PARTICIPANT'S PERCEPTION OF ONLINE STAFF DEVELOPMENT AND LEARNING TOOLS

Jennifer Smolka, B.S., M.S.

Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

May 2003

APPROVED:

Cathleen Norris, Major Professor
Gerald Knezek, Committee Member
Elliot Soloway, Committee Member
Jon Young, Chair of the Department of Technology and Cognition
Jean Keller, Dean of the College of Education
C. Neal Tate, Dean of the Robert B. Toulouse School of Graduate Studies

Smolka, Jennifer, Participant's perceptions of online staff development and learning tools. Doctor of Philosophy (Educational Computing), May 2003, 118 pp., 27 tables, 4 illustrations, references, 44 titles.

This study analyzed participants in an online professional development and certification program can to see if they could predict the learning value of individual distance education tools. The Texas Center for Educational Technology (TCET) funded by the Texas Telecommunications Infrastructure Fund (TIF) designed the Technology Applications Certification Program (TACP). In the TACP, students are offered four graduate level classes which, when combined, meet the standards for the State Board for Educator Certification (SBEC) Technology Applications certification. The four courses that comprise the TACP are Computers in Education, Introduction to the Internet, Multimedia in Technology Applications, and Introduction to Video Technologies. The first course started in January 2002 with approximately 706 participants in 40 cohorts across the state of Texas. The TACP combines two different worlds of technology training. Half of the coursework was completed through asynchronous content and discussions, while the remaining classes were hands-on classes in local district computer labs. These face-to-face meetings enabled learners to get hands-on training with direct assistance. Between the online and face-to-face segments, a variety of learning tools were introduced to the participants. Participants were surveyed through the online Snapshot Survey in January and again in September.

ACKNOWLEDGMENTS

As this part of my life comes to an end, there are certain people who must be acknowledged for their part in my education. To my parents, Arline Ragland and Chuck Ragland, for instilling in me early the importance of education and always encouraging my love for it. To my sister, Debbie Fowler, for being the kind of big sister that I could look up to and strive to meet the highest of academic standards. To Dr. Cathleen Norris, for being my mentor, my advisor and a role model for all women in the field of educational technology. To Dr. Elliot Soloway, Dr. Gerald Knezek, Dr. Jim Poirot and Dr. Jon Young, for giving me opportunities to learn and work in the field of educational technology. To the rest of the faculty of the Educational Computing program, Dr. Mark Mortensen, Dr. Terry Holcomb and Dr. Demetria Ennis-Cole, for providing valuable learning experiences. To many friends at the University of North Texas who made this journey a true enjoyment.

None of this could have been accomplished without the support of my beloved family. To my husband Kevin and my sons William, Mark and Luke, thank you for lifting me to reach my dreams.

TABLE OF CONTENTS

Acknowledgments iii

List of tables vii

List of Illustrations ix

Chapter 1 1

Introduction 1

Statement of the Problem 3

Purpose of the Study 3

Research Questions 4

Significance of the Study 5

Definition of Terms 5

Chapter 2 7

Review of the Literature 7

Introduction 7

Learning Styles in a Distance Learning Environment 8

Mass Customization and Personalized Learning 11

Summary 17

Chapter 3 18

Methodology 18

Research Participants 18

Instrumentation 20

Research Design and Data Analysis 22

Summary 23

Chapter 4 24

Data analysis 24

Description of Subjects 24

Characteristics of the Sample 26

Testing of Hypothesis 1 31

Hypothesis I: Summary 39

Factor Analysis of the TACP Tools 39

Hypothesis 2: Testing & Summary 44

Hypothesis 3: Testing 46

Hypothesis 3: Summary 51

Hypothesis 4: Testing 51

Hypothesis 4: Summary 60

Additional Findings 60

Chapter 5 63

Discussions, Conclusions and Recommendations 63

Impact of Tool Predictability 64

Impact of Predictability Across Demographic Groups 67

Impact of Self-Efficacy and Predictability 67

Impact of Correlation Between Beliefs about Distance learning and Value of Learning Tools 69

Impact of the Types of Tools Preferred 69

Areas for Further Research 71

Conclusion 73

APPENDIX A 74

APPENDIX B 104

REFERENCES 109

LIST OF TABLES

Table Page

1. Demographic frequencies of age, gender, and degree status 38
2. Teaching field demographic frequencies of years in education, current position, teaching assignment and grade level assignment 39
3. New variable computation for pre-post TACP tools 42
4. Computation of the absolute value of change of TACP tools 43
5. Computation of the variable representing the ability of participants to predict the value of learning for the TACP tools 43
6. Frequency and distribution for the variable total_ch 45
7. Paired samples t-test between the pre and post tests for each of the fifteen TACP tools 47
8. Original rotated component matrix for the factor analysis of the fifteen TACP tools 40
9. Break down of the 5 factors and each set of component TACP tools 41
10. Computation of the new TACP factor variables for pre and post tests 42
11. Paired samples t-test comparing the means of the TACP factored components between the pre-test and the post-test 43
12. Correlations between the change of the 5 TACP factors and age, gender, and years in education 45
13. Correlations between pre-test TACP factors and the TPSA self-efficacy scales and subscales 47
14. Correlations between post-test TACP factors and TPSA self-efficacy scales and

subscales 48
15. Correlations between the change of pre/post of the TACP factors and the TPSA self-efficacy scales and subscales 49
16. Frequencies for the belief of future participation in district online professional development 52
17. Paired samples t-test between pre- and post-test belief of future participation in district online professional development 52
18. Correlations between beliefs about future online staff development and the TACP factor components 53
19. Correlations between online staff development participating and self-efficacy 54
20. Computation of the TAT overall variable for distance learning 55
21. Correlation between the TAT distance learning and the future professional development 55
22. Correlations between the TAT distance learning and each of the TACP tool factors 56
23. Correlations between the TAT distance learning and the self-efficacy measures ..57
24. Correlations between the pre-test TACP tool factors and the pre-test stage of adoption 58
25. Correlation between the post-test TACP tool factors and the post-test stage of adoption 58
26. Pearson correlations between the pre-test/post-test change of TACP tool factors and the participants pre-test/post-test change of stage of adoption 59
27. Rankings of the learning tools of the TACP 61

LIST OF ILLUSTRATIONS

1. Frequencies of the years that teachers of the TACP have had in education 41

2. A normal distribution for a random sampling of the variable total_ch with a mean of 30, range from 0 to 60 and a standard deviation of 4.17 44

3. Frequency graph for the matched pre-post variable tool_ch 46

4. Overlay of the normally distributed range with the actual distribution of tool_ch.....46

CHAPTER 1

INTRODUCTION

For years, experts have said that each individual acquires information in a different way (Kolb, 1985; Birkey & Rodman, 1995; Keefe, 1979). There are many different types of learning or personality inventories that can help a learner determine which methods of instruction will best suit his or her learning styles (Overall, 2001):

- Canfield Learning Styles Inventory
- Costa and McRae's NEO Personality Inventory (NEO PI)
- Curry's Model of Learning Style Components and Effects
- Dunn and Dunn
- Felder-Silverman Learning Style Model
- Gardner's Multiple Intelligences
- Gregorc Mind Styles
- Grasha and Riechman Student Learning Styles (GRSLS)
- Herrman Brain Dominance
- Jung's Theory of Psychological Types
- Knowledge Management
- Kolb's Model of Experiential Learning
- Levine's Neurodevelopmental Profiles
- McCarthy's 4MAT System
- Modalities or Sensory Preferences
- RJ Ridings Dimensions

Learning style is defined as "the characteristic cognitive, affective, and psychological factors that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment" (Keefe (1979) in Overall 2001. p.1). Traditionally, learning environments were situations where the learner and the teacher are in the same place at the same time. However, in recent years the infusion of

the Internet into our educational system has revolutionized the learning environment. Researchers have been investigating how these learning styles affect the online learning experience (Guawardena & Boverie, 1993; Campbell Coggins, 1988; Ehrman 1990, Gee 1990; Soles & Moller 2001; Shih et al., 1998; Abromitis, 2001).

One of the ways in which the Internet can cater toward individual learning styles is through mass customization and personalized learning. "Mass customization will enable students to use information, delivery and service technologies to create their own learning environment and to enable instructors to individualize instruction" (Hassett, et al 1997, p. 200). Personalized learning is "where learners can be uniquely identified, content can be specifically measured, and progress can be individually monitored supported and assessed" (Martinez & Bunderson, 2000, ¶1). Online developers must design multiple ways to provide instruction and environments so that all learners will want to learn on the World Wide Web and continue to have opportunities for success (Martinez & Bunderson, 2000).

Once multiple learning paths are developed, instructional designers must decide whether to force learning or allow for learner choice. One design structure forces the students to use a learning path automatically selected through learning style inventories or surveys. Another option gives the learner a menu of tools and options to learn the same content. The choice of which learning path to travel is theirs. The disadvantage of forcing the path is that learners are not given the opportunity to strengthen other learning styles. Conversely, giving the options assumes that learners know enough about themselves to successfully choose the most effective path.

If we could determine that adult learners have the knowledge of how they learn best and are able to choose the tools that have the most impact on their learning, then we can offer multitudes of opportunities and tools that allow the learners to design their own learning path.

Statement of the Problem

This study seeks to determine if participants in an online professional development and certification program can predict the learning value of individual distance education tools.

Purpose of the Study

The purpose of this study is to determine if adults have enough knowledge of their learning preferences to predetermine the value and impact of specific tools on their distance learning experience. The Texas Center for Educational Technology (TCET) in conjunction with Voyager University, Inc (VU) and funded by the Texas Telecommunications Infrastructure Fund (TIF) began the Technology Applications Certification Program (TACP). The TACP offers four graduate level classes which, when combined, meet the standards for the Texas State Board for Educator Certification (SBEC) Technology Applications certification. The four courses that comprise the TACP are Computers in Education, Introduction to the Internet, Multimedia in Technology Applications, and Introduction to Video Technologies. The first course started in January 2002 with approximately 706 participants in 40 cohorts across the state of Texas.

The TACP combined the best of both worlds of technology training. Half of the coursework was completed through asynchronous content and discussions, while the remaining classes were hands-on classes in local district computer labs. These face-to-

face meetings enabled learners to get hands-on training with direct assistance. Between the online and face-to-face segments, a variety of learning tools were provided to the participants:

- Textbook Readings
- Hands-on practice
- Video Modules
- PowerPoint Presentations
- Asynchronous Discussion Boards
- Web-Based Tutorials

TACP participants were not given any surveys or inventories about their learning styles and were expected to complete all materials using all of the tools. Learners were not given the option of completing only the activities that aided in their own learning of the skills and knowledge for the Technology Applications Certification Program.

Research Questions

1. Do participants perceive the value of learning tools to be the same as the actual value that they place after they experience the tools?
2. Are there certain demographic groups that can better predict the value of the online learning tools?
3. Does technology self-efficacy, or the belief in one's own ability to achieve, affect the value of the learning tools?
4. Do feelings and beliefs about distance learning correlate with the value of the TACP learning tools?

Significance of the Study

This study will be significant to the online learning community for several reasons:

1. This study will provide information on the perceived value of specific learning tools in a distance learning program.
2. This study will provide information on the actual value of specific learning tools in distance learning.
3. This study will provide information on how well adult participants in a distance learning program can identify which tools will have the greatest impact on their learning. If participants are not able to significantly determine this information, course designers will need to screen participants for learning preferences and then offer the matching tools. However, if the participants can successfully predict which tools will most positively affect their learning experience, course designers can provide a buffet of tools and opportunities to allow adult learners to create their own pathway of learning.
4. This study will also provide information about which types of students have been more successful in pre-determining the value of their learning tools. Segmented populations include: gender, age, teaching experience, and self-reported stage of adoption.

Definition of Terms

Mass Customization: "An adaptive learning system that enables students to use information, delivery and service technologies to create their own learning environment and to enable instructors to individualize instruction" also known as Personalized Learning (Hassett, et al 1997; Martinez & Burdenson, 2000).

Distance Learning, Online Learning, Distance Education: Educational settings where the teacher and student are separated by time and distance and where technologies are used to mediate the learning.

Tool: A component of a learning program.

Asynchronous: Learning that occurs independently of others with respect to time and place.

Synchronous: Learning that occurs dependent of others with respect to time.

Face-to-Face: Occurring when both the teacher and the student are in physical proximity of each other.

Andragogy: The art and science of helping adults learn. (Blackmore, 1996)

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

In the forward to Power of The Internet for Learning: Moving from Promise to Practice, the report of the Web-Based Education Commission, Senator Bob Kerrey and Representative Johnny Isakson state, "For education, the Internet is making it possible for more individuals than ever to access knowledge and to learn in new and different ways. At the dawn of the 21st Century, the education landscape is changing" (2000, p. 1). The report also specifically addresses online professional development: "The training teachers do receive is usually too little, too basic and too generic to help them develop real facility in teaching with technology" (Web-Based Education Commission, 2000, p. 41). In addition, the National Center for Education Statistics surveyed teachers about barriers to their use of computers and the Internet in the classroom (Web-Based Education Commission, 2000). Eighty-two percent of the teachers surveyed stated that time was the primary factor for lack of training. Mass customization and personalized learning can help significantly with "too little", "too generic" and "too little time."

Teachers have insufficient training because there is not enough time to provide adequate training. When learning styles and distance learning are combined, the problem of too little time for technology training and staff development is addressed by efficiently using the time that is available (Diaz & Bontenbal, 2001). While mass customization and personalized learning do not magically create more hours in the day, they optimize the

time that is spent learning so that learners feel more productive and use tools designed to make them learn more efficiently and effectively based on their individual learning preferences or styles. This study of values of online learning tools combines the areas of learning styles in distance education; mass customization and personalized learning. Furthermore, in discussing whether the online learning tools meet the participants' initial value perceptions, self-efficacy must be considered when comparing pre and post values. Although the amount of literature on the technical advances of the merging of learning styles, distance education, mass customization and personalized learning is growing, there are few studies that directly relate to the new wave of online learning.

Learning Styles in a Distance Learning Environment

"For many years, educators have noticed that some students prefer certain methods of learning over others" (Diaz & Bontenbal, 2001). This preference means instructional designers "should provide experiences that should be tailor-made, if not for individual students, at least for different types of students" (MacKinnon, 1978). It has also been shown that adjusting teaching materials to meet the needs of a variety of learning styles benefits all students. (Agogino & Shi, 1995; Kramer-Koehlerk, Tooney, & Beke, 1995, Blackmore, 1996) "As the traditional mindset broadens from a four-walled learning environment to an online distance-learning environment, a different teaching-learning process is often encountered" (Soles & Moller, 2001).

As researchers have studied the interaction between learning styles and distance education, the results have not been consistent. In Diaz & Bontenbal (2001), a study is described where the participants exhibited significantly different types of learning styles than in a comparable traditional classroom. While the two groups differed significantly

on the GRSLS Independent and Dependent learning styles, there was still a broad range of learning styles in each type of classroom. This distribution describes the highly diverse nature of online students as noted by other researchers (Thompson, 1998). The belief among researchers is that certain learning styles will be drawn to online courses and find greater success in these courses. However, in Gunawardena & Boverie (1993), they found that learning styles did not seem to differ between various with methods of teaching. Shih et al. (1998) also found "different types of students using different learning strategies and patterns of learning with different learning styles can learn equally well in Web-based courses" (p. 363). But equally interesting was that while many different learning strategies succeeded, those who successfully used any of the learning strategies had significant gains in student achievement. It is not the type of learner that determines whether they are successful. It is if they know what to do with their individual learning style.

Utilizing the knowledge of different learning styles and distance learning is important to several groups of people: students, instructors and designers. Students need to be mindful of their own learning styles as they choose to learn through distance education (Abromitis, 2001). Instructors of each course should be aware of individual students learning style in order to best guide them on their learning journey (Abromitis, Diaz & Bontenbal, 2001). And finally, as designers and instructors develop the curriculum, they should be aware of learning styles in general and create materials and activities that will be appropriate (Diaz & Bontenbal; Gee, 1990; Gunawardena & Boverie, 1993; Abromitis; Soles & Moller, 2001).

Once courses are designed and set for enrollment, there will be learners to enroll who are experienced in learning online. However, with every course taught online, there will be some who have never participated in an online course. Some researchers believe that "students should be assessed to determine their learning style before enrolling in distance education courses. Students should be provided the best opportunity for learning possible, and that begins with addressing how they best learn" (Abromitis, 2001). Many institutions provide surveys to determine if online learning is a right choice for the particular student. They include items about learning styles, computer availability, and family resources -- items that affect adult learning based on learning preferences and lifestyle considerations.

Once a learner has made the choice to learn online, it can be extremely beneficial to the instructor to know individual learning styles. (Abromitis, 2001; Diaz & Bontenbal, 2001) By using surveys, questionnaires, and inventories, an instructor can discover a wealth of information with respect to student learning preferences and other characteristics (Diaz & Bontenbal, 2001). "Armed with learning style data, instructors can more efficiently allocate instructional time to various learning activities" (Diaz & Bontenbal, 2001, 3.1 Learning Style, ¶4). This efficient use of time addresses that problem of "too little time" for technology training and staff development.

Many researchers believe that the knowledge of learning styles should be an integral part of the design process. "Considering the unique effects that different learning environments, different media applications, and different conditions of instruction have on learner perception and behavior may be especially important when designing technology-based learning systems" (Gee, 1990, p. 4). If an online instructor or course

designer is aware of the different learning styles during this design time, they can plan activities and experiences that meet the needs of the different learning styles. “Instructors could also design class activities that creatively mismatch learning preferences, thereby helping students develop weaker or underused learning styles” (Diaz & Bontenbal, 2001, 3.1 Learning Style, ¶3).

Designing for the Internet gives course developers a myriad of delivery methods to support the variety of learning styles of the students that will be enrolled in the course. (Soles & Moller, 2001) In addition, a technology enhanced delivery can provide more creative and effective ways of handling multiple learning preferences at the same time. Furthermore, “when trying to accommodate a variety of learning styles [ages, backgrounds, interests and educational levels] in the instructional design, it is always best to design alternative activities to reach the same objective and give the students an option of selecting from these alternative activities those which best meet their preferred learning style" (Sanchez and Gunawardena, 1998, p. 47). In order “to take full advantage of this potential for educational customization in the planning stages for distance learning, teachers and instructional designers should recognize the different learning styles of the target audience and plan for these differences by providing flexible course designs” (Soles & Moller, 2001, ¶2).

Mass Customization and Personalized Learning

Flexible course design and educational customization have the power to quickly change the way we implement online staff development. Don Tapscott in his book The Digital Economy explains how the networks of today make it possible to bring the customization to the level of the individual (Tapscott, 1997 in Soles & Moller, 2001).

"Significant opportunities result from technology's potential for creating 'customized' educational programming tailored to meet an individual student's learning preferences and strengths. Conversely, the challenge is to identify what those learning preferences and strengths are for a given learner and utilize instructional designs which maximize a learner's potential" (Solis & Moller, 2001, Conclusion, ¶2).

Even though there are years of research (back to Gagne in 1967) recognizing individual learning differences, a majority of online learning has "continued to treat learners as a homogeneous audience with a 'one-size-fits-all' approach" (Martinez, 2001, Historical Review, ¶6). In her study, Martinez concluded, "learners learned less successfully in the unmatched environments that conflicted with their learning orientation" (2001, Conclusion, ¶3). The fundamental theory behind personalized learning and mass customization is that the learning environment should not be designed merely to fit the average person. Instead learning should be developed around particular aptitude patterns. (Martinez, 2001b) One suggestion Martinez makes is to support learners in the many different ways in which they want to and intend to learn.

Stilborn and Williams (1996) agree. In their ISOC (Internet Society) presentation publication, they discuss the implications of designing an online environment for adult learners. Developers should "provide more than one way for people to learn the material" (Personal learning styles, ¶6). They also believe in helping learners to "be aware of their own learning styles and offer them ways to adapt materials to suit their learning styles" (Personal learning styles, ¶7).

"The Web offers the perfect technology and environment for personalized learning where learners can be uniquely identified, content can be specifically presented,

and progress can be individually monitored, supported, and assessed" (Martinez & Bunderson, 2000, ¶1). Web-based personalized learning, frequently powered by object architecture and adaptive technology, is the perfect technology to make group matching happen. "This is a personalization or adaptive learning approach (called mass customization) that identifies aggregate types or segmented populations" (Martinez & Bunderson, 2000, Part II, Section C, ¶1). Learners have the ability to design their own path as they journey through the learning experience. "When we design a course with only a universal type of learner in mind … we unintentionally set learners up for frustration and possible failure" (Martinez & Bunderson, Conclusion, ¶1).

While the development of personalized and customized learning environments do take considerably more time to create than the 'one-for-all' models, "with practice, the matched solutions will be easier to design and less expensive (Martinez, 2001a, Conclusion, ¶3)." The long-term promise of personalized learning offers better results through learner responsibility, increasingly higher goals and improved learning ability (Martinez).

Self – Efficacy

"Perceived self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, ¶1). The concept of self-efficacy is actually grounded in a larger framework called social cognitive theory (Bandura, 1986, 1997). Self-efficacy has the potential to influence academic motivation, learning and achievement (Pajares, 1996; Schunk, 1995). "Self – efficacy is not a measure of skill; rather, it reflects what

individuals believe they can do with the skills they possess" (Eastin & LaRose, 2000, Introduction, ¶3).

