Pan, C. (2008). A year-long investigation of self-efficacy for technology integration and behavior pattern in a pre-service technology course using Hispanic student population. *International Journal of Technology in Teaching and Learning, 4*(1), 34–44.

A Year-Long Investigation of Self-Efficacy for Technology Integration and Behavior Pattern in a Pre-Service Technology Course Using Hispanic Student Population

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The present study was designed to investigate pre-service teachers' behavior pattern and its effect on these student teachers' self-efficacy for technology integration through the school year of 2004-2005. This quantitative research was conducted using a paper-and-pencil questionnaire, administered twice in each of the three semesters in the year. One hundred and sixty-four students from a U.S. southern state university on the border with Mexico successfully participated on a voluntary basis. Results from *t*-test and two-way ANOVA analyses suggested that Hispanic students' self-efficacy for technology integration increased significantly throughout each semester and was affected by students' prior experience with the computer.

Keywords: computer self-efficacy, pre-service, learning styles, Hispanics, technology integration.

INTRODUCTION

Successful student learning outcomes are the ultimate goal of any instructional technology initiative. But success requires at least two, necessary factors: budget and manpower. This is congruent with findings of a survey study by De Los Santos and De Los Santos (2003). Assuming that the latter always comes along with the former is a wishful thought.

As school administrators succeed in disseminating large quantities of a variety of instructional technologies in K-12 settings, effective use of manpower is often not prioritized. Lack of effective use of human resources is especially relevant when it comes to individual classroom teachers who stand at the front-line of the fight for a better student achievement. Unfortunately, it is still not uncommon for technology to sit in some corner of the campus while administrators ponder effective means to change teachers' skills, knowledge, and attitudes toward technology. Sibley and Kimball (2003) distinguished change from movement in schools, and asserted that placing a computer on

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a teacher's desk is nothing but movement, whereas empowering the teacher to use the tool in his/her decision making of curriculum and instruction is truly a change.

A pre-service technology competencies program can potentially exert far more impact than an "after the fact" in-service that is all too often hastily planned and executed. Willis and Raines (2001) contended that technology incorporated in pre-service computer literacy curricula should play a vital role for fundamentally changing the way faculty teach and how students learn. There may be a sound rationale for arguing that well-conceived pre-service opportunities can enable future teachers to become powerful change agents.

Institutions of higher education in the U.S. have actively infused technology into the courses they offer in response to the demand by students and, in some cases, the faculty. Although technology may cause a counterbalancing force to humanistic touch, "computer applications can potentially enhance the [college] curriculum in several fields, including science, the humanities, and social sciences" (Galván, 2006, p. 88). In these institutions, it is common to see a technology course that focuses upon giving pre-service teachers the requisite skills to enable them to integrate technology into future instruction (Northrup & Little, 1996). Such course often demonstrates examples of various models of teaching that rely heavily upon technology for instructional delivery. The technology course is in existence partially due to the state K-12 curriculum standards, e.g., Texas Essential Knowledge and Skills by The Texas Education Agency (n.d.).

HISPANICS' GROWTH

Following on the discussion of those institutions of higher education, the student body in the southern state universities (e.g., Texas), and in the schools or colleges of education, is overwhelmingly Hispanic, specifically students of Mexican-American heritage (De Los Santos & De Los Santos, 2003). According to Botelho (2004), Hispanic groups represented almost 14% of the U.S. population in 2003, which is a four percent increase from 1990. The CNN news reporter also claimed that projected population of Hispanics in 2050 is 24%. The United Stated Census Bureau (2008) reported a 25.5% growth in Hispanic or Latino population from 2000 to (July) 2006. As a matter of fact, the Hispanics is now the largest minority group in the States (Gandossy, 2007), which is consistent with the report of the U.S. Census Bureau's *2008 Statistical Abstract* (2008). For the past twenty some years, more universities have been recognized as Hispanic-serving institutions of higher education because of this rapidly growing population in colleges (De Los Santos & De Los Santos, 2003).

