

**A STUDY OF PERSISTENCE FACTORS OF NONTRADITIONAL
STUDENTS ENROLLED IN NONCREDIT INFORMATION
TECHNOLOGY PROGRAMS IN THE ADVANTAGE VALLEY
COMMUNITY COLLEGE CONSORTIUM.**

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**Dissertation submitted to the Faculty of the
Marshall University Graduate College
in partial fulfillment of the
Requirements for the degree of**

**Doctor of Education
in
Educational Leadership**

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Key words: Adult Student Persistence, Noncredit Information Technology

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ABSTRACT

A study of persistence factors of nontraditional students enrolled in noncredit information technology programs in the Advantage Valley Community College Consortium.

By Steven L. Brown

As continuing education divisions of college's noncredit programs assume a greater role to help develop workforce job skills, it is important to understand what factors affect student persistence. There have been no studies on nontraditional student persistence in noncredit information technology training programs. This study examined non-traditional students enrolled in noncredit information technology (IT) programs in the Advantage Valley Consortium in the state of West Virginia. The study was conducted to determine if the demographic factors that were identified in the literature as adversely affecting non-traditional students pursuing credit programs of study also affected students enrolled in noncredit IT programs of study. The survey population (n=176) consisted of noncredit IT students who had attended Marshall Community and Technical College, West Virginia State Community and Technical College, and West Virginia University Technical Community and Technical College during the years 2000 through 2005.

There was no statistically significant correlation between the background demographics of age, family situation, level of family support, financial aid needs and previous educational attainment to persistence in their noncredit IT program of study. The primary factor that affected student persistence in their IT program was an unexpected illness. Respondents further indicated that, contrary to the literature, students did not receive a direct economic benefit from completing their IT program. A low number of students reported that they had taken an IT industry certification exam, which does not support literature that indicated that IT certifications would be the primary objective of noncredit students since industry certifications are critical for workers to demonstrate their skills and knowledge, and generally result in higher salaries.

DEDICATION

I wish to dedicate this research to my family who influenced my pursuit of and education; my wife Cheryl who has provided me support and inspiration; my children for whom I hope to instill lifelong learning; my mother who as a child educated in the German system had completed her education in the ninth grade; and my deceased father who started work as a migrant farm worker and did not have the opportunity to pursue post-secondary education until late in life after I had left home. They have always inspired me to work harder and do more than I thought I could.

ACKNOWLEDGMENTS

As I reflect back on the daunting task of completing the literature review, research, many iterations of this document, I realize; that I am in debt to many individuals for the understanding and encouragement they have provided me. Without the support of my family, friends, and committee members this task would not have been completed. I further wish to acknowledge the support and of the specific individuals who helped guide me in this endeavor:

To my chair, Dr. Dennis M. Anderson, who has been patient, understanding and providing me guidance throughout this process. There is not a week that goes by in which something I have learned in his classes has not proven valuable in my job and from whom I constantly seek advice and counsel, and plan to continue to do so into the future.

To Dr. Robert Bickel, who helped me to navigate the complex world of statistical analysis and helped me to transform the research data into understandable, meaningful and valuable information.

To Dr. Teresa Eagle, who always provided me encouragement and helped me through the entire process from admission to completion. As an expert on APA style she has been a blessing and a curse.

To Dr. Bobbie Nicholson, who I can always rely on to critically analyze each word and sentence, and can always be relied upon to ask a probing “unexpected” question.

To Dr. Andrew Sikula, who as my minor chair, readily volunteered to help me with selecting the course to fulfill my minor requirements and supported me throughout this process.

To my wife, Cheryl she was far more understanding of the real work involved in writing a dissertation than I was with her when she wrote hers. I know that she is really looking to my no longer having “I am working on the dissertation” as an excuse as to why I have not yet built her the back deck.

To Michelle Duncan, who gave me a graduate assistant job that enabled me to easily afford to attend college, access to a computer and printer, and encouraged me to apply for a job at Marshall.

To my coworkers who truly “walked the talk” on the value of pursuing higher degree by allowing me to develop a flexible schedule so that I could attend classes and understood when I had to work on my dissertation and could not take on additional projects.

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CHAPTER ONE: INTRODUCTION, OVERVIEW, PROBLEM STATEMENT

“In the long run, nothing influences a state’s prosperity more than the education of its people -- not oil, coal, gas or any other natural resource” (Southern Regional Education Board, 2002, p.16).

Historically, two-year institutions have provided equal access to higher education and job skill training to all citizens. These educational institutions traditionally have been expected to provide vocational and career education, to transition students to baccalaureate institutions, and to provide continuing education (Averett & Dalessandro, 2001). In recent years, state legislators have also called upon two-year institutions to provide postsecondary educational training to assist in workforce development (Brock, Matus-Grossman & Hamilton, 2001; Mazzeo, Rab & Alssid, 2003).

The purpose of this study is to determine if the same background demographic factors that have been identified as negative factors in previous studies of adult student persistence in associate degree for-credit programs of study also negatively influenced completion rates of adult students completing noncredit Information Technology (IT) certificate programs of study. This study adds to the body of literature by providing research on persistence and background demographics of noncredit adult students. Research by Matus-Grossman and Gooden (2002a) indicated that adult students enrolling in noncredit programs of study possess the same background demographics as adult students enrolled in for-credit programs of study. Adults take noncredit courses to attain

job skills because noncredit programs allow them to more rapidly join the workforce. Nationally, Adelman (2000a) found that noncredit IT training programs trained more adult students than academic credit programs of study. Although these students enrolled in noncredit training possess the same background demographics as students enrolled in academic credit programs, there is an absence of literature that addresses the effect of background demographics on completers or non-completers enrolled in noncredit IT programs.

The increased need for IT workers also affects the geographical area that is served by Marshall Community and Technical College, West Virginia State Community and Technical College, and West Virginia University Technology Community and Technical College. This geographical area was identified by the West Virginia State Legislature as the Advantage Valley Consortium area (S.B. No. 653, 2000, p. 113). The American Association of Community Colleges, which was contracted by the West Virginia Community and Technical College System to forecast regional job needs, has predicted that by the year of 2006, there would be a need for an additional 597 IT employees in the Advantage Valley Consortium area (AACC, 2004). Employers expect these IT employees to possess IT skills that are frequently validated by IT industry certifications.

Background

Since the 1970s, higher education has experienced a dramatic increase in full-time and part-time students. This increase occurred even though the number of high school students remained “relatively flat” during this time (Aslanian, 2001, p. 2). In the last ten years, the number of students over 25 years old enrolled in college increased by 75% (Aslanian, 2001). Bash (2003) stated this increased enrollment of adult learners reflected

a new reality: education is now considered to be a lifetime process. Adult students are either returning to postsecondary education after an extended absence or starting college in recognition that secondary education provides insufficient access to middle-income jobs. This expanded adult student enrollment is found to have occurred because adult workers realize that they need to learn new competencies and job skills necessary for today's workforce (Aslanian, 2001).

Typically, associate degree programs require the completion of a stringent program of study with 60 or more academic semester credit hours. Information technology associate degree programs are provided by colleges in a traditional educational format incorporating mathematics, English and social science courses (Sanchez, Laanan & Wisely, 1999). On the other hand, noncredit IT programs provide job-skill specific education that enable individuals to focus solely on the IT skills that employers desire (Adelman, 2000). There is no prescribed educational format, length of training, or delivery method for noncredit IT programs (Adelman, 2000; Aslanian, 2002). Because these courses are competency based, success is determined by the student's demonstration of the attainment of skills. An IT competency demonstration is the sole requirement for the earning of an industry certificate. Completion of an associate's degree or a noncredit IT program educates students to meet employer job skills expectations and enables either type of student to enter the IT field (Adelman, 2000).

