason being is "manufacturers are increasingly hard-pressed to find skilled—or even trainable—people to meet their workforce needs"(Sheridan, 1998, p.11). What it amounts to is respect as a worker socially and linguistically. The experience they have gained in a challenging technological ESL classroom will equip them with the tools to be successful in a workplace environment. Finally, the success of the goal depends on the instructor's lesson design with technology and the students' willingness to challenge themselves beyond than the traditional ESL curriculum. Kavanaugh (1999) suggested a curriculum design for a "productivity program" to include 1) objective of the lesson, 2) materials needed for the lesson, 3) specific instructional methodology, and 4) assessment technique used.

Bruce (1998) discovered that abundant changes in technology forced people to adapt to its usefulness with creative practices. He indicated, "It is no longer the case that we can easily separate the use of new technologies in literacy from standard practices [or
traditional methods of learning]" (p.13). The constant changes accounted for alternative approaches for maximizing technology's usage. Bruce called this resourceful learning application "hybrid literacies" (1998) to denote the ingenuity of integrating old practices with new. This cognitive process transformed the average population to a more intellectual collection of great minds and thinkers. The fact that people can shape new technologies to facilitate better learning methods is evident that people are evolving into a more intellectual society. Bruce is not saying that technology may make a society more intellectual, but rather the ability of people to adjust to the dynamics of technology proves that a great deal of cognitive skills are displayed. For example, Claybourne stated,

Computer software and language labs have taken the language learning process beyond sitting and listening to an audiotape and then repeating back the words. Today's foreign language software programs use colorful graphics and real-life examples to teach foreign language in an exciting new way. (2000, p.6)

People grow with new and advancing technology. The ability to do so is an example of Bruce's "hybrid literacies". He simply suggested that as new technology builds upon the old technology and abundant technology results, society
tends to maximize its usage in very creative ways that accounts for growth in cognitive abilities.

**Reinforcing Work Skills**

Educators must train ESL students to meet the increased educational expectations for workforce efficiency. How do educators develop and implement successful educational programs to meet the growing demands of companies for “the new knowledge worker[s]” (Gordon, 1997, p. 14)? The author of “Technology Approaches to Teaching ESL Students” (Bowman et al., 1996, p. 267) examined Project TECH and its endeavor to produce the new breed of strong thinkers for the workplace. Project TECH reinforced the skills necessary for students to function above margin in the workplace. It emphasized the importance of “creating a community of learners that could contribute to society, motivating students to complete high school and college, and learning technical skills in computing and television” (Bowman et al., 1996, p. 27). Bowman et al. concluded that Project TECH discovered a formula, of mixing technology with ESL programs, to be a success. It is a perfect example of how classroom knowledge contributes to society.
Workplace Expectations

ESL workers must understand how to utilize new knowledge to meet the challenges of “complex, tactical and strategic tasks” (Gordon, 1997, p. 15). The discussion in Gordon’s report indicated the movement away from the traditional adult ESL programs. This marked the arrival of a new philosophy integrating work skills training. Sheridan (1998) stated “temp agencies now partner with key clients (i.e. Adult Schools) to create training programs to advance the skill levels of prospective employees” (p.11). Lozada (1998) reiterated Platt, “The most effective place I saw was where an ESL teacher had given the vocational teacher some staff development and vice versa” (p.12). Kavanaugh (1999) pushed for productivity programs in ESL that embrace the new instructional approach of functional and specific English acquisition. These reports supported Gordon’s report that there is a movement away from the traditional ESL curriculum to a more functional based English curriculum specifically for the workplace environment.

What is the purpose of ESL education in this technologically advanced society? Advanced technological companies today demanded workers with skills and ability to produce above than marginal results. Stiff competitions
among companies in this capitalistic world required workers to be innovative, imaginative and knowledgeable. The success of any one company meant that the employees could adjust to the dynamics of societal and technological demands. For ESL workers to be successful in the workplace they would definitely need to grasp the skills of critical thinking and problem solving offered in the technological ESL classrooms.

These are only the obvious factors of why adult ESL students strive to acquire the English language. Moore (1999) saw beyond just the need to increase the company’s market productivity. She collaborated with five ESL instructors and discovered adult ESL students empowered themselves through ESL education culturally. Moore and the five instructors concluded that learning English is for the purpose of acculturation and not assimilation. ESL students build upon their learning and experience in the mainstream society in their first language. Moore (1999) stated, “This pedagogical approach encourages bilingualism and does not leave the learner stranded between two languages and cultures”(p.145). Gonzalez (2000) saw a relation between earnings and ESL education. He claimed, “learning English is a costly endeavor rewarded in the labor market”(p.262). He also later added “they
(immigrants) learn English for social reasons, perhaps to aid them in their acculturation into American society" (p. 265). How does this relate to workplace expectations? Tremendously. ESL workers need a sense of identity, too. ESL workers are as intelligent as any English-speaking workers. They are also valued employees. The flexibility to meet different job descriptions would mean the particular ESL worker possessed the comprehension and the functionality of a high cognitive mind. Gordon (1997) expressed, "Workers cannot be efficient team members if they are inarticulate" (p. 17).

The old trend of adult ESL education, which emphasized only basic academia to assist in passing remedial tests, is ineffective and negligible in terms of success at work. A new framework was introduced for the development of a work readiness curriculum. The U.S. Department of Labor developed Secretary’s Commission on Achieving Necessary Skills (SCANS) to reinforce preparation and appropriate training of ESL students for possible employment. In utilizing the SCANS design of instructions, Tetreault (1997) exemplified students’ creation of “ethnic cookbooks, beautification objects, community resource pamphlet, surveys for local agencies, and ice cream socials” (p.1). The various projects
understandably confirmed the efficiency of technology. Students use functional and specific work production skills to accomplish their tasks. With the help of technology, they fulfill their objectives requiring them to work as a team, pay attention to detail, plan, and negotiate their way to the success of the project. The rationale behind SCANS, in its attempt to produce a work readiness population of ESL students, comprised the new framework of an ESL curriculum that devoted itself to meeting the urgency of workforce excellence. Tetreault’s students demonstrated that technology can be manipulated to assist them in creating the different projects and fostered a learning experience conducive to the SCANS requirement.