"Self-efficacy beliefs are strong determinants and predictors of the level of accomplishment that individuals attain" (Pajares, 1996, ¶ 5). A strong sense of self efficacy strengthens the likelihood of accomplishment. People with a high sense of self-efficacy look at a task as a challenge to be mastered. Their commitment and motivation is high (Bandura, 1994). High self-efficacy creates feelings of serenity in approaching difficult tasks and activities (Pajares, 1996). "Those who feel efficacious for learning or performing a task participate more readily, work harder, persist longer when they encounter difficulties, and achieve at a higher level" (Schunk & Pajares, 2002, p.2)

Individuals with a low sense of self-efficacy will shy away and perceive new tasks as a threat and their commitment and motivation is low (Bandura, 1994). If you expect less of yourself, you expend less effort" (Nahl, 1996). The feelings of threat combined with low commitment and low motivation fosters the belief that things are tougher than they really are. These feelings and beliefs caused by low self-efficacy "foster stress, depression and a narrow vision of how best to solve a problem" (Pajares, 1996, ¶5). "Individuals with a weak sense of self-efficacy will be frustrated more easily by obstacles to their performance and will respond by lowering their perceptions of their capabilities" (Compeau & Higgins, 1995, p. 192).

"People's beliefs in their efficacy are developed by four main sources of influence. They include mastery experiences, seeing people similar to oneself manage task demands successfully, social persuasion that one has the capabilities to succeed in given activities, and inferences from somatic and emotional states indicative of personal

strengths and vulnerabilities" (Bandura, 1994, ¶4). By experiencing mastery in given situations, a belief in one's ability to master again is built. In addition, self-efficacy can be strengthened by vicarious experiences by social models (Bandura, 1994; Bandura, 1997; Oliver& Shappiro, 1993; Schunk & Pajares, 2002). The influence of the social models on one's self-efficacy is strongly related to one's perceived similarity to those in the model. Seeing someone who is similar to oneself succeed strengthens the belief that they can also succeed. A third way to influence self-efficacy is social persuasion models (Bandura, 1994; Bandura, 1997; Oliver& Shappiro, 1993; Schunk & Pajares, 2002). With verbal persuasion and positive reinforcement, one can be convinced that they do indeed possess the ability to accomplish the task at hand. Finally, somatic and emotional states can internally affect how one perceives their abilities. They can transfer their stress and tension to lower their beliefs in their abilities (Bandura, 1994; Schunk & Pajares, 2002).

Several studies have examined the connections between self-efficacy, computers, the Internet and distance learning. A statistical relationship between computer use and self-efficacy was shown by Compeau and Higgins (1995). In computer usage, self-efficacy is the key for novices to tackle their difficulties and fears (Eastin & LaRose, 2000).

Once an individual achieves a positive self-efficacy with computer skills, they need to build the efficacy in relation to the Internet.

> The Internet requires development of a further set of skills that, to the novice user, at least, may be daunting. Internet self-efficacy may be distinguished from computer self-

> efficacy as the belief that one can successfully perform a distinct set of behaviors required to establish, maintain and utilize effectively the Internet over and above basic personal computer skills (Eastin & LaRose, 2000. Introduction, ¶ 4).

In the Eastin & LaRose study (2000), Internet uses, experience and outcome expectancies were positively correlated with Internet self-efficacy. Of the three, the strongest predictor was experience which follows Bandura's primary source of efficacy being mastery experiences.

In an investigation of self-efficacy and performance in distance learning, Joo et al (2000) determined that one of the key components of success in computer based learning and distance learning is basic computer self-efficacy.

In using the Internet for learning, Nahl (1996) found "that those who have a less positive initial self-efficacy perception can be overwhelmed and end up dropping out … while those who have a more positive initial self-efficacy perception maintain this perception throughout the program, all the way to success" (¶ 10). Those that found their way to success maintained positive self-efficacy during even the times of highest difficulty and uncertainty (Nahl).

Since self-efficacy is a self-referent judgment concerning future functioning, it is an excellent predictor of behavior (Bandura, 1997; Pajares, 1996). "The environment, personal factors, and behavior work together to help an individual make an efficacious

judgment about whether he or she will be able to carry out a certain action in the future" (Henson, 1999, p.36).

> Efficacy beliefs help determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will prove in the face of adverse situations – the higher the sense of efficacy, the greater the effort, persistence, and resilience. People engage in tasks in which they feel competent and confident and avoid those in which they do not (Pajares, 1996, ¶ 5).

Summary

Learning styles theory dictates that good education is built around the variety of ways the people process information. It would be very difficult in a traditional face-to-face classroom setting to address all of the styles of a particular learning theory for each objective. However, the options available in the online classroom enable instructors and course designers to provide many different tools for the learning activity. Each of the learning tools can address a different learning segment of the population. In this personalized and customized learning experience, adults participating in online staff development would be able to choose the tools that best meet their learning needs. Unfortunately, this will only work if the learner is aware of their learning styles and can effectively choose the tools that will add the most value to the learning experience. Furthermore, self-efficacy can provide the foundation of which to make the necessary decisions regarding learning experiences.

CHAPTER 3

METHODOLOGY

Research Participants

The population involved in this study was comprised of in-service teachers from across the state of Texas who were enrolled in the Technology Applications Certification Program in January 2002. The program typically delivered once course per semester for four semesters. The entire population (n=706) were surveyed at the beginning of their coursework in CECS 5020: Computers and Education.

In January, all participants met with their cohort groups in a face to face meeting to explain the content, delivery and assignments. Components of the course, including the variety of learning tools was described and examples shown.

During the next semester, across the state, teachers met as participants in the TACP program both online and in their local area. Participants met together for seven of the 15 classes. In between classes they used online learning tools in a virtual classroom:

- Textbook Readings - Integrating Educational Technology into Teaching by M.D Robyler and Jack Edwards was used as the primary text for the course. Students were required to read sections to on a weekly basis.
- Hands-On Activities – Students were given instructions on how to use various software packages including, but not limited to, Microsoft Word, Excel and Access. During their online time, they relied on the help documentation, video and instructions to complete these hands-on computer based tasks.

- ADAM Modules – Produced by the Texas Leadership Institute's Web Library, an ADAM module contains a combination of video, audio, PowerPoint, and online resources. The TACP program team designed content specifically for their courses as well as using modules from within the TLI Web Library.
- Guest Speakers – During at least one live class, a guest speaker was brought into the course to explain that school district's infrastructure.
- Instruction from CFM – The CFM is a Clinical Faculty Member who is the district team leader acting as a Teaching Assistant for the Faculty of Record (FOR) for the University of North Texas. During live classes, the CFM reviewed class materials. The CFM also acted as the moderator of the online discussion boards.
- Directed Website Visits – During each class, participants had to complete several different types of activities. Often they were instructed to go to a website and complete specific tasks or readings.
- Online Discussion Boards – Each of the online classes had a communication activity that brought the participants together on an online discussion board. They were given a guiding question and asked to post and respond.
- Projects – Participants delivered authentic projects based on integrating technology into their classroom and teaching.
- Small Group Collaboration – In both live and online classes, participants were given opportunities to work together in pairs, triads or small groups to collaborate on the learning task.

- Assignment Rubrics – Assignment rubrics were given to all participants to help them develop and deliver their projects to a set standard.
- Downloadable Audio Only Files – Frequently audio files were used as testimonials to introduce a topic within a class.
- Awareness of Objectives – Each class listed the objectives at the beginning of the content.
- Exam – There was objective based exam graded by the Faculty of Record with online portions graded by the system.

In the summer 2002, participants took the second of the four courses Introduction to the Internet. At the halfway point in the beginning of the third semester, participants were surveyed again. This study used data that already exists from the pre-test and corresponding post-test scores.

Participants in the TACP include teachers from urban and rural areas. In addition, participants are from both wealthy and economically disadvantaged groups. Both males and females participated. The group also included teachers who were just entering their first year and well as teachers with 20 years of experience. The broad range of demographic backgrounds should provide for a well-segmented population.

Instrumentation

The instrument used with the TACP is the Snapshot Survey developed by Dr. Cathleen Norris and Dr. Elliot Soloway. In addition, the Stages of Adoption by Dr. Rhonda Christensen and the TPSA by Dr. Margaret Ropp were utilized. Instrumentation is included as Appendix A.

The Snapshot Survey developed by Dr. Cathleen Norris and Dr. Elliot Soloway is an online instrument that "asks professional educators questions about three major issues: activities using technology, beliefs about technology, and needs in order to use technology" (Norris, Soloway, Knezek, Topp & Box, 2000). One of the benefits is the ability of the Snapshot to be customized to an individual group in their technology decision making. (Norris & Soloway, 2000). For the TACP, questions to measure the effectiveness of the online learning environment were included.

The Stages of Adoption (Christensen, 1997, Christensen & Knezek, 1999, Knezek, Christensen, Miyashita, Ropp, 2000) is a quick self-reporting of an individual teacher's stage of development in using and applying information technology. Derived from Russell (1995), Christensen and Knezek "generalized the stage descriptions to make them appropriate for any informational technology" (Knezek, et al, 2000). The purpose in using the Stages of Adoption was to see growth within individual teachers during the TACP program. Internal consistency with the Stages of Adoption of Technology cannot be measured because it is a single item inventory. However in August of 1999, using test-retest reliability, the Stages inventory receives a high rating of .91 (Knezek, et al, 2000).

The Technology Proficiency Self - Assessment (TPSA) (Ropp, 1999) reflects the International Society of Technology in Education (ISTE) Standards domains of email, WWW, applications and integration. The TPSA was originally designed as a measure of teaching and learning with computers. However, because participants are asked to rate their own confidence in performance of a task, it is truly a measure of self-efficacy (Knezek et al, 2000).

Research Design and Data Analysis

This study had a pre/post test design. There was no control group. The study compared each individual perception to the actual value of learning placed on the learning tools. The pre-test was issued the first week of class and the post-test was issued during the last at the beginning of the third semester of the program. This was considered to be a half-way point. Between the two tests, participants had many opportunities to experience each of the learning tools they were evaluating.

The pre-test and post-test gave each participant 15 sets of perceived and actual value of tool ratings ($tacp\_tool_x1$ and $tacp\_tool_x2$). A new variable was computed for each of the tools called change ($tacp\_tool_xch$). This value was the difference between the pre-test score and the post-test score. If a significant change could be determined, $tacp\_tool_xch$ would show the direction of the change.

In order to look for the accuracy of perceptions, the direction of the change was not needed. A new variable $achngtool_x$ was calculated that was the absolute value of the difference between the pre-test score and the post-test score. Next, all of the change variables were summed to create one variable (total_ch) per participant. This represented the ability of the participant to predict the value of the set of online learning tools. The greatest amount of change per variable was 4 and the lowest amount of change per variable was 0. Therefore, total_ch would have a value between 0 and 60. As the value of the variable total_ch decreased, it indicated the participant was better able to predict accurately the value of the learning tools. Once the total_ch had been determined, its distribution and mean was evaluated to see if it meets the null hypothesis. A factor

analysis was performed to determine if the tools fell into component groups. These factor groups were analyzed as well as the individual tools.

Prior to other statistical tests, Levine's homogeneity of variance test was run on the segmented population to ensure that the distributions between subgroups were similar. In addition, a Pearson's correlation was used to determine whether the demographic values of gender, age, teaching experience or self-reported stage of adoption bore any effect on the participants' ability to predict the value of online learning tools. A T-test between the means of the segmented populations was also performed to determine any difference between the segmented populations.

Summary

Before any statistical tests can be run on the pre-existing data from the TACP, new variables will need to be calculated to collapse subset scores. After the new variables are collected, this study will evaluate distributions, means, and homogeneity of variance, and t-test scores. The results will enable the researchers to determine if participants could accurately determine the value of online learning tools.

CHAPTER 4

DATA ANALYSIS

Data were gathered in January 2002 and again in September 2002 from participants in the Technology Application Certification Program funded through a Texas Telecommunications Fund (TIF) grant to the Texas Center for Educational Technology. The data were gathered for the general purpose of evaluation of the grant and also for building a research databank of teacher's profiles on needs, beliefs and attitudes towards educational technology. These data were analyzed to answer four research hypotheses:

Hypothesis 1: Adult participants in online staff development perceive the value of individual learning tools to be the same as the actual value that they place after they experience the tools.

Hypothesis 2: The ability to accurately predict the value of learning tools will not differ across the demographic groups.

Hypothesis 3: The ability to accurately predict the value of learning tools will differ in correlation with the participant's technology skills self-efficacy.

Hypothesis 4: The feelings and beliefs about distance learning will correlate with the value of the TACP learning tools.

Description of Subjects

In January 2002, 706 teachers started in the Technology Application Certification Program (TACP), an innovative staff development program that combined online and face-to-face delivery for state certification and graduate credit. During the initial face-to-

face meeting, participants from across the state of Texas learned about what they would be doing during the four semester program. They were introduced to the delivery platform and the learning tools they would be using. After this introduction, they were asked to complete an online survey about their initial perceptions of technology in the classroom and distance learning. Of the 706 participants, 360 (51%) completed the pre-test.

During the spring semester, participants completed the first course Computers in Education. This course prepares teachers to use integrated applications in their classroom as well as giving them a foundation of technology theory. The second course, Introduction to the Internet, was completed in the summer 2002. This course taught about the use of the internet in the classroom through communication, inquiry and construction.

Over the course of two semesters, the attrition rate for the program was 23%. At the start of the third semester, 549 participants entered the third course, Introduction to Video Technology. Several weeks into this course, we resurveyed the group. Of the remaining original group, 296 (53%) completed the post-test. One participant was consistently the outlier by extremes and the data points between like measures were conflicting. It appeared that this participant would choose a set number of the lowest data point, a set number of mid points and a set number of high points. This participant was removed from the data analysis.

Pre and post tests were matched based on four items: last four digits of social security number, campus, district and email. After the matching was completed, there were 118 (21% of remaining participants) matched sets of data. Independent sample t-

tests were calculated between the smaller group of those with matching pre- and post-test scores and each of the larger unmatched pre- and post-test datasets. Only one of the variables tested returned a statistically significant result - CFM led instruction on the post-test ($p < .05$). And while this result is statistically significant, the sheer size of this group will push the results to a significant result. When the effect size was calculated (see Appendix B), it did not reach the critical point of .30 ($r = .11$). Therefore, it is believed that the matched set of data is representative of the larger sample size and can be used for analysis.

The identifying information was stripped from the research data prior to data analysis. The matching and data clean up was completed by the administrator of the survey at the University of Michigan. For data analysis, both the matched pre-post data set (n=118) and the unmatched post test of the original participants (n=295) were evaluated. Upon receipt of the data sets, variables were renamed with meaningful abbreviations based on the question key provided by the data administrator at the University of Michigan.

Characteristics of the Sample

The Snapshot Survey asked several demographic questions: age, gender, years in education, degree status, current position, teaching assignment, and grade level assignment (see Table 1 and Table 2). The majority of the participants in the TACP program survey were females (81.9%). The age of the participants ranged from 20-25 to 61-65 with the median and mode being the age range of 41 – 45. The mean of 5.2 also falls within this age range. Considering that this is a joint graduate program and state certification program, it seems reasonable that 71.8% of the participants have not

completed a master's degree. However, of those surveyed 28.1% have completed a master's degree and are continuing with their education.

Table 1

Demographic frequencies of age, gender, and degree status

		Frequency	Valid Percent
Gender	Male	21	18.1%
	Female	95	81.9%
Age	20 - 25	2	1.7%
	26 – 30	6	5.1%
	31 – 35	15	12.8%
	36 – 40	13	11.1%
	41 – 45	28	23.9%
	46 – 50	20	17.1%
	51 – 55	26	22.2%
	56 - 60	5	4.3%
	61 - 65	2	1.7%
	Mean	5.2 (41 – 45)	
	Median	5.0 (41 – 45)	
	Mode	5.0 (41 – 45)	
Degree	BA/BS	47	40.2%
	BA/BS +15	37	31.6%
	Masters	15	12.8%
	Masters + 15	10	8.5%
	Masters +30	8	6.8%
	Mean	2.1	BA/BS +15
	Median	2.0	BA/BS +15
	Mode	1.0	BA/BS

Table 2

Teaching field demographic frequencies of years in education, current position, teaching assignment and grade level assignment

		Frequency	Valid Percent
Current Position	Teacher	83	70.3%
	Campus Administrator	1	.8%
	District Administrator	4	3.4%
	Other	30	25.4%
Teaching Assignment	Elementary	18	17.8%
	Language Arts	10	9.9%
	Math	10	9.9%
	Foreign Language	2	2.0%
	Social Studies	4	4.0%
	Computer Science	4	4.0%
	Business	6	5.9%
	PE/Health	1	1.0%
	Art	3	3.0%
	Special Education	4	4.0%
	Special Assignment	1	1.0%
	Technology Applications	38	37.6%
Grade Level Assignment	Pre – K	2	1.8%
	Elementary	37	32.5%
	K – 8	9	7.9%
	K – 12	6	5.3%
	Middle School	23	20.2%
	High School	36	31.6%
	Post Secondary	1	.9%
Years in Education	1 to 5 years	22	19.0%
	6 to 10 years	18	15.5%
	11 to 15 years	29	25.0%
	16 to 20 years	22	19.0%
	more than 20 years	25	21.6%
	Mean	3.08	
	Median	3.0	
	Mode	3.0	

Upon examining the demographics of the teaching experiences of the survey participants, 70.3% were teachers with the remaining 29.7 percent spread across campus administrators, district administrators or other positions.

Of the teachers who responded to the survey, the majority of them were teachers of technology applications (37.6%). This was logical since participants who complete the four courses in the program receive a soon-to-be-mandated Technology Applications certificate. Other responses that were interesting include that the TACP program had special education, art, foreign language and PE/Health teachers working towards technology certification. This led the researcher to wonder if these teachers are planning on integrating technology with their current field or if they are planning on changing teaching fields.

The top two categories of grade level assignment were elementary (32.5%) and high school (31.6%) with middle school a not too distant third (20.2%). Most of the technology integration and teaching are focused in Texas's five high school technology application courses; it was exciting to see such a large portion of participants from elementary school. If elementary students could be better prepared with a solid foundation in technology applications and integration, they would be able to progress farther at the secondary level.

The final demographic for teaching that was evaluated was years in education. The distribution of responses was close together giving an almost even representation (see Figure 1). In comparing the age demographics, with a mean, median and mode all in the range of 41 to 45, a mean, median and mode of the 11 to 15 years teaching would be

expected. It would be interesting to see if these teachers have always been teachers or if education is a second career.

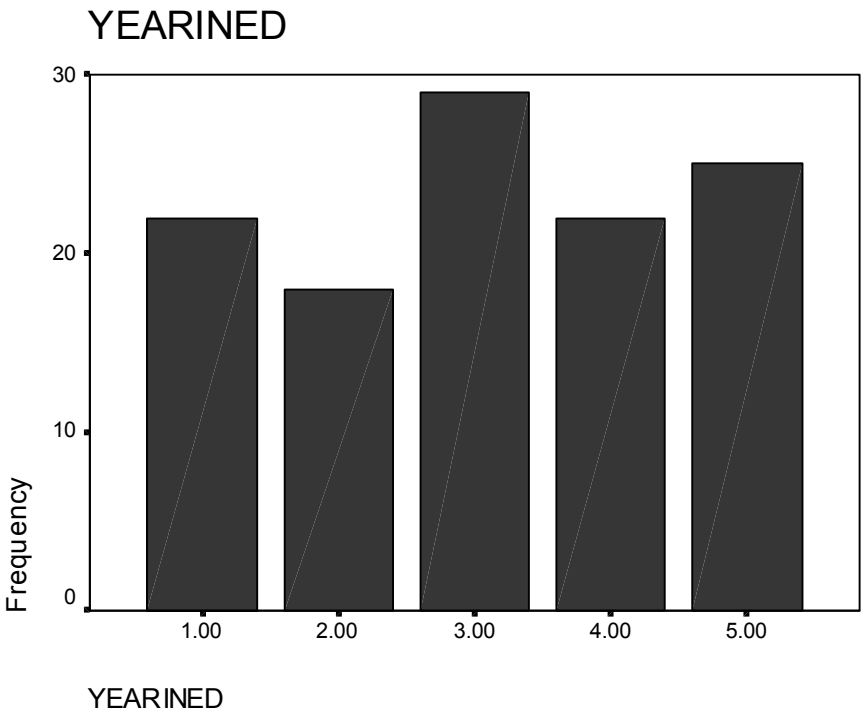

Figure 1. Frequencies of the years that teachers of the TACP have had in education.

Testing of Hypothesis 1

The first set of variables to be analyzed was the participant perceptions of the value of the TACP learning tools. Cronbach's reliability of the pre-test yielded an alpha of .83 and the reliability of the matched post-test yielded an alpha of .80. Based on these variables, several computations had to be programmed to form new variables. A new variable was defined for the difference of the pre and post-test scores for each of the fifteen TACP learning tools. This was computed by subtracting the post-test score from the pre-test score. The range of this new variable was -4 to 4 (see Table 3).

Table 3

New variable computation for pre-post TACP Tools

Computed Variable	Equation	Computed Variable	Equation
chng_tbk	tacp_tbk1 – tacp_tbk2	chng_f2f	tacp_f2f1 - tacp_f2f2
chng_hoa	tacp_hoa1 – tacp_hoa2	chng_prj	tacp_prj1 - tacp_prj2
chng_adm	tacp_adm1 – tacp_adm2	chng_sgc	tacp_sgc1 - tacp_sgc2
chng_gsp	tacp_gsp1 – tacp_gsp2	chng_rub	tacp_rub1 - tacp_rub2
chng_cfm	tacp_cfm1 – tacp_cfm2	chng_aud	tacp_aud1 - tacp_aud2
chng_web	tacp_web1 - tacp_web2	chng_obj	tacp_obj1 - tacp_obj2
chng_src	tacp_src1 - tacp_src2	chng_exm	tacp_exm1 - tacp_exm2
chng_odb	tacp_odb1 - tacp_odb2		

After the change was computed, another variable was defined as the absolute value of each change. This would measure the magnitude but not the direction of the change in perceived values of individual tools (see Table 4).

The final step of this computational process was to calculate the sum of the absolute values of change for each of the 15 TACP tools (see Table 5). This new variable (total_ch) measures the magnitude of the ability of the participant to accurately predict the value of learning they place on all of the TACP tools.