Past studies on persistence have been focused exclusively on students enrolled in for-credit programs of study. Research by Matus-Grossman and Gooden (2002a) indicated that adult students, because of their additional responsibilities, preferred to

enroll in programs of studies that allowed them to gain job skills more rapidly. These adult students frequently opted to register for noncredit programs, which could be completed in a much shorter time frame and did not require course work in what is considered non-critical subjects to gaining employment in the IT field, such as mathematics and English (Adelman, 2000a).

Adult Student Persistence Factors

The Bean and Metzner (1985) retention model for nontraditional college students identified pre-college background variables that have a direct impact on student retention and educational goal attainment. These variables included (a) age, (b) enrollment status, (c) residence, (d) educational goals, (e) high school educational performance, (f) ethnicity, and (g) gender (Bean & Metzner, 1985). The presence of pre-college background demographics working in concert can negatively affect student persistence and are often referred to by researchers as “risk factors” (Bean & Metzner, 1985; Choy, 2002; Greene & Greene, 2002; Horn, Premo & Malizio, 1986).

Age was defined as a student’s age when starting his or her program of study. Enrollment status was defined as either full-time or part-time student attendance with part-time status negatively affecting completion. Residence was defined as living on-campus versus residing off-campus with off-campus residency negatively affecting completion. The ultimate educational goal was an earned degree. It was found that the higher the degree that the adult students aspired to ultimately attain, the more likely they were to have completed their programs of study. High school performance was an indicator of a student’s preparedness for college level work. Whether students had taken

college preparatory courses in high school did significantly affect degree completion (Bean & Metzner, 1985).

Hoyt (2000), using the Bean and Metzner research model in a Utah Valley State College study, found that 65% of first year nontraditional students enrolled in an associate degree program and majoring in computer science returned the following year. Adult students attending postsecondary education with only one risk factor have been found to complete a baccalaureate degree program 64% of the time within five years; for students with three or more risk factors, however, the graduation rate drops to 43% (Greene & Greene, 2002).

Although the Bean and Metzner (1985) model laid the groundwork for research in adult student persistence, more recent studies have focused on adult students from lower socioeconomic conditions, who often are in greatest need for improved job skills. These recent studies of adult students and workforce development found that other factors needed to be considered when taking into account nontraditional students (Choy, 2002; Golonka & Matus-Grossman 2001; Matus-Grossman & Gooden, 2000a). These other factors included family situation, level of family support, and financial need (Choy, 2002; Golonka & Matus-Grossman 2001; Matus-Grossman & Gooden, 2000a). Furthermore, Choy (2002) found that because a significant number of adult students returned to postsecondary education as stop-outs, the more accurate description for adult students was to use the term “previous educational attainment” rather than high school educational performance” to describe adult student preparation for postsecondary education. Conversely, other studies which focused on workforce development and adult college student persistence found that sex and ethnic background were not statistically significant

for adult student persistence (DiBiscelligi, 2002; Greenberg, 1997; MacLellan, 2001; Shelley, 2002; Thornton-Heath, 2002).

This study used the following independent variables that were identified by Choy (2002) as background demographics that adversely affect retention: (a) age, (b) family situation, (c) level of family support, (d) financial aid needs, and (e) previous educational attainment to determine the effect, if any, on the completion of noncredit IT programs. These independent variables have surfaced as recurring themes in research by Golonka and Matus-Grossman (2001), and Matus-Grossman and Gooden (2002) as barriers to adult students' completing postsecondary education.

Age

Horn and Carroll (1996) found that only 27% of adult learners aged 24 years and older who started work on an associate's degree in 1989 had completed their degrees by 1994. In a study at Mountain State Community College, Sydow and Sandel (1998) found that 45% of the students aged 20-25 did not return to college the second year and that 28% of students, aged 36 years and older did not return to college at all. Feldman's (1993) research also indicated that students aged 26-35 completed their programs of study at the same rate as traditional aged students at 14%.

By 1998, 58% of students with an IT certification were younger than 35 years of age compared to 44% in 1996 (Alderman, 2000). A workforce development study by the National Academy Press (2001) found that 91% of students enrolled nationwide in IT associate degree programs were over the age of 25, and that 18% of these adult students were enrolled in IT programs to develop computer skills to meet employer needs. By 1999, 39% of all students enrolled in postsecondary education were over the age of 25

(Choy, 2002). Since the late 1990s, the average age of students earning IT certifications has been decreasing. However, studies of adult college student persistence indicated that students between the ages of 28 and 38 are less likely to persist and complete their educations (Feldman, 1993; Greenberg, 1997; Thornton-Heath, 2002).

Family Situation

Research indicated adult students who have dependents other than spouses are adversely affected in the completion of their postsecondary education (Brawer, 1996; Horn, Premo & Malizio, 1996; Matus-Grossman & Gooden, 2000a). This negative influence on retention is especially true for single parents who are faced with a difficult decision on priorities when childcare is unavailable. By 1999, 45.3% of students enrolled in associate degree programs had dependents other than a spouse (Horn, Peter & Rooney, 2002).

Level of Family Support

The level of family support most significantly influences low-income individuals because they have a more difficult time balancing work, family, and college. Frequently a single negative event can trigger a decision to drop out of college, such as a lack of childcare and/or transportation (Golonka & Matus-Grossman, 2001; Hensley & Kinser, 2003; Matus-Grossman & Gooden, 2000a). Family support for the completion of educational goals has been found to positively affect student persistence and attainment of certifications and/or degrees (Donaldson & Graham, 1999; Greenberg, 1997; Heath-Thornton, 2002; Hensley & Kinser, 2001).

Financial Need

Because of financial considerations, many students are unable to afford the cost

of reducing their incomes to pursue further education or training. Some employers were found to be unwilling to adjust work hours to accommodate class schedules, thereby forcing students to decide between attending college or working (Golonka & Matus-Grossman, 2001; Horn, Premo & Malizio, 1996; Matus-Grossman & Gooden, 2000a). For students enrolled in for-credit courses, reductions in state government-supported funding of postsecondary education that generally benefits lower income individuals have adversely affected the ability of lower income students to attend college (Lachman, 2002; Paulson, 1998; Powell, 2002). Tuition has been increased to offset the reduced level of state funding at public institutions, and the amount of federal grant money available to each student has not been raised to a corresponding level. The failure of federal funding to offset more of the tuition costs of higher education has resulted in an increasing number of low-income students' using student loan money to offset educational costs. Because of concern over incurring future long-term debt, the use of student loans to fund postsecondary education has been found to negatively affect persistence (Golonka & Matus-Grossman, 2001).

Students enrolled in noncredit programs of study are ineligible for traditional financial aid such as Pell Grants or student loans. The cost of for-credit college level courses in public education is subsidized by the state. In the state of West Virginia continuing education components of community and technical colleges are required to be self-supporting. Because of this requirement, a minimum tuition cost for noncredit classes must recoup all of the direct and indirect costs associated with course delivery.

Not all employers offer tuition reimbursement for noncredit courses. For example, local employer ALCON has a policy that offers reimbursement for employees enrolled in

for-credit courses only. The company's management did not offer tuition reimbursement because it would offer any necessary skill development training that employees need (J. Hoppe, personal communication, February 10, 2005). St. Mary's Medical Center took a different approach by providing a flat annual reimbursement rate for any training (for-credit and noncredit) that employees take (St. Mary's Medical Center, 2004). Because of limited reimbursement from employers, it is frequently more expensive for students to take noncredit IT courses versus for-credit IT courses, even if the learning outcomes are similar. Adelman's research (2000a) indicated that approximately 50% of employers provided financial support for students enrolled in IT programs of study.