When it comes to Hispanic learners' preferences, Griggs and Dunn (1996) found the majority of Hispanic-American learners had a tendency for "(1) a cool environment, (2) conformity, (3) peer-oriented learning, (4) kinesthetic instructional resources, (5) a high degree of structure, (6) late morning and afternoon peak energy levels, (7) variety as opposed to routines, and (8) a field-dependent cognitive style" (p. 4). Comparing three learning style models (e.g., The Index of Learning Style and The Gregorc Style Delineator, and The Long/Dziuban Inventory), Ouellette (2000) determined that Hispanic learners were found to be more intuitive than other ethnic groups, which suggests that Hispanics preferred possibilities and relationships. Furthermore, a study by Cornelius-White, Garza, and Hoey (2004) may shed some light on the Hispanic learners' personality traits. Using a sample (n=122) of Mexican-American high school students in a border city with a population of over 210,000 in South Texas, these researchers discovered that high academic achievers were usually emotionally stabler and more goal-driven in general but these high school seniors were not particularly open to experiences (e.g., feelings and ideas), sociable (e.g., being outgoing), or agreeable (e.g., trust). After all, there was not much known about these Hispanic groups probably because they have been academically underrepresented in the States (De Los Santos & De Los Santos, 2003; Miller, 2005). This was one of the motivations to conduct this study.

SELF-EFFICACY FOR TECHNOLOGY INTEGRATION

Literature showed that academic self-efficacy in general is deemed an effective factor to predict students' learning outcomes. Torres and Solberg (2001) conducted a path analysis on the mediating effect of Hispanic college students' self-efficacy on stress, social integration, health, and persistence intentions in the presence of family support. They found college students with higher academic self-efficacy tended to interact with faculty more and have a stronger intention to graduate.

Self-efficacy for technology integration, a special form of self-efficacy, was operationally defined as learners' confidence in using computer technology in a learning context or a classroom setting. A validated questionnaire by Wang, Ertmer, and Newby's work (2004) was adapted to measure self-efficacy for technology integration in this study. Any significant increase in pre-service students' self-efficacy for technology integration throughout the semester was considered evidence of the effectiveness of the course. The original survey instrument represented a one-factor-solution model, measured on a five point Likert scale, ranging from "strongly disagree," "disagree," "neither degree nor disagree," "agree," to "strongly agree." Higher scores on the scale indicated higher self-efficacy for technology integration. Due to a differing learning context, the questionnaire was revised to reflect the needs and philosophy of the present study.

BEHAVIOR PATTERN

Behavior patterns or learning styles were usually correlated with successful learning experience in the school; however, prior studies on these learning or behavior patterns' interaction with Mexican-Americans' academic success were few (Cornelius-White, Garza, & Hoey, 2004). Therefore, another aspect of this study was to investigate the interaction between the student teachers' learning styles (i.e., behavioral patterns) and their self-efficacy for technology integration. The Long-Dziuban Learning Style Inventory was adopted. According to Bayston (2002), four quadrants, which represent four general behavior patterns, were defined in The Long-Dziuban Learning Style Inventory: aggressive independent, aggressive dependent, passive independent, and passive dependent. Research (as cited in Kysilka & Geary, 2003) also showed that of the four patterns, aggressive independent and passive independent learners appeared to be incompatible to the traditional school type of learning. Similar results were documented in a study by Dziuban, Moskal, and Dziuban (2000), targeting an online population. How learning styles pertain to self-efficacy was further examined in the remaining of the paper.

THE PURPOSE OF THE STUDY

This phase of the exploration was concentrated on investigating pre-service teachers' behavior pattern and its effect on these student teachers' self-efficacy for technology integration through the school year of 2004-2005.

How can university professors provide leadership and support for teacher candidates in technology integration in curriculum and instruction? A logical starting point was knowing their own students (Pan, Tsai, Tsai, Tao, & Cornell, 2003). A strategy was envisioned that began with ascertaining the pre-service teachers' learning styles, then implementing a carefully scaffolded series of activities aimed at increasing their self-efficacy for technology use, followed by activities that allowed pre-service teachers to transfer their skills and conceptual knowledge to field-based classroom experiences. This inquiry described the first step of that process – determining the pre-service teachers' confidence in effectively using technology in their future endeavors. The scope of the analysis was focused on exploring the effectiveness of a mandated computer literacy program. That is, the differences in mean scores of self-efficacy for technology integration between Time One (i.e., the beginning of a given semester) and Time Two (i.e., close to the end of the semester) in each semester of the school year 2004 and 2005.

SIGNIFICANCE

The instructor of the technology class was able to further understand their students' learning style and its influence on their self-efficacy for technology integration throughout the year. By collecting and analyzing the students' learning styles, the instructor was better able to respond to needs of students and evaluate his course design. The instructor was also able to more effectively resolve complex technology integration issues, such as cooperative learning with technology. By having an established baseline for both students' confidence level and comfort zone with respect to incorporating technology into curriculum, the instructor could use the results to develop a gear-up, or remedial course, prior to or after the mandatory technology course.

