

AN ANALYSIS OF THE EFFECT OF DISTANCE LEARNING SITE ON STUDENT  
SELF-EFFICACY OF JUNIOR HIGH SCHOOL SPANISH STUDENTS

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Prior to the development of interactive television, schools that were either geographically isolated or financially restricted were often unable to provide courses that may have been essential for students. Interactive television has helped such school districts provide appropriate courses for their students.

Because student self-efficacy is a significant indicator of student success, the relationship between distance learning and students' self-efficacy requires research. The problem of the study was to examine the impact of site location in a distance learning environment on student self-efficacy in Spanish instruction.

The participants in this study were junior high school students enrolled in distance-learning Spanish classes at two junior high schools in a north central Texas independent school district. All of the students were taught by the same instructor. The age range of the students was from 11 to 14 years of age, and all students were in either the seventh or the eighth grade. Students took a modified version of the Motivated Strategies for Learning Questionnaire at the end of each treatment.

Using the counterbalanced design, each subject was matched to themselves. In order to employ a counterbalanced design the researcher must make certain that the number of groups used in the research equal the

number of treatments used. Using the counterbalanced design, the research can compare the average performance of the groups for each treatment. *T*-tests for nonindependent samples were used to compare the two treatments.

The findings indicate that there is no significant difference in the level of student self-efficacy by site location. The findings in this study support the use of distance learning as a medium for Spanish instruction at the junior high school level. Because of the strong statistical relationship between self-efficacy and student performance, teachers and administrators can reasonably believe that site location will not hamper their students' success.

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## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS .....	ii
LIST OF TABLES .....	v
Chapter	
1. INTRODUCTION .....	1
Rationale	
Purpose	
Statement of Problem	
Research Questions	
Definitions	
Limitations/Delimitations	
Summary	
2. REVIEW OF RELATED LITERATURE 10	
Introduction	
Self-Efficacy Research	
Measurement of Self-Efficacy	
History of Distance Learning	
Distance Learning Research	
Summary	
3. METHODOLOGY .....	23
Introduction	
Problem	
Participants	
Procedure	
Design	
Data Analysis	
4. RESULTS .....	33
Introduction	

Findings	
Summary	
5. CONCLUSIONS AND RECOMMENDATIONS.....	43
Introduction	
Conclusions	
Summary of Results	
Recommendations	
APPENDICES.....	54
LIST OF REFERENCES.....	81

## LIST OF TABLES

Table		Page
1	Diversity and Gender of Students	26
2	Total Number of Participants at Each Site by Minority and Non-Minority Status	26
3	Total Number of Participants at Each Site by Gender Status	27
4	Total Number of Participants	27
5	Total Number of Participants by School	27
6	Total Number of Participants at Each Site	28
7	Results – All Students	37
8	Results – Males	38
9	Results – Females	39
10	Results – Non-Minority	40
11	Results – Minority	41
12	All Students: Control of Learning Beliefs ( <i>t</i> -test for Nonindependent Samples)	65
13	Outlier Removed – All Students: Control of Learning Beliefs ( <i>t</i> -test for Nonindependent Samples)	66
14	All Students: Self-Efficacy for Learning and Performance ( <i>t</i> -test for Nonindependent Samples)	67

15	Outlier Removed – All Students: Self-Efficacy for Learning and Performance ( <i>t</i> -test for Nonindependent Samples)	68
16	Males: Control of Learning Beliefs ( <i>t</i> -test for Nonindependent Samples)	69
17	Outlier Removed – Males: Control of Learning Beliefs ( <i>t</i> -test for Nonindependent Samples)	70
18	Males: Self-Efficacy for Learning and Performance ( <i>t</i> -test for Nonindependent Samples)	71
19	Outlier Removed – Males: Self-Efficacy for Learning and Performance ( <i>t</i> -test for Nonindependent Samples)	72
20	Females: Control of Learning Beliefs ( <i>t</i> -test for Nonindependent Samples)	73
21	Females: Self-Efficacy for Learning and Performance ( <i>t</i> -test for Nonindependent Samples)	74
22	Non-Minority: Control of Learning Beliefs ( <i>t</i> -test for Nonindependent Samples)	75
23	Outlier Removed – Non-Minority: Control of Learning Beliefs ( <i>t</i> -test for Nonindependent Samples)	76
24	Non-Minority: Self-Efficacy for Learning and Performance ( <i>t</i> -test for Nonindependent Samples)	77
25	Outlier Removed – Non-Minority: Self-Efficacy for Learning and Performance ( <i>t</i> -test for Nonindependent Samples)	78



26	Minority: Control of Learning Beliefs ( <i>t</i> -test for Nonindependent Samples)	79
27	Minority: Self-Efficacy for Learning and Performance ( <i>t</i> -test for Nonindependent Samples)	80

# CHAPTER 1

## INTRODUCTION

### Introduction

For reasons ranging from students living a great distance from a university, to personal time management needs, to limited local program offerings, a demand was created for a nontraditional system of education. The system that was created is commonly referred to as distance learning and began with correspondence courses at the University of Chicago in 1892. In the 1920s distance learning expanded to the use of radio, and then in the 1950s the system was enhanced with the use of instructional television (Campbell, 1996) and a variety of other tools ranging from telephones to audio tapes and various combinations. While distance learning has been evolving over the years, it has historically been used in the context of adult higher education, which is where the focus of research has been. However, in the last few years, as the result of technological innovation, limited public resources, and increased program requirements, we are beginning to see the infiltration of this concept into the K-12 public schools.

With the evolutionary pinnacle of distance learning being the fairly recent development of interactive television, new possibilities have arisen, especially for the K-12 public school systems across the country. Prior to the development of interactive television, schools that were either geographically isolated or

financially restricted were often unable to provide specialized courses, and in some cases courses that may have been essential to students' future success. Recognizing that "educators have the responsibility to provide its users with the resources they need to be productive and responsible citizens in a democratic national and worldwide society," (Riddle, 1994, p. 3) it is vital that schools be able to offer to our students the essential courses, as determined by the curriculum.

With the technological innovation of interactive television, school districts that previously could not afford or find the needed personnel for these classes are now able to provide the educational opportunities once not available to their students. Districts are beginning to "recognize that distance education with its technological capabilities holds the promise of a solution" (Riddle, 1994, p. 1) in K-12 public schools for providing educational opportunities that previously were only available to students in school districts with the resources to find or afford the needed personnel. For example, in Texas, according to the Texas Education Agency's Public Information Management System (PIEMS) data, the number of districts in Texas reporting students using video conferencing for core academic classes has jumped from just 31 districts in 1998-1999 to 155 districts in 2002-2003. This data also shows that the number of campuses has similarly jumped from 33 campuses in 1998-1999 to 165 campuses in 2002-2003 (Gouge, 2004).

While using distance learning to provide the opportunities to students in school districts that have been geographically isolated, or that are economically struggling is promising for the students in America's K-12 public schools, there

are concerns that need to be addressed. As has been done with traditional school settings, research needs to be conducted in order to assure educators of the viability of this new educational environment. From instructional methods to psychological issues, we need to do all that we can to make sure that the distance learning environment is the best possible educational environment we can provide.

### Rationale

One of the psychological constructs of interest to the researcher is that of self-efficacy. Self-efficacy “reflects an individual’s confidence in his/her abilities to perform the behavior required to produce specific outcomes (Kinzie, Delcourt & Power, 1994, p. 747). Bandura (1994) asserts that “those who judge themselves as inefficacious are more inclined to visualize failure scenarios that undermine performance by dwelling on personal deficiencies and on how things will go wrong” (p. 368). Considering these findings it becomes evident that as educators we need to recognize the significant role that self-efficacy constructs, such as outcome expectations, luck, effort, ability, and task difficulty play in the success of our students.

Furthermore, research shows that academic self-efficacy beliefs are strongly predictive of academic performance, (Pajares, 1995) and that a “student’s perception of self can affect choice of activities, effort expended, and persistence in the face of difficulties” (Schunk, 1983b, p. 512). This is significant because it takes the psychological concept and constructs of self-efficacy and brings them

into the world of practice as related to education. For educators this should increase the attention given to self-efficacy issues and alert us to the possible impacts of educational initiatives and the effect these initiatives may have on students' self-efficacy.

Based on our understanding of students' self-efficacy and the role it plays in their academic success, it is essential to have confidence in the impact of new practices on student self-efficacy. One of the new initiatives within the last five to ten years has been the use of distance learning instructional settings to provide instruction. This study will examine the impact of the two instructional sites (receiving and sending) in a distance learning environment on the self-efficacy of seventh grade students in Spanish classes. The hope is that, under existing conditions in the distance learning classroom, no significant difference will be found between the sending and receiving sites as it relates to a student's self-efficacy.

#### Purpose

In the present educational environment a significant focus is being placed on multiple intelligence's, student learning styles, brain research, and technology in the K-12 public schools on student learning. While technology research exists about teacher efficacy related to distance learning and technology, there is very little research that explores the impact of site location in a distance learning environment on student learning. In the distance learning environment (defined as two-way video-conferencing), students are taught while at a site either with a

teacher present or at a distant site interacting with the teacher over a two-way video-conferencing television. This process demands the attention of educators as it pertains to student learning. The purpose of this study is to bridge a gap in the research and to provide data that may prove useful to educators teaching in a distance learning environment.

Because student self-efficacy has been shown to be a significant indicator of student success in various classroom settings, the relationship between distance learning and students' self-efficacy is a topic that requires the attention of research. Of particular interest to the researcher is the impact on students' self-efficacy in Spanish classes taught via distance education. This area is interesting for the researcher because in Texas there is a supply and demand problem related to the number of classroom teachers of Spanish.

According to the U.S. Department of Education Office of Federal Student Aid, Texas schools have had a shortage of foreign language teachers since 1997 and the shortage continues through today. In response to this shortage, administrators are turning more and more to distance education to fill the void. While administrators are turning to distance learning to provide for classes like Spanish, they are doing so out of necessity, not necessarily because they believe it is the best way to educate children. While financially this may be feasible and provide for personnel resources that might not otherwise be found, concerns over impact on student performance need to be examined. The information from this study may assist administrators as they determine how much focus and financial

support they should give to the continued development of distance education courses in general, and more specifically, Spanish education in such an instructional setting. It may also prove helpful to teachers who work in a distance learning environment by providing them with information that may direct psychological and educational methods employed.