Table 4

Computation of the absolute value of change of TACP tools

Computed Variable	Equation	Computed Variable	Equation
achngtbk	| chng_tbk |	achngf2f	| chng_f2f |
achnghoa	| chng_hoa |	achngprj	| chng_prj |
achngadm	| chng_adm |	achngsgc	| chng_sgc |
achnggsp	| chng_gsp |	achngrub	| chng_rub |
achngcfm	| chng_cfm |	achngaud	| chng_aud |
achngweb	| chng_web |	achngobj	| chng_obj |
achngsrc	| chng_src |	achngexm	| chng_exm |
achngodb	| chng_odb |		

Table 5

Computation of the variable representing the ability of participants to predict the value of learning for the TACP tools

Computed Variable	Equation
total_ch =	achngtbk + achnghoa + achngadm + achnggsp + achngcfm + achngweb + achngsrc + achngodb + achngf2f + achngprj + achngsgc + achngrub + achngaud + achngobj + achngexm

The range of the new variable total_ch would be from 0 to 60. The lower the value of this number, the better able the participant was to predict the value of the learning tools. Conversely, a higher number would indicate more errors on this

prediction and therefore demonstrate a lower ability to accurately predict the value of the learning tools.

The null distribution of this data set would have a normal distribution curve with a mean of 30 (see Figure 2). The same standard deviation was used that was calculated for the variable tool_ch.

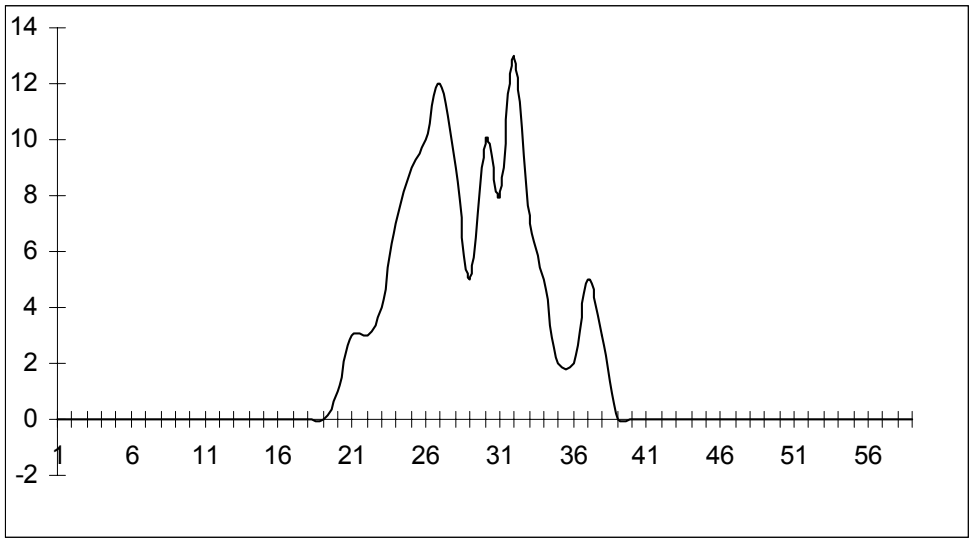

Figure 2: A normal distribution for a random sampling of the variable tool_ch with a mean of 30, range from 0 to 60 and a standard deviation of 4.17.

The actual frequency distribution of the variable tool_ch was run (see Table 6). When the frequencies of the variable tool_ch were graphed the result is Figure 3.

Table 6

Frequency and distribution for the variable tool_ch

N	Valid	100
	Missing	18
Mean		10.2400
Std. Error of Mean		.4176
Median		9.5000
Mode		7.00
Std. Deviation		4.1757
Variance		17.4368
Skewness		.593
Std. Error of Skewness		.241

Furthermore, the mean of 10.2 shows that the group was better than the random average of 30. When the two graphs are overlaid (see Figure 4), it accentuates the movement in the mean and skewness from a normally distributed group. The frequencies and distribution of the variable tool_ch visually showed that adults have better than average abilities to evaluate learning tools based on the impact on their learning. To further support this hypothesis, a t-test was performed on the variable tool_ch to measure for a statistically significant difference between the values of the pre-test and the values of the post-test (see Table 7).

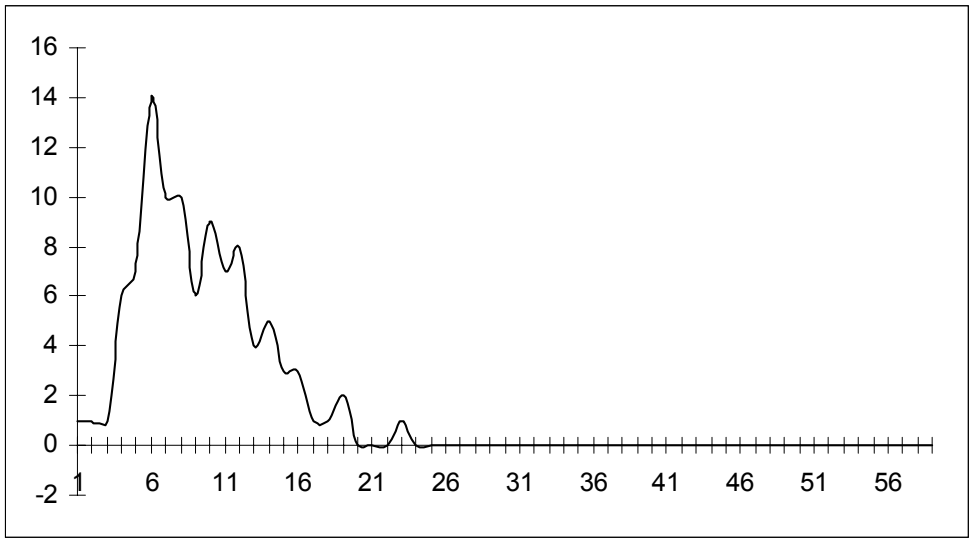

Figure 3: Frequency graph for the matched pre-post variable tool_ch.

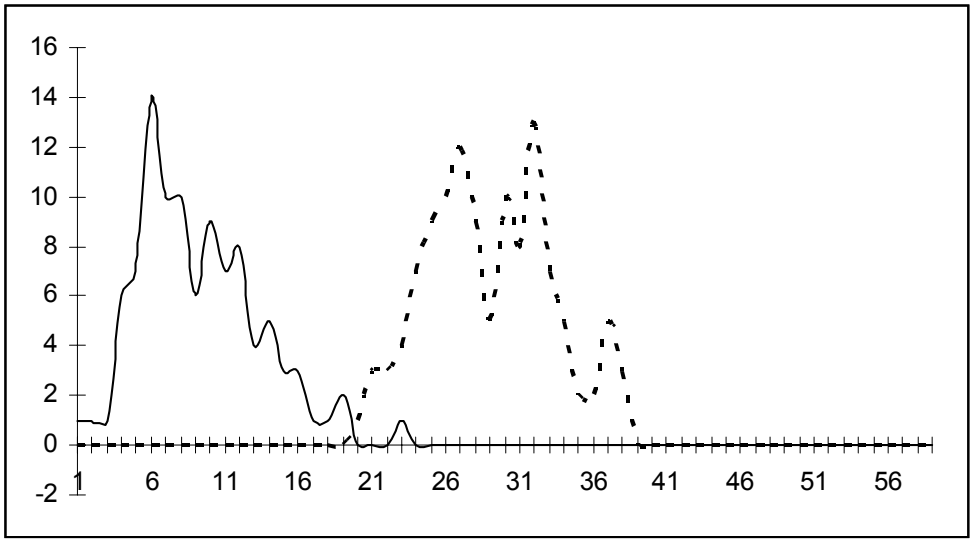

Figure 4: Overlay of the normal distribution with the actual distribution of tool_ch

Table 7

Paired Samples t-test between the pre- and post-tests for each of the fifteen TACP tools

TACP Tools	Pre-test	Post-test	*M*	*SD*	*SEM*	*t*	*df*	Sig.	*r*
Textbooks	3.17	2.98	.19	1.09	.10	1.88	115	.063	0.09
Hands-On Activities	4.67	4.72	-.05	.60	.05	-.93	116	.357	-0.03
ADAM Modules[a]	3.87	3.85	.02	1.17	.11	.24	114	.811	0.01
Guest Speakers	3.48	3.27	.21	1.00	.09	2.25	114	*.027	0.10
CFM led instruction[b]	3.93	3.84	.08	1.19	.11	.78	113	.434	0.04
Directed Web Visits	4.13	4.04	.08	.94	.08	.99	115	.324	0.05
Web Searches	4.05	3.97	.08	.86	.08	.98	113	.331	0.04
Discussion Boards	3.56	3.18	.38	1.18	.11	3.42	112	**.001	0.17
Face to Face Learning	4.03	4.03	.00	1.01	.09	.00	115	1.000	0.00
Projects	4.27	4.37	.095	.86	.08	-1.18	115	.240	-0.05
Small Group Collaboration	4.15	4.10	.04	1.0	.09	.46	115	.649	0.02
Rubrics	3.99	4.14	-.16	1.0	.09	-1.66	113	.101	-0.07
Downloaded Audio Files	3.11	3.08	.02	1.17	.11	.16	112	.873	0.01
Knowledge of Objectives	4.20	4.11	.09	.98	.09	.95	113	.343	0.05
Exams	2.73	2.77	-.03	1.26	.12	-.30	114	.767	-0.02

[a]ADAM Modules are multimedia learning tools that combine audio, video, website and powerpoint presentations. [b]CFM is Clinical Faculty Member. They had roles similar to teaching assistants. [c] 2-tailed significance**$p < .01$ *$p < .05$ [d] Data scale is from 1 to 5.

Of the fifteen tool variables, two variables showed statistical significance, one at $p < .01$ and one at $p < .05$. The variable representing the online discussion board (Tacp_odb) returned a statistically significant difference ($p < .01$). For the online discussion boards, participants thought that they would be more beneficial to their learning that they actually were. This was shown by a mean difference of .38. In retrospect, the facilitation and design of the asynchronous communication activities were not designed to properly impact the learning and those facilitating the discussions were not properly trained in the use of the tool.

A second individual tool (tacp_gsp) showed a statistically significant difference ($p < .05$). Tacp_gsp represents the use of guest speakers in the classroom. The difference between the pre and post was .21. The perceived value of this learning tool was also higher than the value after experiencing it within the TACP. Further information needs to be gathered to determine the reason for the lower than anticipated effectiveness of the guest speakers. One possible reason was that since each cohort group brought in a network administrator from the local district, the quality and personality of each guest speaker would differ greatly among cohorts. However, the correlation between school district and the change of the value of the guest speaker did not yield statistically significant differences ($p = .367$). A second possible cause for the statistical decrease could be that during the first meeting of the first course, the students were told that they would have well known technology experts brought in as guest speakers through conferencing tools. Anticipation could have inflated the initial value of a guest speaker. For a variety of reasons, these expert guest speakers were not available. Instead they only had local personnel serving as subject matter expects, specifically in the area school

district wide networking. The disappointment of not having the well known speakers could have caused the statistically significant difference.

Hypothesis I: Summary

The frequency distributions of the variable that measures the magnitude of errors for the perceptions of learning tools compared with a possible random sample visually show that these adult online learners could successfully identify the value of the learning tools in the TACP program. When the pre-post mean differences were compared using a t-test, 13 of the 15 (87%) tools showed no significance difference. This supports the hypothesis that the participants' values of the learning tools will be consistent. The other two tools (13%) illustrate an important point about planning, implementation, and expectation. When participants could not accurately predict the value, there was clearly a disconnect between their expectation and the reality of the experience.

Factor Analysis of the TACP Tools

After showing that most learning tools had no significant difference when measured individually, a factor analysis was run on the 15 TACP tools using the umatched post-test data set (n=295, alpha = .84). A principal component analysis with a varimax rotation was performed. Extraction was forced for 5 components and rotation converged in 10 iterations (see Table 8).

Table 8

Original rotated component matrix for the factor analysis of the fifteen TACP tools

	Components				
	1	2	3	4	5
Directed Web Visit	.808	.275	.161		
Web Searches	.792	.281	.197		
ADAM Video	.588			.415	
Downloadable Audio Files	.480	.289	.108	.377	-.299
Rubrics	.176	.725			
Objectives	.349	.624		.187	
Projects	.221	.615	.185		
Exams		.564		.499	-.322
Face-to-Face Instruction	.129		.826	.105	
CFM Instruction		.169	.627	.321	.242
Small Group Collaboration	.179	.396	.608	-.248	-.207
Textbook		.122		.765	
Guest Speakers	.325		.363	.575	
Hands-on Activities	.137	.211	.183		.775
Online Discussion Board	.417	.238	.266	.261	-.457

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 10 iterations.

Upon analysis of each of the components the following factors were defined: Online Tools, Assessment Tools, Human Interaction, Third Party Information, and Skills Practice (see Table 9)

Table 9

Break down of the 5 factors and each set of component TACP tools

Technology Enhanced Tools (Factor 1)	Human Interaction (Factor 3)
Directed Web Visit	Face-to-Face Instruction
Web Searches	CFM Instruction
ADAM Video	Small Group Collaboration
Downloadable Audio Files	Third Party Information (Factor 4)
Online Discussion Board	Textbook
Assessment Tools (Factor 2)	Guest Speakers
Rubrics	Skills Practice (Factor 5)
Objectives	Hands on Activities
Projects	
Exams	

In the matched pre-post data set, new variables were created based on the tool factor components. The average of each new set of TACP factor variables was computed for both the pre-test and the post-test (see Table 10). Then the means of the pre-post matched pairs were compared using a paired sample t-test (see Table 11).

Table 10

Computation of the new TACP factor variables for pre- and post-tests

Pre-test data	
New Variable	Equation
tacp_1_1	(tacpweb1 + tacpsrc1 + tacpodb1 + tacpaud1+ tacpadm1) / 5
tacp_2_1	(tacpobj1 + tacpexm1 + tacprub1 + tacpprj1) / 4
tacp_3_1	(tacpcfm1 + tacpf2f1 + tacpsgc1) / 3
tacp_4_1	(tacptbk1 + tacpgsp1) / 2
tacp_5_1	(tacphoa1)
Post – test data	
New Variable	Equation
tacp_1_2	(tacpweb2 + tacpsrc2 + tacpodb2 + tacpaud2 + tacpadm2) / 5
tacp_2_2	(tacpobj2 + tacpexm2 + tacprub2 + tacpprj2) / 4
tacp_3_2	(tacpcfm2 + tacpf2f2 + tacpsgc2) / 3
tacp_4_2	(tacptbk2 + tacpgsp2) / 2
tacp_5_2	(tacphoa2)

Table 11

Paired samples t-test comparing the means of the TACP factored components between the pre-test and the post-test

TACP tool factors	*Pre*	*Post*	*M*	*SD*	*SEM*	*t*	*df*	*Sig.*	*r*
Technology Enhanced	3.76	3.63	.13	.63	.06	2.15	105	*.034	0.08
Assessment	3.81	3.52	.29	.73	.06	4.19	108	**.000	0.17
Human Interaction	4.04	3.98	.05	.70	.06	.90	112	.371	0.04
Third Party	3.33	3.12	.21	.75	.06	2.99	114	**.003	0.12
Hands-on	4.67	4.71	-.05	.60	.05	-.93	116	.357	-0.03

[a](2-tailed)**p < .01 *p < .05 [a]Data scale from 1 to 5.

Three of the five tool components yielded statistically significant results. The primary factor of technology enhanced tools resulted in a statistically significant (p < .05) decrease in the perceived value of the tool set. Furthermore, the second and fourth components, assessment tools and third party tools yielded statistically significant (p < .01) decreases between the pre and post test. Although these factors reached statistical significance, the largest effect size is .17 which is far below the .3 standard for effective size. The third factor and the fifth factor, Human Interaction and hands-on, were not found to have shown a statistically significant difference. By using factor analysis to reduce the data and group like tools together, it was shown that participants using three of the five tools made statistically significant changes to their perceived value of the learning tools.

The question now arises about how this affects the acceptance of the null hypothesis. Since the original hypothesis was about the individual tools, the acceptance

of the hypothesis should stand. The component results became statistically significant when the magnitude of the individual perception errors were combined. This warrants further testing of the individual tools and the component tools.

Hypothesis 2: Testing & Summary

To determine if any groups of participants were better at predicting the learning value of the TACP tools, the five component factors were measured against each of the following groups for correlations: age, gender, and years of experience. In respect to each of the demographic groups, none of the variables were statistically significant when correlated with each of the factored tool components (see Table 12). Due to the non-statistically significant correlations between the TACP tool components and each of the demographic groups, the hypothesis that there is no difference is accepted.

Table 12

Correlations between the change of the five TACP tool factors and age, gender, and years in education

		Years in Education	Age	Gender
Technology Enhanced	*r*	.108	-.019	-.034
	Sig. (2-tailed)	.282	.852	.730
	N	101	103	105
Assessment	*r*	.083	-.056	-.002
	Sig. (2-tailed)	.397	.566	.980
	N	105	106	108
Human Interaction	*r*	-.002	.027	-.068
	Sig. (2-tailed)	.986	.779	.476
	N	109	110	112
Third Party	*r*	-.016	-.023	-.073
	Sig. (2-tailed)	.866	.809	.439
	N	111	112	114
Hands-On	*r*	-.046	-.037	.071
	Sig. (2-tailed)	.628	.695	.446
	N	112	114	116

Hypothesis 3: Testing

Also correlated with the TACP tools was the Technology Proficiency Self-Assessment (TPSA) (Ropp, 1999) which is a measure of self-efficacy related to technology and computers with a reliability of alpha = .95 (Knezek, Christensen, 2000). The TPSA also has been factored to include four components of electronic mail (alpha = .78), WWW (alpha = .95), Integrated Applications (alpha = .84), and Teaching with Technology (alpha = .88). Both the entire measure and each individual scale were measured for correlation with the perceived value (see Table 13), actual value (see Table 14) and the change in value (see Table 15).

The pre-test correlations showed multiple statistically significant correlations primarily in the overall measure of the TPSA and the Teaching with Technology subscale. The overall TPSA instrument statistically significantly ($\underline{p} < .01$) correlated with the TACP tool factor components of Technology Enhanced Tools and Assessment Tools. In addition the TPSA scale correlated with two additional factors, Human Interaction and Third Party Information with a statistical significance of $\underline{p} < .05$.

The fourth subscale, Teaching with Technology, had the most statistically significant correlations to the TACP tool factored components. This subscale was statistically significant at the $\underline{p} < .01$ level with four of the five components including: Technology Enhanced Tools, Assessment Tools, Collaborative Tools, and Third Party Information. Furthermore, the Teaching with Technology correlated with the fifth TACP tool component with a statistically significant level of $\underline{p} < .05$.

Table 13

Correlations between pre-test TACP factors and the TPSA self-efficacy scales and subscales

		Technology Enhanced	Assessment	Human Interaction	Third Party	Hands-on
TPSA	*r*	.273	.549	.233	.212	-.012
	Sig. (2-tailed)	**.006	**.000	*.017	*.031	.904
	N	101	105	104	104	105
TPSA Email	*r*	.158	.289	.234	.168	.025
	Sig. (2-tailed)	.102	**.002	*.012	.073	.786
	N	108	113	114	115	116
TPSA WWW	*r*	-.012	.198	-.008	-.031	-.010
	Sig. (2-tailed)	.903	*.036	.931	.744	.914
	N	106	112	112	114	115
TPSA Integrated	*r*	.002	.276	-.027	.125	-.096
	Sig. (2-tailed)	.982	.**004	.781	.188	.309
	N	106	109	110	112	114
TPSA Teaching	*r*	.647	.904	.596	.333	.202
	Sig. (2-tailed)	**.000	**.000	**.000	**.000	*.033
	N	106	110	109	109	111

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Table 14

Correlations between post-test TACP factors and TPSA self-efficacy scales and subscales

		Technology Enhanced	Assessment	Human Interaction	Third Party	Hands-on
TPSA	*r*	.346	.520	.246	.188	.108
	Sig. (2-tailed)	**.000	**.000	**.010	.050	.263
	N	108	109	109	109	109
TPSA Email	*r*	.056	.182	.095	-.011	.133
	Sig. (2-tailed)	.554	.053	.311	.905	.154
	N	114	113	116	116	116
TPSA WWW	*r*	-.002	.066	-.016	.056	.023
	Sig. (2-tailed)	.981	.494	.869	.557	.809
	N	112	111	114	114	114
TPSA Integrated	*r*	.177	.199	-.017	.189	.028
	Sig. (2-tailed)	.059	*.035	.853	*.042	.769
	N	114	113	116	116	116
TPSA Teaching	*r*	.670	.954	.606	.255	.263
	Sig. (2-tailed)	**.000	**.000	**.000	**.006	**.005
	N	113	114	114	114	114

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Table 15

Correlations between the change of pre/post of the TACP factors and the TPSA self-efficacy scales and subscales

		Technology Enhanced	Assessment	Human Interaction	Third Party	Hands-on
TPSA	*r*	.142	.443	.153	.094	.056
	Sig. (2-tailed)	.177	**.000	.137	.364	.583
	N	92	97	96	96	97
TPSA Email	*r*	.123	.235	.122	-.004	.051
	Sig. (2-tailed)	.214	*.014	.200	.966	.589
	N	104	108	112	113	114
TPSA WWW	*r*	-.024	.123	-.033	-.042	.150
	Sig. (2-tailed)	.814	.212	.738	.660	.116
	N	100	105	108	110	111
TPSA Integrated	*r*	-.052	.168	-.013	.092	-.069
	Sig. (2-tailed)	.602	.089	.897	.340	.469
	N	102	104	108	110	112
TPSA Teaching	*r*	.484	.887	.506	.222	.102
	Sig. (2-tailed)	**.000	**.000	**.000	*.023	.294
	N	101	106	105	105	107

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Beside being statistically significantly correlated with the TPSA scale and the Teaching with Technology subscale, the TACP component of Assessment tools was also statistically significantly correlated with the Email subscale ($p < .01$), the Integrated Applications subscale ($p < .01$) and the WWW subscale ($p < .05$). Finally, the Email subscale of the TPSA correlated with the Human Interaction Tool of the TACP program with a statistical significance of $p < .05$.