In addition, researchers could also benefit from this study and its findings. Implications for further research were addressed in the conclusions.

RESEARCH QUESTIONS

1. Are there any differences in self-efficacy for technology integration between Time One and Time Two in each semester?
2. Are there any interactions between behavior pattern and semester on self-efficacy for technology integration in Time One and Time Two, respectively?
3. Can gender, work, prior experience with the computer, and access to the Internet affect self-efficacy for technology integration?

METHOD

RESEARCH DESIGN

This quasi-experimental study was intended to explore the effectiveness of a state-mandated pre-service computer literacy program in a border university. The self-efficacy for technology integration variable (as the dependent variable) and the behavior pattern variable (as one independent variable) were measured and analyzed, using SPSS v.13.

PARTICIPANTS

A convenient sample, composed of 164 student teachers across three semesters during 2004 and 2005 in EDCI 4203 Technology and the School Curriculum, a required computer competencies course, successfully participated in the study on a voluntary basis.

Response rate is 90% (equal to 73 on Time Two divided by 81 on Time One) in the Fall Semester of 2004, 100% in Spring 2005, and 100% in Summer I, 2005. Over 90%

were Hispanic. Close to 80% were female. Less than 50% worked more than 20 hours a week. Over 50% had used the computer for more than six years. Over 80% had an Internet access in the place where they studied.

Concerning the class setting, the undergraduate technology class was worth three school credit hours, using Blackboard, a course management system. In this hybrid class, students were expected to complete chapter quizzes (10% of the end-of-class grade), write critique papers (30%), conduct a cooperative instructional presentation (20%), develop individual projects using software applications (20%), participate in threaded discussion in Blackboard Discussion Board/Forum(10%), and take the final examination (10%).

MEASUREMENTS

A paper-and-pencil questionnaire, made up of three instruments, was administered on two time occasions: the beginning and the end of each semester. The three adapted instruments were: Self-Efficacy for Technology Integration Instrument (Wang, Ertmer, & Newby, 2004), Long-Dziuban Learning Style Inventory (as cited in Bayston, 2002), and Student Demographic Instrument (Pan, 2003).

The Self-Efficacy for Technology Integration Instrument was adapted to measure participants' confidence in instructional use of technologies in curriculum. Twenty items were revised and scrutinized for face and content validity initially by three university faculty members with significant public school and pre-service computer literary courses teaching experience. Each variable was measured on a five point Likert scale, with "strongly disagree" coded as 1, "strongly agree" as 5, and "neither agree nor disagree" as 3. The highest score possible was 20 while the lowest score possible was 5. Higher scores suggested higher self efficacy for technology integration. A typical sample question entailed, "I feel confident that I can teach a subject content with technology." An exploratory factor analysis was conducted for construct validity, using principal component analysis as an extraction method, KMO = .92 and Bartlett's Test of Sphericity: $p < .001$). Three subscales were clustered: self-efficacy for clinical teaching with 32.3% of variance explained, self-efficacy for general use with 18.3% of variance explained, and self-efficacy for responsiveness with 17% of variance explained, which explained 68% of the total variance. The results were slightly more plausible than the previous study by Wang, Ertmer, and Newby (2004) published in the *Journal of Research on Technology in Education*, which accounted for approximately 60% of the systematic covariance. An internal consistency test throughout the three semesters showed that our revised instrument is deemed a reliable survey tool (see Table 1).

Table 1.
Reliability Testing of the Self Efficacy for Technology Integration Instrument in Alpha Value by Semester

	Fall Semester of 2004		Spring Semester of 2005		Summer Semester of 2005	
Subscale	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
SE1	.94	.90	.94	.94	.81	.95
SE2	.85	.81	.82	.90	.76	.91
SE3	.85	.81	.80	.90	.76	.94

Note. SE1=self-efficacy for clinical teaching subscale, SE2=self-efficacy for general use subscale, SE3=self-efficacy for responsiveness subscale, Time 1= near the beginning of the semester, Time 2=close to the end of the semester of the semester.