While research has been done in traditional classroom settings on the impact of various instructional methods on student self-efficacy, there has been very little research examining the impact of a distance learning setting on the self-efficacy of young students. Considering the importance of self-efficacy on student performance, this void in the research needs to be filled. This study will examine the impact of the different instructional settings in distance learning on student self-efficacy. Through the examination of student self-efficacy in both the sending and receiving sites of a distance learning setting the researcher hopes to provide data that may shed light on the impact of instructional setting in a distance learning environment on student self-efficacy.

#### Statement of Problem

The problem of the study was to examine the relationship that receiving instruction in distance learning environment has with students' self-efficacy beliefs. Specifically, this study will examine the impact of site location in a distance learning environment on student self-efficacy in Spanish instruction.

## Research Questions

The research questions include:

1. Is there a significant difference in the self-efficacy of students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
2. Is there a significant difference in the self-efficacy of boys receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
3. Is there a significant difference in the self-efficacy of girls receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
4. Is there a significant difference in the self-efficacy of non-minority students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
5. Is there a significant difference in the self-efficacy of minority students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

## Definitions

Self-efficacy: "Individuals' beliefs about their capabilities to perform well on events that affect their lives." (Graham & Weiner, 1996)



Minority: Persons belonging to a racial grouping other than Anglo-American

Junior High: Students who are in the seventh or eighth grade

Distance Learning: Two-way video-conferencing classroom in which nearly half of the student are receiving instruction face to face and the other half are receiving instruction via the video-conferencing technology

Sending Site: The site in a distance learning class that has the instructor physically present

Receiving Site: The site in a distance learning class that does not have the instructor physically present

#### Limitations

One of the limitations of the study is that the findings cannot be generalized to distance learning students outside of examined district. Further limitations include the willingness of the students and faculty to participate in the study, the students understanding of the questions as put forth in the survey of self-efficacy, and that the survey for self-efficacy was not developed specifically for distance learning.

#### Delimitation

Delimitations of the study include using only one teacher. This will be done in order to eliminate teacher variables without having to use a large number of teachers in the study. Another delimitation of the study is that only junior high school students will be used because this is the area of interest to the

researcher. Finally, the study will examine only Spanish classes for distance learning because this is the area that is commonly used in a distance learning environment.

### Summary

Distance learning has developed to the point that it is now a standard in our K-12 public schools. Self-efficacy, a psychological construct that explains a student's belief about their ability to perform a specific task, has been shown in many studies to be a strong predictor of student performance and persistence. Self-efficacy research also indicates that students' self-efficacy can be affected by the environment, and various psychological and instructional techniques. With this in mind, this study examined the effect of the distance learning site on the self-efficacy of students. By examining the effect of the distance learning site on the self-efficacy of students, I hope to present data that will help the principal and teacher develop a distance learning environment that will optimize student performance.

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

#### Introduction

The educational environment provides a contextual influence on students' self-efficacy, and some environments may not provide needed information to the student and, therefore, the students' level of self-efficacy may suffer (Schunk, 1985). While this has been understood by educators for years as it relates to a traditional classroom setting, it has great meaning today within the context of two-way video-conferencing classrooms. Students' psychological states, including self-efficacy, often have significant impacts on student motivation and performance in school. Schunk (1985) asserts that "different psychological procedures change behavior in part by creating and strengthening perceived self-efficacy, which refers to personal judgments of one's performance capabilities in a given activity" (p. 4). Because self-efficacy can influence one's choice of activities, effort expended, and persistence in completing activities, "students who have a low self-efficacy will tend to avoid certain activities, whereas those who believe they are capable should participate more eagerly" (Schunk, 1988, p. 5). What can be found in the existing research is that students' "self-efficacy beliefs are important influences on motivation and behavior in part because they mediate the relationship between knowledge and action" (Pajares, 1995, p. 4).

Thus, the willingness of an individual to engage in a task and put forth effort is determined by their perception of their ability to perform the task.

Educators recognize that with the advent of the fairly new distance learning environment of interactive television, there may be a solution to solving the educational needs of the geographically-isolated and underserved populations of our country (Riddle, 1994, p. 1-2). These telecommunication systems enable educators to reach their goals of providing academic programs through the use of technology and establishing new programs for students and citizens on a statewide basis (Riddle, 1994). Distance learning is a very attractive means for educators to fulfill their responsibility of providing their students with the resources they need to become productive citizens, especially in underserved geographic regions where the resources cannot be accessed in the traditional manner. However, “upon establishing that there is value in providing education to the previously underserved populations, and demonstrating that interactive telecommunications systems provide a means to deliver that education, the next task is to design those delivery systems so that students’ needs are met” (Riddle, 1994, p. 7). Of specific concern, considering the significance of self-efficacy on student persistence and performance, should be the impact of this environment on the self-efficacy perceptions of the students. In the literature review I will examine research surrounding self-efficacy, self-efficacy measurement, the history of distance learning, and distance learning.

## Self-Efficacy

While the significance of motivation on student performance has been evident to educators since the onset of public school education in America, until recently it has not been the focus of significant research. In the 1950s, research into student motivation began with Julian Rotter's research into locus of control, and later continued with the seminal research of Albert Bandura in the 1970s, focusing on the role of self-efficacy in student motivation. Since then there has been extensive research conducted on the way in which motivation influences student behaviors and decisions.

In what is commonly known as social learning theory, Bandura (1977) asserts that behaviors are learned through the continuous reciprocal interaction of people, their environments and learning generated by previous experiences. From this process individuals develop a sense of what they can accomplish, and this influences future decisions based on efficacy expectations. Efficacy expectations, or self-efficacy, "reflects an individual's confidence in his/her abilities to perform the behavior required to produce specific outcomes and is thought to directly impact the choice to engage in a task, as well as the effort that will be expended and the persistence that will be exhibited" (Kinzie, Delcourt & Power, 1994, p. 747). Bandura (1996) also asserts that people's belief in their capabilities to exercise control over their level of functioning and environmental demands will greatly affect their incentive to persist or even attempt a new goal. This is significant because of the unique environmental demands presented by

distance learning. Bandura's assertion requires a look at the potential impact of this environment on student self-efficacy.

Bandura (1977) and Schunk (1985) have shown that student persistence is impacted by efficacy expectations. For educators, the persistence that students will exhibit in the face of difficulties is of great importance. Research in self-efficacy has "revealed positive and statistically significant relationships between self-efficacy beliefs and academic performance and persistence across a wide variety of subjects" (Riddle, 1994, p. 54). Relative to this study, it has specifically been found that a "student's motivation to persist in a distance learning course is more important in a distance learning telecourse than in a traditional classroom course" (Campbell, 1996, p. 16). Persistence is significantly impacted when a student believes that the environment in which they are learning is either enhancing or inhibiting their ability or effort, or making the task more or less difficult. Because of this, teachers need to have confidence that the environment in which students learn will not negatively impact their student's persistence. Examining the relationship between the unique environmental demands of distance learning and self-efficacy thus becomes vital.

Research has also focused on the relationship between the various educational elements and a student's self-efficacy. According to Pajares (1995), researchers have studied, in an educational environment, the relationship between self-efficacy and attributions, career development, goal setting, memory, modeling, problem solving, reward contingencies, self-regulation, social

comparisons, strategy training, teaching and teacher education, anxiety and self-concept, and academic performances across subject areas. In nearly all of this research it has been found that self-efficacy is a strong predictor of academic outcomes, and that “students’ self-efficacy can be influenced by such things as prior performance, vicarious experiences, social persuasion, and inferences from physiological states” (Schunk, 1984, p. 5).

Also of interest is a study conducted by Hagerty (1997) in which four schools were selected as efficacy schools and over a period of two years academic scores were compared with four non-efficacy schools. To qualify as an efficacy school the teachers in the school had to partake in specific training provided by the Efficacy Institute. This training “focused on improving the academic performance of students through the development of positive attitudes toward learning. This included a presentation of theory and discussion of such topics as the innate ability and developmental models of learning as they operate at large and in schools. The final day involved a developing of curriculum for students based on what the teachers had learned in the training “(Hagerty, 1997, p. 1). Four schools in the Sacramento City Unified School District completed the training and were thus labeled efficacy schools. The comparison schools, whose teachers had not gone through the training, were labeled non-efficacy schools. Results indicated that in math, boys, African-American, and white student scores improved more in the efficacy schools than the non-efficacy schools. This is

significant for educators because it provides concrete evidence of the important role that self-efficacy plays in student academic performance.

### Measurement of Self-Efficacy

While self-efficacy research has shown high predictability factors for student performance, there has been concern that some of the research has been flawed by the designs. Specifically, researchers such as Bandura, Bond, and Pajares have had great concern over the manner in which self-efficacy has been measured. Self-efficacy research should measure the confidence that students have towards accomplishing a specific task in the future. The emphasis needs to be on the specificity of the task. “Bandura cautioned that, because judgments of self-efficacy are task- and domain-specific, global or inappropriately defined self-efficacy assessments will weaken effects. For this reason, measures of self-efficacy should be tailored to the criterial task being assessed” (Pajares, 1995, p. 6). Furthermore, “context-specificity is critical in self-efficacy assessment because accurate judgments of one’s own capability toward tasks require all the affordances and constraints of the task-performing situation be taken into consideration” (Bong, 1999, p.1). Unfortunately, research frequently has focused more on students’ general sense about their capability to perform well in a given subject, as opposed to on a specific task. Therefore, what has often been the topic of research in self-efficacy studies has more closely resembled a self-concept construct. The difference between the two, while subtle, is significant. Pajares (1995, p. 6) states “self-concept beliefs are generally defined in terms of



judgments of self-worth associated with one's perceived competence". Self-efficacy, while it can be impacted by perceived competence, is less global in nature and more specific to a given task. Therefore, while an individual's overall perception of self may be low, on a given task their efficacy perceptions may be high, and vice versa.

