Integrating Technology with Traditional Classroom Pedagogy to Increase Level Gains of English as a Second Language Adult Students

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A Special Project

Presented to

Dr. Audrian Huff

Heritage College

In Partial Fulfillment

of the Requirement for the Degree of

Masters of Education

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Spring 2008

FACULTY APPROVAL

Integrating Technology with Traditional Classroom Pedagogy to Increase Level Gains of English as a Second Language Adult Students

Approved for the Faculty

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ABSTRACT

The researcher investigated the relationship between integrating technology into the adult English language learning classroom and level gain in English literacy as measured by the *Comprehensive Adult Student Assessment System*. The research project studied a family literacy program that served migrant families to determine if linking together services using a variety of distance learning modalities increased learner outcomes for adults in English language learning instruction. The students were taught in a traditional classroom and also received instruction through on-line computer based instruction.

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CHAPTER 1

Introduction

Background for the Project

A community college family literacy program that provided English language learning instruction to adult learners was the focus of the study. The program provided in class English language learning instruction for families in the rural area of central Washington and on-line English language learning instruction. Some of the students were migrant farm workers and some of the students were seasonal farm workers.

The census bureau estimated there were 31,903 migrant and seasonal farm workers and an additional 17,448 migrant and seasonal non-workers in the community college service district. (Migrant and Seasonal Farm Worker Enumeration Profiles Study, Health Resources and Services Admin. 2000). Information provided by the school districts indicated the need for a high intensity family literacy project that linked together key support services and literacy efforts for migrant families. Each of the school districts participated in School Wide Title 1 programs, had a large percentage of migrant children, and struggled to meet the needs of a large percentage of children at risk for school failure. The children in the families were often characterized as academically unprepared due to coming from high poverty homes, generally having limited English proficiency, parents with limited formal schooling, poor nutrition and health care, high absenteeism, and having to contend with a mobile way of life (changing schools and communities several times a year). In 1990, the Hispanic population

made up 20.1% of the local community college service district, by 2000 the Hispanic population made up 32.8%, an increase of over 12%. (Local Community College (District 18): Facts and Findings, July 2005)

Studies have indicated that most of jobs in the United States would require some sort of a degree past that of a high school diploma. Today's students needed to be literate across a variety of communication technologies. A number of studies supported a technology-rich environment to improve learning outcomes. The researcher hypothesized that at-risk migrant farm worker families who received instruction with integrated technology approaches would score higher on adult basic skills testing than second language learners who received traditional instruction.

Statement of the Problem

Research indicated that adult literacy students achieved one level gain after sixty to one hundred hours of instruction. Migrant students presented many barriers in achieving enough intensity and duration of instruction that resulted in level gain progress toward English language acquisition. The study attempted to study the question: Does integrating technology and distance learning for migrant and seasonal farm worker adult students increase the intensity of instruction sufficiently to make measurable gains in English language acquisition, compared to similar populations of English language students who do not receive instruction integrated with technology?

Purpose of the Project

The project proposed to study a family literacy program that served migrant families and a family literacy program that served seasonal farm workers to determine if linking together services for students using a variety of distance learning modalities increased learner outcomes for adults in the English Language Learning component. The program incorporated computer technology, web-based classes, and a variety of distance learning tools into regular in-class instruction. Additional distance learning tools included video tapes, leap pads, and library resources to support and provide increased intensity of services for the migrant and seasonal adult learners.

The project connected two communities in an agricultural based corridor in similar delivery of services. Each family literacy program site targeted families with children birth through seven years of age and provided instruction for the children. The program partnered with local school districts and migrant childcare programs that provided additional services to the families. Accessible virtual classrooms that students accessed in community libraries, school district labs, internet cafes, adult basic skills labs, or the student's homes allowed students to have control over when class was offered and students could build learning opportunities that fit into mobile lives and work schedules. The degree to which students accessed distance learning and internet classes determined the level of intensity the project provided for the student.