There were several consistencies between the correlations of the pre-test TACP and TPSA and the correlations of the post-test TACP and TPSA. Most remarkable is the continued statistically significant difference ($p < .01$) of the TPSA subscale Teaching with Technology to all five of the TACP tool components. It demonstrates that the participant's perceptions of how they can teach with technology correlate with how they learn with technology.

Another consistency between the pre- and post-test correlations was the statistically significant correlation ($p < .01$) of the TPSA scale to three of the five TACP tool factors: Technology Enhanced tools, assessment tools and human interaction. One of the changes between the pre and post correlations is the loss of the statistically significant correlation with the Email subscale and the WWW subscale. However, the integrated applications subscale of the TPSA remained statistically significantly ($p < .05$) correlated with the Assessment tool and gained statistical significance ($p < .05$) with the third party resources of the TACP tools.

When the change between pre- and post-test for the TACP tool factors was correlated with TPSA scales and subscales, not surprisingly, the growth of feelings of self-efficacy measured by the Teaching with Technology subscale was statistically

significantly correlated with an increase in the perceived value of four learning tools: Technology Enhanced tools ($p < .01$), Assessment tools ($p < .01$), Human Interaction ($p < .01$) and Third party resources ($p < .05$). Only two other change correlations were apparent: TPSA scale/Assessment tool ($p < .01$) and TPSA Email subscale/Assessment tool ($p < .05$).

Hypothesis 3: Summary

Of the self-efficacy instruments, only the complete TPSA scale and the TPSA Teaching with Technology subscale consistently returned statistically significant results. The specific skill efficacy that the TPSA measured was correlated with the participant's learning value of the TACP tools. Due to the statistically significant results of the TPSA, hypothesis 3 that stated that self-efficacy beliefs were correlated with the perceptions of learning tools was accepted.

Hypothesis 4: Testing

The final set of correlations that were examined was the measures of attitudes of distance learning and the values of the five TACP tool factors. In the Snapshot Survey (Norris, Soloway, 2000), participants were asked their feelings about participating in distance learning staff development. Even though all of the participants were currently involved in a distance learning program, in both the pre- and post-test, the beliefs of future participation in online staff development was disagreed or strongly disagreed with by only 7.6% of respondents (see Table 16). There was also no statistically significant change between the average of the pre-test and the average of the post-test as measured by a paired samples t-test (see Table 17).

Table 16

Frequencies for the belief of future participation in district online professional development

	Pre-test Online Profession Development				Post-test Online Profession Development			
	Frequency	Percent	Valid Percent	Cumulative Percent	Frequency	Percent	Valid Percent	Cumulative Percent
1.00	8	6.8	6.8	6.8	7	5.9	5.9	5.9
2.00	1	.8	.8	7.6	2	1.7	1.7	7.6
3.00	3	2.5	2.5	10.2	8	6.8	6.8	14.4
4.00	34	28.8	28.8	39.0	32	27.1	27.1	41.5
5.00	72	61.0	61.0	100.0	69	58.5	58.5	100.0
Total	118	100.0	100.0		118	100.0	100.0	

Note: The 1 to 5 is from strongly disagree to strongly agree.

Table 17

Paired samples t-test between pre- and post-test belief of future participation in district online professional development

	Pre	*Post*	*M*	*U*	*SD M*	*t*	*df*	Sig. (2-tailed)
Online Professional Development (Pre/Post)			.05	1.33	.12	.49	117	.629

Based on their current experience, the TACP participants did not incur a statistically significant difference in their future of participating in online staff development. In order to determine if the value of learning tools played a part in a participants decision about future online learning opportunities, correlations (see Table 18) were run using the larger unmatched post-test data set (n = 295).

Table 18

Correlations between beliefs about future online staff development and the TACP factor components

		Technology Enhanced	Assessment	Human Interaction	Third Party	Hands-on
Online Professional Development	*r*	.271	.094	.046	.151	-.038
	Sig. (2-tailed)	**.000	.114	.433	**.010	.522
	N	285	285	290	288	290

** Correlation is significant at the 0.01 level (2-tailed).

There were two TACP tool factors that were statistically significantly ($p < .01$) correlated to the belief in participating in future online staff development: technology enhanced tools and third party resources. The participants who placed higher value on online learning tools were more apt to participate in an online learning program. Beliefs in the future of staff development online were also correlated with each of the self-efficacy measures (see Table 19).

Table 19

Correlations between online staff development participating and self-efficacy

Correlations

		TPSA Email	TPSA WWW	TPSA Integrated	TPSA Teaching	TPSA	Stages
Online Professional Development	*r*	.054	.019	.022	-.019	.037	-.033
	Sig. (2-tailed)	.320	.720	.684	.727	.513	.537
	N	342	342	342	337	319	345

There were no statistically significant correlations between future participation in online staff development and the self-efficacy measures of the TPSA and Stages of Adoption.

A second belief measure of distance learning is the Teachers' Attitudes Towards Information Technology (TAT 4.1). This tool has been used with many components of informational technology including email, www, and multimedia. It has an average reliability of .95. This TACP survey was the first time that it was used referencing distance learning. It maintained an alpha of .95 (n = 278). The following semantic pairs were used: appealing/unappealing, fascinating/mundane, important/unimportant, boring/interesting, relevant/irrelevant, exciting/unexciting, means nothing/means something, and involving/uninvolving. The negative and positive pairs were placed in alternate positions to help ensure that participants would not just mark down one column. In order to have each of the items on the same scale with the negative term at 1 and the

positive term at 7, several variables' values were recalculated by subtracting the data point from 8. The computation for finding the overall TAT for distance learning was obtained by summing each semantic pair value and finding an average (see Table 20.)

Table 20

Computation of the TAT overall variable for distance learning

New Variable	Equation
Tat_dl	(tat_app + tat_fasc + tat_imp + tat_bor + tat_rel + tat_exc + tat_noth + tat_inv)/8

The first correlation that was examined was between the TAT distance learning semantic pairings and the choice of future distance learning staff development opportunities. The expected correlation (see Table 21) was achieved with statistical significance ($p < .01$).

Table 21

Correlation between the TAT distance learning and the future professional development

		Attitudes of Distance Learning (TAT)
Online Professional Development	r	.309
	Sig. (2-tailed)	**.000
	N	275

** Correlation is significant at the 0.01 level (2-tailed).

The statistically significant result of the correlation shows that the more positive participants felt about distance learning in general, the more apt they would be to

participate in online staff development. Compared with the correlation between self-efficacy and participation, general feelings have greater influence over participation in online staff development than skill levels.

The next correlation that was computed was the TAT distance learning with each of the TACP tool factors (see Table 22). Three of the five TACP tools showed statistically significant correlation ($p < .01$) with the semantic differentials of the TAT distance learning: technology enhanced tools, assessment tools, and third party resources. The more positive the general feelings about distance learning correlates with a higher value of some learning tools in the distance learning program. In order to examine the third hypothesis the correlation between the TAT distance learning was correlated with the self-efficacy measures (see Table 23).

Table 22

Correlations between the TAT distance learning and each of the TACP tool factors

		Technology Enhanced	Assessment	Human Interaction	Third Party	Hands-on
TAT Distance Learning	*r*	.457	.363	.105	.218	.069
	Sig. (2-tailed)	**.000	**.000	.083	**.000	.256
	N	271	271	276	274	276

** Correlation is significant at the 0.01 level (2-tailed).

The correlations between the TAT distance learning and the TPSA scale and subscales show many statistically significant results: TPSA WWW ($p < .05$), TPSA

Integrated applications ($p < .05$), Teaching with technology ($p < .01$) and the primary scale of TPSA ($p < .01$). The words that participants chose to describe distance learning are correlated with their beliefs in their own skills with regard to technology and computers.

Table 23

Correlations between the TAT distance learning and the self-efficacy measures

		TPSA Email	TPSA WWW	TPSA Integrated	TPSA Teaching	TPSA	Stages
TAT Distance Learning	*r*	.114	.127	.137	.169	.181	.102
	Sig. (2-tailed)	.061	*.036	*.023	**.006	**.003	.092
	N	273	276	275	269	259	276

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Another question that was asked was Stages of Adoption (Christensen, 1997) . Each pre-test value of the TACP tool factor components was measured for correlation with the Stages of Adoption which has a reliability of .91(Knezek, et al, 2000) (see Table 24).

Only the second factor of Assessment Tools returned a statistically significant correlation ($p < .05$). However, when the post-test values for stages were correlated with each of the tool factor components, none showed a statistically significant correlation (see Table 25).

Table 24

Correlations between the pre-test TACP tool factors and the pre-test stage of adoption.

		Technology Enhanced	Assessment	Human Interaction	Third Party	Hands-on
Stages	*r*	-.131	.193	-.129	.034	-.145
	Sig. (2-tailed)	.184	*.045	.180	.725	.123
	N	105	109	110	112	114

* Correlation is significant at the 0.05 level (2-tailed).

Table 25

Correlations between the post-test TACP tool factors and the post-test stage of adoption.

		Technology Enhanced	Assessment	Human Interaction	Third Party	Hands-on
Stages	*r*	.133	.132	.063	.043	.075
	Sig. (2-tailed)	.156	.161	.500	.642	.419
	N	115	114	117	117	117

Finally the value of the change between the pre- and post-tests for the stages and each of the tool factors were measured for correlations. Consistent with the post-test correlations, there were no statistically significant correlations between the changes in the stages of awareness of any of the TACP tool factored components (see Table 26).

Table 26

Pearson correlations between the pre-test/post-test change of TACP tool factors and the participants pre-test/post-test change of stage of adoption.

		Technology Enhanced	Assessment	Human Interaction	Third Party	Hands-on
Stages	*r*	.000	.120	.052	.186	.003
	Sig. (2-tailed)	.997	.220	.588	.051	.979
	N	102	106	109	111	113

The final measure that was used to gauge participants' perceptions of distance learning for staff development was created by O'Malley and McCraw (1999) and based on the works of Rogers and also Moore and Benbasat (O'Malley & McCraw). To determine the effectiveness of distance learning, this section asked five questions for agreement or disagreement:

- Most people believe that DL is more effective than traditional methodologies.
- In a course with both traditional and DL methodologies, I learn better through the DL portion.
- I prefer DL courses to traditional courses.
- I believe that I can learn the same amount in a DL course as in a traditional course.
- I believe that I can make the same grade in a DL course as in a traditional course.

Even though 8 of the 10 inter-item correlations reached statistical significance ($p < .01$) the reliability of the effectiveness of distance learning variables was the lowest of the

all of the survey components (alpha = .68). Since this measurement did not yield a high enough inter-item reliability it was not used for these data analyses.

Hypothesis 4: Summary

Belief in future participation in distance learning is guided by the value that the participants place on the tools that they will be using in the program. Furthermore, the strength of the feelings in the semantic pairs of the TAT is also correlated with the value of the learning tools. Therefore, the fourth hypothesis, that the feelings and beliefs about distance education are correlated with the TACP tools, is accepted.

However, it is interesting to note that while self-efficacy did correlate with the semantic pairs, it did not correlate with the belief about future participation. Additionally, the Stages of Adoption also did not correlate with the self-efficacy measures. This is an area that will prompt further research.

Additional Findings

Even though there was not a direct hypothesis about the rankings of the individual learning tools, it is very important to the development of future online staff development programs. Each tool was ranked based on the mean value that the participants placed on it at the pre-test and post-test (see Table 27). An overall average was computed and also ranked.

Table 27

Rankings of the learning tools of the TACP

				Ranks 1 to 15 (1 is the highest)		
Tool	Pre	Post	Average	Average	Pre	Post
Hands-on activities	4.67	4.72	4.69	1	1	1
Projects	4.28	4.37	4.3	2	2	2
Knowing objectives	4.20	4.11	4.15	3	3	4
Small group collaboration	4.15	4.10	4.125	4	4	5
Directed website visits	4.13	4.04	4.08	5	5	6
Rubrics	3.99	4.15	4.07	6	8	3
Face-to-face	4.03	4.03	4.02	7	7	7
Web searches	4.05	3.97	4.01	8	6	8
CFM instruction	3.93	3.84	3.88	9	9	10
ADAM modules	3.87	3.84	3.85	10	10	9
Guest speaker	3.48	3.27	3.37	11	12	11
Online discussion boards	3.56	3.18	3.36	12	11	12
Downloaded audio	3.11	3.09	3.09	13	14	13
Textbook	3.17	2.98	3.07	14	13	14
Exams	2.73	2.77	2.74	15	15	15

In examining the table of ranks, several interesting things emerge. First, a X^2ranks was computed at 5.84. The critical value for $X^2_{.95}(14) = 23.7$. Since the critical

value was not reached, it indicates that there is no statistical significance between the linear ranks. This is consistent with our prior findings of no statistically significant difference in the means of these tools and the frequencies and distributions that show a propensity to be able to predict the value of learning tools. Four of the 15 (27%) of the tools kept the same ranking for all three of the ratings (pre, post and average). In addition, 9 of the tools (60%) were only one ranking off within the pre, post and average.

Only two tools had a larger movement. Directed website visits were originally ranked 6th of 15. At the post-test their ranking dropped two positions to 8th. However, this is still only a shift of magnitude two. The really interesting change in ranking was rubrics. The average value of rubrics ranked it 8th in the pre-test. However, after nine months of using well designed rubrics for evaluation, the rubric tool was ranked 3rd. The increase in the ranking and value demonstrate that the TACP program developers did an excellent job of the development and implementation of rubrics. This ranking of the values of the individual tools will help instructional designers plan for tools and activities that will have a greater potential to impact the learning of the participants.

CHAPTER 5

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

The Internet has great potential…and great hazard. For every potential benefit that the Internet provides society, there is some sort of evil waiting on the sidelines. The Internet aids in our communication with each other through email. However, our mailboxes our now being jammed with "spam." As of late, this spam is not just your garden-variety sales promotion. The images and innuendos that come with these messages are enough to make a grown man blush. We can now connect computers to share digital information; however, some people believe in sharing and transferring information that can destroy the networks providing the connection. The Internet offers instant access to valuable information to increase knowledge; however, some of this information is not always true and it is not always valuable. For every good, there is an evil.

The same can be said about distance learning. Distance learning programs have the potential to reach the masses quicker than traditional training. However, many question if the training is the same quality as a more established program. Learners can be connected to content, each other, and the instructor through asynchronous and synchronous communications. However, can this actually replace the relationships that are built and the connections that are made in a face-to-face classroom?

Most professions have some program in place for its employees to participate in ongoing training. In Texas schools, teachers are required to complete a set number of

hours in staff development. Between planning curriculum, meeting with parents, supporting after school activities, working with individual students, continuing their graduate degrees and spending time with their own families, there is not a lot of time remaining to spend in professional development. The Internet provides a valuable solution to many school districts who are now implementing district-wide staff development initiatives. These school districts are allowing their employees the freedom to learn at their own pace, on their own time, and often, their own choice of subjects.

The design of these programs is imperative to their success. Yet, success cannot be measured only in skills learned. Districts must look at the staff development program's success in terms of how well they are addressing the needs, attitudes and beliefs of their teacher. Designers must take the time to know that audience before constructing and implementing online training.

Based on surveys from the Technology Applications Certification Program valuable information about online professional development for teachers was gathered. This information can be used to increase the great potential of online staff development and help to reduce the possible hazards.

Impact of Tool Predictability

Learning style theory has told educators for years that there are many different ways students learn. This propensity to different learning styles continues in adulthood. One of the drawbacks to teaching towards different learning styles is that in a traditional classroom with one teacher, the number of learning styles that can be addressed at any one time is limited. While it is possible to combine one or two learning styles in a face-to-face lesson, it is difficult to meet the needs of each and every learner.

This is where the Internet provides an ideal solution. With the advent of personalized learning and mass customization, each learner can receive content and instructional strategies geared to their learning styles. Often this is accomplished through surveys and instruments used to determine a learning style or personality preference and then placing the learner in a pre-determined pathway of activities, tools and delivery. Each participant receives the curriculum through strategies proven to assist other learners with similar learning preferences.

Learners can benefit greatly from matching the learning path to a learning style or preference. They make better use of their training time by focusing in on tools and activities that should help them learn best. Unfortunately, this may not always be the case. Not every learner is going to fit into a prescribed style. There will be some form of error that excludes a percentage of students from matching up correctly. If students are forced by a learning management system to have access only to certain tools, activities, or resources, and the learning system made a mistake, the learner is left in an uncomfortable learning environment. While they may very well reach the expected outcomes, they may have done it under duress and without having their feelings, needs and beliefs addressed. Another drawback to the instrument driven personalized learning is that by pigeon-holing the learner to only use a small subset of the tools and resources available, participants are not stretching their abilities or expanding their learning preferences.

However, what if the learner was not forced to follow a prescribed learning pathway? If the learner had the ability to choose for themselves which learning tools that they have had the best experience with, would the result be equivalent to an artificially

intelligent placement system? Furthermore, if the students could have access to all the possible learning pathways, would they choose new and enticing tools and resources to stretch their learning experience and grow in their learning style and preferences? In order to make a system like the one described work, the first step is to determine if adult learners have the expertise to place value on learning tools based on prior experience.

The TACP program gave learners a wide variety of tools and resources to meet the instructional objectives. By asking them to place value at the beginning of the program and again after eight months of using the tools, their ability to perceive the value was tested. After several statistical tests, results show that adults do have the ability to pick the online tools that will best help them learn the materials. This result has potential to influence greatly the way instructional designers plan the tools and resources available to their participants.

Gone are the days of face-to-face learning where a learner is lucky to experience the lesson from their learning perspective. Now each time learners log into the online staff development platform, they are given choices; choices which enable them to learn from the tools and resources that best meet the needs of learners with different learning styles or preferences. However, instead of only having one or two tools to choose from, they have the ability to choose from all of the learning styles for all of the lessons. Designers can tell the participants to pick two or three different types of activities for the week's lesson.

This means that for a staff development module on any given topic activities would be developed encompassing videos, audios, pictures, graphic organizers, textbooks, learner-to-learner interaction, learner-to-instructor interaction, intrapersonal

journal writing, and hands-on skill practice. Each tool would cover the objectives from a different learning perspective. When combined into the module, they provide a menu for the learner to design their own learning path.

The intelligence behind mass customization and personalized learning should still be a vital part of online staff development that advocates choice. Learners can be guided in their selections by icons or color-coding that represent the different types of learning activities. In addition, the system can track the choices that a learner is making and perhaps suggest that they choose something different in order to grow in their learning preferences. However, with the knowledge that adult participants in online staff development have the ability to accurately perceive the value of learning tools, the power lies in their ability to choose.

Impact of Predictability Across Demographic Groups

The fact that the ability to accurately predict the value of learning tools does not differ across large demographic sections of the population supports the first hypothesis that all adult learners should be able to choose their own learning tools. During their years of education and training, adults over the age of 20 have had enough experience to know themselves and how they learn. At what point does this self-awareness reach a critical point? One possible area of further research would be to examine high school students' ability to accurately predict the value of learning tools. This information would provide valuable information for virtual high school development.

Impact of Self-Efficacy and Predictability

Being able to perform in an online classroom is sometimes more challenging then just showing up for a live training. There are many opportunities for the technology to

fail. Between the operating system, the software, and the internet connection, the learner needs to feel efficient in solving technology difficulties on their own. It is not like the face-to-face classroom where there is an instructor, other students, or tech support on hand to help fix these problems.

The TPSA measured computer self-efficacy. When it was correlated with the values of the learning tools and the beliefs about distance learning, there were positive statistically significant correlations. Online learners need to feel proficient in their computer skills before beginning their online learning experience.

This impacts online development because designers need to determine how to ensure basic computer skills before the distance training begins. Some would say to include a learning module at the beginning of the online program that has the instructional objectives of testing and training for integrated applications skills, basic email skills, and basic web skills. However, since it shows that the value of the distance learning increases when participants feel efficacy in these areas, then these skills should be present before any online learning takes place.

Therefore, these skill-based workshops should take place in live training experiences before learners begin their online training. Some learners will have the necessary skills prior to deciding to join an online staff development program. They should be given the opportunity to complete a test or survey to show competence in these areas. The participants who decide to take advantage of the live skills training will be able to begin the online training at comparable skill level with the other participants. It should lessen their initial frustrations and provide a solid foundation on which to build other skills.

Impact of Correlation Between Beliefs about Distance learning and Value of Learning Tools

While it is not surprising that overall feelings about distance learning correlate with the value of the individual tools that are being used, it does speak toward the importance of positive beliefs and feelings and the impending impact of the learning experience. In addition, when participants have negative experiences with tools, such as the online discussion boards in the TACP program or the unmet expectations of the guest speaker program, the value of those experiences decreases. And, in turn, it has the potential to devalue the beliefs and feelings about distance learning programs in general. Another example is how well the TACP program did with well-designed rubrics and the corresponding increase in value. Those different experiences show the power of positive and negative experiences. The way to positive experiences is through research based design, thorough implementation, properly set expectations, and sufficient training on behalf of those facilitating the tools being implemented.

Impact of the Types of Tools Preferred

Although the ranking of types of tools was not directly related to the hypotheses of this research study, the results are very important to online designers and staff development programs. All of the technology-enhanced tools cannot replace the importance of hands-on activities, projects and well designed assessments.

Online training often contains only content where participants read about how to do something. In some instances there are video segments where they can watch someone else perform those tasks. Trained educators know the importance for children

to actually perform the tasks themselves. This need does not stop at some magical age. Even adults need to experience tasks themselves. There are several video tutors available on the market that walk the participants through the hands-on application of the skills. These experiences provide the needed application of the knowledge to make the transfer to the learner's long term memory. A low tech alternative to video tutors is the use of step-by-step guides that can provide the scaffolding needed to implement the hands-on activities.