The Long/Dziuban Learning Style Inventory was adopted to determine learners' behavioral patterns in terms of four quadrants, each specified by several descriptors. The inventory was drawn upon theories in learning by Dr. William A. Long of the University of Mississippi, Medical School (Dziuban, 2002). According to Dziuban and Moskal (2004)[1], an aggressive-independent leaner tended to be "high energy," "action-oriented," "not concerned with approval," "speaks out freely," and "gets into confrontational situations." Other patterns included: aggressive-independent, passive-dependent, and passive independent. Another aspect of The Long/Dziuban Learning Style Inventory was concerned with behavior traits. For the purpose of this research, this concept was not discussed in the present study.

Student Demographics Instrument was made up of five items of Pan's (2003) demographics scale. The items included gender, racial/ethnic groups, occupation status, prior experience with the computer, and access to the Internet.

PROCEDURES

The instructor of the mandated undergraduate technology course agreed to distribute the copies of the questionnaire to his students after the class was finished. This way the class was not interrupted. In the beginning of each semester the questionnaire was passed out to the participating students after the add/drop date. The instructor then introduced the purpose of the study and encouraged students to participate in the study. Completed questionnaires were put in a sealed envelope and handed over to the researcher of this study by the instructor himself. Two weeks after the deadline to withdraw with a "W", the same procedure was repeated.

The data collected were then entered to an EXCEL spreadsheet and organized before imported to SPSS. Used statistical procedures included *t*-test for independent samples, *t*-test for dependent samples, and two-way analysis of variance.

DATA ANALYSIS AND RESULTS

QUESTION ONE

Are there any differences in self-efficacy for technology integration between Time One and Time Two in each semester?

A *t*-test for independent samples was conducted for the Fall 2004 dataset (n=73). A *t*-test for dependent samples was used to analyze datasets from spring 2005 (n=61) and summer 2005 (n=30). There is a statistically significant difference in the mean self-efficacy for technology integration scores between Time One and Time Two in each semester (see Table 2).

Table 2. T-Test for Self-Efficacy for Technology Integration by Semester

Semester	*df*	*t*	*d*
Fall 2004	144	-5.66*	.94
Spring 2005	60	-5.54**	.84
Summer 2005	29	-6.24**	1.26

Note. *p <.05. **p <.01.

[1] Please note that these descriptors are direct quotes from the two authors' presentation slides published at http://rite.ucf.edu/Presentations/Educause 2004.ppt

Overall, self-efficacy for technology integration on Time Two was significantly higher than that on Time One in each semester, indicating that students' self-efficacy increased for each semester.

QUESTION TWO

Are there any interactions between behavior pattern and semester on self-efficacy for technology integration in Time One and Time Two, respectively?

Due to the sparse distribution of participants' behavior patterns, the behavior pattern variable was collapsed into a dichotomy: aggressive dependent (AD) and non-aggressive dependent (NAD).

On Time One, the AD group represented 57% (n=93) of the total respondents while the NAD group was 43% (n=70). The fall 2004 semester represented 44.2% (n=72). The spring 2005 semester was 37.4% (n=61). The summer 2005 semester was 18.4% (n=30). Given that the assumption of equal variances was met (p=.55), a t-test for independent samples was conducted. The mean self-efficacy for technology integration score in the AD group did not exceed the mean self-efficacy for technology integration score in the NAD group during the year to a statistically significant degree, ($t_{(161)}$ = .63, p >.05, d=.10). Given that the assumption of equal variances was met (p=.28), a (2 x 3) two-way analysis of variance was used. No statistically significant interaction effect between behavior pattern and semester was found (R^2=.01), $F_{(2\ 157)}$ =.71, p=.49. Moreover, no statistically significant difference between the group means for AD and NAD was found $F_{(1, 157)}$ =.07, p=.80, (R^2=.0004).

On Time Two, AD and NAD represented 61% (n=100) and 39% (n=64), respectively. Three semesters, Fall 2004, Spring 2005, and Summer 2005, each represented 44.5% (n=73), 37.2% (n=61), and 18.3% (n=30) of the participants, correspondingly. Given that the assumption of equal variances was not met (p<.05), the results of a t-test for independent samples to determine whether the mean self-efficacy for technology integration score in the NAD group exceeded that in the AD group during the year was not reported. Given that the assumption of equal variances was met (p=.12), a (2 x 3) two-way analysis of variance was used. No statistically significant interaction effect between behavior pattern and semester was found $F_{(2,\ 158)}$ =.67, p=.52, (R^2=.01). No statistically significant difference between the group means for AD and NAD was found $F_{(1, 158)}$ =1.36, p=.25, (R^2=.01).