The study included assessment outcomes from the students that became engaged in distance learning services in the migrant family literacy program. The

data was compared with students enrolled in classrooms who did not engage in distance learning in the same communities.

Delimitations

The study compared language level gains of migrant adult English language learners in a traditional classroom that integrated the use of technology with adult English language learners who did not integrate technology in a traditional class room setting. The program attempted to provide adult literacy efforts even when families moved from the program area to work in another area, state, or country through a virtual classroom.

The family literacy program enrolled and pre-tested fifty-eight adult learners. All program participants were Hispanic and represented very low socio-economic levels. Children of all families included in the study qualified for free and reduced lunch. The traditional classrooms enrolled and pre-tested ninety-five adult learners in the same communities. All participants were Hispanic and represented very low socio-economic levels.

The study compared adults who had received at least sixty hours of instruction with traditional instruction integrated with technology with adults who had received sixty hours of instruction in English language learning classes offered in the community that did not integrate technology. All students in the study were tested using the *Comprehensive Adult Student Assessment System* within the first twelve hours of instruction and again at a minimum of sixty hours of instruction. The study focused on the scope of the project to ascertain whether distance learning modalities increased outcomes for adult English language

learners as measured by the adult assessment tool, *Comprehensive Adult Student Assessment System.*

Assumptions

Instructors in all classrooms were highly qualified with a minimum of a Bachelor's degree. All instructors received orientation for teaching English language learners and use of the *Comprehensive Adult Student Assessment Systems* tool to assess learners.

The instructors for the family literacy projects worked together to create lesson plans and activities that were integrated into the instruction offered on-line. The instructors were supported with workshops and training on how to teach effectively using the on-line format. The curriculum in all classrooms supported contextual, constructivist instruction with relevance to the student's lives. Study circles, ongoing training, and Web logs were used to support the migrant literacy project instructors. Instructors of the comparison classrooms received the same support without the emphasis on technology integration.

One family literacy program instructor had ten years teaching experience. One instructor had three years English language instruction experience. Two instructors had two years English language instruction experience. One instructor in the comparison classroom had fourteen years of English language instruction experience, two instructors had three years experience, and two instructors had two years experience.

The researcher assumed that all students wanted to learn English. The writer expected that all students were tested during the first twelve hours of

instruction in a quiet place in the classroom or in an adjoining room. A *t*-test on the pre-test was done to assure students in each class were similar.

Hypothesis

English language learners taught in a model that integrated technology and distance learning in the traditional classroom instruction made greater gains in English language acquisition as measured by the *Comprehensive Adult Student Assessment System* than English language students who did not receive traditional instruction integrated with technology as measured by a *t*-test.

Null Hypothesis

English language learners taught in a model that integrated technology and distance learning in the traditional classroom instruction did not make greater gains in English language acquisition as measured by the *Comprehensive Adult Student Assessment System* than English language students who did not receive traditional instruction integrated with technology as measured by a *t*-test.

Significance of the Project

The research study compared English language learner literacy gains through comparing classrooms that integrated the use of technology with classrooms that taught using the traditional classroom model. The intent of the study was to add to the body of current research that attempted to understand English language acquisition through integrating technology with traditional language learning pedagogy.

Procedure

All one hundred forty three students were given the *Comprehensive Adult Student Assessment Systems* pre-test within the first twelve hours of instruction during the twelve months between January 2007 and March 2008. Information regarding testing and hours participated by the students were reported using the Web-based Adult Education Reporting System. The students were all tested by the classroom instructor in a familiar environment and the same testing conditions. Students were tested both individually and in groups. A *t*-test on the pre-tests was done to assure that the students in all classrooms were similar.

All students in the research were offered five to twelve hours of instruction per week. Students were provided instruction that included basic technology literacy. Computer labs furnished with individual computers were available in the classroom and laptop computers were available to check out for the students to take home in the family literacy program.