The majority of enrolled adult community college students work full time (Aslanian, 2001; Horn, Premo & Malizio, 1996). Working adults are ineligible to receive financial aid grants because of their income. Although tax incentives existed for employers to offset educational costs, only 8-9% received educational assistance from Section 127 of the Revenue Act of 1978, often requiring the employee to absorb the cost of an education (Futureworks, 2002a). Individual tax incentives are limited because internal revenue codes state that in order for students to take advantage of the tax credits they must enroll in six credit hours per term. Thus students enrolled in noncredit courses are not eligible to deduct the costs of the training.

Previous Educational Attainment

Lower income individuals attending postsecondary education are often faced with the requirement to take developmental courses to compensate for a lack of academic preparation from high school or knowledge attrition (Choy, 2002; Golonka & Matus-Grossman, 2001; Hensley & Kinser, 2001; Matus-Grossman & Gooden, 2000a). Golonka

and Matus-Grossman (2001) found that the increased academic requirements placed upon nontraditional students, by requiring them to take noncredit developmental courses, have a negative effect upon retention and completion of for-credit programs of study.

Choy (2002) reported that 22.5% of nontraditional students who had attended postsecondary institution without having earned a high school diploma or having earned a General Equivalency Degree did not complete his or her program of study.

Problem Statement

Only recently have researchers started addressing the issue of adult student persistence in community colleges (Greenberg, 1997; Heath-Thornton, 2002). However, Greenberg's (1997) research focused only on students enrolled in associate or baccalaureate degree programs, and Heath-Thornton's research focused on students attending a private college. There is a lack of research addressing the persistence of adult students enrolled in noncredit programs of study. Research on the persistence of adults in noncredit programs of study is especially critical since, as identified by legislators in West Virginia Senate Bill 653 (2000), it is mandated that the noncredit component of community colleges play a more significant role in workforce development. A study that identifies the background demographics of adult students that persisted in Information Technology noncredit programs can augment efforts to better understand the factors that affect persistence. Because this study focused on adult students enrolled in noncredit IT programs of study, this research adds to the body of literature by providing research on persistence and background demographics of noncredit adult students.

Adult students enroll in noncredit Information Technology programs to rapidly attain skills to enter the job market. This training is provided by public higher education

institutions in the Advantage Valley Consortium area by the continuing education components of three Community and Technical Colleges: Marshall Community and Technical College, West Virginia State Community and Technical College, and West Virginia University Institute of Technology Community and Technical College. There has been no research to determine what background demographics may adversely affect completion of noncredit IT programs of study.

Purpose of the Study

The purpose of this study is to determine if there is a problem with retention in noncredit IT programs of study, and if there is a retention problem, whether the same background demographic factors that have been identified in previous studies of adult student persistence in associate degree for-credit programs of study also influenced completion rates of adult students completing noncredit Information Technology certificate programs of study.

Research Questions

1. What is the attrition rate of students enrolled in noncredit IT certificate programs?
2. Is there a relationship between *age* and the persistence of students enrolled in noncredit IT certificate programs?
3. Is there a relationship between *family situation* and the persistence of students enrolled in noncredit IT certificate programs?
4. Is there a relationship between *level of family support* and the persistence of students enrolled in noncredit IT certificate programs?
5. Is there a relationship between *financial aid needs* and the persistence of students enrolled in noncredit IT certificate programs?

6. Is there a relationship between *previous educational attainment* and the persistence of students enrolled in noncredit IT certificate programs?

7. What economic benefits, if any, did students attain as a result of being enrolled in noncredit IT certificate programs?

Operational Definitions

Age: The age of a student when enrolled in a noncredit IT program as self-reported by individuals on the *Advantage Valley Adult Student Persistence Questionnaire* (Choy, 2002).

Completer: Students who complete their postsecondary educational programs by earning a certificate as self-reported by individuals on the *Advantage Valley Adult Student Persistence Questionnaire*. (Aslanian, 2001; Bean & Metzner, 1985; Choy, 2002).

Economic Benefit: The financial benefit derived as a result of participating in noncredit IT training as measured by self-reported responses on the *Advantage Valley Adult Student Persistence Questionnaire* (Adelman, 2000a & 2000b; Aslanian, 2001).

Family situation: The number of immediate family members residing in the home as measured by self-reported responses on the *Advantage Valley Adult Student Persistence Questionnaire* (Golonka & Matus-Grossman, 2001; Matus-Grossman & Gooden, 2002a).

Financial aid: The amount of financial support a student received from all sources to include employer as measured by self-reported responses on the *Advantage Valley Adult Student Persistence Questionnaire* (Lachman, 2002; Paulson, 1998; Powell, 2002).

Level of home support: The reported level of perceived family support for the attainment of educational goals as self-reported by responses on the *Advantage Valley Adult Student Persistence Questionnaire* (Greenberg, 1997; Heath-Thornton 2002).

Noncredit programs of study: Programs of study that focus on developing competency skills via training that enable individuals to learn industry recognized skill sets or industry certifications as measured by response on the *Advantage Valley Adult Student Persistence Questionnaire* (Adelman, 2000a & 2000b).

Persistence: Completion of a noncredit program of study as self-reported by individuals on the *Advantage Valley Adult Student Persistence Questionnaire* (Choy, 2004a & 2004b; Greenberg, 1997; Heath-Thornton, 2002).

Previous educational attainment: The highest level of educational attainment prior to attending IT training as measured by self-reported responses on the *Advantage Valley Adult Student Persistence Questionnaire* (Choy, 2002; Golonka & Matus-Grossman, 2001; Hensley & Kinser, 2001; Matus-Grossman & Gooden, 2000a).

Significance of the Study

Gray (2005) predicted that United States businesses will need over 200,000 additional IT employees by year 2010. These IT employees will be required to have skills attained from postsecondary educational sources, but below the baccalaureate level. Information Technology employers will be seeking out employees with job skills that are validated by industry credentials in lieu of postsecondary degrees. Adelman (2000a & 2000b) reported that in information technology, adult students are enrolling in noncredit programs in lieu of attending traditional college courses to acquire job skills.

Through their continuing education components, Advantage Valley Consortium colleges offer both credit and noncredit IT courses to train and update worker skills within their regional service areas. Although graduation rates are maintained on students enrolled in for-credit programs, completion rates are not maintained for students taking noncredit IT programs. This study determines if there is a retention problem with noncredit IT programs. If there are problems with student retention in noncredit programs, this study uses the factors that are known to adversely affect adult student persistence in for-credit programs to ascertain if these factors also affect retention in noncredit IT programs of study.

There are several constituencies that can benefit from research on retention in noncredit IT programs of study. The first constituency that will benefit from this study will be presidents of community and technical colleges. Community and technical colleges are required to submit two reports annually on their training. First, an annual Perkins Fund report is required to demonstrate how federal funds have been utilized in technical training and education of students. This report currently tracks the total number of adults who have received training from both credit and noncredit programs.

The second report that community and technical college presidents are required to submit focuses on the accomplishments of their Compact Goals. These goals are negotiated and agreed upon annually with the Chancellor of the West Virginia Community and Technical College System. In Compact Goal III colleges are required to list their accomplishment of work force development training from both for-credit and noncredit programs. This study can help Advantage Valley Consortium colleges to more accurately report the results of their IT training.

The Board of Advisors of the Advantage Valley Community and Technical Colleges can also benefit from this study. As community colleges assume more responsibility for their own governance, the Board of Advisors can use the results of this study to provide better guidance to the president and staffs. With passage of West Virginia Senate Bill 653 (2000), state legislators clearly held community colleges responsible for the mission of workforce development. The need to educate and train the workforce has been further reinforced with West Virginia Senate Bill 448 (2004). This study can help in determine if noncredit IT training is having a positive affect on workforce development.