**Work Skills**

Technology redefined the meaning of literacy in various educational settings. In “Preparing Students for Work,” Tetreault (1997) identified the essentials of the ability to think critically. ESL students no longer could leave “their brains at the door [or lack of application outside of the classroom]” (Tetreault, 1997, p. 14). Students must learn to articulate to be effective in their job environment. The classroom environment must allow for students to experience this critical thinking process. In
doing so, educators could implement programs that encouraged “social skills of negotiation, giving and taking criticism, or even using listening or nonverbal communication skills that have been lacking” (Tetreault, 1997, p. 10). Employers are interested in individuals with the ability to get along with their fellow workers, to problem solve, and to think critically. Most importantly, employers desire individuals who possess strong interpersonal skills. The best method to foster these important skills is the integration of technology in the educational programs. The increased educational expectations of workers epitomized the role of technology in current workforce environment. Due to technological advancement, many companies required adult ESL students to be challenged away from “the assembly line of the past ninety years that emphasized unvarying, rote, fixed procedural sequences that relied heavily on psychomotor skills” (Gordon, 1997, p. 16). The students needed to be independent thinkers, resourceful and creative to produce better work outcome. The workplace looked to recruit students possessing skills of leadership, team building and quality management. As technology is present in the instruction of ESL students, it forces them to utilize
critical thinking and problem-solving skills to acquire and to use the English language more meaningfully.

The Correlation Between Learning Performance and Learning With Technology

Technology provides opportunities for students in all languages to succeed. The use of technology creates a platform for meaningful and authentic literacy experience. Clovis (1997) discovered that her ESL students were inspired by electronic media. The electronic media helped students "comprehend and retain ideas, engage in dynamic discussions, and improve problem-solving skills" (Clovis, 1997, p. 38). In technology-assisted classrooms, students gain access to materials that are used for role-playing of authentic, functional events in context. Clovis engaged students to interact constructively with TV and Video. In doing so, she succeeded in motivating students by reaching their different learning styles. In the ESL setting, these "authentic assignments allow learners to use their oral and written languages for real purposes, which makes literacy learning meaningful" (Barnitz, 1999, p. 876). When students feel the learning process is fun and interesting, they develop a positive attitude making learning very effective and resulting in better
performance. The following subheadings will discuss further in details the effects of technology on the learning performance of students.

Motivation and Enthusiasm

The traditional approaches to teaching ESL students proved dismal since many ESL students were either neglected or felt intimidated in class. They were quiet and hesitant to speak up not because they were bashful, but because they were not familiar with the English language and the learning environment. Charp (1997) suggested the implementation of technology improved their anxiety. ESL students came out of their shell because they found a safe haven in technology. Technology, as a medium for learning, introduced them to each other despite the diverse language background.

Motivation had been of utmost importance for strong attendance in adult ESL classes. ESL students faced many hardships, and sometimes a few decided to quit and gave up altogether. Many ESL instructors struggled to recruit students to their classes. Once students were present, engaging students became overly crucial. Students needed to feel comfortable as they struggled earnestly to become proficient in English. Technology filled that gaping hole
of insecurity and made learning English innovative, meaningful, and inspirational.

Clovis (1997) put it best when she said, "A teacher of English as a second language discovers the inspirational power of using electronic media with her students" (p. 38). Anxiety of learning English diminished. Computer technology broke the ice among different students entering the ESL classrooms for the first time, and learning performance increased as a result. As time progressed into the twenty-first century, a new breed of enthusiastic learners emerged. ESL instructors could attribute this excitement to the proper usage of technology in the ESL classrooms.

Technology and Diversity of Instructions

Traditionally, technology was used in a way that did not promote effective learning. Many teachers used technology to show videos or films for students to learn from instead of using it as a tool for students to learn with. Students are slowly realizing that learning with technology is a "part of the future of instructional delivery" (Sankaran, 2000, p. 67). Sankaran showed that the trend is changing, and technology played a crucial role in education after all. She expressed that the students who had negative feelings toward learning with technology
gradually became more receptive toward learning with technology by the end of the course.

Educators realized that there are many uses of technology for effective instruction, especially in the ESL setting. Clovis (1997) pointed out, "In particular, the method addressed children’s visual, auditory, and kinesthetic learning styles" (p. 39). Her points could be easily addressed to adult ESL students also. The bottom line is ESL students, adult or children, learned through experiences and hands-on activities. Clovis (1997) said, "Students used sight, hearing, touch, smell, or taste to enhance their learning" (p. 40). The second language is easier to acquire if learning is in the context of the whole physical surrounding.

Sankaran (2000) also expressed that employing web based course format benefited the students. She explained that multiple deliveries of instruction produced better learning outcomes because different learning modalities were being met. In her explanation of students' attitude toward the web among ESL students, she concluded that "when a course is offered in multiple formats, students tend to enroll in the one that is compatible with their attitude and learning strategies" (p. 70). She discovered many ESL students prefer to enroll in the web format of
the course because they felt hesitant to interact in a lecture environment due to language and cultural barriers. In this respect, technology is beneficial by providing the opportunity for ESL students to get started with their learning by eliminating the fear and anxiety of a classroom lecture format.

In another study by Cox (2000), the delivery of instructions over the Internet proved very effective for ESL students. He discussed the power of pronunciation practice over the Internet more suitable for ESL students due to their lifestyles and busy schedule. One might wonder pronunciation practice should follow the traditional "face-to-face exchange with a student speaking, and a teacher giving feedback" (Cox, 2000, p. 20) to ensure the correction of accentual sound right away. Accounts of many students in Cox (2000) proved that ESL students used recording of sound files over the Internet to improve their pronunciation. They felt the easy access to the Internet whenever they want to really push their learning performance. "The ESL pronunciation classroom is being re-engineered and refitted for the Internet and the 21st century" (Cox, 2000, p. 20).