Students in the family literacy program received instruction that included journaling in the classroom and in on-line discussion boards, the use of web sites that supported the content of the class instruction, and e-mail. Students were post-tested after the students had completed a minimum of sixty hours of instruction by the classroom instructor using the *Comprehensive Adult Student Assessment Survey*.

Students in the traditional classrooms did not receive computer literacy instruction, did not use on-line discussion boards, did not use web sites or email to support language acquisition. Traditional classroom students were post-tested

after the students had completed a minimum of sixty hours of instruction by the classroom instructor using the *Comprehensive Adult Student Assessment Survey*.

Definition of Terms

adult basic skills. The Community College program used basic literacy skills that are needed by adults to function in family, community, and work environments for the instructional model.

basic technology literacy. The ability to perform simple tasks using a computer defined basic technology literacy.

Comprehensive Adult Student Assessment System. The assessment test used for assessment, training, and evaluation based on the critical competencies and skill areas required for success in the workplace, community, and family.

family literacy. The adult basic skill instructional program used to provide literacy instruction for the adults and the children of those adults between the ages of birth to seven years.

level gain. The measure used to determine progress in reading and/or listening skills.

migrant farm worker. An individual or family who had moved to a different community to seek agriculture related farm labor during a three year time period.

seasonal farm worker. An individual or family employed seasonally in agriculture related farm labor.

Web-based Adult Education Reporting System. The Washington state reporting system for adult education used to record and track literacy outcomes.

Acronyms

ABE. Adult Basic Skills

CASAS. Comprehensive Adult Student Assessment System

ELL. English Language Learners

GED. General Education Development

MSFW. Migrant and Seasonal Farm Workers

NIFL. National Institute for Adult Literacy

WABERS. Web-based Adult Education Reporting System

WASL. Washington Achievement of Student Learning

CHAPTER 2

Review of Selected Literature

Introduction

The Bush administration presented a blueprint for changes to federal adult basic education. The blueprint emphasized improving accountability, research to practice applications, expanding program choices, and increasing program flexibility. The program flexibility identified technology facilitated learning and distance learning to "accelerate student achievement and expand access to adult basic and literacy education" (Porter, p. 14). Additional research to determine whether the use of distance learning, expanded program choice and offered greater flexibility for adult learners was needed.

Society has placed a significant value on computer technology. Because of technology's pervasive impact, many adult literacy instructors have been under substantial pressure to increase computer use in the classroom. Educators have moved slowly to incorporate technology and would benefit from guidance regarding how to provide seamless movement between technology and non-technology-based instruction.

Researchers have studied the K-12 school system and have identified a broad range of factors necessary to facilitate technology integration. One factor that supported technology integration had been identified as the personal support provided to teachers to help make technology a seamless part of the teaching and learning process and not a burdensome add-on.

California's Experience with Distance Education for Adult Basic Learners

Adult basic skills programs in California monitored progress of students in classrooms that included technology in the adult learning program. Porter (2004) described how California adult schools' served adult learners via distance learning. Over 38,000 unduplicated learners participated in the 2001-2002 program year. The legislation, the initiative, popular distance learning approaches, participant demographics, research issues, and next steps were addressed in the study. According to Porter's study, the research showed positive learning gains and other outcomes. Porter's study was useful to states and programs wishing to adopt distance learning interventions.

Computer Technology Integration should be Optimized

Instructors have been under significant pressure to incorporate computer use in the classroom, however there has been little support for how educators could appropriately integrate technology. A study by Dillon-Marble & Valentine (2006) indicated that computers significantly improved certain aspects of instruction. However, putting research findings to work has been difficult because of the considerable variability in what happened in any given adult basic skills classroom on a day to day basis. The purpose of the study by Dillon-Marble & Valentine was to better understand what optimal computer technology integration looked like in adult basic skills education used the Delphi method of research which placed a high value on complex human judgment and reflection. The study was designed to build theory on the consensus of expert opinion. The approach allowed for the exploration and explication of vague concepts through the systemic sharing, evaluation, and reevaluation of ideas among experts. The

purpose of the study was to develop a theoretical framework for examining and improving computer technology integration in adult literacy. The findings of the study took the form of four classroom characteristics which defined the integration of computer technology use in the classroom. The characteristics included; seamless computer use, computer use appropriate to the learner, computer use that was facilitated, and computer use that empowered the learner. Conceptually, a classroom that embodied seamless computer use, computer use appropriate to the learner, computer use that was facilitated, and computer use that empowered the learner was a classroom with optimal levels of computer technology integration.