In general, there was not any interaction effect between behavior pattern and semester on students' self-efficacy for technology integration at either time occasion, indicating that students' behavior pattern did not appear to be an important variable in determining their self-efficacy scores.

QUESTION THREE

Can gender, work, prior experience with the computer, and access to the Internet affect self-efficacy for technology integration?

After recoded, gender (male vs. female), prior experience with the computer (up to six years experience vs. over six years experience), and access to the Internet (yes vs. no) were taken into account in a dichotomy. However, the three levels of the work variable (i.e., full-timers, part-timers, and neither) were kept for further analysis.

On Time One, given that the assumption of equal variances was met (p=.28), a (2 x 3) two-way ANOVA was used. No statistically significant interaction effect between gender and semester was found $F_{(2,\ 157)}$ =1.88, p=.16, (R^2=.02). Male participants represented 20.7% of the population (n=34); females represented 77.4% (n=127). Three semesters, Fall 2004, Spring 2005, and Summer 2005, each represented 44.5% (*n*=73), 37.2% (*n*=61), and 18.3% (*n*=30) of the participants, correspondingly. No statistically significant difference between the group means for male and female was found $F_{(2, 157)}$ =.96, *p*=.39, (R^2=.01).

Given that the assumption of equal variances was met (*p*=.12), a (3 x 3) two-way ANOVA was used. No statistically significant interaction effect between work and semester was found $F_{(4, 154)}$ =.12, *p*=.97, (R^2=.003). The full-timers group represented 42.7% (*n*=70), the part-timers group represented 31.1% (*n*=51), and the neither group was 24.4% (*n*=40). The *n* for each of the three semesters remained the same as mentioned in the previous paragraph. Also, no statistically significant difference among the three work groups was found $F_{(3, 154)}$ =1.14, *p*=.37, (R^2=.02) .

Given that the assumption of equal variances was met (*p*=.28), a (2 x 3) two-way ANOVA was used. No statistically significant interaction effect between prior experience with the computer and semester was found $F_{(2, 155)}$ =.91, *p*=.41, (R^2=.01). The group with more than six years experience with the computer represented 47.2% (*n*=76); the group with up to six years experience with the computer represented 52.8% (*n*=85). Three semesters, Fall 2004, Spring 2005, and Summer 2005, each represented 43.5% (*n*=70), 37.9% (*n*=61), and 18.6% (*n*=30) of the participants, correspondingly. However, a statistically significant difference between the group means for prior experience with the computer was found, suggesting that the collected data were unlikely, assuming that the null hypothesis was true, $F_{(1, 155)}$ =8.11, *p* <.01. Therefore, the null hypothesis was rejected in favor of the alternative which stated that a difference existed between the PC experience means in the population (R^2=.05).

Given that the assumption of equal variances was met (*p*=.05), a (2 x 3) two-way ANOVA with access to the Internet and semester as the two independent variables was conducted. No statistically significant interaction effect between the two independent variables was found $F_{(2, 157)}$ = .14, *p*=.87, (R^2=.002). The group with Internet access represented 83.5% (*n*=137); the group without Internet access represented 14.6% (*n*=24). Three semesters, Fall 2004, Spring 2005, and Summer 2005, each represented 44.5% (*n*=73), 37.2% (*n*=61), and 18.3% (*n*=30) of the participants. No statistically significant difference between the group means for access to the Internet and no access to the Internet was found $F_{(2, 157)}$ =1.18, *p*=.31, (R^2=.01).

On Time Two, given that the assumption of equal variances was met (*p*=.13), a (2 x 3) two-way ANOVA was used. No statistically significant interaction effect between gender and semester was found $F_{(2, 157)}$ =.60, *p*=.55, (R^2=.007). Males represented 21.5% (*n*=35) of the participants; females represented 78.5% (*n*=128). Three semesters, Fall 2004, Spring 2005, and Summer 2005, each represented 44.2% (*n*=72), 37.4% (*n*=61), and 18.4% (*n*=30) of the participants. No statistically significant difference between the group means for male and female was found $F_{(1, 157)}$ =.08, *p*=.78, (R^2=.001) .