Directly related to hands-on activities that provide guided practice is the use of projects for learning assessment. Ranked as second in the listing of available tools, professional educators find high value in being able to produce something for authentic assessment. That is quite different than exams which were ranked 15 out of 15 on all three rankings (pre, post and average). In developing programs which use assessment measures, instructional designers should strive to provide authentic active assessment instead of objective driven exams that the participants place little value on in terms of their own learning achievement.

Educators across the state of Texas are asked to teach to the TEKS – Texas Essential Knowledge and Skills. They are so accustomed to providing instruction based on these objectives that when they move to a role of learning, they want to be aware of the objectives they are learning. The TACP program used objectives that the State Board of Educator Certification (SBEC) wrote as their guide in curriculum development. The SBEC teacher objectives are derived from the TEKS student objectives. One of the benefits for teachers being aware of their SBEC learning objectives is that it can be quickly matched with what they are going to be teaching based on their TEKS objectives.

Once educators are used to teaching from objectives, the use of objectives in their learning becomes important. This implies that designers should not only develop the curriculum from an organized objective structure, but also find a way for participants to be aware of which objectives they are learning.

Another learning tool that is often forgotten in online staff development is the use of small group collaboration. Learner-to-learner interaction is an important concept for all learning activities. The support that a learning community can give its members can be vital to some learning styles. Without collaboration with other participants, learners can feel isolated and inadequate in their skills. However, when they collaborate, the old philosophy of "two heads are better than one" is put to use. Small group collaboration can be achieved in many possible forms: partner work, instant messaging, chat sessions, or discussion boards. The tool that is being used may not be as important as the ability to interact with other learners since the online discussion board tool for the TACP was ranked twelfth of 15 tools. This directs programs to assemble learning communities or even learning teams where they can participate in the program as a small group. Possibilities include campus teams, district wide grade level teams, or district wide content area teams.

Areas for Further Research

The TACP is a very unique program. The combination of live training with distance learning may give different results than if the development was completely online. Ranking of the value of the learning tools could be completely different because of face-to-face connections. For example, perhaps the videos would be more important for a human visual connection if the participants never gathered in a live setting.

Additionally, all student-to-student interaction would have to be computer mediated; therefore the value of the online discussion boards would be increased. One area of further research is to give these tools to a completely online program and determine where the differences lie.

Another area for further research is to see if the predictability of value for learning tools extends across other professions. It could possibly be that because educators are experts in the field of learning to begin with, they are more aware of how they themselves learn. To test this hypothesis, it would be interesting to repeat the study with different segments of the employment spectrum.

The next step within a research and design process is to develop a prototype of a choice-driven instructional tools model. Each learning objective would have multiple tools and activities designed to meet the different learning styles. Participant's learning styles would be tested upon entry in the program as well as self-efficacy and distance learning beliefs and needs. Furthermore, a skill and theory pre-test would be implemented to measure instructional gains. As the participants built their own learning pathway, the learning management system would track their tool choices. At the end of the program, participants would have an exit instrument that would track the changes in needs, attitudes and beliefs as well as instructional growth. These changes would then be tested against the learning tools chosen. Researchers would be able to ascertain which tools were preferred, which tools were avoided, and which tools were consistent with the greatest growth.

Conclusion

Due to accepting each of the four hypotheses around perceptions of online staff development and learning tools, it can be said that adult learners are able to accurately perceive the value of the learning tool that they will be using. This ability does not differ between large demographic groups of age, gender or experience. Furthermore it can be said that the needs, attitudes and beliefs about distance learning do correlate with the value participants place on the learning tools. Finally, feelings of computer self-efficacy do transfer to distance learning tools. Therefore, in order to provide the best possible experience, online staff development participants should be adequately trained in basic computer skills.

.

APPENDIX A

The Snapshot Survey On Technology in K-12 Education provides educators an opportunity to make their voices heard! Please take a few moments and fill out this survey; make known your uses of and needs for technology in your classroom and school.

This survey runs from September 24 through October 24, 2002.

If you've taken the survey enter your email address

login

Click Here

Take the Snapshot Survey

to take the survey!

This page was made possible by snapshotsurvey.org in conjunction with...

POWERED BY Sun microsystems

hi ce

TCET

Welcome to the survey! The questions are broken up into four sections. The first section is the Research Consent Form. Please read through the information, give your answers and then click the button at the bottom of the page to continue to the next section.

Contact: Jennifer Smolka
Technical Questions: benlevy@mac.com

Research Consent Form

Part One of Four

UNIVERSITY OF NORTH TEXAS COMMITTEE FOR

THE PROTECTION OF HUMAN SUBJECTS

RESEARCH CONSENT FORM

Last 4 Digits of Social Security#:

Title of Study: PARTICIPANT PERCEPTION OF LEARNING TOOLS IN AN ONLINE STAFF DEVELOPMENT PROGRAM

Principal Investigator: Jennifer Smolka (smolka@unt.edu)
Committee Chair: Dr. Cathleen Norris (norris@tac.coe.unt.edu)

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the proposed procedures. It describes the procedures, benefits, risks, and discomforts of the study. It also describes your right to withdraw from the study at any time. It is important for you to understand that no guarantees or assurances can be made as to the results of the study.

Purpose of the study

The purpose of this survey 3 fold. 1) It will provide you individual assessment of your technology skills, needs and beliefs benchmarked against your program and also to the 10,000 other participants of the survey. 2) It will provide grant evaluation information for the TIF Board Grant that funded the TACP. 3) It will build an profile archive of teacher skill level and use of technology.

How long it will last:

The average length of time that it takes someone to complete this survey is 20 minutes. After you have completed this survey, your identifying number (4 digits of social security number) will be used to match you to

your pre-test. Once this is complete, the identifying information will be removed from the data.

Risks or discomforts:

There should be no procedures or elements that may result in discomfort or inconvenience. There are also no foreseeable risks with participating in this survey.

Benefits:

The survey can benefit you by showing how you have progressed in your technology applications professional development activities. In addition, by investigating your answers the researchers will be able to develop distance learning and training opportunities that better suit in service teachers.

Confidentiality:

Your data will **not** be released to the public in a way that individuals can be identified.

Withdrawal from Study:

You understand that you are free to withdraw your consent and discontinue participation in the study at any time without consequences; b) circumstances may develop under which the your participation may be terminated by the Investigator; and c) you will receive significant information developed during the course of the research which may affect their willingness to continue participation.

This research study has been reviewed and approved by the UNT Committee for the Protection of Human Subjects (940) 565-3940.

RESEARCH SUBJECTS[1] RIGHTS: I have read or have had read to me all of the above.

The study has been explained to me and all of my questions answered . I have been told the risks or discomforts and possible benefits of the study.

I understand that I do not have to take part in this study, and my refusal to participate or to withdraw will involve no penalty or loss of rights or benefits or legal recourse to which I am entitled. The study personnel may choose to stop my participation at any time.

In case there are problems or questions, I have been told I can call Jennifer Smolka at telephone number 214-228-7988 or email at smolka@unt.edu .

I understand my rights as a research subject, and I voluntarily consent to participate in this study. I understand what the study is about and how and why it is being done.

Print a copy of this consent for your records before continuing with the survey.

Please check the box to signify that you understand and accept the information described here.

☐ I Agree to Participate in the Evaluation Survey

Clear Answers | Continue To Part Two

The second section or the survey asks you to identify your school district. Please give your answer and then click the button at the bottom of the page to continue to the next section.

Contact: Jennifer Smolka
Technical Questions: benlevy@mac.com

School District

Part Two of Four

Please select your school district:

- ABBOTT ISD
- ABERNATHY ISD
- ABILENE ISD
- ACADEMY ISD
- ACADEMY OF ACCELERATED LEARNING INC
- ACADEMY OF HOUSTON
- ACADEMY OF SKILLS & KNOWLEDGE
- ACADEMY OF TRANSITIONAL STUDIES
- ADRIAN ISD
- AGUA DULCE ISD
- ALAMO HEIGHTS ISD
- ALBA-GOLDEN ISD
- ALBANY ISD
- ALDINE ISD
- ALEDO ISD
- ALICE ISD
- ALIEF ISD
- ALIEF MONTESSORI COMMUNITY SCHOOL
- ALLEN ISD
- ALLISON ISD
- ALPINE ISD
- ALTO ISD
- ALVARADO ISD
- ALVIN ISD
- ALVORD ISD
- AMARILLO ISD
- AMERICAN INSTITUTE FOR LEARNING
- AMHERST ISD
- ANDERSON-SHIRO CONS ISD
- ANDREWS ISD
- ANGLETON ISD
- ANNA ISD
- ANSON ISD
- ANTHONY ISD
- ANTON ISD
- APPLE SPRINGS ISD
- AQUILLA ISD
- ARANSAS COUNTY ISD
- ARANSAS PASS ISD
- ARCHER CITY ISD
- ARGYLE ISD
- ARLINGTON ISD
- ARLINGTON CLASSICS ACADEMY
- ARP ISD
- ASPERMONT ISD
- ATHENS ISD
- ATLANTA ISD
- AUBREY ISD
- AUSTIN ISD
- AUSTWELL-TIVOLI ISD
- AVALON ISD
- AVERY ISD
- AVINGER ISD
- AXTELL ISD
- AZLE ISD
- BAIRD ISD
- BALLINGER ISD
- BALMORHEA ISD
- BANDERA ISD
- BANGS ISD

- BANQUETE ISD
- BARBERS HILL ISD
- BARTLETT ISD
- BASTROP ISD
- BAY CITY ISD
- BEAUMONT ISD
- BECKVILLE ISD
- BEEVILLE ISD
- BELLEVUE ISD
- BELLS ISD
- BELLVILLE ISD
- BELTON ISD
- BEN BOLT-PALITO BLANCO ISD
- BENAVIDES ISD
- BENJAMIN ISD
- BIG SANDY ISD
- BIG SANDY ISD
- BIG SPRING ISD
- BIRDVILLE ISD
- BISHOP CONS ISD
- BLACKWELL CONS ISD
- BLAH ISD
- BLANCO ISD
- BLAND ISD
- BLANKET ISD
- BLESSED SACRAMENT ACAD CHARTER H S
- BLOOMBURG ISD
- BLOOMING GROVE ISD
- BLOOMINGTON ISD
- BLUE RIDGE ISD
- BLUFF DALE ISD
- BLUM ISD
- BOERNE ISD
- BOLES ISD
- BOLING ISD
- BONHAM ISD
- BOOKER ISD
- BORDEN COUNTY ISD
- BORGER ISD
- BOSQUEVILLE ISD
- BOVINA ISD
- BOWIE ISD
- BOYD ISD
- BOYS RANCH ISD
- BRACKETT ISD
- BRADY ISD
- BRAZOS ISD
- BRAZOSPORT ISD
- BRECKENRIDGE ISD
- BREMOND ISD
- BRENHAM ISD
- BRIDGE CITY ISD
- BRIDGEPORT ISD
- BROADDUS ISD
- BROCK ISD
- BRONTE ISD
- BROOKELAND ISD
- BROOKESMITH ISD
- BROOKS ISD
- BROWNFIELD ISD
- BROWNSBORO ISD
- BROWNSVILLE ISD
- BROWNWOOD ISD
- BROWNWOOD SANCTION UNIT ISD
- BROWNWOOD ST HM AND SCH
- BRUCEVILLE-EDDY ISD
- BRYAN ISD
- BRYSON ISD
- BUCKHOLTS ISD
- BUENA VISTA ISD
- BUFFALO ISD
- BUILDING ALTERNATIVES CHARTER
- BULLARD ISD
- BUNA ISD
- BURKBURNETT ISD
- BURKEVILLE ISD
- BURLESON ISD
- BURNET CONS ISD
- BURNHAM WOOD CHARTER SCHOOL
- BURTON ISD
- BUSHLAND ISD
- BYERS ISD
- BYNUM ISD
- CADDO MILLS ISD
- CALALLEN ISD
- CALDWELL ISD
- CALHOUN CO ISD
- CALLISBURG ISD
- CALVERT ISD
- CAMERON ISD
- CAMPBELL ISD
- CANADIAN ISD
- CANTON ISD
- CANUTILLO ISD
- CANYON ISD
- CARLISLE ISD
- CARRIZO SPRINGS CONS ISD
- CARROLL ISD
- CARROLLTON-FARMERS BRANCH ISD

- CARTHAGE ISD
- CASTLEBERRY ISD
- CEDAR HILL ISD
- CEDAR RIDGE CHARTER SCHOOL
- CELESTE ISD
- CELINA ISD
- CENTER ISD
- CENTER POINT ISD
- CENTERVILLE ISD
- CENTERVILLE ISD
- CENTRAL HEIGHTS ISD
- CHANNELVIEW ISD
- CHANNING ISD
- CHAPEL HILL ISD
- CHAPEL HILL ISD
- CHARLOTTE ISD
- CHEROKEE ISD
- CHESTER ISD
- CHICO ISD
- CHILDRESS ISD
- CHILLICOTHE ISD
- CHILTON ISD
- CHINA SPRING ISD
- CHIRENO ISD
- CHISUM ISD
- CHRISTOVAL ISD
- CISCO ISD
- CITY VIEW ISD
- CLARENDON ISD
- CLARKSVILLE ISD
- CLAUDE ISD
- CLEAR CREEK ISD
- CLEBURNE ISD
- CLEVELAND ISD
- CLIFTON ISD
- CLINT ISD
- CLYDE CONS ISD
- COAHOMA ISD
- COASTAL BEND YOUTH CITY
- COLDSPRING-OAKHURST CONS ISD
- COLEMAN ISD
- COLLEGE STATION ISD
- COLLINSVILLE ISD
- COLMESNEIL ISD
- COLORADO ISD
- COLUMBIA-BRAZORIA ISD
- COLUMBUS ISD
- COMAL ISD
- COMANCHE ISD
- COMFORT ISD
- COMMERCE ISD
- COMMUNITY ISD
- COMO-PICKTON CISD
- COMSTOCK ISD
- CONNALLY ISD
- CONROE ISD
- COOLIDGE ISD
- COOPER ISD
- COPPELL ISD
- COPPERAS COVE ISD
- CORPUS CHRISTI ISD
- CORPUS CHRISTI-RICHARD MILBURN ALTER HIGH SCHOOL
- CORRIGAN-CAMDEN ISD
- CORSICANA ISD
- CORSICANA ST HM
- COTTON CENTER ISD
- COTULLA ISD
- COUPLAND ISD
- COVINGTON ISD
- CRANDALL ISD
- CRANE ISD
- CRANFILLS GAP ISD
- CRAWFORD ISD
- CROCKETT CO CONS CSD
- CROCKETT ISD
- CROCKETT ST SCH ISD
- CROSBY ISD
- CROSBYTON ISD
- CROSS PLAINS ISD
- CROSS ROADS ISD
- CROWELL ISD
- CROWLEY ISD
- CRYSTAL CITY ISD
- CUERO ISD
- CULBERSON COUNTY-ALLAMOORE ISD
- CUMBY ISD
- CUSHING ISD
- CYPRESS-FAIRBANKS ISD
- D'HANIS ISD
- DAINGERFIELD-LONE STAR ISD
- DALHART ISD
- DALLAS ISD
- DALLAS CAN! ACADEMY CHARTER
- DALLAS COMMUNITY CHARTER SCHOOL
- DAMON ISD
- DANBURY ISD

- DARROUZETT ISD
- DAWSON ISD
- DAWSON ISD
- DAYTON ISD
- DE LEON ISD
- DECATUR ISD
- DEER PARK ISD
- DEKALB ISD
- DEL VALLE ISD
- DELL CITY ISD
- DENISON ISD
- DENTON ISD
- DENVER CITY ISD
- DESOTO ISD
- DETROIT ISD
- DEVERS ISD
- DEVINE ISD
- DEW ISD
- DEWEYVILLE ISD
- DIBOLL ISD
- DICKINSON ISD
- DILLEY ISD
- DIME BOX ISD
- DIMMITT ISD
- DIVIDE ISD
- DODD CITY ISD
- DONNA ISD
- DOSS CONS CSD
- DOUGLASS ISD
- DRIPPING SPRINGS ISD
- DRISCOLL ISD
- DUBLIN ISD
- DUMAS ISD
- DUNCANVILLE ISD
- EAGLE ADVANTAGE SCHOOL
- EAGLE MT-SAGINAW ISD
- EAGLE PASS ISD
- EANES ISD
- EARLY ISD
- EAST BERNARD ISD
- EAST CENTRAL ISD
- EAST CHAMBERS ISD
- EAST WACO SCHOOL
- EASTLAND ISD
- ECTOR COUNTY ISD
- ECTOR ISD
- ED WHITE SCHOOL OF EDUCATIONAL ENHANCEMENT
- EDCOUCH-ELSA ISD
- EDEN CONS ISD
- EDEN PARK ACADEMY
- EDGEWOOD ISD
- EDGEWOOD ISD
- EDINBURG CISD
- EDNA ISD
- EL CAMPO ISD
- EL PASO ISD
- ELECTRA ISD
- ELKHART ISD
- ELYSIAN FIELDS ISD
- ENNIS ISD
- ERA ISD
- ETOILE ISD
- EULA ISD
- EUSTACE ISD
- EVADALE ISD
- EVANT ISD
- EVERMAN ISD
- EVINS REGIONAL JUVENILE CENTER
- EXCELSIOR ISD
- EZZELL ISD
- FABENS ISD
- FAIRFIELD ISD
- FALLS CITY ISD
- FANNINDEL ISD
- FARMERSVILLE ISD
- FARWELL ISD
- FAYETTEVILLE ISD
- FERRIS ISD
- FLATONIA ISD
- FLORENCE ISD
- FLORESVILLE ISD
- FLOUR BLUFF ISD
- FLOYDADA ISD
- FOLLETT ISD
- FORESTBURG ISD
- FORNEY ISD
- FORSAN ISD
- FORT BEND ISD
- FORT ELLIOTT CONS ISD
- FORT WORTH ISD
- FRANKLIN ISD
- FRANKSTON ISD
- FREDERICKSBURG ISD
- FREER ISD
- FRENSHIP ISD
- FRIENDSWOOD ISD
- FRIONA ISD
- FRISCO ISD
- FROST ISD
- FRUITVALE ISD
- FT DAVIS ISD
- FT HANCOCK ISD
- FT SAM HOUSTON ISD
- FT STOCKTON ISD
- GAINESVILLE ISD

- GAINESVILLE ST SCH ISD
- GALENA PARK ISD
- GALVESTON ISD
- GANADO ISD
- GARLAND ISD
- GARNER ISD
- GARRISON ISD
- GARY ISD
- GATESVILLE ISD
- GAUSE ISD
- GEORGE I. SANCHEZ CHARTER
- GEORGE WEST ISD
- GEORGETOWN ISD
- GHOLSON ISD
- GIDDINGS ISD
- GIDDINGS ST HM AND SCH
- GILMER ISD
- GIRLS & BOYS PREP ACADEMY
- GLADEWATER ISD
- GLASSCOCK COUNTY ISD
- GLEN ROSE ISD
- GODLEY ISD
- GOLD BURG ISD
- GOLDTHWAITE ISD
- GOLIAD ISD
- GONZALES ISD
- GOODRICH ISD
- GOOSE CREEK ISD
- GORDON ISD
- GOREE ISD
- GORMAN ISD
- GRADY ISD
- GRAFORD ISD
- GRAHAM ISD
- GRANBURY ISD
- GRAND PRAIRIE ISD
- GRAND SALINE ISD
- GRANDFALLS-ROYALTY ISD
- GRANDVIEW ISD
- GRANDVIEW-HOPKINS ISD
- GRANGER ISD
- GRAPE CREEK-PULLIAM ISD
- GRAPELAND ISD
- GRAPEVINE-COLLEYVILLE ISD
- GREENVILLE ISD
- GREENWOOD ISD
- GREGORY-PORTLAND ISD
- GROESBECK ISD
- GROOM ISD
- GROVETON ISD
- GRUVER ISD
- GULF COAST TRADES CENTER
- GUNTER ISD
- GUSTINE ISD
- GUTHRIE CSD
- HALE CENTER ISD
- HALLETTSVILLE ISD
- HALLSBURG ISD
- HALLSVILLE ISD
- HAMILTON ISD
- HAMILTON STATE SCHOOL ISD
- HAMLIN ISD
- HAMSHIRE-FANNETT ISD
- HAPPY ISD
- HARDIN ISD
- HARDIN-JEFFERSON ISD
- HARLANDALE ISD
- HARLETON ISD
- HARLINGEN CONS ISD
- HARMONY ISD
- HARPER ISD
- HARRIS COUNTY JUVENILE JUSTICE CHARTER SCHOOL
- HARROLD ISD
- HART ISD
- HARTLEY ISD
- HARTS BLUFF ISD
- HASKELL CISD
- HAWKINS ISD
- HAWLEY ISD
- HAYS CONS ISD
- HEARNE ISD
- HEDLEY ISD
- HEMPHILL ISD
- HEMPSTEAD ISD
- HENDERSON ISD
- HENRIETTA ISD
- HEREFORD ISD
- HERMLEIGH ISD
- HICO ISD
- HIDALGO ISD
- HIGGINS ISD
- HIGGS
- CARTER
- KING GIFTED & TALENTED CHARTER ACAD
- HIGH ISLAND ISD
- HIGHLAND ISD