Critical Issues and Models to support Technology Integration in Adult Education

Gopalakrishnan's study (2006) involved adult education programs in Connecticut that explored the nature and structure of personal support within adult education programs in 2002-2004. The programs offered adult basic education, English as a Second Language, adult high school credit diploma, and General Educational Development classes. In the study, certain primary questions with regard to providing types of instructional support for teachers were explored: What types of personal support were critical in helping teachers to integrate technology? How could adult education programs provide the support and who was best equipped to provide the support? What organizational implications should program administrators consider when institutionalizing a personal support infrastructure? The study found four types of support were essential to successful integration of technology in adult classrooms:

1) The support must be available on demand.

2) The support provided personal encouragement, instructional mentoring, and technical support of a routine nature.

3) Individuals from both educational and technical orientations supported teachers with technology integration as long as the teachers were able to "translate" between the two domains and work with users of varying technical abilities. Administrative level technical proficiency was not required of the persons involved in supporting teachers to integrate technology.

4) The factors that influenced an administrator's choice of the technology support model included the size of the program, the program geographic span, and the leader's preferred connections to the technology support infrastructure of the parent organization.

Use of Supportive Devices in a Successful Technology Integration Method

Maninger (2006) conducted a study that explored the impact of technology integration in a ninth grade English Literature class. Maninger's (2006) study sought to demonstrate the effect of instruction within a technology-rich environment in preparation for state-mandated testing. The study hypothesized that ninth-grade, at-risk students who received instruction with specialized computer technology integrated into the learning environment would score higher on the state-mandated reading test than ninth-grade counterparts who were on-level and received traditional instruction. According to Maninger (2006), the successful technology integration study revealed a connection between

technology use and the passing rate of at-risk students on the state mandated reading exams in a high school English literature class.

Adopting the Internet into Adult Literacy and Basic Education Classrooms have Pre-conceived Consequences

Using a component of Everett Rogers' theory of diffusion of innovations to understand adult literacy instructors' perceptions of the consequences of adopting the Internet into the classrooms, Berger (2005) explored what instructors perceived was the impact of adopting technology into the classroom. *The Perceived Consequences of Adopting the Internet into Adult Literacy and Basic Education Classrooms* study provided information about the types of consequences observed and the researchers' perceptions about the desirability, predictability, and directness of instructors' reaction. "Based on the conclusions of the study, use of the Internet was a viable resource for working with adult literacy and basic education students to potentially improve critical thinking skills and introduce resources found using the Internet" (Berger, p.11). Berger's 2005 study showed that the Internet had the potential to change the culture of the classroom through interactive, collaborative learning. According to Berger (2005), the results of the study indicated instructors perceived three broad areas of impact of adopting the Internet into the classroom: student empowerment, collaborative classroom, and a shift in the instructors' role.

Comprehensive Adult Student Assessment Systems

The adult education community currently used a wide range of instructional standards, also known as content standards, learning objectives, or

competencies. The *Comprehensive Adult Student Assessment System* was the most widely used system for assessing adult basic reading, mathematics, listening, writing, and speaking skills within a functional context. The *Comprehensive Adult Student Assessment System* was approved and validated by the U.S. Department of Education and the U.S. Department of Labor to assess both native and non-native speakers of English. According to researchers and research briefs located in the CASAS website, twenty-five years of research and development in adult assessment, instruction, and evaluation, CASAS provided the expertise to establish a comprehensive performance accountability system, address core indicators of performance, integrate literacy and occupational skill instruction, and evaluate the effectiveness of adult education and literacy programs.