On a whole, technology proved to be a strong factor in the overall success of the ESL students. When ESL
instructors implemented technology in their instructional designs, students improved on their learning performance because their individual learning strategies were being met effectively. These effective learning strategies also consisted of internal online activities involving discussion and group projects. Students were immersed in the English language, and they experienced a lot more speaking, writing, and hearing of the English language. Definitely, technology helped facilitate better learning and make the learning process for ESL students more effective. Next, a visit to classrooms of at-risk students demonstrated the importance of technology in instructions.

The Effect of Technology in At-Risk Population

Katims and Diem (1995) conducted a case study of students identified as at-risk, investigating the affective results of using technology in the classroom. Their study was made up of two stages: analysis of pro- and post-student surveys pertaining to personal reactions to technology and in-depth interviews. They emphasized attitudinal reaction to the introduction of a technological learning environment by students identified as at-risk and by students identified as having learning disabilities. The results of their case study revealed that technology was indeed effective in the areas of
academic gains, problem solving and higher motivation in reading, writing and math among the population in study.

Katims and Diem (1995) asserted that technology usage in the classroom "can help remove barriers to time, distance, socio-economic status, and in many instances, cognitive differences among school-aged students" (p. 98). It resulted in increased attention, motivation, and time on task for all students. They concluded positive response by students identified as at-risk and students with learning disabilities, indicating technology fostered positive attitude toward learning even among the worst of students. The next section presents a study by Hilton and Kameda (1999) about the effect of e-mail and the Internet on international student population.

The Effect of E-mail and the Internet on English for Foreign Language Students

Hilton and Kameda (1999) conducted a case study, which addressed the efficiency and effectiveness of e-mail and the Internet among international students. The project paired two classes of students from the United States and Japan, linking together a cross-cultural communication experience. The results of their study showed real learning occurred about different cultures, suggesting the communication process itself overcame the "danger of
stereotyping and persistence of mindset" (Hilton, 1999, p. 183). E-mail and the Internet provided a vehicle for great discussions, strengthening a stronger sense of national interests. Both the United States and the Japanese students responded enthusiastically to the experience. The research team found the activity was rewarding to students. The experience was especially exciting for the United States students since the activity was not typically tied to specific objectives. For once, the United States students were not "grade hungry and uninterested in activity not directly tied to specific, reward-driven task" (1999, p. 185). Kameda and Hilton concluded that e-mail and the Internet provide the means to create a true multinational, global student projects. ESL programs could use these means as an opportunity to implement efficient and effective teaching vehicles to meet the needs of their student population. In the project, these components were carefully observed and included to provide the interactive online communication necessary among ESL Students. In the project, ESL students can use discussion board as well as e-mail over the Internet for better access to other students from around the world. Technology can also help improve the quality of classroom environment that may prove very effective for
certain student population with disabilities. The next section of the literature review will analyze McSporran's study on the acoustics of the classroom space and its effect on students' learning performance.

**Technology Accounts for Success of Students**

Technology provided a strong foundation for success because ESL students finally engaged in effective learning. Since technology became the new found inspiration for obtaining language proficiency, the outlook for ESL education seemed bright. Achievement is phenomenal, especially for ESL students in English language acquisition. Students can grasp language skills rather than face meaningless rote memory. The trend in almost every research revealed the incorporation of technology greatly benefited the ESL students. Technology gave ESL students more opportunities for success in the classroom, and eventually they could transfer the success to the workplace.

Bowman and Plaisir (1996) mentioned an excellent example of how successful technology could be when combined with ESL programs. They praised Project TECH (Telecommunications, Education, Career Enhancement Project) as the perfect "formula of mixing technology with ESL programs to be a success" (1996, p. 27). ESL students
excelled in their endeavor with Project TECH, and they gained proficiency in the English language. This proficiency was evident in the improvement of their English usage, writing and speaking. Project TECH proved that the success was largely attributed to the enthusiasm of students in the new learning approaches integrated with technology. The skills they have used collaborating and discussing problems for answers would be useful indeed once they moved out of the classroom and into a workplace.

Interactive Multimedia

Interactive multimedia emerged in an out-of-control fashion. The technology developed so quickly that educators did not understand how to use it effectively in their classrooms. In fact, abundant multimedia created confusion among students. Charp (1997) once said that a "plethora of tools confused many students and the value of making all this multimedia available was questioned" (p. 6).

Recently, the popularity of the Internet made multimedia a valuable commodity. The use of interactive multimedia shifted to the World Wide Web, and the tools and functions of multimedia improved considerably. Web-oriented multimedia programming languages, such as
Java, can now create self-directed and self-paced multimedia tools to be placed on the web, making multimedia more accessible and suitable to the learners.

A Tool for Social Studies Project

The success of interactive multimedia in the classroom must demonstrate collaborative and cooperative learning among students. Kingberg and Ingareda (1994) reported an effective use of multimedia among students at North View Middle School in Norfolk, VA. They headed a study by seventh grade students at Norfolk Middle about Dr. Martin Luther King, Jr. and his assassination using hypermedia to help expand their thinking. Student research teams used combination of IBM Linkway, Mac Hypercard, and ABC News interactive laser disc to compile information and to create electronic folders. Kingberg and Ingareda (1994), demonstrated that the use of “hypermedia gets students reading, writing, and thinking about Dr. King” (p. 12). Here at Norfolk Middle, the success of multimedia programs was largely a result of “enthusiastic and cooperative educators and students” (Charp, p. 7).

The opportunity to work in teams helped the students at Norfolk Middle learned important critical thinking skills. The student research teams learned Social Studies effectively through the use of hypermedia. Not only did
they compile information, these student research teams synthesized information at a high level of thinking. The assassination of Dr. King was analyzed, and the students examined "how the assassination could have been prevented and how America's reactions to the assassination reflected the economic, social, and political scene of the 1960's" (p. 12). Thanks to interactive multimedia, the students at Norfolk Middle developed essential critical thinking skills necessary for other classroom practices.