Local Workforce Investment Boards (WIBs) can benefit from this study as well. In accordance with the Workforce Investment Act of 1998, WIBS are responsible for providing counseling, career advisement, and funding for unemployed or underemployed workers (Jacobs, 2001). These agencies provide significant funding for adults to attend training/retraining courses to attain job skills. With improved knowledge of student persistence factors, local WIB case managers can better advise their clients in selecting the optimum training or educational programs to develop marketable workforce skills.

Limitations and Assumptions

This study focused only on those students enrolled in IT noncredit programs offered by Marshall Community and Technical College, West Virginia State Community and Technical College, and West Virginia University Institute of Technology Community and Technical College. West Virginia Senate Bills 653 and 448 refer to this group of component community and technical colleges as the Advantage Valley Community Colleges. The student population selected for the survey was all students enrolled in the

IT noncredit programs of study during the time frame 1999 through 2004 and available to the researcher in the spring semester of 2005.

This study was limited to students who have taken courses in the Advantage Valley Community College consortium in the state of West Virginia, and therefore the results may not apply to students at other West Virginia institutions or in other states (Kerlinger & Lee, 2000).

1. This study uses a self-reporting questionnaire survey and is limited in accuracy by the participants' responses (Kerlinger & Lee, 2000).
2. This study is limited to students enrolled in noncredit information technology courses in the Advantage Valley Community College consortium in the State of West Virginia, and therefore the results may not apply to students enrolled in other noncredit programs of study.
3. It is assumed that with assured anonymity respondents will answer questions honestly.
4. The survey instrument, Advantage Valley Adult Student Persistence Questionnaire (AVASPQ), is adapted from the Adult Student Persistence Questionnaire (ASPQ) that has been used in two previous studies in both two and four- programs (Greenberg, 1997; Heath-Thornton, 2002).
5. The survey instrument was sent to adult students who are completers and noncompleters of IT programs of study. There is a probability that the rate of survey returns from noncompleters will be significantly lower than completers, thus lowering the overall rate of return.
6. A narrowly defined population reduces the ability to generalize the findings to a

broader population (Gay, 1987).

Summary

Nontraditional students return to postsecondary education to develop new job skills. With knowledge provided by research on the effect of background demographics on the completion of programs of study, case managers at Workforce Investment Boards and advisors from the continuing education components of community colleges within the Advantage Valley consortium can help meet the needs of students by providing proper advisement in the selecting of the best type of IT program of study. Improved completion rates of adult students in noncredit programs can help community and technical colleges meet the workforce development of employers and comply with the state legislature's mandates.

CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

This chapter is a review of the literature involving the identification and significance of the demographic factors of adult students enrolled in noncredit information technology (IT) programs of study. These selected demographic factors will be used as the independent variables in this study and will be reviewed and discussed individually within the context of available literature. The independent variables that will be reviewed are as follows: (a) age, (b) family situation, (c) level of family support, (d) financial aid, and (e) previous educational attainment. The dependent variable is completion of the IT program of study.

Previous studies on adult student persistence have found that the presence of two or more of these demographic factors work to negatively influence adult completion of postsecondary education (Choy, 2002; Golonka & Matus-Grossman, 2001; Greene & Greene, 2002; Matus-Grossman & Gooden, 2002; Tweedell, 2000). Frequently, it has been found that it is a combination of these factors, and not the presence of a single factor, that has influenced students in deciding to withdraw from postsecondary education. Since most of the literature deals with each of these demographic factors independently, they will be discussed independently.

The negative effect that demographic factors have on persistence varies with each student. Greenberg (1997) reported that the conflicting external demands of family situation, the need to work, and going to school often had a negative impact on persistence. Heath-Thornton (2002) found that 59.1% of adult students that had

completed postsecondary education had at one time seriously considered withdrawing. The most common reasons given by these students for withdrawing were stress from family and work and the cost of attendance.

Age

By 2001, over 39% of all postsecondary education students were over 25 years old (Aslanian, 2001; Choy, 2002). Since 1970, this reflected an 11% increase of students over the age of 25 (Choy, 2002). Phillippe and Valiga (2000) reported that by 1997, 16% of the community college populations were aged 40 years or older. Forty-six percent of all postsecondary undergraduate students have delayed their enrollment into college instead of entering immediately upon completion of high school (Choy, 2002). The literature about the impact of age on retention is contradictory. While one set of research data indicated that the non-persistence rate of adult students is greater for students in their 30s, another study indicated that the non-persistence rate is greater for students in their late 20s (Greenberg, 1997; Heath-Thornton, 2002).

Feldman (1993) found that students aged 20-25 dropped out of college at the highest rate of any age group. The second age group with the highest drop out rate was those students aged 36 years and older, with a nonpersistence rate of 28%. Students, aged 26-35 were found to have dropped out of postsecondary education at a rate of 14%, which is almost the same rate of traditional college students aged 19 years and younger.

In his study of community college students, Greenberg (1997) found that age affected the persistence of adult students differently. As adult students mature, a different combination of demographic factors influenced student persistence. Financial need was found to have a greater effect on students aged 25-39 years (Greenberg, 1997). However,

students aged 40 years and older, who successfully earned their associate's degrees, often had spouses providing financial support (Greenberg, 1997; Phillippe & Valiga, 2000; VanDerlinden, 2002). Students at this age also experienced reduced negative influence from their parental roles since their children typically were older, attending school, and showing more independence (Greenberg, 1997; Heath-Thornton 2002).

Greenberg's (1997) research further indicated that the motivation of adult students to return to college varies based on the adult student's age. Students aged 25-39 often attended college to help make themselves more competitive for their current jobs. VanDerlinden's (2002) study of community college students, during the years 1999 and 2000, found that 58% of adult students enrolled in academic programs were taking classes for career preparation. Research further indicated that older students often developed more pronounced institutional commitment to complete their programs of study (Greenberg, 1997). Greenberg (1997) attributed this increased commitment to the fact that older students recognized the value of completing and earning a degree. This increased commitment was found to be especially true for those students enrolled in courses to help them work in their chosen career fields (Greenberg, 1997).

The student's age also influenced academic performance. Students 31 years and older have been found to have lower perceptions of their academic abilities than students between the ages of 25-30 (Nunn, 1994). As students returned to an educational environment, they often were required to take developmental courses to compensate for poor academic skills (MacLellan, 2001). Adult students' arrival to postsecondary with poor academic skills is often a reflection of degradation of knowledge since secondary schooling or their failure to take college preparatory classes while in secondary education

(Golonka & Matus-Grossman, 2001; MacLellan, 2001; Matus-Grossman and Gooden, 2002).

In a report on the demographics of West Virginia noncredit students, it was found that 76.2% were aged 25 years and older (ACT Educational & Social Research, 2001). The largest group of these students was aged 50 years and older, comprising 37.6% of the total students. The smallest group of enrolled students was those aged 25-29 years, comprising only 6% of the student population. Students aged 30-39 comprised 12% of noncredit students, while 19.7% of the students were aged 40-49 years.

Family Situation

The literature on the family situation and persistence is limited. Metzner and Bean (1987), in their model of nontraditional student persistence, recognized that families play a key role in retention. However, a follow-up study by Heath-Thornton (2002) found that the majority of nontraditional students are caring for children. In studies of adults desiring to participate in federally funded workforce development programs, Golonka and Matus-Grossman (2001) found that the majority of individuals with children state that the lack of childcare limited their ability to participate in postsecondary education.