Summary

The research literature indicated when technology was used to support student learning in adult classrooms, students became more engaged in learning. Technology integration resulted in higher test scores. However, the research in each of the studies also reported that instructors had difficulty integrating technology and needed to be supported in a variety of ways to ensure outcomes for the learner.

CHAPTER 3

Methodology and Treatment of Data

Introduction

The researcher investigated the relationship between integrating technology into the adult English language learning classroom and level gain in English literacy as measured by the *Comprehensive Adult Student Assessment System.* The research project studied a family literacy program which served migrant farm worker families and seasonal farm worker families to determine if linking together services using a variety of distance learning modalities increased learner outcomes for adults in English language learning instruction. The students were taught in a traditional classroom and also received instruction through on-line computer based instruction.

Methodology

The researcher conducted the study with adult English language learners in a family literacy program. The study was a quantitative academic study. The researcher gathered the quantitative data from the *Comprehensive Adult Student Assessment System* pre-test in September and October and the *Comprehensive Adult Student Assessment System* posttest after a minimum of sixty hours of English language instruction. The researcher compared scores between the family literacy program students that received both traditional face to face instruction combined with technology based instruction to students in the same geographic area who received instruction face to face only. Each student

was assessed for progress after the student completed at least sixty instructional hours. Student attendance was recorded daily by the instructor.

Participants

All family literacy program participants were Hispanic and represented very low socio-economic levels. Children of the family literacy program students included in the study qualified for free and reduced lunch. Adults in classes without technology also were Hispanic with low socio-economic levels.

The study compared adults in two communities who had received at least sixty hours of instruction with traditional English language instruction integrated with technology, with adults in the two communities who had received sixty hours of instruction in English language learning classes that did not integrate the use of technology. All students in the study were tested using the *Comprehensive Adult Student Assessment System* within the first twelve hours of instruction and again at a minimum of sixty hours of instruction. This study focused on the scope of the project to ascertain whether distance learning modalities increased outcomes for adult English language learners as measured by the adult assessment tool, *Comprehensive Adult Student Assessment System*. The study began the Fall of 2007 and was completed in March 2008.

Instruments

The researcher used the *Comprehensive Adult Student Assessment Survey* listening and reading tests to assess student learning gains in listening and reading. The *Comprehensive Adult Student Assessment Survey* was designed for English language learners. The *Comprehensive Adult Student Assessment System*

was approved and validated by the U.S. Department of Education and the U.S. Department of Labor to assess both native and non-native speakers of English.

Design

Within each method in the research studied, there were a variety of designs. For example, in an experimental study the researcher used a pretest and post-test. In a descriptive study the researcher used a self-report, and in a qualitative study the researcher conducted a case study. The design used in this study used data from the CASAS pre test and post test in reading and listening comprehension. The class room instructors administered the tests. A *t*-test was done to compare the students' achievement gains after sixty hours of instruction.

Procedure

All 166 students included in the study were given the CASAS reading and listening pretests within the first twelve hours of instruction. The students were all tested by the instructor or the class aide. All instructors and classroom aides had been trained to give the CASAS test. Students were tested individually and in groups. A *t*-test on the pretests was done to assure that the students in each classroom were similar. Students in the family literacy program were offered instruction in a traditional face to face model nine to twelve hours per week and offered an additional three hours per week of instruction in the on-line classroom. Students in the regular class received five hours per week of face to face instruction in a traditional classroom setting. All students were posttested after a minimum of sixty hours of instruction. Instructors used a variety of curriculums to support English language acquisition based on life skills a student would use at

work, in the community, and in the family. Attendance was recorded daily by the instructor. Instructors employed classroom aides to provide additional support for students through one-on-one tutoring. The family literacy classrooms integrated computer literacy into the daily classroom routine. Computers were not available to the students in the other classrooms.