In measuring self-efficacy it is important to keep the task specificity in mind and develop a survey that is task specific. "Pajares and his associates showed that, as Bandura theorized, particularized judgments of capabilities are better predictors of highly related academic performances than more generalized self-referent judgments" (Pajares, 1995, p. 21). Pajares' (1995) research confirms Bandura's caution that a self-efficacy measure must assess the same skills called for in the performance task with which it is to be compared. As important in assessing self-efficacy is proximity of the assessment to the performance. To ensure that self-efficacy is actually being measured, it is important that the assessor measure self-efficacy in temporal proximity to the skill being examined (Bong, 1999).

Self-efficacy measures, as pointed out early in this research, have been shown to have significant predictability as it relates to student performance and persistence, especially if the measurement is task specific and in close temporal proximity to the action being measured. Within self-efficacy research, the most common tool for conducting self-efficacy measurement is the Motivated Strategies for Learning Questionnaire (MSLQ). Developed by the University of

Michigan to study motivation in college students, the MSLQ has been used in motivation and self-efficacy research conducted with both junior high and high school students. There are two sections to the MSLQ, but for the purposes of this research only the section on motivation was used, which is appropriate since the different scales can be used together or independently. Within the section on motivation there are three subsections, of which the section dealing with expectancy components was used in this research (Johnson and Ross, p. 4). “The expectancy component assesses students’ control beliefs and sense of self-efficacy for learning and performance” (Jans, p.8), which is the focus of this study. Previous researchers have modified the questions in the MSLQ for the purpose of readability, specificity of content, and to allow students to complete the survey without teacher interaction. In each case the focus of the individual questions was maintained, without changing the reliability and validity of the survey.

### History of Distance Learning

Recognizing the vital role of self-efficacy in student persistence and performance, one would assume that innovations in public schools would automatically receive the attention of research. As pointed out previously, self-efficacy has been addressed in many different ways in the educational setting. However, to date there has been very little research on the impact of distance learning on self-efficacy in the K-12 public schools. For the purpose of this study, I am defining distance learning as two-way audio-visual television.

With the advancement that has occurred in distance learning technology, schools across the state of Texas have been implementing distance learning classrooms at the cost of approximately \$100,000 per permanently situated lab. In the district in which this research was conducted five elementary schools received labs in 2002, while each of the secondary campuses have had this technology in place since 2000. Prior to the last five years, two-way interactive audio-visual experiences have been primarily used by the military, businesses and higher education. In public school settings this is a relatively new technology, and very little research has been done to evaluate the instructional effectiveness of this technology.

The nature and scope of distance education has changed radically since its early beginnings as correspondence courses over 100 years ago (Campbell, 1996). While the first instructional television was introduced in 1951 (Lane, 1992), interactive television technology was still a long way off. Before the introduction of such technology into our educational setting, Americans would still have to go through multimedia education for distance learning, which incorporated audio, video, and correspondence technology for the purpose of relaying education information.

It was not until the mid 1980s that telecourses were offered for educational opportunities, and since then the use of such technology has increased at a staggering rate (Campbell, 1996). As noted earlier, in the state of Texas, according to Public Education Information Management System (PIEMS) data

obtained from the Texas Education Agency, the number of districts in Texas reporting students using video conferencing for core academic classes has jumped from just 31 districts in 1998-1999 to 155 districts in 2002-2003. The number of campuses has similarly jumped from 33 campuses in 1998-1999 to 165 campuses in 2002-2003 (Gouge, 2004). The introduction of this technology into the K-12 educational setting has removed significant barriers to equal educational opportunities for students from geographically-isolated and financially struggling communities, and indications are that nearly all states are planning or implementing telecommunication systems for education (Riddle, 1994). However, "for most people, two-way audio/video distance education environments are new experiences. New experiences by their nature can be anxiety provoking" (Reinhart, & Schneider, 1998, p. 3). Couple this anxiety related to technology with the new educational experience of Spanish for children and you have the potential for even greater levels of anxiety.

#### Distance Learning Research

This anxiety has to be considered when evaluating the effectiveness of a distance learning environment. While it has been established that distance education can fill a significant void in educational opportunity for those who are geographically-isolated and for financially strapped communities, there has been little research into the impact of this delivery medium on K-12 students. The significant amount of research conducted on distance learning has been primarily reserved for the realm of higher education. Campbell (1996) pointed out

research conducted by Russel (1993) that indicated there was no significant difference in the achievement of learning between students in traditional face-to-face settings and those in distance learning settings. However, it is important to note that this research focused on students in university settings, who had the choice between the two environments, and not in a K-12 public school environment where students generally do not get to determine the educational setting. This is significant because many of the university students who make the choice of a distance learning course would believe that they had the ability to be successful in such a setting. Those who did not believe they could be successful would not have attempted or persisted in such an environment. Because of the nature of choice and the inherent relationship with self-efficacy, much of the research on self-efficacy and distance learning may not be generalizable to the K-12 public school system.

As referred to earlier, the U.S. Department of Education Office of Federal Student Aid has found that Texas schools have had a shortage of foreign language teachers since 1997 that continues through today. With an increased need for Spanish instruction across the state of Texas and a decrease in the number of qualified teachers, school administrators are turning more and more to distance learning technology to fill the void. While “two-way audio-visual distance education has the potential to provide real-time interaction, significant impediments might result if the student is not comfortable with the technology” (Reinhart, & Schneider, 1998, p. 4). Reinhart and Schneider (1998) also state

that a “students’ perception of the physical environment in a two-way audio/video classroom will be related to their perceptions of self-efficacy in the classroom” (p. 4). Reinhart and Schneider’s research is significant to this present study because it is one of the few that examines the relationship between the environment of distance learning and self-efficacy. However, their research also focused on college students whose level of self-efficacy may not match the whole of students within a public school setting. Furthermore, while their research looked at the effect of self-efficacy beliefs on student performance in a distance learning environment, it did not evaluate the effect of the site location in a distance learning environment on the student’s self-efficacy beliefs. Anderson (1993), in a study of success in distance education telecourses versus traditional classroom courses, concludes that motivation may be an important factor in the successful persistence of students in distance education courses. While this is consistent with prior self-efficacy research in traditional classroom settings, it is important for K-12 institutions offering distance learning courses to know if the findings of prior self-efficacy research based in traditional classrooms apply to the distance learning setting. As Krendl and Broihier (1992) indicated, “as the technology gains a stronger foothold on our educational institutions and becomes a standard instructional tool in the classroom, as well as a fundamental component of cultural literacy, it is critical that we understand students’ response to this medium” (p. 225).

## Summary

One solution to the problem of providing an adequate education to the underserved and geographically isolated learner has been found in the electronic telecommunications technologies (Riddle, 1994). With the support of the Texas Legislature via Technology Infrastructure Grants, many Texas schools have developed distance learning labs to bring educational opportunities that may not have been possible before. This medium has increasingly been used to provide courses for students that previously had not been offered because personnel either could not be found or afforded. “While there are compelling reasons, e.g., cost effectiveness, marketing, and student access, for institutions to develop and implement distance education programs, it is important to consider research as it pertains to distance education” (Campbell, 1996. p. 2). This study examined the impact of the distance learning site on student self-efficacy. The purpose of this examination was to evaluate the relationship between the two variables to establish the instructional effectiveness, as it relates to self-efficacy, of a distance learning environment.

CHAPTER 3  
METHODOLOGY

Introduction

This study examined the possible effect of site location in a distance learning environment on the self-efficacy of junior high school students in Spanish education.

The following research questions were addressed:

1. Is there a significant difference in the self-efficacy of students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
2. Is there a significant difference in the self-efficacy of boys receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
3. Is there a significant difference in the self-efficacy of girls receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
4. Is there a significant difference in the self-efficacy of non-minority students receiving instruction in Spanish via distance learning at the sending site



versus receiving site on the post-test measure of junior high school students' self-efficacy?

5. Is there a significant difference in the self-efficacy of minority students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

### Problem

Self-efficacy studies have shown, with a high degree of confidence, a relationship between students' levels of self-efficacy and future academic performance. Assuming this relationship would continue within a distance learning classroom, this study examined the effect of the students' site position in a distance learning classroom on their self-efficacy. The null hypothesis is that the self-efficacy of students' will not differ with any degree of significance based upon the site position in a distance learning environment.

In this study I examined the relationship between self-efficacy and the site position of students in a distance-learning course for Spanish instruction. While there has been a significant amount of research on the effects of instructional methods, and instructor influences on self-efficacy, there has been little research on the effects of distance learning on students' self-efficacy. The purpose of this research is to fill in a gap in the existing research on self-efficacy and begin the process of examining the various components of distance-learning and the

environmental impact on student learning, thus assisting administrators and teachers in developing future distance-learning courses.

### Participants

The participants in this study were junior high school students enrolled in distance-learning Spanish classes at two junior high schools in a north central Texas independent school district. All of the students were taught by the same instructor, thus eliminating instructor variance. The age range of the students was from 11 to 14 years of age, and all students were in either the seventh or the eighth grade. There were twenty-nine total participants in the distance learning class, with thirteen participants at School A and sixteen participants at School B. At School A there were five male participants and eight female participants. Ten of the participants at School A were non-minority, and three of the participants were minority. At School B there were nine male participants and seven female participants. Eight of the participants at School B were non-minority, and eight of the participants were minority. The number of students for this study was impacted by their willingness to participate. There were forty-nine students in the two classes, but only twenty-nine decided to participate. This was due to either the students desire not to participate, or their parent's desire for them not to participate.