Streaming Video on the Web

Streaming video on the web is an excellent example of multimedia and the Internet at its finest. It is an excellent tool for integrating technology into classroom instructions. How else can educators set the stage for real-world instructions? With streaming video on the web, students can compare and contrast what has been written to the actual live video captured. Students learned to be more critical of the media and the news through a variety of sources, thus the true role of education. Critical analysis and problem-solving skills are of utmost important in education, and the ability to utilize streaming video on the web effectively provides for that opportunity best.
The ability to use streaming video on the web has been made easier for educators for a low per clip cost of $40, any size file desired. There are companies, such as Cybermedia, that would custom video clips to any specification for easy and effective use in the classroom. The benefits for "outsourcing your project" (Cybertech Media Group, 1991) include, of course, time, low cost and convenience. I understand, that as educators, these three benefits are crucial because we're already slumped with work and other responsibilities.

It is not an impossible task for capturing and producing one's own video. Yes, the hardware and software cost can widen one's eyes, but the money allocated to schools should give every school the capability to obtain a school-wide inventory of the equipments needed for this technology. Every teacher can use this technology through sharing and collaborating with each other.

What hardware and software are required for producing one's own video clip for the Internet? "You'll need a capture card, sound and picture editing software, a video deck, an AV rated hard drive with a significant amount of storage capacity, and a back-up preferably in the form of a CD drive you can archive to" (Cybertech Media Group, 1991). Afterward, it is a matter of creating quality
production in terms of picture and sound to be uploaded to a web site. The process can be a difficult one, requiring time to learn the technology.

The quality of streaming video is very important, and it requires customizing it to a specific bandwidth. If bandwidth is not considered carefully, the streaming video will not serve its purpose due to poor delivery. This is where having it professionally done will be more cost and time effective.

I believe, however, that schools should now have the capability for high and above standard Internet connection, and the issue of bandwidth would not be too much of a problem. High-speed bandwidth is easily obtainable in a school setting through technological funding. Students can benefit from high-quality video and audio compression, and streaming video on the web would be a giant step toward quality education.

Real World Learning Through Interactive Multimedia

Interactive multimedia gives students the opportunity to build skills for real-world applications. Multimedia tools, such as Macromedia Director and Adobe Premier, are popular in industry. In Encinatas, CA, High School students created their multimedia yearbook using these software
programs. In learning the tools, T. H. E. Journal reported that Encinatas students prepared themselves “for the world of work and for college” (p. 70). As educators, classroom instructions are effective when students can apply the skills learned in class to the real world.

Excellent multimedia software must observe the appropriate usability principles (Nelson et al., 1999, p. 271). Software engineers employed usability methods to ensure students will benefit from good interactive qualities. Nelson et al. (1999) expressed in the Journal of Research on Computing and Education, “Frequency and engaging interactions coupled with authenticity and familiar contexts” (p. 272) will foster classroom learning that is transferable to the real world. Effective use of interactive multimedia in the classroom, then, must consist of instructional designs suitable for meaningful learning.

Although interactive multimedia initially piled up and educators did not know what to do with all the tools, it remained a hot commodity in constructive educational practices. Now, the fast growing interactive multimedia technology has been fairly manageable for effective use in the classroom setting. The Internet plays a large part in the usability of interactive multimedia thanks to its
web-oriented multimedia programming languages. As a result of the Internet popularity, educators are now better informed about multimedia programs, and students begin to understand the objectives of multimedia in the classroom. The quality of education should improve significantly once interactive multimedia can find its place in the classroom. Although the discussion of the benefits of interactive multimedia touched mainly on academia, it did not exclude the benefits that interactive multimedia can bring to the ESL setting. Interactive multimedia and ESL go hand in hand because ESL students can benefit from the video images in streaming video, sound files on the Internet, VCR, DVD, and a plethora of other tools. All these tools can be fully maximized for interactive conversation and dialog practice, simulation of real life and functional English usage, grammar, reading, listening, and writing.

Conclusion

The preceding literature review supports the current worldview that technology is essential in educational programs, especially English as a Second Language programs. The evidence is tremendous, proving that technology is a key role for the success of ESL programs.
throughout the nation. Many experts agreed, through various researches, on the positive effect of technology on ESL instructions. Through technology, bilingual and ESL students discovered a learning environment conducive to their needs and wants. They can overcome feelings of intimidation and achieve to their maximum potential.

When technology is used appropriately and responsibly by well-trained educators, students can develop stronger cognitive skills, engage in fun learning and enjoy the learning process. Technology reaches out to a diverse student population because it allows students of all different languages and abilities the opportunity to achieve their learning goals and succeed.

It is important that educators take advantage of the usage of technology since it has been proven by experts to ease the difficulty in attending to various populations of students, including ESL students. Technology is a mean to educate students for companies demanding articulate workers and independent thinkers who can produce great results. Instructions with technology require students to think. In conclusion, technology makes a strong presence in all types of educational institutions because it is an effective and efficient tool for learning.
CHAPTER THREE
INSTRUCTIONAL DESIGN AND DEVELOPMENT

Introduction

The ADDIE Model (Analysis, Design, Development, Implementation, and Evaluation) of instructional design is adhered to in producing the software of this project. The organization of Chapter Three follows the structure of the ADDIE Model by demonstrating its systematic approach to instructional design. Incorporating the ADDIE Model fosters a student-centered atmosphere and reduces teacher-centered traditional teaching strategy. The following content outline details right up front how the project was constructed, so understanding chapter three of this project would be easier.

Content Outline

I. Grammar
   1. Alphabet and Sounds
   2. Verb "to be"
   3. Verb "to do"
   4. Verb "to have"
   5. Contractions
   6. Games
II. Conversation
1. Greetings and Introduction
2. Absent from Class
3. Asking and Giving Directions
4. Asking a Girl Out
5. Emergency 9-1-1 Call

III. Reading
1. Personal Information
2. Health and Fitness
3. Transportation
4. Shopping
5. Occupations

IV. Quizzes
1. Quiz 1
2. Quiz 2
3. Quiz 3
4. Quiz 4
5. Quiz 5

V. Favorite Links
1. Link 1
2. Link 2
3. Link 3
4. Link 4
5. Link 5
Flowchart as shown in Appendix A
Storyboard as shown in Appendix B

Analysis

The author of this project determined the audience to consist of adult ESL students at the beginning level. Specifically, there were twenty student subjects undergoing language training in the project developer's classroom of instruction. The twenty student subjects had to fulfill the requirements stated in the syllabus of the beginning level ESL course conducted by the project developer. The project was another component of the semester long instructional program held at the San Bernardino Adult School. In this manner, the issue of consent was never a factor in implementing the project.