The lack of child care is found to be a prevalent source of discouragement for adult community college students with more than 60% reporting that family responsibilities and child care problems had created difficulties for them while attending school (VanDerlinden, 2002). Forty-five percent of community college students who enrolled in classes to change their careers reported that they were single parents and that the cost of child care created significant problems for them while enrolled in classes (VanDerlinden, 2002). Even when their children attended secondary education, the lack

of child care limited course selection for these individuals since some courses were only offered after the children were out of school (Golonka & Matus-Grossman, 2001; Tweedell, 2000).

Family situation influences the perceived primary role of adult students (Greenberg, 1997; Heath-Thornton, 2002). Studies indicated that female students with families viewed their primary roles to be parents versus students (Greenberg, 1997; Heath-Thornton, 2002; Golonka & Matus-Grossman, 2001). The affect of this perception is that if a conflict arises between educational programs of study or family duties, students will withdraw from school to take care of their family member(s).

An American Association of Community Colleges study showed that single parents comprised only 7% of the students enrolled in a college credit program of study (Phillippe & Valiga, 2000). However, 51% of these single parents reported that their annual family incomes were below \$20,000. Because of this low average family income, 29% of the single parents reported they were reliant on public assistance to complete their educational programs (Phillippe & Valiga, 2000).

Berker and Horn's (2003) study of college students from 1999-2000 found that 52% of nontraditional students were married, and these students reported they felt that their primary roles were as employees who attend college versus college students who also work. The necessity to support a family often detracts from a student's emphasis on academics, and frequently, these students will accept lower grades or failing classes to accommodate work or family schedules. Research has further shown that having dependents other than a spouse had a negative effect on student persistence with the impact increasing as the number of dependents increased (Berker & Horn, 2003; Berkner,

Horn & McCune, 2000). Fifty-seven percent of students who viewed their roles as employees had dependents in addition to spouses. However, it was found that 57% of students who viewed their primary roles as students, had only a spouse as a dependent and correspondingly better rates of persistence (Berker & Horn, 2003). The number of dependents affects the primary role nontraditional students select for themselves, which, in turn, affects academic persistence.

In a report on West Virginia noncredit students, it was found that 8.7% identified themselves as having the primary role of caring for family members or stay at home parents (ACT Educational & Social Research, 2001). The majority of the remaining noncredit students had identified themselves as either working full or part-time, and another 20% identified themselves as unemployed. Additionally, a large number of students had reported that they had decided to register for noncredit courses because they desired to have time for family or personal interests.

Level of Family Support

Studies of adult students returning to postsecondary education found that one of the primary reasons cited for their previous departure was a lack of emotional or moral support from family members (Hensley & Kinser, 2001). This lack of support included being told by a significant family member that the student did not have the capability to do college-level work (Hensley & Kinser, 2001). If family support and encouragement from friends is absent, adult students will tend to withdraw from college even if they are doing well academically (Greenberg, 1997).

Adult students reported that their family support for the completion of associate degree programs helped them to remain in school even after the student had considered

withdrawing prior to graduation (Greenburg, 1997; Metzner & Bean, 1983). Family member support often compensates for a limited on-campus social integration that assists traditional college students in succeeding. Married respondents stated that spousal support and encouragement were of the greatest importance in their persistence and completion of their degree programs. Greenberg (1997) found that spousal support was present in different forms to include assistance with household chores and financial and moral support. Several respondents stated that spousal support was not present initially but grew over time (Greenberg, 1997).

Divorced parents felt that support from their children was the most important factor in their persistence. Unmarried students received their support from immediate members who had encouraged them to complete their programs of study (Greenberg, 1997; MacLellan, 2001; Tinto, 1983). Greenberg's (1997) research further found that students with parents, siblings, or friends with postsecondary education are more likely to receive support from them.

On-campus social integration has been found to improve student persistence (Pascarella & Terenzini, 2001). An increased level of on-campus social integration often compensates for the lack of family support or if the individual is the first family member to attend postsecondary education (Pascarella & Terenzini, 2001). Social integration includes contact with faculty members and fellow students outside of the classroom. However, community college students often have demands that curtail their ability to meet informally with both peers and faculty (Greenberg, 1997). Because of these demands, family support is often critical for the academic success of nontraditional students.

Nationwide, community college students tend to commute to classes and not reside in the dormitories, so they often do not receive the benefits of on-campus social integration that traditional on-campus students derive (MacLellan 2001; Metzner & Bean, 1987). MacLellan (2001), in her study of community college students, found that family support helped to push both traditional and nontraditional students to completing their course work. Community college students, unlike students attending more traditional baccalaureate institutions, often have more outside commitments that prohibit them from integrating into the academic life of the college experience that often promotes persistence. MacLellan (2000) attributed family support as providing compensation for the lack of campus social integration that provides encouragement for traditional students to persist.

Financial Aid

The literature on the impact of financial aid is contradictory and inconsistent. Wood's (2002) research on community college students determined that financial need was not a primary factor in student persistence, but contributed to a student's decision to stop attending college. Community college students typically enrolled in a local college for several reasons: convenience of location, development of workplace skills, and development of confidence in their academic abilities prior to attending a college away from home. Students from Wood's (2002) study did not attribute financial need as a factor in their decision to depart college.

However, from their nationwide study of community college students, Phillippe and Valiga (2000) found that personal financial problems adversely affected approximately 58% of the students. Phillippe and Valiga further found that 48% of first

generation students and 42% of all community college students reported that financial aid was a very important source of funding for college. Previous studies have shown that although financial concerns were a factor in student non-persistence, students leaving college considered financial concerns as a contributing factor, but not the primary reason for withdrawal from college (Sydow & Sandel, 1998; Tweedell, 2000).

The federal government primarily uses the Pell Grant program to distribute need-based financial aid for students enrolled in postsecondary education (Choy, 2004). Technically Pell Grants are available for students enrolled part-time for six to eleven credit hours. However, students enrolled in classes for fewer than six credit hours comprised less than 1% of Pell Grant recipients, and Pell Grants are not available for those students enrolled in noncredit programs (FutureWorks, 2002a). Because of time constraints from work and family, adults are often limited to enrolling in fewer than six credit hours per semester to keep from becoming overloaded. If they are not enrolled for at least six hours, this places an even larger financial strain on them. Part-time students are ineligible for federal subsidized loans if they are not enrolled in six or more credit hours. (FutureWorks, 2002a; Golonka & Matus-Grossman, 2001; Matus-Grossman & Gooden, 2002).

The majority of research indicated that reductions at the level of state government support in funding postsecondary education have caused colleges to raise tuition rates and that these increases adversely affect the ability of lower income students to attend college (Lachman, 2002; Paulson, 1998; Powell, 2002). A study by Horn, Wei and Berker (2002) reported that when comparing tuition rates from school years 1992-1993 versus 1999-2000, federal funding from Pell Grants had increased sufficiently to compensate for

tuition increases for students attending community colleges. However, research from Choy (2004) indicated community college tuition has risen faster than the consumer price index in the last few years. Students attending four-year colleges and universities are the individuals who had to pay more tuition dollars to offset significant increases in tuition and fees. Research has indicated that working, nontraditional students often felt that they were ineligible for financial aid and would not apply for federal funds, paying for their classes out-of-pocket (Berker & Horn, 2003).

Choy (2002) reported that 67% of nontraditional college students work more than 20 hours a week and consider their primary roles to be employees versus college students. MacLellan (2001) found that students were forced to support themselves by working while attending college. Heath-Thornton (2001) found that there was a statistical correlation in persistence of adult students based on financial need and marital status. Her research indicated that married students were less concerned about financial need. Greenberg (1997) reported that financial need affected on just 8% of his respondents; however, Heath-Thornton (1997) found that 67.5% of the respondents considered withdrawing because of financial concerns.