Table 1

*Diversity and Gender of Students*

<u>Student Group</u>	<u>Student Numbers</u>	
	School A	
Boys		5
Girls		8
Minority		3
Non-Minority		10
	School B	
Boys		9
Girls		7
Minority		8
Non-Minority		8

Table 2

*Total Number of Participants at Each Site by Minority and Non-Minority Status*

	<u>Site Position</u>	
	Sending Site	Receiving Site
Minority	<i>n</i> = 11	<i>n</i> = 11
Non-Minority	<i>n</i> = 18	<i>n</i> = 18

Table 3

*Total Number of Participants at Each Site by Gender Status*

	<u>Site Position</u>	
	Sending Site	Receiving Site
Male	<i>n</i> = 14	<i>n</i> = 14
Female	<i>n</i> = 15	<i>n</i> = 15

Table 4

*Total Number of Participants*

<u>Student Group</u>	<u>Student Numbers</u>
Boys	14
Girls	15
Minority	11
Non-Minority	18

Table 5

*Total Number of Participants by School*

	School A	School B
1 <sup>st</sup> Two Weeks	<i>n</i> = 13	<i>n</i> = 16
2 <sup>nd</sup> Two Weeks	<i>n</i> = 13	<i>n</i> = 16

Table 6

*Total Number of Participants at Each Site*

Sending Site	Receiving Site
N= 29	N= 29

Permission to use these students in the study was obtained from the University of North Texas Institutional Review Board, the participating schools administration, the teacher, and the participating school district's superintendent. All students enrolled in the course needed written consent from parents in order to participate in the study.

#### Instrumentation

Survey research was conducted at both School A and School B using the Motivated Strategies for Learning Questionnaire (MSLQ) as a posttest measure of self-efficacy. The MSLQ was developed at the University of Michigan in 1986 by Paul Pintrich, David Smith, Teresa Garcia, and Wilbert McKeachie. It has been under development formally since 1986, and has been used extensively in research on self-efficacy with populations ranging from junior high school students to graduate level college students.

#### Procedures

Students at both sites were given a nine weeks grading period to acclimate themselves to the technology used in a distance-learning environment. This was done so that familiarity with technology or discomfort with technology could be

eliminated as a variable in the study. At the beginning of the study the instructor taught from School A for a period of two weeks, using instructional techniques that he had used prior to the beginning of the study so as to eliminate familiarity with instructional method as a variable. Students in School B received the instruction via distance learning technology from the same instructor and at the same time as the students in School A. After two weeks, the instructor gave the MSLQ to the students at the sending site (School A), and at the receiving site (School B). Following this procedure, the instructor then repeated the same steps teaching from School B, which then became the sending site, making School A the receiving site.

These two schools have systemic differences in both social economic status and ethnic breakdown. School A is a Title I school with a higher number and percentage of minority and low social economic status students as compared to School B, a non-Title I school. To control for the differences between the populations of the two schools, a researcher can either use statistical or design methods.

The analysis of covariance is the statistical method used “to control for initial differences between groups before comparisons are made” (Gall, Borg, & Gall, 1996, p. 394). This is used because “the researcher cannot always select comparison groups that are matched with respect to all relevant variables” (Gall, Borg, & Gall, 1996, p. 395). Rather than controlling statistically, the researcher can control by design. The means for controlling for confounding variables by

design is referred to as matching. "Matching is used to equate two groups on one or more extraneous variable so that these extraneous variables do not confound study of causal relationships involving the variables of primary interest to the researcher" (Gall, Borg, & Gall, 1996, p. 387). Typically, matching involves "recruiting a subject in the second group because he or she (or it) is a good match for a particular subject in the first group" (Huck, 2000, p. 291) on extraneous variables. Considering the social economic status and ethnic differences between School A and School B, this type of matching would likely result in the loss of African-American, Hispanic, and low social economic status subjects from the study.

Since it is desirable to control for differences by design rather than statistically, another matching design was employed. Using the counterbalanced design, each subject was matched to themselves. In order to employ this design "the number of groups must equal the number of treatments," (Gay, 1992, p. 329) which was the case in this study. Using this method, the "average performance of the groups for each treatment can be compared" (Gay, 1992, p. 329). This is what was done in this study, using *t*-test for nonindependent samples to compare the two treatments. However, "a unique weakness of this design is potential multiple-treatment interference that can result when the group receives more than one treatment. Thus, a counterbalanced design should really only be used when the treatments are such that exposure to one will not affect evaluation of the effectiveness of another" (Gay, 1992, p. 330). In this study the students

exposure to distance learning via the sending site should not effect the evaluation of their self-efficacy in the receiving site. By following this design the group size at both the sending and receiving sites is doubled, making this study more statistically robust. In addition, many extraneous variables are eliminated because the two groups are identical.

### Design

This research study is a quasi-experimental, counterbalanced, quantitative design. Using a posttest measure of self-efficacy, comparative effects of sending sites and receiving sites in distance-learning Spanish classes were examined for race, gender and aggregate scores.

A two-tailed *t*-test for nonindependent samples was used to examine differences between sending and receiving sites, both aggregate and disaggregate (based on gender and minority status). A two-tailed *t*-test was used as there is no assumption that the differences that may occur in the study will occur in one direction. The *t*-test for nonindependent samples is being used, because this is the type of test for significance that is used when the study employs matching techniques. The formula for *t*-test for nonindependent samples (Gay, 1992, p. 450) was used in a spreadsheet software product to test the null hypothesis. An alpha level of .05 was used, as this is what most studies use as a reasonable probability level.



## Summary

The purpose of this study was to examine the possible effects of site position in a distance-learning Spanish class consisting of junior high school students. The interactions between site position and gender, and site position and race were examined for the purpose of helping future administrators and teachers design the most effective distance-learning environments possible.

## CHAPTER 4

### RESULTS

#### Introduction

The purpose of this study was to examine the relationship that receiving instruction in a distance learning environment has with students' self-efficacy beliefs. Specifically, this study examined the impact of site location in a distance learning environment on student self-efficacy in Spanish instruction.

In this chapter the findings related to the research questions are presented. Following the introduction the examination of the results are presented by research question.

The questions for this research are as follows:

1. Is there a significant difference in the self-efficacy of students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
2. Is there a significant difference in the self-efficacy of boys receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
3. Is there a significant difference in the self-efficacy of girls receiving

instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

4. Is there a significant difference in the self-efficacy of non-minority students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
5. Is there a significant difference in the self-efficacy of minority students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

The instrument used in this research was the Motivated Strategies for Learning Questionnaire (MSLQ). This instrument was developed at the University of Michigan for the "purpose of assessing student motivational orientations and their use of different learning strategies for a college course" (Benson, 1991, p. 2). The MSLQ is divided into 15 scales that can be administered as an entire instrument or used by subscales. For this study the two subscales of the Expectancy Component under the Motivational Scales were used, as these subscales relate to self-efficacy. The first subscale is titled Control of Learning Beliefs (COLB), and the second is titled Self-Efficacy for Learning Performance (SLP). "The control of learning refers to students' beliefs

that their efforts to learn will result in positive outcomes” (Pintrich et al., 1991, p. 12). The self-efficacy for learning and performance reflects the “judgment about one’s ability to accomplish a task as well as one’s confidence in one’s skills to perform that task” (Pintrich, et al., 1991, p. 13). The survey questions were altered to meet the measurement specificity required for self-efficacy studies, and to meet the language level of eleven to fourteen year old students. Questions 1, 4, 7, and 10 pertained to the Control of Learning Beliefs component. Questions 2, 3, 5, 6, 8, 9, 11, and 12 pertain to the Self-Efficacy for Learning and Performance component. The following statements were used on the survey instrument:

1. If I study in appropriate ways, then I will be able to speak using Spanish food terms.
2. I believe I will receive an excellent grade in this class.
3. I’m certain I can understand the most difficult Spanish food terms from the readings.
4. It is my own fault if I don’t learn the Spanish food terms in this unit.
5. I’m confident I can understand the basic Spanish food terms taught in this unit.
6. I’m confident I can understand the most complex Spanish food terms presented by the instructor in this unit.

7. If I try hard enough, then I will understand the material over Spanish food terms.
8. I'm confident I can do an excellent job on the assignments and tests covering Spanish food terms.
9. I expect to do well in this class.
10. If I don't understand the Spanish food terms, it is because I didn't try hard enough.
11. I'm certain I can master the Spanish food terms being taught in this class.
12. Considering the difficulty of the material over Spanish food terms, the teacher, and my skills, I think I will do well in this class.

Twenty-nine students completed questionnaires at the end of each two week period of instruction. This number represents 59% of the students in the two classes. Each student participated at both the receiving and sending sites. There were eleven minority and eighteen non-minority students. There were fourteen males and fifteen female students. The instructor confirmed that all students understood the nature of the survey, that each student was in attendance for entire period of the research, and that each student completed their own survey without help.

A *t*-test for nonindependent samples was used, because this is the type of test for significance that is used when research employs matching techniques. Using the formula for *t*-test for nonindependent samples, students' mean scores

at the sending site were compared with their mean scores at the receiving site to come up with a *t*-test observed value to test for significance. The data revealed that one student's responses were dramatically different from all other student responses. The difference in the data was the result of this student having a larger disparity in survey responses between the sending and receiving sites in comparison to other students. A note is at the end of the examination of results for Questions 1, 2, and 4 sections to show the specific impact of including this student's scores. The following summarizes the results of the responses of the 29 students who completed the MSLQ successfully.

#### Examination of Results

Table 7

*Results – All Students*

Degrees of Freedom	<i>t</i> observed value	Alpha	<i>t</i> critical value
Control of Learning Beliefs			
28	1.939558	.05	2.048
Self-Efficacy for Learning and Performance			
28	1.694786	.05	2.048

Question 1: Is there a significant difference in the self-efficacy of students receiving instruction in Spanish via distance learning at the sending site versus

receiving site on the post-test measure of junior high school students' self-efficacy?

As can be seen in Table 7, there is no significant difference in students' beliefs about their ability to perform the given task in the future based upon where the student is located in a two-way interactive television course. Neither the COLB *t* observed values nor the SLP *t* observed values reached the level required for there to be considered a statistically significant difference in students' self-efficacy at receiving and sending sites. Removing the outlier score shows that the COLB *t* observed value for all students would have reduced to 1.632, and the SLP *t* observed value would have reduced to 1.350.