Given that the assumption of equal variances was met (*p*=.23), a (3 x 3) two-way ANOVA was used. No statistically significant interaction effect between work and semester was found $F_{(4, 154)}$ =.20, *p*=.94, (R^2=.005). Full-timers represented 52.8% (n=86), part-timers represented 25.8% (n=42), and the neither group was 21.5% (n=35). The *n* for each of the three semesters remained the same as mentioned in the previous paragraph. No statistically significant difference among the group means for full-timers, part-timers, and neither was found $F_{(2, 154)}$ =.98, *p*=.38, (R^2=.01).

Given that the both assumptions of equal variances (*p* <.001) and *n*'s were not met, results of a (2 x 3) two-way ANOVA with prior experience with the computer and semester as the two independent variables was not reported. However, a *t*-test for independent samples was used to examine the mean difference in self-efficacy for technology integration between students with more than six years experience with the computer and those with no more than six years experience with the computer. A statistically significant difference between the group means for prior experience with the computer was found, ($t_{(161)}$ = 4.46, df = 161, p <.001, d =.70).

Given that the assumption of equal variances was met (p=.06), a (2 x 3) two-way ANOVA was used. No statistically significant interaction effect between access to the Internet and semester was found $F_{(2, 157)}$ =.28, p=.75, (R^2=.004). The group with access to the Internet represented 89% (n=145) of the population, and the group without the access was 11% (n=18). Three semesters, Fall 2004, Spring 2005, and Summer 2005, each represented 44.2% (n=72), 37.4% (n=61), and 18.4% (n=30) of the participants. No statistically significant difference between the group means for students with access to the Internet and those without the access was found $F_{(1, 157)}$ =.99, p=.32, (R^2=.006).

Of all the demographics investigated, only students' prior experience with the computer seemed to affect their self-efficacy for technology integration at either time point, indicating that students with over six years experience with the computer scored significantly highly than those with up to six years experience with the computer on the self-efficacy for technology integration scale. Three other variables (i.e., gender, work, and access to the Internet) did not appear to influence students' self-efficacy for technology integration to a significant degree.

CONCLUSIONS

This year-long quantitative study was anticipated to investigate the effectiveness of a Hispanic-dominated pre-service computer literacy program in a border university in South Texas. The effectiveness was operationalized and determined primarily by increased self-efficacy for incorporating computer technology into curriculum upon the completion of the computer literacy course. A questionnaire comprised of three measures: Self-Efficacy for Technology Integration Instrument, Long and Dziuban Learning Style Inventory, and Student Demographics was administered at two time occasions in each of the three semesters during 2004 and 2005. Data were complied in an Excel file and then imported to SPSS v.13 for further analysis.

These student teachers' confidence in incorporating appropriate technologies into curriculum changed from Time One to Time Two significantly in the Fall Semester of 2004, the Spring Semester of 2005, and the Summer I Semester of 2005. This suggested that effectiveness of the required computer literacy course was evidenced. Because there was not any significant difference in mean self-efficacy scores among semesters either in the beginning or at the end of each semester, these participating student teachers seemed to begin the course with a similar confidence level in terms of use of technology in the curriculum. Upon completion of the course, they appeared to have acquired a similar confidence level in instructional use of technologies at the class level. A longitudinal study is needed to make a confident statement in this area.

Based on the test results in the Question Two section, student behavior pattern did not seem to affect their overall self-efficacy either in the beginning or at the end of each semester. An aggressive-dependent learner's confidence of integrating technology into curriculum did not differ from that of a non-aggressive-dependent learner. Further analysis should focus on the subscale level of self-efficacy for technology integration and any potential impact of the four auxiliary traits of Behavior Pattern.

Students' demographics: gender, work, prior experience with the computer, and access to the Internet were studied in the investigation of their moderating effects on overall self-efficacy of this mostly Hispanic student group. For the purpose of this study, the demographics (except work status) were collapsed into dichotomous variables. Results suggested that students with more than six years experience of using a computer seemed to feel more confident than those with no more than six years experiences of using a computer when they started the course and when they completed the course. As computers receives acceptance in South Texas, this observation may not hold true in the long run. Perhaps attention should be placed on these students' social economic background.

Due to the fact that data were collected from one single university, cautions apply when generalizing these results to similar settings.

ACKNOWLEDGEMENT

This paper is dedicated to the memory of Dr. Thomas Eugene Bayston, Jr. who provided great inspiration on this study. Many thanks go to Dr. Charles D. Dziuban, Dr. Michael Sullivan, and Mr. Juan Hinojosa for their support and encouragement.

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