Treatment of the Data

In March the instructors tested all students that had received a minimum of 60 hours of instruction using the *Comprehensive Adult Student Assessment Survey* for reading and the survey for listening. A *t*-test was given to compare the students' achievement gains from Fall quarter through Winter quarter. The scores of the family literacy students who had received traditional face-to-face instruction and instruction using computers was compared to the scores of the students that had received instruction in a traditional face to face classroom only.

Summary

Adult English language learners in a family literacy program and regular instructional programs in two communities were given the CASAS pretest within twelve hours of enrollment in the ELL class. All of the students received similar instruction throughout the program year. Students in the family literacy class received additional instruction through an on-line ELL class. Throughout the year the students in the family literacy classes were strongly encouraged to spend time on the computer learning English. The students turned in assignments that were completed on the computer. At the end of sixty hours of instruction, students were given the CASAS posttest. The students' posttest scores were compared to

the individual pretest scores. The students' reading and listening achievement was compared between the students who had technology available and the students that did not have technology available.

CHAPTER 4

Analysis of the Data

Introduction

The researcher investigated the relationship between integrating technology into the adult English language learning classroom and level gain in English literacy as measured by the *Comprehensive Adult Student Assessment System.* The research project studied a family literacy program which served migrant farm worker families and seasonal farm worker families to determine if linking together services using a variety of distance learning modalities increased learner outcomes for adults in English language learning instruction. The students were taught in a traditional classroom and also received instruction through on-line computer based instruction.

Description of the Environment

The study compared language level gains of migrant adult English language learners in a traditional classroom that integrated the use of technology with adult English language learners who did not integrate technology in a traditional class room setting. The program attempted to provide adult literacy efforts even when families moved from the program area to work in another area, state, or country through a virtual classroom.

The family literacy program enrolled and pretested fifty-eight adult learners. All program participants were Hispanic and represented very low socio-economic levels. Children of all families included in the study qualified for free and reduced lunch.

The traditional classrooms enrolled and pretested ninety-five adult learners in the same communities. All participants were Hispanic and represented very low socio-economic levels. Fifty of the fifty-eight (86.2%) students in the family literacy program completed at least sixty hours of instruction and were given the *Comprehensive Adult Student Assessment System* posttest. Forty-eight of ninety-five (50.5%) traditional classroom students completed at least sixty hours of instruction and were given the *Comprehensive Adult Student Assessment System* posttest.

The study compared adults who had received at least sixty hours of instruction with traditional instruction integrated with technology with adults who had received sixty hours of instruction in English language learning classes offered in the same community that did not integrate technology. All students in the study were tested using the *Comprehensive Adult Student Assessment System* within the first twelve hours of instruction and again at a minimum of sixty hours of instruction. Only students that completed the *Comprehensive Adult Student Assessment System* pretest and posttest were compared. This study focused on the scope of the project to ascertain whether distance learning modalities increased outcomes for adult English language learners as measured by the adult assessment tool, *Comprehensive Adult Student Assessment System.*

Hypothesis

English language learners taught in a model that integrated technology and distance learning in the traditional classroom instruction made greater gains in English language acquisition as measured by the *Comprehensive Adult Student*

Assessment System than English language students who did not receive traditional instruction integrated with technology.

Null Hypothesis

English language learners taught in a model that integrated technology and distance learning in the traditional classroom instruction did not make greater gains in English language acquisition as measured by the *Comprehensive Adult Student Assessment System* than English language students who did not receive traditional instruction integrated with technology.

Results of the Study

Table 1. *t*-Test for Pretest Scores Comparing Students in Classes with Technology and Classes Without Technology

	N	M	SD
With Technology	50	203.30	11.76
Without Technology	48	203.65	13.35

df = 96 *t*-score = 0.15 probability >.05

The CASAS pretest scores of each classroom were compared. The null hypotheses was accepted. Table 1 indicated there was no statistical significance between the two groups of classrooms; the students in each classroom were at a similar level at the beginning of the study.