Table 8

*Results – Boys*

Degrees of Freedom	<i>t</i> observed value	Alpha	<i>t</i> critical value
Control of Learning Beliefs			
13	1.76453	.05	2.16
Self-Efficacy for Learning and Performance			
13	1.572676	.05	2.16

Question 2: Is there a significant difference in the self-efficacy of boys receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

As can be seen in Table 8, there is no significant difference in boys' beliefs about their ability to perform the given task in the future based upon where the boy is located in a two-way interactive television course. Neither the boys' COLB  $t$  observed value nor their SLP observed value reached the level required for there to be considered a statistically significant difference in boys' self-efficacy at receiving and sending sites. Removing the outlier score shows that the COLB  $t$  observed value for boys would have reduced to 1.440, and the SLP  $t$  observed value would have reduced to 1.222.

Table 9

*Results – Girls*

Degrees of Freedom	$t$ observed value	Alpha	$t$ critical value
Control of Learning Beliefs			
14	.0863112	.05	2.145
Self-Efficacy for Learning and Performance			
14	.680864	.05	2.145

Question 3: Is there a significant difference in the self-efficacy of girls receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

As can be seen in Table 9, there is no significant difference in girls' beliefs about their ability to perform the given task in the future based upon where the



girl is located in a two-way interactive television course. Neither the girls' COLB  $t$  observed value nor their SLP  $t$  observed value reached the level required for there to be considered a statistically significant difference in girls' self-efficacy at receiving and sending sites.

Table 10

*Results – Non-Minority*

Degrees of Freedom	$t$ observed value	Alpha	$t$ critical value
Control of Learning Beliefs			
17	1.151394	.05	2.11
Self-Efficacy for Learning and Performance			
17	1.283717	.05	2.11

Question 4: Is there a significant difference in the self-efficacy of non-minority students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

As can be seen in Table 10, there is no significant difference in non-minority students' beliefs about their ability to perform the given task in the future based upon where the non-minority student is located in a two-way interactive television course. Neither the non-minority students' COLB  $t$  observed values nor their SLP  $t$  observed values reached the level required for there to be considered a

statistically significant difference in non-minority students' self-efficacy at receiving and sending sites. Removing the outlier score shows that the COLB  $t$  observed value for non-minority students would have reduced to 0.558, and the SLP  $t$  observed values would have reduced to 0.7667.

Table 11

*Results – Minority*

Degrees of Freedom	$t$ observed value	Alpha	$t$ critical value
Control of Learning Beliefs			
10	1.349627	.05	2.228
Self-Efficacy for Learning and Performance			
10	1.041566	.05	2.228

Question 5: Is there a significant difference in the self-efficacy of minority students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

As can be seen in Table 11, there is no significant difference in minority students' beliefs about their ability to perform the given task in the future based upon where the minority student is located in a two-way interactive television course. Neither the minority students' COLB  $t$  observed value nor their SLP  $t$  observed value reached the level required for there to be considered a

statistically significant difference in minority students' self-efficacy at receiving and sending sites.

### Summary of Results

The findings by all students, as well as disaggregated by gender and race, indicate that there is no significant difference in the level of student self-efficacy by site location in a distance learning environment. A consideration of the outlier data reveals that the scores would have been even further removed from the point of significance.

## CHAPTER 5

### CONCLUSIONS AND RECOMMENDATIONS

#### Introduction

Distance learning, defined as two-way interactive television, has become a means for districts across the state of Texas to meet the curriculum needs of students. For districts that are experiencing economic problems or teacher recruitment issues, the medium of interactive television is proving to be a solution. According to the Texas Education Agency's Public Information Management System (PIEMS) data, the number of districts in Texas reporting students using video conferencing for core academic classes has jumped from just 31 districts in 1998-1999 to 155 districts in 2002-2003. This data also shows that the number of campuses has similarly jumped from 33 campuses in 1998-1999 to 165 campuses in 2002-2003 (Gouge, 2004). While using distance learning to provide opportunities to students in school districts that are experiencing teacher recruitment issues or that are economically struggling is promising for the students in Texas K-12 public schools, there are concerns that need to be addressed.

One of these concerns that needed to be addressed was this instructional mediums impact on students' self-efficacy, which is what this research set out to do. Bandura (1994) asserts that "those who judge themselves as inefficacious are more inclined to visualize failure scenarios that undermine performance by

dwelling on personal deficiencies and on how things will go wrong” (p. 368). Furthermore, research shows that academic self-efficacy beliefs are strongly predictive of academic performance (Pajares, 1995), and that a “student’s perception of self can affect choice of activities, effort expended, and persistence in the face of difficulties” (Schunk, 1983b, p. 512). This is significant because it takes the psychological concept and constructs of self-efficacy and brings them into the world of practice as related to education.

Bandura (1977) and Schunk (1985) have also shown that student persistence is impacted by efficacy expectations. For educators, the persistence that students will exhibit in the face of difficulties is of great importance. Research in self-efficacy has “revealed positive and statistically significant relationships between self-efficacy beliefs and academic performance and persistence across a wide variety of subjects” (Riddle, 1994, p. 54). Relative to this study, research has shown that a student’s motivation to persist in a course is more important in a distance learning telecourse than in a traditional classroom course (Campbell, 1996). Persistence is significantly impacted when a student believes that the environment in which they are learning is either enhancing or inhibiting their ability or effort, or making the task more or less difficult. Because of this, teachers need to have confidence that the environment in which students learn will not negatively impact their student’s persistence.

The importance of the impact of the environment on self-efficacy cannot be minimized. In fact, Schunk (1985) found that the educational environment

provides a contextual influence on students' self-efficacy, and some environments may not provide needed information to the student and, therefore, the students' level of self-efficacy may suffer. Bandura's (1996) research supports Schunk's statements in that he found that people's belief in their capabilities to exercise control over their level of functioning and environmental demands will greatly affect their incentive to persist or even attempt a new goal. These findings are significant to the purpose of this research because of the unique environmental demands presented by distance learning.

The purpose of this study was to examine the relationship that receiving instruction in a distance learning environment has with students' self-efficacy beliefs. Specifically, this study examined the impact of site location in a distance learning environment on students' self-efficacy in Spanish instruction. In this chapter the conclusions from the findings related to the research questions are presented. The questions for this research were as follows:

1. Is there a significant difference in the self-efficacy of students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
2. Is there a significant difference in the self-efficacy of boys receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

3. Is there a significant difference in the self-efficacy of girls receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
4. Is there a significant difference in the self-efficacy of non-minority students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?
5. Is there a significant difference in the self-efficacy of minority students receiving instruction in Spanish via distance learning at the sending site versus receiving site on the post-test measure of junior high school students' self-efficacy?

Data were collected using a modified version of the Motivated Strategies for Learning Questionnaire (MSLQ) designed by the University of Michigan. Means of student scores were then compared between sending and receiving sites to determine if there were significant differences in student self-efficacy based on site location in a distance learning environment.

### Conclusions

The data indicate that students' self-efficacy for the whole group did not change significantly due to being located at the sending site versus being located at the receiving site during instruction in a Spanish course. This outcome was similarly reflected in the girls, boys, non-minority, and minority t-observed values.

As noted earlier, research has shown that self-efficacy plays an important role in students' choice of activities, as well as effort and persistence in activities (Kinzie, Delcourt & Power, 1994). The fact that self-efficacy levels did not significantly vary by site location indicates that students do not find the site location in a distance learning environment to be a hindrance to their effort and persistence in a Spanish course.

Reinhart and Schneider (1998) had noted that the new experience of distance education could be anxiety provoking, which theoretically would impact their level of self-efficacy. Through the design, the participants at both sites were exposed to the technology for an extended period. This was done so that the anxiety related to interfacing with new technology could be mostly eliminated. Any remaining anxiety would mostly be related to the site location, as all other variables were controlled. The data from this study indicate that any anxiety experienced as a result of site location in a distance learning environment does not negatively impact students' level of self-efficacy.

Self-efficacy, as shown by Schunk (1984), Pajares (1995), and others, is highly correlated to student performance. Research conducted by Russell (1993) indicated there was no significant difference in the achievement of learning between students in traditional face-to-face settings and those in distance learning settings. I believed it was important to note that this research focused on students in university settings, who had the choice between the two environments, and not in a K-12 public school environment where students



generally do not get to determine the educational setting. However, the self-efficacy findings in this study turned out to be consistent with Russell's conclusions, indicating that this environment is as appropriate to use with junior high school students as with college age students.

The primary impetus for this study was determine if a distance learning environment has an impact on student self-efficacy. Schunk (1985) concluded that the educational environment does provide a contextual influence on students' self-efficacy, and some environments may not provide needed information to the student and, therefore, the students' level of self-efficacy may suffer. Reinhart and Schneider's research looked into Schunk's conclusions as they relate to a distance learning environment. Reinhart and Schneider (1998) had concluded that students' perception of the physical environment in a two-way audio/video classroom was related to their perceptions of self-efficacy in the classroom. Reinhart and Schneider's research was significant to this study because it is one of the few studies that examined the relationship between the environment of distance learning and self-efficacy. However, their research focused on college students, and once again, I was concerned that findings involving college students' would not be generalizable to students within a junior high school. Furthermore, while their research looked at the relationship between self-efficacy beliefs and a distance learning environment, it did not evaluate the effect of the site location in a distance learning environment on the student's self-efficacy beliefs. These two studies supported the need to examine

the relationship between self-efficacy and site location in a junior high school distance learning environment. The results of this study indicate that the educational environment of distance learning does not negatively impact junior high school students' self-efficacy regardless of site location.

For the purposes of this research the examination of data involved looking at comparisons self-efficacy scores within identified groups. The participants were grouped by females, males, non-minorities and minorities. These groups were examined independently and not compared to each other. The rationale behind doing this was to exclusively examine the effective of site location on self-efficacy for each group. The *t*-observed values that were obtained for each group showed the statistical difference in self-efficacy between sending and receiving sites in a distance learning environment, and were not a reflection of an overall self-efficacy.