The major characteristics noted among this target audience were anxiety, nervousness, dependency, frustrations, and lack of critical thinking ability. The audience possessed very little or no knowledge of the English language and computer technology. They came from a predominantly Mexican culture with little or no formal education in their primary language. They lacked the understanding of the structure and organization of educational concept. For this reason, they were new to the
educational setting. However, the target audience went through a month long orientation and formal training to gain basic computer literacy skills necessary for them to work with the author’s project with little or no assistance. Once some computer literacy skills were attained by the students, they began a semester long training of the English language with the author’s project as a supplement to their regular beginning level ESL curriculum.

The target audience desperately needed to gain competency in the English language. The ESL instructor, who is also the author of this project, concentrated on delivering instructions in the area of listening, reading, writing, speaking, and basic grammar. The instructor followed a communicative approach to instruction while incorporating the CAI project in a computer lab setting with his instructional program.

A communicative approach in ESL suggests learning for real life situations. The learning is applicable and functional when the ESL learners must communicate effectively in the society and especially in the workplace environment. A communicative approach curriculum in ESL includes SCANS, life skills and survival skills necessary for effective daily life production.
The target audience needed to apply the skills and knowledge to the real world environment, such as the vocational setting and daily life. In reaching this important goal, the author of this project discovered the vitality of incorporating basic computer skills to the English as a Second Language curriculum.

The students learned English skills twice a week in a computer lab to reinforce what they had learned in class and to apply what they had learned in class. In doing so, the target audience equipped themselves with the tools to survive in the various environments that they were bound to encounter.

It was obvious that the target audience needed some knowledge in basic computer literacy to be productive in the current society. The opportunity for students to utilize the author’s project gave them more advantage to compete in the workforce because they were applying their skills right away in working with computer technology.

Design and Development

The project utilized various software media that primarily included the Internet web page editor Microsoft FrontPage. The Internet web search engines AltaVista, Google, Northernlight, and Yahoo were used to collect and
gather the different images in gifs and jpegs formats. Also the Clip Arts feature of Microsoft Office was utilized to collect and gather images. The audio component of the project was created with Windows Media software. To listen to the audio, a download of the free Windows Media or Real Player software was necessary. ESL students or any users of this software must configure their multimedia player to include that free download of Windows Media Player. A quiz and game-generating tool called Half-baked Software was used to create interactive quizzes and games. The discussion board was obtained from a registration with an Internet company called Beseen. The resulting software was hosted on 50megs.com for $12.90 a month. This was the Value Package of 50megs.com that allows an instructional designer to upload more than 10 megabytes at a time and store up to 100 megabytes of data. There was a free web hosting with 50megs.com, but it was not adequate for the entire project. After the entire project was uploaded to the server of 50megs.com using an FTP protocol call Cute FTP, a 30.5 megabytes of web space were occupied.

The contents of this software, as previously outlined, aimed to enhance and promote lifelong learning among adult ESL students. The contents of this software strictly adhered to the adult ESL curriculum for beginning
level ESL. The author of the project carefully created the contents suitable for beginning level adult ESL students in his class; at the same time, he selected reading materials that were challenging, real life and meaningful to his adult students.

In general, the software helped adult ESL students refined Basic English language skills and computer skills necessary for higher cognitive classroom activities. The author of this software wanted these adult ESL students to begin using critical thinking and problem-solving skills through computer technology integration with English language instructions. How were problem-solving and critical thinking skills facilitated? After students practiced the skills presented in the software, they demonstrate their mastery through writing construction, guided role-play, student projects, and proper communication in mock interview sessions. As students go through the trial and tribulations of producing these assignments, they would have utilized the necessary skills of collaboration, communication, decision-making, and many more skills under the umbrella of critical thinking and problem-solving learning activities. In this respect, the software contributed to the overall successes of the
students and thus, learning English had been enhanced significantly as the result of using the software.

Also, the project was designed to provide students learning access outside the classroom. The author of the project understood that if the target audience made attempts to access the program on their own terms and away from the classroom setting, they would embark on a journey toward independent learning, and begin articulate communication through listening, speaking, reading, and writing. This is why the software is via the Internet with adequate multimedia tools, i.e. email and discussion board.

Implementation

The software was implemented to a target audience of twenty adult ESL students at the beginning level. The target audience resided at the San Bernardino Adult School in the San Bernardino Unified School District in San Bernardino, California. During spring semester 2001, the target audience worked with the software twice a week in a computer lab setting that was on a shared T1 network system. The computer lab was consisted of about twenty-nine computers equipped with Microsoft Office, Internet Explorer, Netscape, and multimedia software.
Also, four printers were present in the lab each shared to
a hub community of about ten shared T1 computers.

The software was uploaded to the Internet using a
free Internet web server called 50megs.com. Students
logged on to the web site (www.pen-esl.50megs.com) and
followed specific tasks directed by the instructor. Rules
for Internet usage was posted on the wall clearly
explaining what students could and could not do while they
were present in the lab. Students went through a lab
orientation for the first week and reinforcement of lab
rules continued, whether in whole class or individually,
to ensure every student understood the policy and
procedures.

Students were required to sign a contract for proper
net etiquette. They were prohibited from using emails for
recreational purpose or personal matters. However, they
could use emails for educational purposes along with heavy
supervision from the instructor. Some consequences of
breaking any of the rules in the contract were dismissal
from the lab, lost of privilege to use the lab, and
expulsion from the lab indefinitely.

A variety of resources and teaching strategies
further developed the strength of this software and
benefited the target audience greatly in a constructive
learning environment. How did the project aimed to improve the students, and how did the instructor monitored progress by students in a constructive environment? What is an example of the problem-solving and critical thinking activities in a constructive learning environment that was fostered by the software? At the beginning adult ESL level, one required project was a role-play of introduction of a friend to another friend. For the role-play, students worked in small groups to construct a dialog among themselves. As they discussed together on how to use the required language for a successful role-play, students make critical decisions on what grammar points to use. They could decide to use the verbs "to be, to have, and to do," plus the structure of the dialog presented in the software acted as the model for their own dialog. This process is clearly filled with problem-solving and critical thinking skills.