Table 2.

t-test comparing Pre-test and Post Test Scores for Significant Progress in Classes Using Technology

	N	M	SD
Pre-test scores	50	201.46	18.21
Post test scores	50	211.76	12.81

Df = 49 *t*-score = 9.22 p < .001

After comparing the students' pretest and post test CASAS scores, Table 2 indicated the results for the family literacy classes. The null hypothesis was rejected. Table 2 indicated that there was greater than expected growth in the students' progress in achieving English literacy gains.

Table 3.

t-test Comparing Pre-test and Post Test Scores for Significant Progress in Classes Not Using Technology

	N	M	SD
Pre-test scores	48	203.65	13.35
Post test scores	48	210.79	14.24

Df = 47 *t*-score = 4.76 $p < .001$

After comparing the students' pretest and post test CASAS scores, Table 3 indicated the results for the regular ELL classes. The null hypothesis was rejected. Table 3 showed that there was greater than expected growth in the students' progress in achieving English literacy gains.

Table 4.

t-test for Post Ttest Scores Comparing Students in Classes with Technology and Classes Without Technology

	N	M	SD
With Technology	50	211.76	12.81
Without Technology	48	210.79	14.24

Df = 96 *t*-score = -0.35 p >.05

The CASAS posttest scores of each classroom were compared in April. The null hypothesis was accepted. Table 4 indicated there was no statistical significance between the two classrooms; the students in each program were at a similar level at the end of the study as measured by the CASAS post test.

Table 5.

x^2 chart comparing level gain between classes

	Students who made a level gain	Students who did not make a level gain
Family literacy students	33	17
Regular ELL students	23	25

df = 1 X^2=3.31 p >.05

The goal of the family literacy program was to provide students additional ELL hours of instruction to support the acquisition of English language through the use of technology. The students' reading and listening progress was compared to the group with no technology. The null hypothesis was accepted.

Table 6.

x^2 Number of Students Pre tested in the Classes and Number Receiving a Post Test

	# of students enrolled in classes with technology	# of students enrolled in classes without technology
Pretested	58	95
Posttested	50	48

df=1 x^2= 8.99 probablity < .01

The study found that there was significant difference in the number of students enrolled in the family literacy class with techology that attended enough hours to be eligible for posttesting. Nearly half of the students in the classes without technology either left the program or did not attend enough hours to be eligible for the posttest.

Findings

The results indicated that all students who completed 60 hours did make statistically significant progress in English language acquisition in the subject areas of reading and listening as measured by CASAS pre and post tests. The results also indicated that in the study the students' progress from one level to the next was not significantly affected by the inclusion of technology as an instructional supplement. Each student in the family literacy programs was using technology as a learning tool, but not all of the students were using technology on a daily or weekly basis. The students spent several weeks and sometimes months of classroom time before students gained enough computer skills to use the computer well enough to access the on-line instruction. Though students were enrolled in the on-line class, students spent significantly more time, between 100 and 200 hours, in the traditional classroom setting with the instructor. Students averaged only 19.6 hours in on-line instruction. Classroom time and on-line time was documented by the instructor and reported in WABERS.

The study found that there was significant difference in the number of students enrolled in the family literacy class with techology that attended enough hours to be eligible for posttesting. Nearly half of the students in the classes without technology either left the program or did not attend enough hours to be eligible for the posttest.

Discussion

The results indicated that although the students made significant reading and listening gains, the time spent in the on-line class did not significantly impact

the reading and listening gains. All of the students in the family literacy programs were enrolled in the on-line class, but some of the students did not actively participate in the on-line instruction. The instructors noticed that students took several sessions to gain the computer skills necessary to participate in the on-line instruction. The instructors also reported that computers were not always available for the students to check out and place in the student homes. There were also periods of time that the computer lab machines were unable to access the internet due to connectivity issues. The instructors provided multiple strategies to help students learn how to use the computers. Instructors provided in class lessons, made home visits to the student to ensure the computer in the home was functioning properly, and one on one tutoring for students. The biggest barrier reported by instructors was that computers often were not working and internet connectivity issues.