However, while the purpose of the study was not to compare one gender group to another, when looking at the data it was interesting to note the difference in the *t*-scores of the boys and the girls. In both the Control of Learning Beliefs (COLB) and Self-Efficacy for Learning and Performance (SLP) *t*-observed values the boys were noticeably closer to the *t* critical value and showing a statistically significant difference between sending and receiving sites than were the girls. Tables 8 and 9 in chapter 4 show that the girls' *t*-observed values were nearly half those of the boys. While neither the COLB nor SLP *t*-observed values differences reached the *t* critical value, this difference in scores

led me to give an examination to prior research involving gender differences as it relates to self-efficacy, and I found this difference in self-efficacy scores to be consistent with prior research done by Pajares. Pajares (2002) found that efficacy levels in middle school aged girls were higher than those of boys, and especially so when the learning is more self-regulated.

From my observations and participations in a distance learning environment I have found it to be an environment that requires a great deal of self-regulated learning, especially at the receiving site. When examining the means, as shown in tables 16, 18, 20, and 21 in Appendix C, I found the self-efficacy scores were always lower at the receiving site for both genders, with a greater difference among males. This is consistent with Pajares' self-regulation findings in that the receiving site in a distance learning environment would likely involve a greater deal of self-regulation than the sending site, and thus I believe this to be a reason for the differences in gender *t* observed values.

It is consistent with research to find that the difference in self-efficacy *t*-scores could be due to girls' efficacy levels being naturally higher than those of boys. However, it is also consistent with research to find that this could be due to the amount and type of self-regulated learning required in a distance learning course.

### Summary of Results

The null hypothesis in this study was that the self-efficacy of students will not differ with any degree of significance based upon the site position in a distance

learning environment. While the findings in this study support the null hypothesis, the results cannot be generally applied beyond the examined district and Spanish instruction in a distance learning environment without further research. This is due to the limitation of the study's small sample size. The number of participants was 29, which with the counterbalanced design gave a number of 58, but the potential sample size was 49, which would have given a number of 98. While this was a respectable acceptance rate of nearly 60%, I had anticipated closer to an 80% acceptance rate. There were no complaints or concerns reported by students or parents related to this study, which indicates that they were not opposed to the study, but may have had other reason for not participating that cannot be accounted for.

While the applicability to other districts is uncertain, the findings in this study support the use of distance learning as a medium for Spanish instruction at the junior high school level. The data show that self-efficacy of students, either as a whole group, by gender, or by race was not impacted significantly by their location in a distance learning environment. This is good news for those who currently use or are planning to use distance learning as a means of instructing students. Because of the strong statistical relationship between self-efficacy and student performance, teachers can reasonably believe that their students will be successful learning in a distance learning environment. While instructional methods may need to vary from the traditional classroom due to the obvious

limitations of a two-way interactive television environment, student performance need not suffer.

As noted earlier in the study, there is a shortage of Spanish teachers in the state of Texas, and distance learning has been employed as an instructional medium by an ever increasing number of districts to help overcome this problem. Based on the findings in this research, school administrators concern about the appropriateness of this medium for student learning can be somewhat reduced. Furthermore, administrators can be that much more confident about using taxpayer money in developing this medium for instruction. This can be asserted because these findings demonstrate that student performance, as indicated by self-efficacy measures, is not hampered by this environment.

#### Recommendations

While the results of this study provide support for distance learning, in order for the results to be more generally applied across school districts, further research will need to be conducted. Research recommendations would be to replicate the study, but change some of the variables used in the study. Specifically, increasing the time the teacher spent away from the receiving site while providing instruction. In this study the teacher instructed from the sending site to the receiving site for a two week period. It would be important to practitioners to know if the students' self-efficacy would be impacted by a greater time separation in this environment, as it might impact the way in which their courses were set up. A replication of this research using a greater number of

participants, different courses, and different teachers would help in determining if the results of this study could be applied across different school settings.

One of the interesting findings of this study was the difference in the self-efficacy *t*-scores between boys and girls in a distance learning environment. While neither group's *t*-scores differed with any degree of significance from the sending and receiving sites in this environment, the difference between the gender scores was noticeable. This research did not set out to examine the amount or type of self-regulation in a distance learning environment, or to compare gender groups. However, based upon the differences in the COLB and SLP *t* observed values, I recommend further research into the amount and type of self-regulated learning that potentially occurs in a distance learning environment, and comparing gender group efficacy levels in this environment so that educators can set up the most effective learning environment possible.

APPENDIX A  
QUESTIONNAIRE

## Self-Efficacy Survey Form

Student Number \_\_\_\_\_

Check the appropriate site location for the previous unit of instruction

\_\_\_\_\_ Sending Site      \_\_\_\_\_ Receiving Site

The following questions ask about your motivation for and attitudes about this class. Remember there are no right or wrong answers, just answer as accurately as possible. Use the scale below to answer the questions. If you think the statement is very true of you, circle 7; if a statement is not at all true of you, circle 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you.

- |   | 1                        | 2 | 3 | 4 | 5 | 6 | 7                  |
|---|--------------------------|---|---|---|---|---|--------------------|
|   | not at all<br>true of me |   |   |   |   |   | very true<br>of me |
| 1. If I study in appropriate ways, then I will be able to speak using Spanish food terms. | 1                        | 2 | 3 | 4 | 5 | 6 | 7                  |
| 2. I believe I will receive an excellent grade in this class.                             | 1                        | 2 | 3 | 4 | 5 | 6 | 7                  |
| 3. I'm certain I can understand the most difficult Spanish food terms from the readings.  | 1                        | 2 | 3 | 4 | 5 | 6 | 7                  |
| 4. It is my own fault if I don't learn the Spanish food terms in this unit.               | 1                        | 2 | 3 | 4 | 5 | 6 | 7                  |
| 5. I'm confident I can understand the basic Spanish food terms taught in this unit.       | 1                        | 2 | 3 | 4 | 5 | 6 | 7                  |



6. I'm confident I can understand the most complex Spanish food terms presented by the instructor in this unit. 1 2 3 4 5 6 7
7. If I try hard enough, then I will understand the material over Spanish food terms. 1 2 3 4 5 6 7
8. I'm confident I can do an excellent job on the assignments and tests covering Spanish food terms. 1 2 3 4 5 6 7
9. I expect to do well in this class. 1 2 3 4 5 6 7
10. If I don't understand the Spanish food terms, it is because I didn't try hard enough. 1 2 3 4 5 6 7
11. I'm certain I can master the Spanish food terms being taught in this class. 1 2 3 4 5 6 7
12. Considering the difficulty of the material over Spanish food terms, the teacher, and my skills, I think I will do well in this class. 1 2 3 4 5 6 7

APPENDIX B  
FORMS

Research by David Vroonland working with the  
University of North Texas  
Denton, Texas

Student Assent Form

\*\*Required for students 7 -13 years old

Your Spanish teacher, (Teacher Name), with the permission of the superintendent and principal, is assisting me in research. The research is about how distance learning affects a student's beliefs about how they will perform in Spanish. The study will be during October and November of 2003. It will only be conducted during class time, and should take approximately 30 minutes. The purpose of this research is to give your teacher and others information that may help them design better distance learning courses.

There will be no changes with the class beyond (Teacher Name) spending approximately two weeks teaching from (School A), followed by two weeks teaching from (School Name). You will be asked to fill out a survey at the end of each unit. This survey has questions over students' feelings about being able to do what they learn in class. Your participation in this study is voluntary and not related in any way to your grade in this class. You may withdraw from the study at any time without hurting your grade. This research will not put you at any expected risk or discomfort beyond what is normal in a school day.

To be a part of the research you must sign this Student Assent Form, and a parent must sign the Parent Consent Form. There will be no negative results if you do not want to participate. If you choose to participate, your identity will be kept confidential by (Teacher Name).

This project has been reviewed and approved by the UNT Committee for the Protection of Human Subjects (940-565-3940). Should you have questions related to this study please feel free to call me, Dr. Johnetta Hudson (Faculty

Sponsor at UNT), the teacher, or your principal. I can be reached at 972-727-0400 ext. 1242, and Dr. Hudson can be reached at 940-565-2175.

I have read or have had read to me all of the above. My Spanish teacher has explained the study to me and answered all of my questions. I understand I do not have to take part in this study and my refusal to participate or decision to withdraw will involve no penalty. I understand my rights and voluntarily assent to participate in this study. I understand what the study is about, how the study is done, and why it is being done. I have been told I will receive a signed copy of this Student Assent Form.

Research by David Vroonland working with the  
University of North Texas  
Denton, Texas

Student Assent Form

\*\*Required for students 7 -13 years old

\_\_\_\_\_  
Student Name (Please print)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Student

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

Research by David Vroonland working with the  
University of North Texas  
Denton, Texas

Parent Consent Form – Required if your child is from 7 to 13 years old

Your child's Spanish teacher, (Teacher Name), with the permission of the superintendent and principal, is assisting me in research. The research is about how distance learning affects a student's beliefs about how they will perform in Spanish. The study will be during October and November of 2003. It will only be conducted during class time, and should take approximately 30 minutes. The purpose of this research is to give your child's teacher and others information that may help them design better distance learning courses.

There will be no changes with the class beyond (Teacher Name) spending approximately two weeks teaching from (School Name), followed by two weeks teaching from (School Name). Your child will be asked to fill out a survey at the end of each unit. This survey has questions over students' feelings about being able to do what they learn in class. Your child's participation in this study is voluntary and not related in any way to their grade in this class. Your child may withdraw from the study at any time without hurting their grade. This research will not put your child at any expected risk or discomfort beyond what is normal in a school day.

In order for your child to be a part of the research you must sign this Parent Consent Form and your child must sign the attached Student Assent Form. There will be no negative results if your child does not want to participate. If your child does participate, their identity will be kept confidential by (Teacher Name).