In a recent study, Berker and Horn (2003) reported that in the years 1999-2000, nontraditional students, who viewed their primary roles as employees versus students, constituted 61.2% of nontraditional students attending community colleges. These students devoted less time to academic study versus their counterparts who viewed their primary roles as students. Further, these students tended to take classes on a part-time basis so as to minimize the cost and the impact of academic studies on work and their

other responsibilities. However, the reduced course load increased time required to complete programs of study.

Financial need also influenced the number of courses for which students could afford to register and pay the tuition costs. Students attending college part-time have been found to be at greater risk of not completing their programs of study (Berker & Horn, 2003; Greenberg, 1997; Heath-Thornton, 2002, Metzner & Bean 1985). Greenberg (1997) found that students who attended college full-time were more likely to attend day-time classes and receive more on-campus academic support. Part-time students were more likely to attend classes in the evening and felt less a member of the institution. As a result, they did not develop the on-campus relationships that are part of the social integration process.

In a report on West Virginia noncredit students, it was found that 21.1% earned less than \$10,000 a year, and that over 50% of the students had an annual income less than \$30,000 (ACT Educational & Social Research, 2001a). A further 41.7% of the students were employed full-time, and another 15.7% were employed part-time. Of the employed full-time students, 54.7% worked 40 plus hours a week. The top response provided for enrolling in noncredit training was to meet job requirements, followed by a desire to increase earning power and improve computer skills.

There is limited tuition reimbursement from employers for noncredit training. St. Mary's Medical Center, a local employer, limits an annual reimbursement to \$1,500.00 a year and has the stipulation that the company will only reimburse training which is work or job related (St. Mary's Medical Center, 2004). Further restricting use of employer funded tuition assistance is the limitation that this benefit is available only to full time

employees with a year or more service to the company (ALCON, 2004; St. Mary's, 2004). Because of the limited ability to take tax benefits, most of the cost of noncredit training is absorbed by the individuals.

Another possible funding source for noncredit training is provided by Workforce Investment Act (WIA) funds. WIA is a federal program that allows local Workforce Investment Boards (WIBs) to determine how to best utilize federal funds to train under-employed or unemployed workers within their regions. West Virginia has divided the state into seven WIB regions. The three regional WIBs that encompass the Advantage Valley Consortium area are Regions I, II, and III. Region I encompasses Fayette, Greenbrier, McDowell, Mercer, Monroe, Nicholas, Pocahontas, Raleigh, Summers, Webster and Wyoming counties. Region II WIA includes Wayne, Cabell, and Putnam counties. Region III WIA consists of Kanawha County.

Each region established its own requirements/standards for determining which programs they will fund. According to Gary Pommerenck, Region II Work Force Investment Board director, the region had established the criterion that they will not fund any training that has fewer than 80 contact hours (personal communication, February 25, 2005). The Region Board members felt that shorter term training was insufficient to help individuals attain long-term job skills. Because training of shorter duration is ineligible in Region II, WIA approved students have to find other sources of funding. The other regions are willing to fund shorter term training, but theoretically WIA funding is supposed to be a once-in-a-life-time benefit, and if students use it for shorter term training, they will be ineligible for future workforce training funds (Gary Pomerenc, personal communication, February 25, 2005).

Previous Educational Attainment

Research indicates that the failure to earn a traditional high school degree has a negative affect on persistence. Nationwide, by 1999, 22.5% of all undergraduates did not graduate from high school, and instead earned their GED degrees (Choy, 2002).

Individuals who earned their credentials from nontraditional sources are found to be not as academically prepared as college students who graduated from high school. This lack of academic preparation results in the necessity for these students to take developmental courses (Golonka & Matus-Grossman, 2001; MacLellan, 2001). Normally, the requirement to take developmental courses increases the amount of time required to complete a program of study. Studies consistently show that the more developmental courses that adults are required to take, the greater the risk they will not complete their programs of study (Golonka & Matus-Grossman, 2001; MacLellan, 2001; Kazis & Liebowitz, 2003).

In comparison with traditional college-aged students, older students, upon entry to postsecondary education, often find that they have increased academic requirements (Bailey, Alfonso, Scott, & Leinbach, 2004; Choy, 2002; MacLellan, 2001). Frequently, adult learners are required to take developmental courses to academically prepare them for college level mathematics or English courses (Matus-Grossman & Gooden, 2002). MacLellan's (2001) research found that 71% of community college students were academically unprepared as measured by their scores on placements exams in English and mathematics. However, if academically unprepared students persisted through a second semester, there was no statistical difference in long-term persistence between the academically prepared and unprepared students.

Unfortunately, adult students arrived at community colleges expecting to be admitted for college level work and are surprised when they are required to take developmental courses (Matus-Grossman & Gooden, 2002). In 1998, an average of 36% of beginning community college students required one or more developmental courses (Shults, 2000). This additional education requirement frustrates adult students, who expected to start college and earn their associate's degrees in two years, only to discover that it may take up to three years to earn a degree (MacLellan, 2001). Adelman (2000b) hypothesizes that that adult students have gravitated to noncredit IT programs of study in lieu of college credit programs of study because noncredit programs allow students to more rapidly develop skills.

A number of adult students decided not to pursue a college education upon graduation from high school because they felt unprepared for the academic requirements of a postsecondary education (Choy, 2002). This lack of preparation is often a reflection that the individuals had opted to take non-college preparation courses while attending secondary education. Upon entry to postsecondary education, the forced placement in developmental courses is often a source of frustration to adult students who could attend college for one semester and not attain a grade point average (GPA) since all of the courses taken were either pass or fail (MacLellan, 2001; Matus-Grossman & Gooden, 2002).

At Mountain Empire Community College, Sydow and Sandel (1998) found that only 32% of nonpersisting students started college with the long-term goal of obtaining a degree or certificate. The majority of the drop-outs decided to take classes for the primary purpose of either transferring to a four-year institution or improving job skills. This

research corresponded to the findings of other researchers (Choy, 2002; Matus-Grossman & Gooden, 2002).

Often, adult students returned to an educational environment with previous negative educational experiences (Hensley & Kinser, 2001). Upon returning to postsecondary education, students who unsuccessfully attended college immediately upon graduation from high school felt that they never developed the necessary study skills and/or experienced extreme test anxiety, which contributed to their stopping out of college (Hensley & Kinser, 2001). The lack of academic preparedness affected student grade point average (GPA). Research has shown that students planning to stop-out of college have significantly higher first-term GPAs than students never intending to return (Greenberg, 1997; Heath-Thornton, 2002; Hoyt & Winn, 1997).

Greenberg (1997) found that 74.6% of students who completed their associate's degrees previously attended another college prior to their persistence in completing their degree. This reinforces the concept that one of the missions of community colleges is to serve stop-out students by providing the opportunity for them to complete their education. Academic success the first semester was found to be a major factor in persistence. Heath-Thornton (2001) found that 88.6% of the adult students who completed the baccalaureate degree had attended another college prior to the completion of their degrees.

Research indicates that the academic preparation of students enrolling in occupational type programs tends to require more developmental courses (Bailey, Alfonso, Scott, & Leinbach, 2004). Occupational degree programs attract students with lower previous educational attainment. Additionally, occupational programs have been

found to attract a higher proportion of students who have earned a GED compared to students enrolled in academically oriented degree programs (Bailey, et al., 2004).

In a report on West Virginia noncredit students, it was found that 53.9% had not attended postsecondary education, and from this population, 5.2% had not completed high school (ACT Educational & Social Research, 2001). An additional 10.4% had previously attended some sort of vocational or technical training programs. Of the remaining students, 4.3% had attended community college; 20% had attended baccalaureate institutions, and 11.3% had attended graduate college.