- HIGHLAND PARK ISD MAILING: 7015
- HIGHLAND PARK ISD
- HILLSBORO ISD
- HITCHCOCK ISD
- HOLLAND ISD
- HOLLIDAY ISD
- HONDO ISD
- HONEY GROVE ISD
- HOOKS ISD
- HOUSTON CAN ACADEMY CHARTER SCHOOL
- HOUSTON ISD
- HOWE ISD
- HUBBARD ISD
- HUBBARD ISD
- HUCKABAY ISD
- HUDSON ISD
- HUFFMAN ISD
- HUGHES SPRINGS ISD
- HULL-DAISETTA ISD
- HUMBLE ISD
- HUNT ISD
- HUNTINGTON ISD
- HUNTSVILLE ISD
- HURST-EULESS-BEDFORD ISD
- HUTTO ISD
- IDALOU ISD
- INDUSTRIAL ISD
- INGLESIDE ISD
- INGRAM ISD
- IOLA ISD
- IOWA PARK CONS ISD
- IRA ISD
- IRAAN-SHEFFIELD ISD
- IREDELL ISD
- IRION CO ISD
- IRVING ISD
- ITALY ISD
- ITASCA ISD
- JACKSBORO ISD
- JACKSONVILLE ISD
- JARRELL ISD
- JASPER ISD
- JAYTON-GIRARD ISD
- JEFFERSON COUNTY STATE SCHOOL
- JEFFERSON ISD
- JIM HOGG COUNTY ISD
- JIM NED CONS ISD
- JOAQUIN ISD
- JOHNSON CITY ISD
- JONESBORO ISD
- JOSHUA ISD
- JOURDANTON ISD
- JUDSON ISD
- JUNCTION ISD
- KARNACK ISD
- KARNES CITY ISD
- KATY ISD
- KAUFMAN ISD
- KEENE ISD
- KELLER ISD
- KELTON ISD
- KEMP ISD
- KENDLETON ISD
- KENEDY COUNTY WIDE CSD
- KENEDY ISD
- KENNARD ISD
- KENNEDALE ISD
- KERENS ISD
- KERMIT ISD
- KERRVILLE ISD
- KILGORE ISD
- KILLEEN ISD
- KILLEEN-RICHARD MILBURN ALTER HIGH SCHOOL
- KINGSVILLE ISD
- KIPP INC CHARTER
- KIRBYVILLE ISD
- KLEIN ISD
- KLONDIKE ISD
- KNIPPA ISD
- KNOX CITY-O'BRIEN ISD
- KOPPERL ISD
- KOUNTZE ISD
- KRESS ISD
- KRUM ISD
- LA FERIA ISD
- LA GLORIA ISD
- LA GRANGE ISD
- LA JOYA ISD
- LA MARQUE ISD
- LA PORTE ISD
- LA POYNOR ISD
- LA PRYOR ISD
- LA VEGA ISD
- LA VERNIA ISD
- LA VILLA ISD
- LACKLAND ISD
- LAGO VISTA ISD
- LAKE DALLAS ISD
- LAKE TRAVIS ISD

- LAKE WORTH ISD
- LAKEVIEW ISD
- LAMAR CONSOLIDATED ISD
- LAMESA ISD
- LAMPASAS ISD
- LANCASTER ISD
- LANEVILLE ISD
- LAREDO ISD
- LASARA ISD
- LATEXO ISD
- LAZBUDDIE ISD
- LEAKEY ISD
- LEANDER ISD
- LEARY ISD
- LEFORS ISD
- LEGGETT ISD
- LEON ISD
- LEONARD ISD
- LEVELLAND ISD
- LEVERETTS CHAPEL ISD
- LEWISVILLE ISD
- LEXINGTON ISD
- LIBERTY HILL ISD
- LIBERTY ISD
- LIBERTY-EYLAU ISD
- LIFE CHARTER SCHOOLS OF OAK CLIFF
- LINDALE ISD
- LINDEN-KILDARE CONS ISD
- LINDSAY ISD
- LINGLEVILLE ISD
- LIPAN ISD
- LIT CYPRESS-MRCEVILLE ISD
- LITTLE ELM ISD
- LITTLEFIELD ISD
- LIVINGSTON ISD
- LLANO ISD
- LOCKHART ISD
- LOCKNEY ISD
- LOHN ISD
- LOMETA ISD
- LONDON ISD
- LONE OAK ISD
- LONGVIEW ISD
- LOOP ISD
- LORAINE ISD
- LORENA ISD
- LORENZO ISD
- LOS FRESNOS CONS ISD
- LOUISE ISD
- LOVEJOY ISD
- LOVELADY ISD
- LUBBOCK ISD
- LUBBOCK-COOPER ISD
- LUBBOCK-RICHARD MILBURN ALTER HIGH SCHOOL
- LUEDERS-AVOCA ISD
- LUFKIN ISD
- LULING ISD
- LUMBERTON ISD
- LYFORD CISD
- LYTLE ISD
- MABANK ISD
- MADISONVILLE CONS ISD
- MAGNOLIA ISD
- MAINLAND PREPARATORY ACADEMY
- MALAKOFF ISD
- MALONE ISD
- MALTA ISD
- MANOR ISD
- MANSFIELD ISD
- MARATHON ISD
- MARBLE FALLS ISD
- MARFA ISD
- MARIETTA ISD
- MARION ISD
- MARLIN ISD
- MARSHALL ISD
- MART ISD
- MARTINS MILL ISD
- MARTINSVILLE ISD
- MASON ISD
- MASONIC HOME ISD
- MATAGORDA ISD
- MATHIS ISD
- MAUD ISD
- MAY ISD
- MAYPEARL ISD
- MCALLEN ISD
- MCCAMEY ISD
- MCDADE ISD
- MCGREGOR ISD
- MCKINNEY ISD
- MCLEAN ISD
- MCLEOD ISD
- MCMULLEN COUNTY ISD
- MEADOW ISD
- MEDICAL CENTER CHARTER SCHOOL
- MEDINA ISD
- MEDINA VALLEY ISD
- MEGARGEL ISD
- MELISSA ISD
- MEMPHIS ISD
- MENARD ISD

MELISSA ISD | MEMPHIS ISD | MENARD ISD

- MERCEDES ISD
- MERIDIAN ISD
- MERKEL ISD
- MESQUITE ISD
- MEXIA ISD
- MEYERSVILLE ISD
- MIAMI ISD
- MIDLAND ISD
- MIDLAND-RICHARD MILBURN ALTER HIGH SCHOOL
- MIDLOTHIAN ISD
- MIDWAY ISD
- MIDWAY ISD
- MILANO ISD
- MILDRED ISD
- MILES ISD
- MILFORD ISD
- MILLER GROVE ISD
- MILLSAP ISD
- MINEOLA ISD
- MINERAL WELLS ISD
- MIRANDO CITY ISD
- MISSION CONS ISD
- MONAHANS-WICKETT-PYOTE ISD
- MONTAGUE ISD
- MONTE ALTO ISD
- MONTGOMERY ISD
- MOODY ISD
- MOODY ISD
- MORAN ISD
- MORGAN ISD
- MORGAN MILL ISD
- MORTON ISD
- MOTLEY COUNTY ISD
- MOULTON ISD
- MOUNT CALM ISD
- MOUNT ENTERPRISE ISD
- MOUNT PLEASANT ISD
- MOUNT VERNON ISD
- MUENSTER ISD
- MULESHOE ISD
- MULLIN ISD
- MUMFORD ISD
- MUNDAY ISD
- MURCHISON ISD
- NACOGDOCHES ISD
- NANCY NEY CHARTER SCHOOL
- NATALIA ISD
- NAVARRO ISD
- NAVASOTA ISD
- NAZARETH ISD
- NECHES ISD
- NEDERLAND ISD
- NEEDVILLE ISD
- NEW BOSTON ISD
- NEW BRAUNFELS ISD
- NEW CANEY ISD
- NEW DEAL ISD
- NEW DIANA ISD
- NEW HOME ISD
- NEW SUMMERFIELD ISD
- NEW WAVERLY ISD
- NEWCASTLE ISD
- NEWTON ISD
- NIXON-SMILEY CONS ISD
- NOCONA ISD
- NORDHEIM ISD
- NORMANGEE ISD
- NORTH EAST ISD
- NORTH FOREST ISD
- NORTH HOPKINS ISD
- NORTH LAMAR ISD
- NORTH ZULCH ISD
- NORTHSIDE ISD
- NORTHSIDE ISD
- NORTHWEST ISD
- NOVICE ISD
- NUECES CANYON CONS ISD
- NURSERY ISD
- NYOS CHARTER SCHOOL
- O'DONNELL ISD
- OAKWOOD ISD
- ODEM-EDROY ISD
- OGLESBY ISD
- OLFEN ISD
- OLNEY ISD
- OLTON ISD
- ONALASKA ISD
- ONE-STOP MULTISERVICE CHARTER SCHOOL
- ORANGE GROVE ISD
- ORANGEFIELD ISD
- ORE CITY ISD
- OVERTON ISD
- PADUCAH ISD
- PAINT CREEK ISD
- PAINT ROCK ISD
- PALACIOS ISD
- PALESTINE ISD
- PALMER ISD
- PALO PINTO ISD

- PAMPA ISD
- PANHANDLE ISD
- PANTHER CREEK CONS ISD
- PARADISE ISD
- PARIS ISD
- PASADENA ISD
- PATTON SPRINGS ISD
- PAWNEE ISD
- PEARLAND ISD
- PEARSALL ISD
- PEASTER ISD
- PECOS-BARSTOW-TOYAH ISD
- PEGASUS CHARTER SCHOOL
- PENELOPE ISD
- PERRIN-WHITT CONS ISD
- PERRYTON ISD
- PETERSBURG ISD
- PETROLIA ISD
- PETTUS ISD
- PEWITT ISD
- PFLUGERVILLE ISD
- PHARR-SAN JUAN-ALAMO ISD
- PILOT POINT ISD
- PINE TREE ISD
- PITTSBURG ISD
- PLAINS ISD
- PLAINVIEW ISD
- PLANO ISD
- PLEASANT GROVE ISD
- PLEASANTON ISD
- PLEMONS-STINNETT-PHILLIPS CONS ISD
- POINT ISABEL ISD
- PONDER ISD
- POOLVILLE ISD
- PORT ARANSAS ISD
- PORT ARTHUR ISD
- PORT NECHES-GROVES ISD
- POST ISD
- POTEET ISD
- POTH ISD
- POTTSBORO ISD
- PRAIRIE LEA ISD
- PRAIRIE VALLEY ISD
- PRAIRILAND ISD
- PREMONT ISD
- PRESIDIO ISD
- PRIDDY ISD
- PRINCETON ISD
- PRINGLE-MORSE CONS ISD
- PROGRESO ISD
- PROSPER ISD
- QUANAH ISD
- QUEEN CITY ISD
- QUINLAN ISD
- QUITMAN ISD
- RAINS ISD
- RALLS ISD
- RAMESES SCHOOL
- RAMIREZ CSD
- RANDOLPH FIELD ISD
- RANGER ISD
- RANKIN ISD
- RAUL YZAGUIRRE SCHOOL FOR SUCCESS
- RAYMONDVILLE ISD
- REAGAN COUNTY ISD
- RED LICK ISD
- RED OAK ISD
- REDWATER ISD
- REFUGIO ISD
- RENAISSANCE CHARTER SCHOOL
- RICARDO ISD
- RICE CONS ISD
- RICE ISD
- RICHARDS ISD
- RICHARDSON ISD
- RICHLAND SPRINGS ISD
- RIESEL ISD
- RIO GRANDE CITY ISD
- RIO HONDO ISD
- RIO VISTA ISD
- RISING STAR ISD
- RIVERCREST ISD
- RIVER ROAD ISD
- RIVIERA ISD
- ROBERT LEE ISD
- ROBINSON ISD
- ROBSTOWN ISD
- ROBY CONS ISD
- ROCHELLE ISD
- ROCHESTER ISD
- ROCKDALE ISD
- ROCKSPRINGS ISD
- ROCKWALL ISD
- ROGERS ISD
- ROMA ISD
- ROOSEVELT ISD
- ROPES ISD
- ROSCOE ISD
- ROSEBUD-LOTT ISD
- ROTAN ISD
- ROUND ROCK ISD
- ROUND TOP-CARMINE ISD

- ROXTON ISD
- ROYAL ISD
- ROYSE CITY ISD
- RULE ISD
- RUNGE ISD
- RUSK ISD
- S AND S CONS ISD
- SABINAL ISD
- SABINE ISD
- SABINE PASS ISD
- SAINT JO ISD
- SALADO ISD
- SALTILLO ISD
- SAM RAYBURN ISD
- SAMNORWOOD ISD
- SAN ANGELO ISD
- SAN ANTONIO ADVANTAGE CHARTER SCHOOL
- SAN ANTONIO ISD
- SAN AUGUSTINE ISD
- SAN BENITO CONS ISD
- SAN DIEGO ISD
- SAN ELIZARIO ISD
- SAN FELIPE-DEL RIO CONS ISD
- SAN ISIDRO ISD
- SAN MARCOS CONS ISD
- SAN PERLITA ISD
- SAN SABA ISD
- SAN SABA STATE SCHOOL
- SAN VICENTE ISD
- SANDS ISD
- SANFORD ISD
- SANGER ISD
- SANTA ANNA ISD
- SANTA FE ISD
- SANTA GERTRUDIS ISD
- SANTA MARIA ISD
- SANTA ROSA ISD
- SANTO ISD
- SAVOY ISD
- SCHERTZ-CIBOLO-U CITY ISD
- SCHLEICHER ISD
- SCHOOL OF EXCELLENCE IN EDUCATION
- SCHULENBURG ISD
- SCURRY-ROSSER ISD
- SEAGRAVES ISD
- SEALY ISD
- SEASHORE LEARNING CENTER CHARTER
- SEGUIN ISD
- SEMINOLE ISD
- SER-NINOS CHARTER SCHOOL
- SEYMOUR ISD
- SHALLOWATER ISD
- SHAMROCK ISD
- SHARYLAND ISD
- SHELBYVILLE ISD
- SHELDON ISD
- SHEPHERD ISD
- SHERMAN ISD
- SHINER ISD
- SIDNEY ISD
- SIERRA BLANCA ISD
- SILSBEE ISD
- SILVERTON ISD
- SIMMS ISD
- SINTON ISD
- SIVELLS BEND ISD
- SKIDMORE-TYNAN ISD
- SLATON ISD
- SLIDELL ISD
- SLOCUM ISD
- SMITHVILLE ISD
- SMYER ISD
- SNOOK ISD
- SNYDER ISD
- SOCORRO ISD
- SOMERSET ISD
- SOMERVILLE ISD
- SONORA ISD
- SOUTH SAN ANTONIO ISD
- SOUTH TEXAS ISD
- SOUTHLAND ISD
- SOUTHSIDE ISD
- SOUTHWEST ISD
- SOUTHWEST PREPARATORY SCHOOL
- SPADE ISD
- SPEARMAN ISD
- SPLENDORA ISD
- SPRING BRANCH ISD
- SPRING CREEK ISD
- SPRING HILL ISD
- SPRING ISD
- SPRINGLAKE-EARTH ISD
- SPRINGTOWN ISD
- SPUR ISD
- SPURGER ISD
- STAFFORD MSD
- STAMFORD ISD
- STANTON ISD
- STAR ISD

- STAMFORD ISD
- STANTON ISD
- STAR ISD
- STEPHENVILLE ISD
- STERLING CITY ISD
- STOCKDALE ISD
- STRATFORD ISD
- STRAWN ISD
- SUDAN ISD
- SULPHUR BLUFF ISD
- SULPHUR SPRINGS ISD
- SUNDOWN ISD
- SUNNYVALE ISD
- SUNRAY ISD
- SWEENY ISD
- SWEET HOME ISD
- SWEETWATER ISD
- T Y C ORIENTATION & ASSESSMENT CTR
- TAFT ISD
- TAHOKA ISD
- TARKINGTON ISD
- TATUM ISD
- TAYLOR ISD
- TEAGUE ISD
- TECHNOLOGY EDUCATION CHARTER HIGH SCHOOL
- TEMPLE ISD
- TENAHA ISD
- TERLINGUA CSD
- TERRELL COUNTY ISD
- TERRELL ISD
- TEXARKANA ISD
- TEXAS ACADEMY OF EXCELLENCE
- TEXAS ACADEMY OF LEADERSHIP IN HUMANITIES
- TEXAS CITY ISD
- TEXAS EMPOWERMENT ACADEMY
- TEXAS SCH FOR THE BLIND
- TEXAS SCH FOR THE DEAF
- TEXHOMA ISD
- TEXLINE ISD
- THE EDUCATIONAL RESOURCE CENTER CHARTER SCHOOL
- THE ENCINO SCHOOL
- THE GABRIEL TAFOLLA CHARTER SCHOOL
- THE NORTH HILLS SCHOOL
- THE UNIVERSITY CHARTER SCHOOL
- THORNDALE ISD
- THRALL ISD
- THREE RIVERS ISD
- THREE WAY ISD
- THREE WAY ISD
- THROCKMORTON ISD
- TIDEHAVEN ISD
- TIMPSON ISD
- TIOGA ISD
- TOLAR ISD
- TOM BEAN ISD
- TOMBALL ISD
- TORNILLO ISD
- TRANSFORMATIVE CHARTER ACADEMY
- TREETOPS SCHOOL INTERNATIONAL
- TRENT ISD
- TRENTON ISD
- TRINIDAD ISD
- TRINITY ISD
- TROUP ISD
- TROY ISD
- TULIA ISD
- TULOSO-MIDWAY ISD
- TURKEY-QUITAQUE ISD
- TYLER ISD
- UNION GROVE ISD
- UNION HILL ISD
- UNITED ISD
- UNIV OF HOUSTON CHARTER SCH-TECH
- UNIVERSAL ACADEMY
- UTOPIA ISD
- UVALDE CONS ISD
- VALENTINE ISD
- VALLEY MILLS ISD
- VALLEY VIEW ISD
- VALLEY VIEW ISD
- VAN ALSTYNE ISD
- VAN ISD
- VAN VLECK ISD
- VEGA ISD
- VENUS ISD
- VERIBEST ISD
- VERNON ISD
- VICTORIA ISD
- VICTORY FIELD CORRECTIONAL ACAD
- VIDOR ISD
- VYSEHRAD ISD
- WACO CHARTER SCHOOL
- WACO ISD
- WALKER ISD
- WALLACE ISD
- WALLIS ISD

- WAELDER ISD
- WALCOTT ISD
- WALL ISD
- WALLER ISD
- WALNUT BEND ISD
- WALNUT SPRINGS ISD
- WARREN ISD
- WASKOM ISD
- WATER VALLEY ISD
- WAXAHACHIE ISD
- WEATHERFORD ISD
- WEBB CONS ISD
- WEIMAR ISD
- WELLINGTON ISD
- WELLMAN-UNION CONS ISD
- WELLS ISD
- WESLACO ISD
- WEST HARDIN COUNTY CONS ISD
- WEST HOUSTON CHARTER SCHOOL
- WEST ISD
- WEST OAK CLIFF CHARTER SCHOOL
- WEST ORANGE-COVE CONS ISD
- WEST OSO ISD
- WEST RUSK ISD
- WEST SABINE ISD
- WEST TEXAS STATE SCHOOL ISD
- WESTBROOK ISD
- WESTHOFF ISD
- WESTPHALIA ISD
- WESTWOOD ISD
- WHARTON ISD
- WHEELER ISD
- WHITE DEER ISD
- WHITE OAK ISD
- WHITE SETTLEMENT ISD
- WHITEFACE CONS ISD
- WHITEHOUSE ISD
- WHITESBORO ISD
- WHITEWRIGHT ISD
- WHITHARRAL ISD
- WHITNEY ISD
- WICHITA FALLS ISD
- WILDORADO ISD
- WILLIS ISD
- WILLS POINT ISD
- WILMER-HUTCHINS ISD
- WILSON ISD
- WIMBERLEY ISD
- WINDHAM SCHOOLS
- WINDTHORST ISD
- WINFIELD ISD
- WINK-LOVING ISD
- WINNSBORO ISD
- WINONA ISD
- WINTERS ISD
- WODEN ISD
- WOLFE CITY ISD
- WOODSBORO ISD
- WOODSON ISD
- WOODVILLE ISD
- WORTHAM ISD
- WYLIE ISD
- WYLIE ISD
- WYNDAM CHARTER SCHOOL
- YANTIS ISD
- YOAKUM ISD
- YORKTOWN ISD
- YSLETA ISD
- ZAPATA COUNTY ISD
- ZAVALLA ISD
- ZEPHYR ISD
- Testing

Clear Answers | Continue To Part Three

The third section asks about who you are and what your role is in education. Please give answers to each of the questions and then click the button at the bottom of the page to continue to the next section. If a particular question does not apply to your current position, please leave the question blank.

Contact: Jennifer Smolka
Technical Questions: benlevy@mac.com

Demographics

Part Three of Four

Please enter your campus name. (i.e. *Smith Elementary*)

Your answer:

What best describes your current position?

○ Classroom Teacher ○ Campus Administrator
○ District Administrator ○ Other

If other, please enter your current position.

Your answer:

If you are a teacher, what best describes your assignment?

○ Elementary	○ Language Arts	○ Math
○ Foreign Language	○ Social Studies	○ Science
○ Computer Science	○ Industrial Technology	○ Business
○ Music	○ PE/Health	○ Art
○ Special Education	○ Teacher on Special Assignment	○ Technology Applications

What is your degree status at this time?

○ BA/BS ○ BA/BS+15 ○ Masters ○ Masters+15 ○ Masters+30 ○ CAS ○ Doctorate

What best describes your grade level assignment:

○ Pre-K ○ Elementary ○ K-8 ○ K-12 ○ Middle School ○ High School ○ Post-Secondary

What best describes your grade level assignment; check all that apply:

☐ Pre-K ☐ K ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ post-secondary

How many years have you worked in education?

○ 1-5 yrs ○ 6-10 yrs ○ 11-15 yrs ○ 16-20 yrs ○ more than 20 yrs

What is your age?

○ 20-25 ○ 26-30 ○ 31-35 ○ 36-40 ○ 41-45 ○ 46-50

○ 51-55 ○ 56-60 ○ 61-65 ○ 66-70 ○ 71-75 ○ >75

What is your gender?