This project has been reviewed and approved by the UNT Committee for the Protection of Human Subjects (940-565-3940). Should you have questions related to this study please feel free to call me, Dr. Johnetta Hudson (Faculty

Sponsor at UNT), the teacher, or your principal. I can be reached at 972-727-0400 ext. 1242, and Dr. Hudson can be reached at 940-565-2175.

You are making a decision about whether or not to have your child participate in this study. Your signature indicates that you have decided to allow your child to participate, that you have read or have had read to you the information provided in the Parent Consent Form, and you understand that you will receive a copy of the signed Parent Consent Form and Student Assent Form.

Research by David Vroonland working with the  
University of North Texas  
Denton, Texas

Parent Consent Form – Required if your child is from 7 to 13 years old

\_\_\_\_\_  
Student Name (Please print)

\_\_\_\_\_  
Parent Name (Please print)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Parent or Guardian (Only one parent or guardian signature is required)

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

Research by David Vroonland working with the  
University of North Texas  
Denton, Texas

Student Consent Form – For students 14 or older

Your Spanish teacher, (Teacher Name), with the permission of the superintendent and principal, is assisting me in research. The research is about how distance learning affects a student's beliefs about how they will perform in Spanish. The study will be during October and November of 2003. It will only be conducted during class time, and should take approximately 30 minutes. The purpose of this research is to give your teacher and others information that may help them design better distance learning courses.

There will be no changes with the class beyond (Teacher Name) spending approximately two weeks teaching from (School Name), followed by two weeks teaching from (School Name). You will be asked to complete a survey at the end of each unit. This survey has questions over students' feelings about being able to do what they learn in class. Your participation in this study is voluntary and not related in any way to your grade in this class. You may withdraw from the study at any time without hurting your grade. This research will not put you at any expected risk or discomfort beyond what is normal in a school day.

To be a part of the research you must sign this Student Consent Form. There will be no negative results if you do not want to participate. If you choose to participate, your identity will be kept confidential by (Teacher Name).

This project has been reviewed and approved by the UNT Committee for the Protection of Human Subjects (940-565-3940). Should you have questions related to this study please feel free to call me, Dr. Johnetta Hudson (Faculty Sponsor at UNT), the teacher, or your principal. I can be reached at 972-727-0400 ext. 1242, and Dr. Hudson can be reached at 940-565-2175.

I have read or have had read to me all of the above. My Spanish teacher has explained the study to me and answered all of my questions. I understand I do not have to take part in this study and my refusal to participate or to decision to withdraw will involve no penalty. I understand my rights and voluntarily consent to participate in this study. I understand what the study is about, how the study is done, and why it is being done. I have been told I will receive a signed copy of this Student Consent Form.

Research by David Vroonland working with the  
University of North Texas  
Denton, Texas

Student Consent Form – For students 14 or older

\_\_\_\_\_  
Student Name (Please print)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Student

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date



APPENDIX C  
DATA TABLES

Table 12

*All Students: Control of Learning Beliefs (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	<i>t</i> observed	α	<i>t</i> critical
1	6.60	6.70	-0.10	0.01	28	1.939558	0.05	2.048
2	6.10	6.10	0.00	0.00				
4	6.90	6.70	0.20	0.04				
5	5.60	5.30	0.30	0.09				
7	5.90	5.80	0.10	0.01				
9	5.90	5.80	0.10	0.01				
12	5.80	5.70	0.10	0.01				
15	6.50	6.40	0.10	0.01				
16	6.50	7.00	-0.50	0.25				
19	5.50	5.70	-0.20	0.04				
20	6.20	5.40	0.80	0.64				
21	5.40	5.60	-0.20	0.04				
23	6.80	6.80	0.00	0.00				
24	4.10	3.90	0.20	0.04				
25	3.30	2.70	0.60	0.36				
26	7.00	7.00	0.00	0.00				
27	6.10	5.90	0.20	0.04				
28	6.50	4.70	1.80	3.24				
30	5.10	4.50	0.60	0.36				
32	5.90	5.20	0.70	0.49				
34	5.57	5.90	-0.33	0.11				
35	6.60	6.10	0.50	0.25				
36	6.40	6.70	-0.30	0.09				
37	6.00	6.40	-0.40	0.16				
39	6.30	5.50	0.80	0.64				
40	5.70	5.10	0.60	0.36				
42	6.20	6.60	-0.40	0.16				
44	4.80	4.80	0.00	0.00				
47	5.90	6.10	-0.20	0.04				
Average	5.90	5.73						
Sum			5.07	7.49				

Table 13

*Outlier Removed - All Students: Control of Learning Beliefs (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	t observed	α	t critical
1	6.60	6.70	-0.10	0.01	28	1.632158	0.05	2.048
2	6.10	6.10	0.00	0.00				
4	6.90	6.70	0.20	0.04				
5	5.60	5.30	0.30	0.09				
7	5.90	5.80	0.10	0.01				
9	5.90	5.80	0.10	0.01				
12	5.80	5.70	0.10	0.01				
15	6.50	6.40	0.10	0.01				
16	6.50	7.00	-0.50	0.25				
19	5.50	5.70	-0.20	0.04				
20	6.20	5.40	0.80	0.64				
21	5.40	5.60	-0.20	0.04				
23	6.80	6.80	0.00	0.00				
24	4.10	3.90	0.20	0.04				
25	3.30	2.70	0.60	0.36				
26	7.00	7.00	0.00	0.00				
27	6.10	5.90	0.20	0.04				
30	5.10	4.50	0.60	0.36				
32	5.90	5.20	0.70	0.49				
34	5.57	5.90	-0.33	0.11				
35	6.60	6.10	0.50	0.25				
36	6.40	6.70	-0.30	0.09				
37	6.00	6.40	-0.40	0.16				
39	6.30	5.50	0.80	0.64				
40	5.70	5.10	0.60	0.36				
42	6.20	6.60	-0.40	0.16				
44	4.80	4.80	0.00	0.00				
47	5.90	6.10	-0.20	0.04				
Average	5.88	5.76						
Sum			3.27	4.25				

Table 14

*All Students: Self-Efficacy for Learning and Performance (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	t observed	α	t critical
1	6.55	6.73	-0.18	0.03	28	1.694786	0.05	2.048
2	6.09	6.09	0.00	0.00				
4	6.91	6.73	0.18	0.03				
5	5.73	5.55	0.18	0.03				
7	5.82	5.64	0.18	0.03				
9	5.91	5.82	0.09	0.01				
12	5.82	5.91	-0.09	0.01				
15	6.55	6.27	0.27	0.07				
16	6.36	7.00	-0.64	0.40				
19	5.55	5.45	0.09	0.01				
20	6.00	5.36	0.64	0.40				
21	5.64	5.91	-0.27	0.07				
23	6.82	6.82	0.00	0.00				
24	4.00	3.91	0.09	0.01				
25	3.09	2.55	0.55	0.30				
26	7.00	7.00	0.00	0.00				
27	5.82	5.73	0.09	0.01				
28	6.55	4.64	1.91	3.64				
30	4.82	4.27	0.55	0.30				
32	5.82	5.36	0.45	0.21				
34	5.60	5.82	-0.22	0.05				
35	6.64	6.09	0.55	0.30				
36	6.45	6.55	-0.09	0.01				
37	5.91	6.45	-0.55	0.30				
39	6.18	5.55	0.64	0.40				
40	5.82	5.45	0.36	0.13				
42	6.27	6.64	-0.36	0.13				
44	4.55	4.45	0.09	0.01				
47	6.00	6.18	-0.18	0.03				
Average	5.87	5.72						
Sum			4.33	6.94				

Table 15

*Outlier Removed - All Students: Self-Efficacy for Learning and Performance (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	t observed	α	t critical
1	6.55	6.73	-0.18	0.03	28	1.350878	0.05	2.048
2	6.09	6.09	0.00	0.00				
4	6.91	6.73	0.18	0.03				
5	5.73	5.55	0.18	0.03				
7	5.82	5.64	0.18	0.03				
9	5.91	5.82	0.09	0.01				
12	5.82	5.91	-0.09	0.01				
15	6.55	6.27	0.27	0.07				
16	6.36	7.00	-0.64	0.40				
19	5.55	5.45	0.09	0.01				
20	6.00	5.36	0.64	0.40				
21	5.64	5.91	-0.27	0.07				
23	6.82	6.82	0.00	0.00				
24	4.00	3.91	0.09	0.01				
25	3.09	2.55	0.55	0.30				
26	7.00	7.00	0.00	0.00				
27	5.82	5.73	0.09	0.01				
30	4.82	4.27	0.55	0.30				
32	5.82	5.36	0.45	0.21				
34	5.60	5.82	-0.22	0.05				
35	6.64	6.09	0.55	0.30				
36	6.45	6.55	-0.09	0.01				
37	5.91	6.45	-0.55	0.30				
39	6.18	5.55	0.64	0.40				
40	5.82	5.45	0.36	0.13				
42	6.27	6.64	-0.36	0.13				
44	4.55	4.45	0.09	0.01				
47	6.00	6.18	-0.18	0.03				
Average	5.85	5.76						
Sum			2.42	3.30				

Table 16

*Males: Control of Learning Beliefs (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	<i>t</i> observed	α	<i>t</i> critical
2	6.10	6.10	0.00	0.00	13	1.76453	0.05	2.16
5	5.60	5.30	0.30	0.09				
7	5.90	5.80	0.10	0.01				
20	6.20	5.40	0.80	0.64				
23	6.80	6.80	0.00	0.00				
24	4.10	3.90	0.20	0.04				
27	6.10	5.90	0.20	0.04				
28	6.50	4.70	1.80	3.24				
34	5.57	5.90	-0.33	0.11				
35	6.60	6.10	0.50	0.25				
37	6.00	6.40	-0.40	0.16				
39	6.30	5.50	0.80	0.64				
44	4.80	4.80	0.00	0.00				
47	5.90	6.10	-0.20	0.04				
Average	5.89	5.62						
Sum			3.77	5.26				