Adelman (2000a) found that noncredit IT training providers expected students to arrive to training with minimal academic skills in areas such as mathematics and English. However, there is no requirement to provide proof or verification of competencies in either mathematics or English. Often the actual academic entry for IT programs of study is verification of either previous completion of IT courses or demonstration of minimal IT competencies.

Economic Benefit

According to the U. S. Bureau of the Census (2000), an individual with only a high school diploma was twice as likely to be unemployed as a student with a college degree. Students no longer view completing a high school diploma as the terminus of their educational process. In previous years, adult students often returned to postsecondary education for the primary purpose of self-enrichment (Adelman, 2000b). Studies showed that “individuals are motivated to attend postsecondary education because of the economic returns, and that there is a strong positive relationship between formal education and earnings” (Sanchez, Laanan, & Wisely, 1999, p. 87). In a

California study, Sanchez, Laanan and Wisely (1999) found in their research that an adult college student, 25 years and older, earned an average salary increase of 9.2% with the completion of a certificate and an increased income of 9.3% with the completion of an associate's degree. For welfare recipients, the completion of just one semester of college credit courses raised their incomes by \$5,000 to \$10,000 a year (Golonka & Matus-Grossman, 2001).

Research also indicated that the attainment of a certificate or an associate's degree increased the likelihood that individuals with secondary education could attain managerial positions versus laborer jobs (Sanchez, Laanan & Wisely, 1999). Studies have shown that wage comparisons between high school graduates and college students who had earned certificates or associate's degrees to be significant for both the entry level wage as well as the salary earned after three years of employment (Choy, 2003; Sanchez et al., 1999). Typically an IT certificate can increase the annual salary in the range of \$3,000 to \$5,000 per year (Adelman, 2000b). The average starting salary for IT workers with IT industry certifications in Microsoft Certified Engineer or CISCO is \$45,000 per year (Symes, 2001).

Although the economic benefits of earning an associate's degree are well documented, Horn and Carroll (1996) found that only 27% of adult learners who started work on an associate's degree in 1989 had completed their degrees by 1994. Even though an associate's degree is typically considered to be a two-year degree, adults often have to attend college as part-time students and require four to five years to complete a program of study (Horn & Carroll, 1996). The longer time to complete the program of study to

attain the economic benefit of completing an IT program of study encourages adult students to attend noncredit IT programs of study (Adelman 2000a; 2000b).

Adult Student Persistence Theory

Tinto's (1993) theory of student persistence is based on traditional college students and social integration into the educational institution. This theory is based upon Durkheim's (1951) theory of social integration, which hypothesized that an individual's integration occurs in two ways: through social interactions with others and by sharing common values with community members. Tinto's (1975, 1987, 1993) theory is that students become similarly integrated into postsecondary education. Social integration is defined as a student's interaction with fellow students and involvement in collegiate extracurricular activities (Greenberg, 1997). Academic integration is defined as both academic performance and interaction with faculty and staff (Tinto, 1993). Of these two types of student integration, Tinto (1993; 1997) stated that social integration is the more important factor in student persistence.

Metzner and Bean's (1987) model of attrition of adult students hypothesized that nontraditional students experienced increased external demands that required them to spend a predominant amount of their time off-campus; therefore, they were unable to participate in activities at the same level as traditional college students. Their model puts more emphasis on the effect of external background demographics in the persistence of nontraditional students. The model used four variables: (a) background defining variables, (b) academic variables, (c) environmental variables, and (d) social integration variables (memberships, family contact and school friends).

Background defining variables were defined as including age at time of enrollment, enrolled hours (part-time versus full-time), ultimate educational goals, previous high school performance, ethnicity, and sex. Academic variables were defined as the student's study habits and skills, academic advising, absenteeism, major, and job certainty. Environmental variables included financial capacity and hours of employment, outside encouragement, familial responsibilities, and the opportunity to transfer to other postsecondary institutions. Social integration variables were described as membership in on-campus organizations, family contact and school friends.

Background and defining variables were hypothesized to influence the other three in the persistence of nontraditional students, and further research supported this hypothesis (Greenberg, 1997; Heath-Thornton 2002; Metzner & Bean, 1987). Academic variables influenced academic performance (grades/grade point average), which, in turn, influenced the student's decision to persist or withdraw. Environmental variables are believed to directly affect the psychological factors that influenced persistence to include the perceived value of the education, student level of satisfaction, and goal commitment. Metzner and Bean (1987) believed that social integration variables have an affect on psychological outcomes.

Because of the many demands placed on nontraditional students that interfere with their ability to focus on being primarily students on campus, social integration may not be a major factor in retention (Greenberg, 1997; Heath-Thornton 2002; Metzner & Bean, 1987). Greenberg (1997) found that on-campus integration had little impact on adult student retention. However, Tweedle's (2005) research found that social integration could be attained by enrolling adult students into programs of study using a cohort model.

The use of a cohort model improved persistence compared to students not enrolled in a cohort program. Students who took classes together developed a bond and support network that helped adult students persist in college to complete their programs of study.

The primary source of social integration for nontraditional students is derived from support for postsecondary education from immediate family members, especially spouses and parents, children, and friends. In order for students to be successful and persist, this support must be available either prior to enrolling in courses or shortly after enrollment. Adult students will withdraw if there is an absence of family or friend support even if they have been academically successful (Heath-Thornton, 2002).

Summary

Adult students arrive at postsecondary education with a number of pre-existing demographics that may adversely affect persistence. Frequently it is a combination of background demographics that work in concert to cause the departure of adult students from postsecondary education (Greenberg, 1997; Heath-Thornton, 2002; Metzner & Bean, 1987). Community colleges provide students the opportunity to seek Information Technology (IT) postsecondary education from both for academic credit and noncredit academic programs, so that they can earn entry level industry certifications and job skills. Both credit and noncredit IT programs attract students with similar background demographics that negatively affect student persistence. Knowledge of the impact of these factors will better prepare colleges to meet the needs of their students.

CHAPTER THREE: RESEARCH METHODS

Purpose of the Study

The purpose of this study was to determine if the same background demographic factors that have been identified in previous studies of adult student persistence in associate degree for-credit programs of study also influenced completion rates of adult students taking noncredit Information Technology certificate programs of study. This study will add to the body of literature by providing research on persistence and background demographics of noncredit adult students. These variables are identified as (a) age, (b) family situation, (c) level of family support, (d) financial need, and (e) previous educational attainment.

This study adapted a survey instrument that has been used in two previous studies to determine background demographic factors in students enrolled in two- and four-year degree programs. Greenberg (1997) developed the initial survey instrument, and it was modified by Heath-Thornton (2002) to measure the background demographics and retention of college students. As recommended by Gay (1987), the survey instrument was modified to remove as many questions as possible that do not directly relate to the current research so as to improve the probability of survey completion and return.

Research Design

This study examined the relationship between the selected independent variables identified as age, family situation, level of family support, financial need, and previous educational attainment and the dependent variable, identified as persistence in completing

a program of study as reported by the respondents. The effects of the independent variables upon the dependent variable were measured by responses on the Advantage Valley Adult Student Persistence Questionnaire. Anonymity of the respondents was assured to help increase the likelihood of response and accuracy (Gay, 1987). This is descriptive research with no manipulation of independent variables to determine the effect on the dependent variable (Gay, 1987; Johnson & Christensen, 2000).