○ male ○ female

What computing platform do you use at home?

○ Mac ○ PC

What computing platform do you use at school?

○ Mac ○ PC

Clear Answers | Continue To Part Four

PRE-TEST Survey Questions

The final part of the survey asks questions about the role of technology in your school or classroom. Again, please fill out all the questions and then click the "finish" button at the bottom of the page. If a particular question does not apply to your current position, please leave the question blank.

Contact: Jennifer Smolka
Technical Questions: benlevy@mac.com

Part Three of Three

When my students use the Internet for my course assignments:

Please rate the following from 1 to 5, where 1 means "Strongly Disagree" and 5 means "Strongly Agree."	Strongly Disagree 1	2	3	4	Strongly Agree 5
Students create products that show higher levels of learning	○	○	○	○	○
There are more discipline problems in my room	○	○	○	○	○
Students are more motivated	○	○	○	○	○
It has a positive impact on my students' learning	○	○	○	○	○
Students increase their use of a variety of resources (books, periodicals, interviews, etc.)	○	○	○	○	○
The role of the teacher becomes more of a guide or coach	○	○	○	○	○
Students often get into inappropriate sites	○	○	○	○	○
Plagiarism becomes more of a problem	○	○	○	○	○
Students become more responsible for their learning	○	○	○	○	○
Students collaborate more with each other	○	○	○	○	○

What is the availability of an Internet-connected computer for your use at home?

○ There is no computer available ○ An available computer is not convenient

○ An available computer is convenient

If you have an Internet-connected computer at home, what type of Internet connection do you use?

○ Dial-Up (under 28.8k) ○ Dial-Up (28.8k - 56k) ○ ISDN ○ DSL

○ Cable Modem ○ T1 or faster ○ Unsure

Which of the following do you need to make technology a more integral part of your school or classroom's curricular activities?

Please rate the following from 1 to 5, where 1 means "less urgent" and 5 means "more urgent."	less urgent 1	2	3	4	more urgent 5
Need more time to learn to use computers and the Internet	○	○	○	○	○
Need more time to change the curriculum to better incorporate the technology	○	○	○	○	○
Need more training with curriculum and pedagogy that integrates technology	○	○	○	○	○
Need access to more computers for my students	○	○	○	○	○
Need more access to the Internet for my students	○	○	○	○	○

Need more software that is curricular-based	○	○	○	○	○
Need more technical support to keep the computers working	○	○	○	○	○
Need more opportunities to work with colleagues to become more proficient using technology-enhanced curriculum units	○	○	○	○	○
Need more compelling reasons why I should incorporate technology into the classroom	○	○	○	○	○
Need faster access to the Internet for my students	○	○	○	○	○
Need access to faster, more powerful computers for my students	○	○	○	○	○

What is the availability of an Internet-connected computer for your use at work?

○ There is no computer available ○ An available computer is not convenient

○ An available computer is convenient

Please indicate the number of typical (or average) minutes PER WEEK that:

	zero	less than 15	15-45	46-90	more than 90
YOU use the Internet at school	○	○	○	○	○
YOU use the Internet at home	○	○	○	○	○
A typical student would use a computer (but not Internet) for curricular purposes in YOUR class	○	○	○	○	○
A typical student would use the Internet for curricular purposes in YOUR class	○	○	○	○	○

If my district offered professional development activities delivered via the Internet, I would use them.

○ Strongly Disagree ○ Disagree ○ No Opinion ○ Agree ○ Strongly Agree

What specific topic would you like to have a professional development training session address?

Your answer:

What is the availability of Internet-connected computers for your STUDENTS in your classroom?

○ 0 Internet-connected computers ○ 1 Internet-connected computer

○ 2-5 Internet-connected computers ○ 6-10 Internet-connected computers

○ More than 10 Internet-connected computers

Complete this sentence: "With respect to using the Internet, I feel I...

○ am much less skilled than the students."

○ am less skilled than the students."

○ have about the same skill level as the students."

○ am more skilled than the students."

○ am much more skilled than the students."

What is the availability of an Internet-connected computer lab for your students?

○ Never ○ Seldom ○ 1 time per week ○ 2 times per week ○ 3 or more times per week

Please indicate your level of agreement with the following statements:

Please rate the following from 1 to 5, where 1 means "Strongly Disagree" and 5 means "Strongly Agree."	Strongly Disagree 1	2	3	4	Strongly Agree 5
I believe that electronic media will replace textbooks within 5 years	○	○	○	○	○
I believe the positive effects of computer use on my students outweigh any negative effects such use might have	○	○	○	○	○
I believe that the role of schools will be dramatically changed because of the Internet within 5 years	○	○	○	○	○
I believe that the role of the teacher will be dramatically changed because of the Internet within 5 years	○	○	○	○	○
I believe that the emerging palm-sized computing devices have more of a chance to significantly impact K-12 teaching and learning than do personal computers	○	○	○	○	○
I believe that I am a better educator when I use technology for my work	○	○	○	○	○
I believe that the teachers in my school or district are more effective when they use technology	○	○	○	○	○
I believe that having students search the Internet for information for a classroom assignment is time well spent	○	○	○	○	○

Which of the following types of software are used in your classroom?

	NOT used	Used
Word processors (e.g., Microsoft Word, ClarisWorks, AppleWorks)	○	○
Office Productivity Tools: Spreadsheets (Excel, ClarisWorks) or Databases (FileMaker, ClarisWorks) or Presentation programs (PowerPoint, ClarisWorks)	○	○
Tools (e.g., KidPix, Inspiration, HyperStudio)	○	○
Non-curricular Software (e.g., Solitaire, PacMan, other games)	○	○
Curricular-based Software (e.g., MathBlasters; Carmen SanDiego; Logical World of the Zoombinies; ScienceSleuth; Choices, Choices; Oregon Trail)	○	○
Teacher developed web pages authored especially for a particular topic or lesson	○	○
Internet search engines (e.g., Yahoo, Yahooligans, Lycos)	○	○
Internet web page authoring (e.g., Dreamweaver, HomePage, FrontPage, PageMill)	○	○

Where do you get information about teaching with technology?

Please rate the following from 1 to 5, where 1 means "no info from" and 5 means "most info from."	no info from 1	2	3	4	most info from 5
Conferences	○	○	○	○	○
Research Journals	○	○	○	○	○
Peers/Colleagues	○	○	○	○	○
School Resource People (e.g. tech coordinator, curric coordinator, media specialist)	○	○	○	○	○
Teacher Magazines	○	○	○	○	○
Internet Websites	○	○	○	○	○
In-District Training	○	○	○	○	○
Your Own Reading and Exploration	○	○	○	○	○
Your Students	○	○	○	○	○
Consultants or Trainers	○	○	○	○	○

What was the focus of your most recent technology-related professional development activity?

Your answer:

I feel confident that I could[1]:

Please rate the following from 1 to 5, where 1 means "Strongly Disagree" and 5 means "Strongly Agree."	Strongly Disagree 1	2	3	4	Strongly Agree 5
Send e-mail to a friend.	○	○	○	○	○
Subscribe to a discussion list.	○	○	○	○	○
Create a "nickname" or an "alias" to send e-mail to several people at once.	○	○	○	○	○
Send a document as an attachment to an e-mail message.	○	○	○	○	○
Keep copies of outgoing messages that I send to others.	○	○	○	○	○
Use an Internet search engine (e.g., Infoseek or Alta Vista) to find Web pages related to my subject matter interests.	○	○	○	○	○
Search for and find the Smithsonian Institution Web Site.	○	○	○	○	○
Create my own World Wide Web home page.	○	○	○	○	○
Keep track of Web sites I have visited so that I can return to them later. (An example is using bookmarks.)	○	○	○	○	○
Find primary sources of information on the Internet that I can use in my teaching.	○	○	○	○	○
Use a spreadsheet to create a pie chart of the proportions of the different colors of M&Ms in a bag.	○	○	○	○	○
Create a newsletter with graphics and text in 3 columns.	○	○	○	○	○
Save documents in formats so that others can read them if they have different word processing programs (e.g., saving Word, ClarisWords, RTF, or text).	○	○	○	○	○
Use the computer to create a slideshow presentation.	○	○	○	○	○
Create a database of information about important authors in a subject matter field.	○	○	○	○	○
Write an essay describing how I would use technology in my classroom.	○	○	○	○	○
Create a lesson or unit that incorporates subject matter software as an integral part.	○	○	○	○	○
Use technology to collaborate with other interns, teachers, or students who are distant from my classroom.	○	○	○	○	○
Describe 5 software programs that I would use in my teaching.	○	○	○	○	○
Write a plan with a budget to buy technology for my classroom.	○	○	○	○	○

Please read the descriptions of each of the six stages related to adoption of technology. Choose the stage that best describes where you are in the adoption of technology[2].

Stage 1: Awareness

○ I am aware that technology exists but have not used it - perhaps I'm even avoiding it. I am anxious about the prospect of using computers.

Stage 2: Learning the process

○ I am currently trying to learn the basics. I am sometimes frustrated using computers. I lack confidence when using computers.

Stage 3: Understanding and application of the process

○ I am beginning to understand the process of using technology and can think of specific tasks in which it might be useful.

Stage 4: Familiarity and confidence

- I am gaining a sense of confidence in using the computer for specific tasks. I am starting to feel comfortable using the computer.

Stage 5: Adaptation to other contexts

- I think about the computer as a tool to help me and am no longer concerned about it as technology. I can use it in many applications and as an instructional aid.

Stage 6: Creative application to new contexts

- I can apply what I know about technology in the classroom. I am able to use it as an instructional tool and integrate it into the curriculum.

In this unique program, we are combining online tools, face-to-face tools and self-study. In the coming semesters you will be given many different ways to learn the content related to Technology Applications. Based on your previous experiences which of these tools do you feel will have the most value on your future learning.

Please rate the following from 1 to 5, where 1 means "No Value" and 5 means "Essential."	No Value 1	2	3	4	Essential 5
Textbook Readings	○	○	○	○	○
Hands-On Activities	○	○	○	○	○
ADAM Modules (Video & Audio on CD-ROM)	○	○	○	○	○
Guest Speaker	○	○	○	○	○
Instruction from CFM	○	○	○	○	○
Directed Website Visits	○	○	○	○	○
Web Searches	○	○	○	○	○
Online Discussion Boards (Asynchronous)	○	○	○	○	○
Face-to-face Instruction	○	○	○	○	○
Projects	○	○	○	○	○
Small Group Collaboration	○	○	○	○	○
Assignment Rubrics	○	○	○	○	○
Downloadable Audio Only Files	○	○	○	○	○
Awareness of the Objectives	○	○	○	○	○
Exams	○	○	○	○	○

Please enter the last four digits of your social security number.

Your answer:

Clear Answers | Finish

1 - modified from the TPSA developed by Dr. Meg Ropp
2 - Stages of Adoption developed by Dr. Rhonda Christensen, University of North Texas

POST-TEST Survey Questions

The final part of the survey asks questions about the role of technology in your school or classroom. Again, please fill out all the questions and then click the "finish" button at the bottom of the page. If a particular question does not apply to your current position, please leave the question blank.

Contact: Jennifer Smolka
Technical Questions: benlevy@mac.com

Part Four of Four

When my students use the Internet for my course assignments:

Please rate the following from 1 to 5, where 1 means "Strongly Disagree" and 5 means "Strongly Agree."	Strongly Disagree 1	2	3	4	Strongly Agree 5
Students create products that show higher levels of learning	○	○	○	○	○
There are more discipline problems in my room	○	○	○	○	○
Students are more motivated	○	○	○	○	○
It has a positive impact on my students' learning	○	○	○	○	○
Students increase their use of a variety of resources (books, periodicals, interviews, etc.)	○	○	○	○	○
The role of the teacher becomes more of a guide or coach	○	○	○	○	○
Students often get into inappropriate sites	○	○	○	○	○
Plagiarism becomes more of a problem	○	○	○	○	○
Students become more responsible for their learning	○	○	○	○	○
Students collaborate more with each other	○	○	○	○	○

What is the availability of an Internet-connected computer for your use at home?

○ There is no computer available ○ An available computer is not convenient

○ An available computer is convenient

If you have an Internet-connected computer at home, what type of Internet connection do you use?

○ Dial-Up (under 28.8k) ○ Dial-Up (28.8k - 56k) ○ ISDN ○ DSL

○ Cable Modem ○ T1 or faster ○ Unsure

Which of the following do you need to make technology a more integral part of your school or classroom's curricular activities?

Please rate the following from 1 to 5, where 1 means "less urgent" and 5 means "more urgent."	less urgent 1	2	3	4	more urgent 5
Need more time to learn to use computers and the Internet	○	○	○	○	○
Need more time to change the curriculum to better incorporate the technology	○	○	○	○	○
Need more training with curriculum and pedagogy that integrates technology	○	○	○	○	○
Need access to more computers for my students	○	○	○	○	○
Need more access to the Internet for my students	○	○	○	○	○

Need more software that is curricular-based	○	○	○	○	○
Need more technical support to keep the computers working	○	○	○	○	○
Need more opportunities to work with colleagues to become more proficient using technology-enhanced curriculum units	○	○	○	○	○
Need more compelling reasons why I should incorporate technology into the classroom	○	○	○	○	○
Need faster access to the Internet for my students	○	○	○	○	○
Need access to faster, more powerful computers for my students	○	○	○	○	○

What is the availability of an Internet-connected computer for your use at work?

○ There is no computer available ○ An available computer is not convenient

○ An available computer is convenient

Please indicate the number of typical (or average) minutes PER WEEK that:

	zero	less than 15	15-45	46-90	more than 90
YOU use the Internet at school	○	○	○	○	○
YOU use the Internet at home	○	○	○	○	○
A typical student would use a computer (but not Internet) for curricular purposes in YOUR class	○	○	○	○	○
A typical student would use the Internet for curricular purposes in YOUR class	○	○	○	○	○

If my district offered professional development activities delivered via the Internet, I would use them.

○ Strongly Disagree ○ Disagree ○ No Opinion ○ Agree ○ Strongly Agree

What specific topic would you like to have a professional development training session address?

Your answer:

What is the availability of Internet-connected computers for your STUDENTS in your classroom?

○ 0 Internet-connected computers ○ 1 Internet-connected computer

○ 2-5 Internet-connected computers ○ 6-10 Internet-connected computers

○ More than 10 Internet-connected computers

Complete this sentence: "With respect to using the Internet, I feel I...

○ am much less skilled than the students."

○ am less skilled than the students."

○ have about the same skill level as the students."

○ am more skilled than the students."

○ am much more skilled than the students."

What is the availability of an Internet-connected computer lab for your students?

○ Never ○ Seldom ○ 1 time per week ○ 2 times per week ○ 3 or more times per week

Please indicate your level of agreement with the following statements:

Please rate the following from 1 to 5, where 1 means "Strongly Disagree" and 5 means "Strongly Agree."	Strongly Disagree 1	2	3	4	Strongly Agree 5
I believe that electronic media will replace textbooks within 5 years	○	○	○	○	○
I believe the positive effects of computer use on my students outweigh any negative effects such use might have	○	○	○	○	○
I believe that the role of schools will be dramatically changed because of the Internet within 5 years	○	○	○	○	○
I believe that the role of the teacher will be dramatically changed because of the Internet within 5 years	○	○	○	○	○
I believe that the emerging palm-sized computing devices have more of a chance to significantly impact K-12 teaching and learning than do personal computers	○	○	○	○	○
I believe that I am a better educator when I use technology for my work	○	○	○	○	○
I believe that the teachers in my school or district are more effective when they use technology	○	○	○	○	○
I believe that having students search the Internet for information for a classroom assignment is time well spent	○	○	○	○	○

Which of the following types of software are used in your classroom?

	NOT used	Used
Word processors (e.g., Microsoft Word, ClarisWorks, AppleWorks)	○	○
Office Productivity Tools: Spreadsheets (Excel, ClarisWorks) or Databases (FileMaker, ClarisWorks) or Presentation programs (PowerPoint, ClarisWorks)	○	○
Tools (e.g., KidPix, Inspiration, HyperStudio)	○	○
Non-curricular Software (e.g., Solitaire, PacMan, other games)	○	○
Curricular-based Software (e.g., MathBlasters; Carmen SanDiego; Logical World of the Zoombinies; ScienceSleuth; Choices, Choices; Oregon Trail)	○	○
Teacher developed web pages authored especially for a particular topic or lesson	○	○
Internet search engines (e.g., Yahoo, Yahooligans, Lycos)	○	○
Internet web page authoring (e.g., Dreamweaver, HomePage, FrontPage, PageMill)	○	○

Where do you get information about teaching with technology?

Please rate the following from 1 to 5, where 1 means "no info from" and 5 means "most info from."	no info from 1	2	3	4	most info from 5
Conferences	○	○	○	○	○
Research Journals	○	○	○	○	○
Peers/Colleagues	○	○	○	○	○
School Resource People (e.g. tech coordinator, curric coordinator, media specialist)	○	○	○	○	○
Teacher Magazines	○	○	○	○	○
Internet Websites	○	○	○	○	○
In-District Training	○	○	○	○	○
Your Own Reading and Exploration	○	○	○	○	○
Your Students	○	○	○	○	○
Consultants or Trainers	○	○	○	○	○

What was the focus of your most recent technology-related professional development activity?

Your answer:

I feel confident that I could[1]:

Please rate the following from 1 to 5, where 1 means "Strongly Disagree" and 5 means "Strongly Agree."	Strongly Disagree 1	2	3	4	Strongly Agree 5
Send e-mail to a friend.	○	○	○	○	○
Subscribe to a discussion list.	○	○	○	○	○
Create a "nickname" or an "alias" to send e-mail to several people at once.	○	○	○	○	○
Send a document as an attachment to an e-mail message.	○	○	○	○	○
Keep copies of outgoing messages that I send to others.	○	○	○	○	○
Use an Internet search engine (e.g., Infoseek or Alta Vista) to find Web pages related to my subject matter interests.	○	○	○	○	○
Search for and find the Smithsonian Institution Web Site.	○	○	○	○	○
Create my own World Wide Web home page.	○	○	○	○	○
Keep track of Web sites I have visited so that I can return to them later. (An example is using bookmarks.)	○	○	○	○	○
Find primary sources of information on the Internet that I can use in my teaching.	○	○	○	○	○
Use a spreadsheet to create a pie chart of the proportions of the different colors of M&Ms in a bag.	○	○	○	○	○
Create a newsletter with graphics and text in 3 columns.	○	○	○	○	○
Save documents in formats so that others can read them if they have different word processing programs (e.g., saving Word, ClarisWords, RTF, or text).	○	○	○	○	○
Use the computer to create a slideshow presentation.	○	○	○	○	○
Create a database of information about important authors in a subject matter field.	○	○	○	○	○
Write an essay describing how I would use technology in my classroom.	○	○	○	○	○
Create a lesson or unit that incorporates subject matter software as an integral part.	○	○	○	○	○
Use technology to collaborate with other interns, teachers, or students who are distant from my classroom.	○	○	○	○	○
Describe 5 software programs that I would use in my teaching.	○	○	○	○	○
Write a plan with a budget to buy technology for my classroom.	○	○	○	○	○

Please read the descriptions of each of the six stages related to adoption of technology. Choose the stage that best describes where you are in the adoption of technology[2].

Stage 1: Awareness
○ I am aware that technology exists but have not used it - perhaps I'm even avoiding it. I am anxious about the prospect of using computers.

Stage 2: Learning the process
○ I am currently trying to learn the basics. I am sometimes frustrated using computers. I lack confidence when using computers.

Stage 3: Understanding and application of the process
○ I am beginning to understand the process of using technology and can think of specific tasks in which it might be useful.

Stage 4: Familiarity and confidence
○ I am gaining a sense of confidence in using the computer for specific tasks. I am starting to feel comfortable

using the computer.

Stage 5: Adaptation to other contexts

○ I think about the computer as a tool to help me and am no longer concerned about it as technology. I can use it in many applications and as an instructional aid.

Stage 6: Creative application to new contexts

○ I can apply what I know about technology in the classroom. I am able to use it as an instructional tool and integrate it into the curriculum.

In this unique program, we are combining online tools, face-to-face tools and self-study. During the next semester you will be given many different ways to learn the content related to Technology Applications. Based on your previous experiences with learning new materials, which of these tools do you feel will have the most value on your learning.

Please rate the following from 1 to 5, where 1 means "No Value" and 5 means "Essential."	No Value 1	2	3	4	Essential 5
Textbook Readings	○	○	○	○	○
Hands-On Activities	○	○	○	○	○
ADAM Modules (on CD-ROM)	○	○	○	○	○
Guest Speaker	○	○	○	○	○
Instruction from CFM	○	○	○	○	○
Directed Website Visits	○	○	○	○	○
Web Searches	○	○	○	○	○
Online Discussion Boards (Asynchronous)	○	○	○	○	○
Face-to-face Instruction	○	○	○	○	○
Projects	○	○	○	○	○
Small Group Collaboration	○	○	○	○	○
Assignment Rubrics	○	○	○	○	○
Downloadable Audio Only Files	○	○	○	○	○
Awareness of the Objectives	○	○	○	○	○
Exams	○	○	○	○	○

Which semester did you join the TACP?

○ Spring 2002 (January) ○ Summer 2002 (June) ○ Fall 2002 (August)

For me, Distance Learning is[3]

appealing	○	○	○	○	○	○	○ unappealing
fascinating	○	○	○	○	○	○	○ mundane
important	○	○	○	○	○	○	○ unimportant
boring	○	○	○	○	○	○	○ interesting
relevant	○	○	○	○	○	○	○ irrelevant
exciting	○	○	○	○	○	○	○ unexciting
means nothing	○	○	○	○	○	○	○ means a lot
involving	○	○	○	○	○	○	○ uninvolving

Now that you have been a part of a distance learning experience for 9 months, compare what you have experienced to your initial perceptions about the training opportunity.