Table 17

*Outlier Removed - Males: Control of Learning Beliefs (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	<i>t</i> observed	α	<i>t</i> critical
2	6.10	6.10	0.00	0.00	13	1.440026	0.05	2.16
5	5.60	5.30	0.30	0.09				
7	5.90	5.80	0.10	0.01				
20	6.20	5.40	0.80	0.64				
23	6.80	6.80	0.00	0.00				
24	4.10	3.90	0.20	0.04				
27	6.10	5.90	0.20	0.04				
34	5.57	5.90	-0.33	0.11				
35	6.60	6.10	0.50	0.25				
37	6.00	6.40	-0.40	0.16				
39	6.30	5.50	0.80	0.64				
44	4.80	4.80	0.00	0.00				
47	5.90	6.10	-0.20	0.04				
Average	5.84	5.69						
Sum			1.97	2.02				

Table 18

*Males: Self-Efficacy for Learning and Performance (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	t observed	α	t critical
2	6.09	6.09	0.00	0.00	13	1.572676	0.05	2.16
5	5.73	5.55	0.18	0.03				
7	5.82	5.64	0.18	0.03				
20	6.00	5.36	0.64	0.40				
23	6.82	6.82	0.00	0.00				
24	4.00	3.91	0.09	0.01				
27	5.82	5.73	0.09	0.01				
28	6.55	4.64	1.91	3.64				
34	5.60	5.82	-0.22	0.05				
35	6.64	6.09	0.55	0.30				
37	5.91	6.45	-0.55	0.30				
39	6.18	5.55	0.64	0.40				
44	4.55	4.45	0.09	0.01				
47	6.00	6.18	-0.18	0.03				
Average	5.84	5.59						
Sum			3.42	5.22				



Table 19

*Outlier Removed - Males: Self-Efficacy for Learning and Performance (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	t observed	α	t critical
2	6.09	6.09	0.00	0.00	13	1.222981	0.05	2.16
5	5.73	5.55	0.18	0.03				
7	5.82	5.64	0.18	0.03				
20	6.00	5.36	0.64	0.40				
23	6.82	6.82	0.00	0.00				
24	4.00	3.91	0.09	0.01				
27	5.82	5.73	0.09	0.01				
34	5.60	5.82	-0.22	0.05				
35	6.64	6.09	0.55	0.30				
37	5.91	6.45	-0.55	0.30				
39	6.18	5.55	0.64	0.40				
44	4.55	4.45	0.09	0.01				
47	6.00	6.18	-0.18	0.03				
Average	5.78	5.66						
Sum			1.51	1.58				

Table 20

*Females: Control of Learning Beliefs (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	<i>t</i> observed	α	<i>t</i> critical
1	6.60	6.70	-0.10	0.01	14	0.863112	0.05	2.145
4	6.90	6.70	0.20	0.04				
9	5.90	5.80	0.10	0.01				
12	5.80	5.70	0.10	0.01				
15	6.50	6.40	0.10	0.01				
16	6.50	7.00	-0.50	0.25				
19	5.50	5.70	-0.20	0.04				
21	5.40	5.60	-0.20	0.04				
25	3.30	2.70	0.60	0.36				
26	7.00	7.00	0.00	0.00				
30	5.10	4.50	0.60	0.36				
32	5.90	5.20	0.70	0.49				
36	6.40	6.70	-0.30	0.09				
40	5.70	5.10	0.60	0.36				
42	6.20	6.60	-0.40	0.16				
Average	5.91	5.83						
Sum			1.30	2.23				

Table 21

*Females: Self-Efficacy for Learning and Performance (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	t observed	α	t critical
1	6.55	6.73	-0.18	0.03	14	0.680864	0.05	2.145
4	6.91	6.73	0.18	0.03				
9	5.91	5.82	0.09	0.01				
12	5.82	5.91	-0.09	0.01				
15	6.55	6.27	0.27	0.07				
16	6.36	7.00	-0.64	0.40				
19	5.55	5.45	0.09	0.01				
21	5.64	5.91	-0.27	0.07				
25	3.09	2.55	0.55	0.30				
26	7.00	7.00	0.00	0.00				
30	4.82	4.27	0.55	0.30				
32	5.82	5.36	0.45	0.21				
36	6.45	6.55	-0.09	0.01				
40	5.82	5.45	0.36	0.13				
42	6.27	6.64	-0.36	0.13				
Average	5.90	5.84						
Sum			0.91	1.72				

Table 22

*Non-Minority: Control of Learning Beliefs (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	<i>t</i> observed	α	<i>t</i> critical
1	6.60	6.70	-0.10	0.01	17	1.151394	0.05	2.11
2	6.10	6.10	0.00	0.00				
4	6.90	6.70	0.20	0.04				
5	5.60	5.80	-0.20	0.04				
9	5.90	5.80	0.10	0.01				
12	5.80	5.70	0.10	0.01				
19	5.50	5.70	-0.20	0.04				
20	6.20	5.40	0.80	0.64				
21	5.40	5.60	-0.20	0.04				
23	6.80	6.80	0.00	0.00				
24	4.10	3.90	0.20	0.04				
25	3.30	2.70	0.60	0.36				
28	6.50	4.70	1.80	3.24				
34	5.57	5.90	-0.33	0.11				
35	6.60	6.10	0.50	0.25				
36	6.40	6.70	-0.30	0.09				
37	6.00	6.40	-0.40	0.16				
44	4.80	4.80	0.00	0.00				
Average	5.78	5.64						
Sum			2.57	5.08				

Table 23

*Outlier Removed - Non-Minority: Control of Learning Beliefs (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	t observed	α	t critical
1	6.60	6.70	-0.10	0.01	17	0.55803	0.05	2.11
2	6.10	6.10	0.00	0.00				
4	6.90	6.70	0.20	0.04				
5	5.60	5.80	-0.20	0.04				
9	5.90	5.80	0.10	0.01				
12	5.80	5.70	0.10	0.01				
19	5.50	5.70	-0.20	0.04				
20	6.20	5.40	0.80	0.64				
21	5.40	5.60	-0.20	0.04				
23	6.80	6.80	0.00	0.00				
24	4.10	3.90	0.20	0.04				
25	3.30	2.70	0.60	0.36				
34	5.57	5.90	-0.33	0.11				
35	6.60	6.10	0.50	0.25				
36	6.40	6.70	-0.30	0.09				
37	6.00	6.40	-0.40	0.16				
44	4.80	4.80	0.00	0.00				
Average	5.74	5.69						
Sum			0.77	1.84				

Table 24

*Non-Minority: Self-Efficacy for Learning and Performance (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	t observed	α	t critical
1	6.55	6.73	-0.18	0.03	17	1.283717	0.05	2.11
2	6.09	6.09	0.00	0.00				
4	6.91	6.73	0.18	0.03				
5	5.73	5.64	0.09	0.01				
9	5.91	5.82	0.09	0.01				
12	5.82	5.91	-0.09	0.01				
19	5.55	5.45	0.09	0.01				
20	6.00	5.36	0.64	0.40				
21	5.64	5.91	-0.27	0.07				
23	6.82	6.82	0.00	0.00				
24	4.00	3.91	0.09	0.01				
25	3.09	2.55	0.55	0.30				
28	6.55	4.64	1.91	3.64				
34	5.60	5.82	-0.22	0.05				
35	6.64	6.09	0.55	0.30				
36	6.45	6.55	-0.09	0.01				
37	5.91	6.45	-0.55	0.30				
44	4.55	4.45	0.09	0.01				
Average	5.77	5.61						
Sum			2.87	5.19				

Table 25

*Outlier Removed - Non-Minority: Self-Efficacy for Learning and Performance  
(t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	t observed	α	t critical
1	6.55	6.73	-0.18	0.03	17	0.766715	0.05	2.11
2	6.09	6.09	0.00	0.00				
4	6.91	6.73	0.18	0.03				
5	5.73	5.64	0.09	0.01				
9	5.91	5.82	0.09	0.01				
12	5.82	5.91	-0.09	0.01				
19	5.55	5.45	0.09	0.01				
20	6.00	5.36	0.64	0.40				
21	5.64	5.91	-0.27	0.07				
23	6.82	6.82	0.00	0.00				
24	4.00	3.91	0.09	0.01				
25	3.09	2.55	0.55	0.30				
34	5.60	5.82	-0.22	0.05				
35	6.64	6.09	0.55	0.30				
36	6.45	6.55	-0.09	0.01				
37	5.91	6.45	-0.55	0.30				
44	4.55	4.45	0.09	0.01				
Average	5.72	5.66						
Sum			0.96	1.54				

Table 26

*Minority: Control of Learning Beliefs (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	<i>t</i> observed	$\alpha$	<i>t</i> critical
7	5.90	5.80	0.10	0.01	10	1.349627	0.05	2.228
15	6.50	6.40	0.10	0.01				
16	6.50	7.00	-0.50	0.25				
26	7.00	7.00	0.00	0.00				
27	6.10	5.90	0.20	0.04				
30	5.10	4.50	0.60	0.36				
32	5.90	5.20	0.70	0.49				
39	6.30	5.50	0.80	0.64				
40	5.70	5.10	0.60	0.36				
42	6.20	6.60	-0.40	0.16				
47	5.90	6.10	-0.20	0.04				
Average	6.10	5.92						
Sum			2.00	2.36				



Table 27

*Minority: Self-Efficacy for Learning and Performance (t-test for Nonindependent Samples)*

Student	Sending	Receiving	D	D <sup>2</sup>	df	<i>t</i> observed	α	<i>t</i> critical
7	5.82	5.64	0.18	0.03	10	1.041566	0.05	2.228
15	6.55	6.27	0.27	0.07				
16	6.36	7.00	-0.64	0.40				
26	7.00	7.00	0.00	0.00				
27	5.82	5.73	0.09	0.01				
30	4.82	4.27	0.55	0.30				
32	5.82	5.36	0.45	0.21				
39	6.18	5.55	0.64	0.40				
40	5.82	5.45	0.36	0.13				
42	6.27	6.64	-0.36	0.13				
47	6.00	6.18	-0.18	0.03				
Average	6.04	5.92						
Sum			1.36	1.73				

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