Highly selective links were incorporated into the program to expand on the ESL curriculum. In fact, the survey of the twenty students revealed that 25% agrees and 65% strongly agrees the selected links add on to what they have learned from the instructional program (Survey Item #6). The software provided the target audience with audio and video features to model their listening, speaking,
reading, and writing skills. Every reading passage has an audio link. ESL students could read independently, click on audio to carefully monitor their pronunciation, and revisit to improve their pronunciation. After they practiced enough and felt confident they had understood the reading, they could work on various exercises ranging from short answer quizzes to games for improving vocabulary and basic language skills. They practiced grammar in the grammar section, and they transferred the grammar points learned to the writing process on the discussion board.

The perception of students about the effectiveness of the software was tabulated through responses from survey items # 5, 6, 12, 14, and 15. Survey items #5 and #6 revealed 90% of students perceived they have gained mastery of the beginning level English grammar and skills taught through the software. Survey items #14 and 15 showed their confidence of the grammar mastery because they were able to make judgments about learning English in this same fashion again (Item #14, 85%); moreover, they liked learning in this manner so much that they would recommend similar CAI instructions in English to others (Item #15, 90%). Majority of students believed they have learned the specific grammar points through the use of the
beginning level ESL software as revealed from their answers to the survey items given to them.

Evaluation

Software evaluation was necessary to understand its effectiveness among the student population. The input of students about the effectiveness of the software was greatly valued by the author of this project. The evaluation was done through a survey of twenty students. They carefully and honestly responded to the questions posed by the author of the project with the understanding that their recommendation and suggestion will be used to improve on the project even more.

The survey questions aimed to clarify the effectiveness of the software through accomplishment of several factors. The questions attempted to elicit the perception of each student's knowledge and comprehension of the instructional content presented in the software. The survey also indicated that students perceived a good understanding of the presented content, and they believed they would apply their knowledge gained from the software in the real world. Each student was also asked if the content was relevant to him or her. The responses were
predominantly high (5) on a Likert scale of 1 to 5, with 1 strongly disagree to 5 strongly agree (See Appendix C).

Twenty student subjects were given a survey to evaluate the effectiveness of the software. Because these were beginning ESL adult ESL students, the project developer was concerned about their comprehension of the survey items. Furthermore, students were to answer via the Internet, so the procedure had to be clarified carefully. The project developer decided to explain each item of the survey with interpreting assistance in Spanish from a more language proficient student. Together as a class, students logged in their answers after each item was sufficiently clarified and interpreted by the teacher and the student assistant. After each item was answered, the instructor obtained the results from the Internet the next day. The survey evaluation method went smoothly and concerns of validity due to language difficulty were ironed out sufficiently.

Careful observations in the computer lab were also used to perform the effectiveness of the software. Two teacher assistants and the teacher roamed the computer lab helping students wherever necessary. In doing so, the three teachers observed the behaviors, competency of beginning level language skills and basic computer use
among the students. The teacher and the two assistants paid attention to the type of questions the ESL students asked. The teacher and the two assistants looked for questions concerning the navigation through the software, the level of difficulty of the content, the clarity of each web page, the readability of each web page, and the technical quality of each web page. This was an ongoing software evaluation process besides the survey of twenty students used for the formative evaluation at the end of implementation period.

The findings of the observation by the teachers and the two assistants showed students were primarily on task. Students were entrenched with the task at hand. Students collaborated with each other and the instructors for clarification. They asked each other how to get to certain tutorials and how to locate a specific conversation model in the tutorial, so they can construct their own conversation. It was evident that students were transitioning smoothly among the different web pages. They knew exactly what to click on, and they were able to choose specifically what they wanted to practice without going through the sequential order of the CAI software.

Other findings from the observation involved the writing process on the discussion board. Some of the
students carefully drafted their writing on the discussion board, making sure proper use of verb forms in the tutorial were followed. They asked the assistants to make sure their grammar usage was appropriate and made sense. In this sense, some students were still dependent on the instructor to correct their errors instead of identifying the errors for themselves. However, some students did help their peers correct their writing before they post it on the discussion board. The students, to come up with new vocabulary for their expression on the discussion board, used the online dictionary and translation link. Their sentences were not perfect, but there were evidences of correct use of the different verb forms.

The most notable difficulty among many students was their inability to play the different vocabulary games. There were some initial questions about how to play the word games for vocabulary practice, but that was quickly handled when the assistants showed them how to do it. Students did not understand how to play the crossword puzzle at first until the assistants showed the method. Some students did not know how to drag an object to match it with another object in the matching vocabulary game. A lot of questions were noted on how to effectively play the different vocabulary games. Once they have played the
games once through they never asked the same questions again. They were able to consult each other for directions to perform steps that were forgotten.

At the end of the implementation process, the author of the software discovered positives and negatives of its use in the prescribed setting. Positively, students responded to the contents enthusiastically because they felt they had gained valuable information to improve their language skills to master the beginning level of ESL. The majority of the students clearly demonstrated the desire to learn from the software. The more knowledgeable students showed off their computer skills and understanding of the grammar concepts in the project by tutoring other less competent students.

Negatively, the computer lab was not an ideal setting for the online learning environment that the author of the software had envisioned. The shared T1 network made it difficult for students to download information from the web site. Accessing the different links was too slow, even for very patient adult ESL students. In this sense, the author of the software witnessed some students became off-tasks at times while waiting for the information to appear.
Some students struggled when transition to a different activity of the lesson was required. Certain students could not function independently without guidance and proper assistance. They failed to use high-level cognitive ability that was necessary to work with a multimedia program. The problem was corrected however when the particular students were trained further to navigate through the program because it became predictable, as was the intention of the author when he created the structure and organization of the software.
CHAPTER FOUR

CONCLUSION AND RECOMMENDATIONS

Conclusion

In developing this project, the author of the project adhered to the constructivist approach to learning in the ESL setting. The beginning level ESL curriculum was carefully incorporated into the contents of the project. As students worked on the different topics in the project, the author of the project indirectly forced students to use critical thinking, problem-solving, and lifelong learning to figure out the computer technology as well as the ESL concepts being taught.