Less time consuming	○	○	○	○	○	○	○ More time consuming
Less relevant	○	○	○	○	○	○	○ More relevant
Less enjoyable	○	○	○	○	○	○	○ More enjoyable
Less frustrating	○	○	○	○	○	○	○ More frustrating
Less boring	○	○	○	○	○	○	○ More boring
Less fun	○	○	○	○	○	○	○ More fun
Less difficult content	○	○	○	○	○	○	○ More difficult content
Less interactive	○	○	○	○	○	○	○ More interactive
Less important	○	○	○	○	○	○	○ More important
Less exciting	○	○	○	○	○	○	○ More exciting
Less meaningful	○	○	○	○	○	○	○ More meaningful
Less fascinating	○	○	○	○	○	○	○ More fascinating
Less appealing	○	○	○	○	○	○	○ More appealing
Less necessary	○	○	○	○	○	○	○ More necessary
Less involving	○	○	○	○	○	○	○ More involving
Less valuable	○	○	○	○	○	○	○ More valuable

Do you as a distance learning participant agree or disagree with the following statements.[4]

	Agree	Disagree
Most people believe that distance learning is more effective than traditional methodologies.	○	○
In a course with both traditional and distance learning methodologies, I learn better through the distance learning portion.	○	○
I prefer distance learning courses to traditional courses.	○	○
I believe that I can learn the same amount in an distance learning course as in a traditional course.	○	○
I believe that I can make the same grade in an distance learning course as in a traditional course.	○	○

Clear Answers | Finish

1 - modified from the TPSA developed by Dr. Meg Ropp
2 - Stages of Adoption developed by Dr. Rhonda Christensen, University of North Texas
3 - TAT 4.1 Knezek & Christensen, 2001
4 - O'Malley & McCraw, 1999

APPENDIX B

T-Test: Independent Samples between all pre-tests & matched pre-tests.

	Group	N	*M*	*SEM*	*r*	*SD*	Sig. (2-tailed)	
Current Position	1.00	360	1.77	.06	-0.03	1.29	**Equal var assumed**	.63
	3.00	118	1.84	.12		1.32	**Equal var not assumed**	.63
Teaching Assignment	1.00	315	7.79	.33	-0.06	5.92	**Equal var assumed**	.31
	3.00	101	8.49	.60		6.01	**Equal var not assumed**	.31
Grade Assignment	1.00	352	4.13	.09	0.01	1.72	**Equal var assumed**	.78
	3.00	114	4.08	.16		1.76	**Equal var not assumed**	.78
Years in Education	1.00	358	2.90	.07	-0.07	1.48	**Equal var assumed**	.23
	3.00	116	3.09	.13		1.41	**Equal var not assumed**	.22
AGE	1.00	357	4.87	.10	-0.10	1.82	**Equal var assumed**	.06
	3.00	117	5.22	.16		1.75	**Equal var not assumed**	.06
TACP Textbooks	1.00	354	3.19	.05	0.01	.98	**Equal var assumed**	.95
	3.00	117	3.18	.09		.92	**Equal var not assumed**	.95
TACP Hands-on Activities	1.00	355	4.74	.03	0.07	.50	**Equal var assumed**	.18
	3.00	118	4.67	.05		.57	**Equal var not assumed**	.21
TACP ADAM Modules	1.00	353	3.87	.05	0.00	.86	**Equal var assumed**	.98
	3.00	116	3.87	.08		.82	**Equal var not assumed**	.98
TACP Guest Speakers	1.00	353	3.59	.04	0.06	.84	**Equal var assumed**	.26
	3.00	116	3.49	.08		.87	**Equal var not assumed**	.26
TACP CFM Led Instruction	1.00	351	4.00	.05	0.04	.90	**Equal var assumed**	.53
	3.00	115	3.93	.08		.86	**Equal var not assumed**	.52
TACP Directed Web Visits	1.00	354	4.14	.04	0.01	.71	**Equal var assumed**	.92
	3.00	117	4.13	.07		.74	**Equal var not assumed**	.93
TACP Web Searches	1.00	353	4.07	.04	0.03	.77	**Equal var assumed**	.71
	3.00	116	4.03	.07		.79	**Equal var not assumed**	.72
TACP Online Discussion Boards	1.00	349	3.49	.05	-0.04	.94	**Equal var assumed**	.50
	3.00	114	3.56	.09		.92	**Equal var not assumed**	.49
TACP Face to Face Learning	1.00	353	4.11	.05	0.04	.88	**Equal var assumed**	.39
	3.00	117	4.03	.08		.91	**Equal var not assumed**	.40
TACP Projects	1.00	352	4.34	.04	0.05	.73	**Equal var assumed**	.43
	3.00	117	4.27	.07		.74	**Equal var not assumed**	.43
TACP Small Group Collaboration	1.00	349	4.19	.05	0.02	.90	**Equal var assumed**	.67
	3.00	117	4.15	.09		.92	**Equal var not assumed**	.68
TACP Rubrics	1.00	349	4.01	.05	0.01	.89	**Equal var assumed**	.93
	3.00	115	4.00	.08		.90	**Equal var not assumed**	.93
TACP Audio Files	1.00	346	3.23	.05	0.06	.98	**Equal var assumed**	.28
	3.00	115	3.11	.09		1.01	**Equal var not assumed**	.29
TACP Knowledge of Objectives	1.00	351	4.30	.05	0.05	.89	**Equal var assumed**	.36
	3.00	116	4.21	.09		.9737	**Equal var not assumed**	.38
TACP Exams	1.00	349	2.82	.06	0.03	1.12	**Equal var assumed**	.62
	3.00	117	2.76	.10		1.11	**Equal var not assumed**	.62
TPSA Email	1.00	354	4.51	.04	-0.05	.67	**Equal var assumed**	.35
	3.00	116	4.57	.05		.52	**Equal var not assumed**	.29

TPSA WWW	1.00	350	4.53	.03	-0.06	.60	**Equal var assumed**	.32
	3.00	115	4.60	.05		.50	**Equal var not assumed**	.27
TPSA Integrated Applications	1.00	343	4.16	.05	-0.03	1.01	**Equal var assumed**	.63
	3.00	114	4.22	.09		1.00	**Equal var not assumed**	.63
TPSA Teaching with Technology	1.00	350	4.18	.05	-0.03	.86	**Equal var assumed**	.58
	3.00	117	4.23	.08		.87	**Equal var not assumed**	.58
TPSA	1.00	328	4.36	.04	-0.05	.69	**Equal var assumed**	.39
	3.00	109	4.42	.06		.61	**Equal var not assumed**	.36
TACP Technology Tools	1.00	337	3.76	.03	0.01	.60	**Equal var assumed**	.93
	3.00	109	3.75	.06		.60	**Equal var not assumed**	.93
TACP Assessment Tools	1.00	342	3.87	.03	0.05	.64	**Equal var assumed**	.45
	3.00	113	3.81	.06		.67	**Equal var not assumed**	.46
TACP Human Interaction	1.00	344	4.10	.04	0.04	.67	**Equal var assumed**	.44
	3.00	114	4.05	.06		.67	**Equal var not assumed**	.44
TACP Third Party Resources	1.00	352	3.39	.04	0.03	.71	**Equal var assumed**	.44
	3.00	116	3.34	.07		.72	**Equal var not assumed**	.44
TACP Hands-On Activities	1.00	355	4.74	.03	0.07	.50	**Equal var assumed**	.18
	3.00	118	4.67	.05		.57	**Equal var not assumed**	.21

* Group 1 is the Pre-test for all respondents. Group 3 is the Pre-test for only those that matched with a post-test.

T-Test: Independent Samples between all post-tests & matched post-tests.

	Group	N	Mean	SEM	*r*	*SD*	Sig. (2-tailed)	*r*
Current Position	2.00	358	1.93	.07	-0.02	1.37	**Equal var assumed**	.70
	4.00	118	1.98	.13		1.40	**Equal var not assumed**	.71
Teaching Assignment	2.00	299	8.34	.34	-0.06	5.85	**Equal var assumed**	.33
	4.00	98	9.01	.60		5.92	**Equal var not assumed**	.33
Grade Assignment	2.00	347	4.11	.09	-0.07	1.73	**Equal var assumed**	.19
	4.00	114	4.35	.16		1.69	**Equal var not assumed**	.18
Years in Education	2.00	346	3.28	.08	0.00	1.41	**Equal var assumed**	1.00
	4.00	113	3.28	.13		1.38	**Equal var not assumed**	1.00
AGE	2.00	351	5.27	.10	-0.03	1.80	**Equal var assumed**	.58
	4.00	115	5.37	.17		1.78	**Equal var not assumed**	.58
TACP Textbooks	2.00	347	3.13	.05	0.07	.94	**Equal var assumed**	.16
	4.00	117	2.99	.09		.96	**Equal var not assumed**	.17
TACP Hands-on Activities	2.00	349	4.71	.03	-0.01	.55	**Equal var assumed**	.90
	4.00	117	4.72	.05		.55	**Equal var not assumed**	.90
TACP ADAM Modules	2.00	347	3.90	.05	0.03	.90	**Equal var assumed**	.55
	4.00	117	3.85	.09		.94	**Equal var not assumed**	.56
TACP Guest Speakers	2.00	346	3.40	.05	0.06	.96	**Equal var assumed**	.23
	4.00	117	3.28	.08		.92	**Equal var not assumed**	.22
TACP CFM Led Instruction	2.00	347	4.06	.05	0.11	.97	**Equal var assumed**	.03
	4.00	117	3.84	.09		1.00	**Equal var not assumed**	.04
TACP Directed Web Visits	2.00	348	4.09	.04	0.03	.78	**Equal var assumed**	.56
	4.00	117	4.04	.07		.80	**Equal var not assumed**	.56
TACP Web Searches	2.00	346	4.06	.04	0.06	.79	**Equal var assumed**	.31
	4.00	116	3.97	.08		.84	**Equal var not assumed**	.33
TACP Online Discussion Boards	2.00	347	3.23	.06	0.04	1.10	**Equal var assumed**	.46
	4.00	117	3.15	.11		1.14	**Equal var not assumed**	.47
TACP Face to Face Learning	2.00	349	4.12	.05	0.05	.89	**Equal var assumed**	.34
	4.00	117	4.03	.09		1.00	**Equal var not assumed**	.37
TACP Projects	2.00	348	4.36	.04	-0.01	.69	**Equal var assumed**	.88
	4.00	117	4.38	.07		.72	**Equal var not assumed**	.88
TACP Small Group Collaboration	2.00	348	4.20	.05	0.05	.92	**Equal var assumed**	.34
	4.00	117	4.10	.09		.99	**Equal var not assumed**	.36
TACP Rubrics	2.00	348	4.28	.04	0.08	.83	**Equal var assumed**	.15
	4.00	117	4.15	.08		.89	**Equal var not assumed**	.17
TACP Audio Files	2.00	344	3.26	.06	0.09	1.04	**Equal var assumed**	.09
	4.00	116	3.08	.09		1.01	**Equal var not assumed**	.09
TACP Knowledge of Objectives	2.00	346	4.14	.05	0.02	.89	**Equal var assumed**	.71
	4.00	116	4.10	.08		.89	**Equal var not assumed**	.71
TACP Exams	2.00	344	2.87	.06	0.04	1.14	**Equal var assumed**	.41
	4.00	116	2.77	.10		1.10	**Equal var not assumed**	.41
TPSA Email	2.00	345	4.78	.02	-0.03	.42	**Equal var assumed**	.59
	4.00	116	4.81	.04		.47	**Equal var not assumed**	.61

TPSA WWW	2.00	345	4.84	.02	-0.01	.32	**Equal var assumed**	.85
	4.00	114	4.85	.04		.45	**Equal var not assumed**	.87
TPSA Integrated Applications	2.00	345	4.72	.02	-0.01	.46	**Equal var assumed**	.88
	4.00	116	4.73	.05		.53	**Equal var not assumed**	.89
TPSA Teaching with Technology	2.00	340	4.70	.03	0.00	.49	**Equal var assumed**	.94
	4.00	114	4.70	.05		.57	**Equal var not assumed**	.95
TPSA	2.00	322	4.76	.02	-0.01	.34	**Equal var assumed**	.87
	4.00	109	4.77	.04		.46	**Equal var not assumed**	.89
TACP Technology Tools	2.00	341	3.71	.04	0.07	.66	**Equal var assumed**	.18
	4.00	115	3.61	.06		.67	**Equal var not assumed**	.18
TACP Assessment Tools	2.00	341	3.91	.03	0.30	.62	**Equal var assumed**	.00
	4.00	114	3.51	.06		.64	**Equal var not assumed**	.00
TACP Human Interaction	2.00	346	4.13	.04	0.10	.68	**Equal var assumed**	.06
	4.00	117	3.99	.07		.73	**Equal var not assumed**	.07
TACP Third Party Resources	2.00	345	3.27	.04	0.09	.75	**Equal var assumed**	.11
	4.00	117	3.14	.07		.72	**Equal var not assumed**	.10
TACP Hands-On Activities	2.00	349	4.71	.03	-0.01	.55	**Equal var assumed**	.90
	4.00	117	4.72	.05		.55	**Equal var not assumed**	.90

* Group 2 is the Post-test for all respondents. Group 4 is the Post-test for only those that matched with a post-test.

REFERENCES

Abromitis, J. (2001). Literature review: learning styles of distance education learners. Retrieved March 15, 2002, from University of Hawaii: http://leahi.kcc.hawaii.edu/org/tcon01/papers/abromitis.html

Agogino, A. M. & Shi, S. (1995). Learning style based innovations to improve retention of female engineering students in the Synthesis Coalition. ASEE/IEEE Frontiers in Education '95: Proceedings. Purdue University.

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), Encyclopedia of human behavior (Vol. 4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], Encyclopedia of mental health. San Diego: Academic Press, 1998).

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H. Freeman.

Bandura, A. (1986). Social Foundations of Thought and Action: A Social Cognitive Theory. Englewood Cliffs, NJ: Prentice- Hall.

Blackmore, J. (1996). Pedagogy: learning styles. Telecommunications for remote work and learning. Retrieved on March 16, 2002, from Telecommunications for workplace and learning: http://www.cyg.net/~jblackmo/diglib/styl-a.html

Birkey, R.C, and Rodman, J.J. (1995). Adult learning styles and preference for technology programs. Retrieved March 15, 2002 from National University Research Institute: http://www2.nu.edu/nuri/llconf/conf1995/birkey.html

Campbell Coggins, C. (1988). Preferred learning styles and their impact on completion of external degree programs. The American Journal of Distance Education. 2(1). 25-37.

Christensen, R. (1997). Effect of technology integration education on the attitudes of teachers and their students. Doctoral dissertation, University of North Texas. Retrieved September 1, 2002 from http://courseweb.tac.unt.edu/rhondac/

Christensen, R. & Knezek, G. (1999). Stages of adoption for technology in education. Computers in New Zealand Schools. 11(3). 25 – 29.

Compeau, D., & Higgins, C. (1995). Computer self-efficacy: Development of a measure and initial test. MIS Quarterly, *19*, 189-211.

Diaz, D. & Bontenbal, K. (2001). Learner preferences: developing a learner-centered environment in the online or mediated classroom. Ed at a Distance. 15(8). Retrieved on March 15, 2002 from http://www.usdla.org/html/journal/AUG01_Issue/article03.html

Eastin, M. & LaRose, R. (2000). Internet self-efficacy and the psychology of the digital divide. Journal of Computer Mediated Communication. 6 (1). Retrieved September 1, 2002 from http://www.ascusc.org/jcmc/vol6/issue1/eastin.html

Ehrman, M. (1990). Psychological Factors and Distance Education. 4 (1). 10-24.

Gagné, R. (1967). Learning and individual differences. Columbus, Ohio: Merrill.

Gee, D.B. (1990). The impact of students' preferred learning style variables in distance education: A case study. Portales, NM: Eastern New Mexico University. (ERIC Document Reproduction Service No. ED 358 836).

Gunawardena, C. & Boverie, P. (1993). Impact of learning styles on instructional design for distance education. Paper presented at World Conference of the International Council of Distance Education, Bangkok, Thailand. (ERIC Document Reproduction Service No ED 359 926).

Hassett, C.M., Meier, R.J., & Schulz, S. (1997). From mass production to mass customization. Published in the Southwest Business Symposium proceedings 14th annual meeting. College of business administration. University of Central Oklahoma. Edmond, Oklahoma. Retrieved on March 18, 2002, from University of Central Oklahoma: http://www.fhsu.edu/cis/hassett/masscust/masscust.html

Henson, R.K. (1999). The effects of participation in teacher research on teacher efficacy and empowerment. (Doctoral dissertation, Texas A & M University, 1999). UMI 9957442.

Joo, Y., Bong, M., & Choi, H. (2000). Self-efficacy for self-regulated learning from the World Wide Web. Educational Technology Research and Development. 45 (4).

Keefe, J.W. (1979). Learning Style: An overview. NASSP's Student Learning styles: diagnosing and prescribing programs. pp. 1-17. Reston, VA: National Association of Secondary School Principals.

Knezek, G.A, Christensen, R.W, Miyashita, K.T., & Ropp, M.M. (2000). Instruments for Assessing Educator Progress in Technology Integration. Denton, TX: Institute for the Integration of Technology into Teaching and Learning.

Kolb, D.A. (1985) Learning style inventory and technical manual. Boston: McBer and Company.

Kramer-Koehler, P., Tooney, N. M., & Beke, D. P. (1995). The Use of learning style innovations to improve retention. ASEE/IEEE Frontiers in Education '95: Proceedings. Purdue University.

MacKinnon, D. W. (1978). In search for human effectiveness: Identifying and developing creativity. Creative Education Foundation.

Martinez, M. & Bunderson, C.V. (2000). Foundations for personalized web learning environments. ALN Magazine. 4(2). Retrieved on March 15, 2002, from http://www.aln.org/alnweb/magazine/Vol4_issue2/burdenson.htm

Martinez, M. (2001a). Mass Customization: designing for successful learning. International Journal of Educational Technology.2(2). Retrieved March 15, 2002 from http://www.outreach.uiuc.edu/ijet/v2n2/martinez/index.html

Martinez, M. (2001b). Key design considerations for personalized learning on the web. Educational Technology & Society**.** 4(1).

Nahl, D. (1996). Affective monitoring of Internet learners: Perceived self-efficacy and success. Journal of American Society for Information Sciences*, 33*, 100-109.

Norris, C.A. & Soloway, E. (2000). The Snapshot Survey Service: A web site for assessing teachers' and administrators' technology activities, beliefs and needs. Presented at Secretary's Conference on Educational Technology 2000. Washington, DC. Retrieved on September 1, 2002 from http://www.ed.gov/Technology/techconf/2000/cathie_norris.pdf

Norris, C. A., Soloway, E., Knezek, G., Topp, N., Young, J. & Box, K.L. (2000). Snapshot Survey: What do your administrators and teachers really need?

Electronic School. 2000 (June). Retrieved on September 1, 2002 from http://www.electronic-school.com/2000/06/0600f3.html .

Oliver, T. A., & Shapiro, F. (1993). Self-efficacy and computers. Journal of Computer-Based Interactions, *20*, 81-85.

O'Malley, J. & McCraw, H. (1999). Students Perceptions of Distance Learning, Online Learning and the Traditional Classroom. Online Journal of Distance Learning Administration. 2 (4). Retrieved September 1, 2002 from http://www.westga.edu/~distance/omalley24.html.

Overall, T. (2001). A review of learning styles and studies of the impact of learning styles in online education. Retrieved March 16, 2002 from the University of North Texas Technology Fellows Program: http://dataweb.cecs.unt.edu/fellows/

Pajares, F. (1996). *Review of Educational Research, 66*(4), 543-578.

Ropp, M. M. (1999). Exploring individual characteristics associated with learning to use computers in preservice teacher preparation. Journal of Research on Computing in Education, 31(4), 402-424.

Russell, A. L. (1995). Stages in learning new technology: Naive adult email users. *Computers in Education, 25*(4), 173-178.

Sanchez, I. & Gunawardena, L. (1998). Understanding and supporting the culturally diverse distance learner. In C. Gibson (Eds.), Distance Learners in Higher Education: Institutional Responses for Quality Outcomes (Diversity Series No. 1). Atwoods Publishing. Madison, WI.

Schunk, D.H. (1995). Self-efficacy and education and instruction. In J.E. Maddux (Ed.), Self-efficacy, adaptation, and adjustment: Theory, research, and application (pp. 281 – 303). New York: Plenum Press.

Schunk, D. H. & Pajares, F. (2002). The development of academic self-efficacy. In A. Wigfield & J. Eccles (Eds), Development of achievement motivation. San Diego: Academic Press.

Shih, C., Ingebritsen, T., Pleasants, J., Flickinger, K, & Brown, G. (1998). Learning strategies and other factors influencing achievement via web courses. In Distance Learning '98 proceedings of the annual conference on distance teaching and learning. Madison, Wisconsin. (ERIC Document Reproduction Service No ED 422 876)

Soles, C. & Moller, L. (2001). Myers Brigg Type Preferences in Distance Learning Education. International Journal of Educational Technology. 2(2). Retrieved March 14, 2002 from http://www.outreach.uiuc.edu/ijet/v2n2/soles/index.html

Stillborn, L. & Williams, L. (1996). Meeting the needs of adult learners in developing courses for the internet. Conference proceedings INET96. Montreal, Canada. Retrieved March 14, 2002 from http://www.isoc.org/isoc/whatis/conferences/inet/96/proceedings/c4/c4_2.htm

Thompson, M. M. (1998). Distance learners in higher education. In C. Gibson (Ed.), Distance learners in higher education: Institutional responses for quality outcomes (pp. 9-24). Madison, WI: Atwood.

Web-Based Education Commission. (2000). Power of the Internet for Learning: Moving From Promise to Practice. Washington, DC. (NTIS No. PB2001-105809).