The study found there was significant difference in the number of students enrolled in the family literacy class with techology that attended at least 60 hours to be eligible for posttesting. Nearly half of the students in the classes without technology either left the program or did not attend enough hours to be eligible for the posttest. This indicated that technology may have played a role in retention of the students. Other factors that may also have contributed to increased retention rates were: students were screened for the family literacy program and admitted when the student committed to participate in all four program components, children were provided early childhood education, students were offered instruction year round.

Summary

Students in the family literacy classrooms and the regular classrooms in this study made significant progress in reading and listening in English as based on the CASAS pre and post assessment scores; the progress was not directly related to the time spent in the on-line ESL class. The WABERS hours report indicated that students participated an average of 19.6 hours of every 100 to 200 hours of ELL instruction. The null hypothesis was accepted as the time spent in the on-line class was not a significant contributor to the students' progress in reading and listening English as measured by CASAS.

CHAPTER 5

Summary, Conclusions and Recommendations

Introduction

The researcher investigated the relationship between integrating technology into the adult English language learning classroom and level gain in English literacy as measured by the *Comprehensive Adult Student Assessment System*. The research project studied a family literacy program which served migrant farm worker families and seasonal farm worker families to determine if linking together services using a variety of distance learning modalities increased learner outcomes for adults in English language learning instruction. The students were taught in a traditional classroom and also received instruction through on-line computer based instruction.

Summary

The research literature indicated that when technology was used to support student learning in adult classrooms, students became more engaged in learning. Technology integration resulted in higher test scores. However, the research in each of the studies also reported that instructors had difficulty integrating technology and needed to be supported in a variety of ways to ensure outcomes for the learner.

In this study, Adult English language learners in a family literacy program and regular instructional programs in two communities were given the CASAS pretest within twelve hours of enrollment in the ELL class. All of the students received similar instruction throughout the program year. Students in the family

literacy class received additional instruction through an on-line ELL class. Throughout the year the students in the family literacy classes were strongly encouraged to spend time on the computer learning English. The students turned in assignments that were completed on the computer. At the end of sixty hours of instruction, students were given the CASAS posttest. The students' posttest scores were compared to the individual pretest scores. The students' reading and listening achievement was compared between the students who had technology available and the students that did not have technology available.

Conclusions

Students made significant progress as measured by CASAS pre and post test assessments. The results of the study indicated the students' reading and listening comprehension was not directly related to the time spent in the on-line instruction. Thirty-four students were registered in the on-line class and 28 were reported with on-line participation hours. The instructors provided three strategies to support the acquisition of computer skills necessary to participate in the on-line class. Students averaged 19.6 hours participation in the on-line class for every 100-200 hours of instruction.

Recommendations

The researcher recommends a future study to be done to better equip, encourage, and empower students to gain computer literacy skills. Computers need to be more readily available to the students and internet connections need to be more reliable and accessible. The study found that there was significant difference in the number of students enrolled in the family literacy class with

technology who attended enough hours to be eligible for posttesting. Nearly half of the students in the classes without technology either left the program or did not attend enough hours to be eligible for the posttest. On-line learning could continue to be explored as an instructional modality that encourages students to participate at a higher level and stay in the program. Continued investigation into the length of time required to become computer literate for second language learners needs further exploration.

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APPENDIX

Table 7.

Technology student hours participating in classes integrating technology instruction

Student	**Total hours participated**	**Total on-line hours**
1	118	21
2	178	31
3	193	21
4	140	9
5	130	9
6	142	21
7	109	2
8	109	20
9	142	14
10	188	0
11	185	28
12	176	49
13	195	20
14	197	6
15	109	23
16	123	48
17	68	9
18	150	22

19	191	10
20	96	0
21	149	0
22	159	0
23	123	19
24	230	14
25	164	17
26	73	0
27	138	34
28	187	27
29	152	19
30	200	17
31	236	19
32	136	14
33	158	5
		548 total hours

28 students that were enrolled averaged 19.6 hours of online instruction