Positive learning attitude among adult ESL students at the beginning level were the focus of this project. The learner characteristics were predominantly dependency, anxiety, and little or no knowledge of the English language and basic computer literacy. The project aimed to provide the target population with specific skills to hone critical thinking, problem-solving, and lifelong learning behavior. The opportunity to strengthen these very critical areas of life skills, vocational skills, and higher education among students was provided. The process of using the project while learning English should equip
students with the knowledge power to survive in the current society of the United States of America. Once students bought into the idea of learning English with the computer to benefit themselves in a real life situation, positive learning environment became automatic. Students were seen helping each other, collaborating on what to say in the discussion board, and interacting in the discussion board and emails outside of class time. Although the number of students that logged on to the Internet outside of class was very little, it was evident enough to suggest a positive impact of the project.

Recommendations

To further better this project, the author of this project would like to suggest these following improvements in the revision of this project.

1. The location of software implementation should be on an independent T1 network system computer lab.

2. The target population should be trained in basic Computer literacy before the actual implementation of this software to maximize productivity.
3. It is ideal for the author of the project to have a stable web environment to host the software.

4. It is ideal for the target audience to possess or have access to the computer and the Internet to produce more interactivity and to promote real life applications outside the classroom setting.

Suggestions for Professional Usage

ESL professionals are encouraged to use this software where they deemed necessary for their student population. It is recommended that professionals look at this project as a model to develop their own software, specifically for their classroom population. In using this project, certain software must be downloaded from the download section of the project to further maximize its usage and more effectively meet the needs of the ESL students. Most importantly, the ESL students must be prepared beforehand on how to work with computer technology. The basics of computer literacy should be addressed first before jumping right into the software.
APPENDIX A

FLOWCHART
APPENDIX B

STORY BOARD
Welcome to Mr. Pen's Wonderful ESL Site.

Background: Light blue

Graphic: Rollover buttons

Animation: Scrolling text

Sound: Midi

Voice:

Effect:

Music:
Page 2: Grammar

Introduction to Grammar section

Directions to Grammar activities

Contents and Grammar exercises

Background: Light blue

Graphic: Picture of school supply

Animation: Scrolling text

Sound:

Voice: Reading directions

Effect:

Music:
### Page 3: Alphabets and Exercises

<table>
<thead>
<tr>
<th>Audio of Alphabets</th>
<th>Written alphabets</th>
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<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Navigation buttons</th>
<th>Exercise 1,2,3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**Background:** Light blue

**Graphic:**

**Animation:** Scrolling text

**Sound:**

**Voice:** Reading of alphabets

**Effect:**

**Music:**
Page 4: Alphabet Sounds

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<tr>
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<table>
<thead>
<tr>
<th>Navigation buttons</th>
<th>Exercise 1,2,3</th>
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</thead>
<tbody>
<tr>
<td></td>
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Background: Light blue

Graphic:

Animation: Scrolling text

Sound:

Voice: Reading of alphabet sounds

Effect:

Music:
Page 5: Verb Conjugations

<table>
<thead>
<tr>
<th>Subject pronouns</th>
<th>Conjugations of BE, DO, and HAVE</th>
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<td>Navigation buttons</td>
<td>Exercises 1, 2, 3</td>
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Background: Light blue

Graphic: Picture of

Animation: Scrolling text

Sound: Midi

Voice:

Effect:

Music: Midi
## Page 6: Contractions

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<thead>
<tr>
<th>Conjugation of BE</th>
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</table>

**Background:** Light blue

**Graphic:** Picture of Animation: Scrolling text

**Sound:** Midi

**Voice:**

**Effect:**

**Music:** Midi
Page 7: Games

1. Link to a game.
2. Link to a game.
3. Link to a game.
4. Link to a game.
5. Link to a game.

Navigation buttons

Background: Light blue

Graphic: Picture of

Animation: Scrolling text

Sound: Midi

Voice:

Effect:

Music: Midi
**Page 8: Conversation and Dialog**

<table>
<thead>
<tr>
<th>Introduction to Conversation and Dialog section.</th>
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<tbody>
<tr>
<td>Directions</td>
</tr>
<tr>
<td>Contents</td>
</tr>
</tbody>
</table>

Background: Light blue

Graphic: Picture of

Animation: Scrolling text

Sound:

Voice: Reading directions

Effect:

Music:
Page 9: Greetings and Introduction

Background: Light blue

Graphic: Picture of people

Animation: Scrolling text

Sound:

Voice: Conversation

Effect:

Music:
Page 10: Absent from Class

Background: Light blue

Graphic: Picture of people

Animation: Scrolling text

Sound:

Voice: Conversation

Effect:

Music:
Page 11: Asking and Giving Directions

<table>
<thead>
<tr>
<th>Image</th>
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<tbody>
<tr>
<td></td>
<td>Audio</td>
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</table>

<table>
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<th>Languages to know</th>
<th>More practice</th>
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<tbody>
<tr>
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<td>Exercise 1,2,3</td>
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</table>

Background: Light blue

Graphic: Picture of street

Animation: Scrolling text

Sound:

Voice: Conversation

Effect:

Music:
### Page 12: Asking a Girl Out

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<td>Audio</td>
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<th>Languages to know</th>
<th>More practice</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Exercise 1,2,3</td>
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</tbody>
</table>

**Background:** Light blue  
**Graphic:** Picture of people  
**Animation:** Scrolling text  
**Sound:**  
**Voice:** Conversation  
**Effect:**  
**Music:**
Page 13: Emergency 9-1-1 Call

Image

Dialog

Audio

Languages to know

More practice

Exercise 1,2,3

Background: Light blue

Graphic: Picture of emergency

Animation: Scrolling text

Sound:

Voice: Conversation

Effect:

Music:
Page 14: Reading

Introduction to Reading section

Directions to Reading activities

Contents and Reading exercises

Background: Light blue

Graphic: Picture of school supply

Animation: Scrolling text

Sound:

Voice: Reading directions

Effect:

Music:
Page 15: Personal Information

Background: Light blue

Graphic: Picture of people

Animation: Scrolling text

Sound:

Voice: Text reading

Effect:

Music:
Page 16: Health

<table>
<thead>
<tr>
<th>Image</th>
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</table>

<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Exercise 1, 2, 3</th>
</tr>
</thead>
</table>

**Background:** Light blue

**Graphic:** Picture of Health

**Animation:** Scrolling text

**Sound:**

**Voice:** Text reading

**Effect:**

**Music:**
Background: Light blue

Graphic: Picture of transportation

Animation: Scrolling text

Sound:

Voice: Text reading

Effect:

Music:
Background: Light blue

Graphic: Picture of shopping

Animation: Scrolling text

Sound:

Voice: Text reading

Effect:

Music:
Page 19: Occupations

<table>
<thead>
<tr>
<th>Image</th>
<th>Text</th>
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<td>Audio</td>
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</table>

<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Exercise 1, 2, 3</th>
</tr>
</thead>
</table>

Background: Light blue

Graphic: Picture of occupations

Animation: Scrolling text

Sound:

Voice: Text reading

Effect:

Music:
Page 20: Quizzes

Introduction to Quizzes section

Directions to completing quizzes

Contents and Quiz menu

Background: Light blue

Graphic: Picture of motivation

Animation: Fireworks

Sound: Midi

Voice: Reading directions

Effect:

Music: Classical
<table>
<thead>
<tr>
<th>Directions</th>
<th>10 questions</th>
<th>Animated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>buttons</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Background: Light blue

Graphic: Picture of motivation

Animation:

Sound:

Voice: Reading directions

Effect:

Music:

Programmer: JavaScript
Background: Light blue

Graphic: Picture of motivation

Animation:

Sound:

Voice: Reading directions

Effect:

Music:

Programmer: JavaScript
Background: Light blue

Graphic: Picture of motivation

Animation:

Sound:

Voice: Reading directions

Effect:

Music:

Programmer: JavaScript
Page 24: Quiz 4

Directions

10 questions

Animated Graphics

Navigation buttons

Background: Light blue

Graphic: Picture of motivation

Animation:

Sound:

Voice: Reading directions

Effect:

Music:

Programmer: JavaScript
Background: Light blue

Graphic: Picture of motivation

Animation:
  Sound:
  Voice: Reading directions

Effect:
  Music:

Programmer: JavaScript
Suggestions for more practice through the following resources

- Link 1
- Link 2
- Link 3
- Link 4
- Link 5
- Downloads

Background: Light blue

Graphic: Picture of motivation

Animation:
- Sound: Midi
- Voice:
- Effect:
- Music: Midi
APPENDIX C

SURVEY QUESTIONS
## Survey Questions for Mr. Pen web site

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am a beginning level English as a Second Language student. [20 responses]</td>
<td>1 (1) 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 (4) 20%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (4) 20%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (3) 15%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 (8) 40%</td>
<td></td>
</tr>
<tr>
<td>2. I was trained to work with computer technology and the Internet. [20 responses]</td>
<td>1 (2) 10%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 (4) 20%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (7) 35%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (1) 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 (6) 30%</td>
<td></td>
</tr>
<tr>
<td>3. The information presented in the program is relevant to me in learning English. [20 responses]</td>
<td>1 (0) 0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 (0) 0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (3) 15%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (6) 30%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 (11) 55%</td>
<td></td>
</tr>
<tr>
<td>4. This program is among one of the best on the Internet. [20 responses]</td>
<td>1 (0) 0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 (0) 0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (5) 25%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (5) 25%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 (10) 50%</td>
<td></td>
</tr>
<tr>
<td>5. I understand the English grammar and skills being taught. [20 responses]</td>
<td>1 (0) 0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 (0) 0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (2) 10%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (5) 25%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 (13) 65%</td>
<td></td>
</tr>
<tr>
<td>6. The links add on to what I have learned from this program. [20 responses]</td>
<td>1 (1) 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 (0) 0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (1) 5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (5) 25%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 (13) 65%</td>
<td></td>
</tr>
</tbody>
</table>
7. There aren't any grammatical errors in the content of the program. [20 responses]

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>60%</td>
</tr>
</tbody>
</table>

8. Contact information is clearly presented to inform of errors in the program [20 responses]

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>60%</td>
</tr>
</tbody>
</table>

9. The graphics used support the instructional content of the program [20 responses]

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>5</td>
<td>11</td>
<td>55%</td>
</tr>
</tbody>
</table>

10. I have no problem accessing this website in terms of Internet speed and connection. [20 responses]

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>5</td>
<td>16</td>
<td>80%</td>
</tr>
</tbody>
</table>

11. Navigation is fairly easy because buttons are clear and easy to understand. [20 responses]

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>10%</td>
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<td>3</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>5</td>
<td>19</td>
<td>95%</td>
</tr>
</tbody>
</table>

12. The instructional content is professionally presented and accurate. [20 responses]

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
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<td>0</td>
<td>10%</td>
</tr>
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<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>5</td>
<td>17</td>
<td>85%</td>
</tr>
<tr>
<td>13. When I need help, I can locate the &quot;help&quot; feature throughout the program. [20 responses]</td>
<td>14. I see myself learning English in this fashion over the Internet. [20 responses]</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>1 (0)</td>
<td>1 (0)</td>
<td></td>
</tr>
<tr>
<td>2 (2)</td>
<td>2 (0)</td>
<td></td>
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<td>3 (2)</td>
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<td>4 (7)</td>
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<td>5 (9)</td>
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<td>45%</td>
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<table>
<thead>
<tr>
<th>15. I would recommend this computer-assisted instruction program to others. [20 responses]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (0)</td>
</tr>
<tr>
<td>2 (0)</td>
</tr>
<tr>
<td>3 (1)</td>
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<td>5 (18)</td>
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<tr>
<td>5%</td>
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<tr>
<td>90%</td>
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</table>
REFERENCES


Nelson et al. (1999). If you build it, they will come. But how will they use it? Journal of research on computing in education, 32(2), 270-287.