There was no random assignment of participants, as the study encompassed the entire population of students enrolled in noncredit IT programs between 2000 and 2005 in the three institutions Marshall Community and Technical College (MCTC), West Virginia State Community and College (WVSCTC), and West Virginia University Institute of Technology Community and Technical College (WVUITCTC). This method also compares the differences in two or more groups without manipulation of variables (Johnson & Christensen, 2000). The following research questions were investigated by this study:

1. What is the attrition rate of students enrolled in noncredit IT certificate programs?
2. Is there a relationship between *age* and the persistence of students enrolled in noncredit IT certificate programs?
3. Is there a relationship between *family situation* and the persistence of students enrolled in noncredit IT certificate programs?
4. Is there a relationship between *level of family support* and the persistence of students enrolled in noncredit IT certificate programs?

5. Is there a relationship between *financial aid needs* and the persistence of students enrolled in noncredit IT certificate programs?
6. Is there a relationship between *previous educational attainment* and the persistence of students enrolled in noncredit IT certificate programs?
7. What economic benefits, if any, did students attain as a result of being enrolled in noncredit IT certificate programs?

Population

The population for this study consisted of all adult students enrolled noncredit IT programs of study in the three community and technical colleges of the Advantage Valley Consortium: Marshall Community and Technical College, West Virginia State Community and College, and West Virginia University Institute of Technology Community and Technical College. The survey population was students enrolled in the IT noncredit programs of study during the time frame 2000 through 2005 and available to the researcher in the spring semester of 2006. The students will be considered to have persisted if they completed their IT programs of study.

Since the population is limited to adult students (aged 25 years and older) who are enrolled in noncredit IT certificate programs, the population is considered to be a purposive sample (Johnson & Christensen, 2000). Because of the small population size (N=300), the entire population of both completers and noncompleters were used for this survey. This helped to ensure that sufficient data were obtained for all data cells. Marshall Community and Technical College has a population of 125. West Virginia State Community and College has a survey population of 100, and West Virginia University

Institute Technology Community and Technical College has a population of 75. The total survey population was N= 300.

Instrumentation

Data were gathered to address the research questions contained in this chapter. For this research, the Advantage Valley Adult Student Persistence Questionnaire (AVASPQ) is adapted from the Adult Student Persistence Questionnaire (ASPQ) with specific institution and academic degree references removed. The ASPQ was developed by Greenberg (1997) and further refined by Heath-Thornton (2002). Permission to use this instrument has been received from both individuals. This instrument has been used in two previous studies (Greenberg, 1997; Heath-Thornton, 2002). Validity of the ASPQ was established by Greenberg (1997) by conducting a pilot study and factor analysis of questions. The modified survey instrument has been reviewed by a panel of experts to determine readability and completion time and to improve validity (Gay, 1987). Panel comments to improve accuracy of the modifications were incorporated into the AVASPQ. The survey requires 10-15 minutes to complete.

The AVASPQ consists of four parts. Part I of the AVASPQ solicits demographic data which include participants' ages at the start of their training programs, sex and race. Additional information will be collected to ascertain marital status, family size, number (if any) of dependents, and previous educational attainment. Part I provides the background demographic information that pertains to age, previous educational attainment, and family situation to answer research questions one, two, and five.

Questions in Part II solicit general information from IT students. The purpose of these questions is to elicit the reasons for institution and program selection, issues of life-

long learning, and reasons or justifications that the students had for returning to an educational setting. These questions are designed to provide structured answers to questions as well as an 'other' category as recommended by Gay (1987) to provide unanticipated answers. The following questions provide the student the opportunity to provide answers that cannot be anticipated by the researcher:

1. What were the reasons you chose to attend the institution?
3. Did a personal crisis occur while you attended classes?
5. As you continued with your IT program, did your reasons for attending change in any way?

Further questions are included to gauge the possible effects of outside commitments, if any, on student persistence.

Part III consists of statements designed to measure adult student perceptions of three other independent variables: level of family support, financial need, and family situation. Respondents are asked to reflect back to when they were taking their course and indicate on a 5-point Likert scale the extent to which they agree or disagree with each of the 14 statements measuring these three independent variables. These statements have been tested in earlier research and have the following levels of reliability. The question addressing family situation has been determined to have an alpha reliability of .67 (Heath-Thornton, 2002). The question addressing family support has an alpha reliability of .77 (Greenberg, 1997) and the question addressing financial need had an alpha reliability of .69 (Greenberg, 1997).

The responses to these statements will record their responses on a 5-point Likert scale and which will be used to answer research questions two, three, and four. The Likert

Scale of the survey instrument consists of the following 5-point range in response to the student's experience while taking classes: 1 for Strongly Agree, 2 for Agree, 3 for Disagree, 4 for Strongly Disagree, and 5 for Not Applicable.

The responses to the questions dealing with family situation will address the perceived influence that a family and family responsibilities had on students and completion of the IT program of study.

Part IV of the AVASPQ was written with open-ended questions designed to solicit from the research participants expanded information that cannot be answered by limited choice questionnaire questions. To improve the quality of research responses, Part IV includes a portion to allow for unstructured answers to questions (Gay, 1987). The answers to these questions may be used to validate answers to questions in Parts II and III, as well as to create the opportunity for respondents to provide research data with greater depth (Gay, 1987). This portion contains a research question to address if any economic benefit was derived from attending the noncredit IT training.

Data Collection

This study used a self-report questionnaire procedure (Johnson & Christensen, 2000). The survey instrument was mailed in a packet which included a cover letter that explained the purpose of the study, gave an assurance of anonymity, encouraged completion of the survey, and provided an explanation stating to the recipients that they do not have to respond. Respondents were asked to complete the survey instrument within two weeks and return it to the author in a self-addressed stamped envelope.

Prior to mailing the instrument to any participants, an exemption was obtained from the Marshall University Institutional Review Board. A response rate of 50% plus

one will be considered adequate for this type of study (Kerlinger, 1986). To increase the response rate there will be multiple mailings. After the initial mailing, a follow-up postcard will be sent to students on the third, fourth, and sixth weeks to remind them to complete the survey if they have not yet done so.

Data Analysis

SPSS Version 14.0 software was used for the appropriate statistical procedures to determine the significance of the results. Frequency distributions were used for the demographic results (Johnson & Christensen, 2002; Zeisset, 2000). Linear regressions will be used to analyze the data collected from the survey. An alpha level of .05 was used to determine statistical significance (Gay, 1987; Zeisset, 2000).

Since this study was mailed to addresses that are up to five years old, there is possibility that some of the surveys would be returned uncompleted by the respondent. The formula for calculating the response rate was the number of questionnaires returned, minus the returned spoiled surveys or surveys returned to sender because the addressee is unreachable and this total will be divided by the population (Gay, 1987). Gay (1987) defines spoiled surveys as those surveys that are returned, but not properly completed.

Open-ended questions provide additional data by allowing survey respondents the opportunity to answer questions in their own words. The use of open-ended questions provides a benefit of ascertaining data unattainable from questions with limited available responses and allows the research instrument to acquire quantitative and qualitative data (Gay, 1987). Responses to open-ended question will be coded, and a content analysis will be performed to determine if any emergent categories arise. Post hoc analysis will be conducted as appropriate.

Summary

The methods used in this chapter were used to determine if there is a problem in the persistence of students enrolled in noncredit IT programs, and if there is a persistence problem, whether the same background persistence factors that have been found to negatively affect adult students enrolled associate degree programs also affected student retention in noncredit courses offered by the community colleges of the Advantage Valley Consortium. The compiled data will further determine the statistical relationship of age, family situation, level of family support, financial aid needs, and previous educational attainment on persistence in noncredit IT certificate programs. This study will also provide research data on the economic benefit, if any, that is derived by students attending noncredit IT training.

CHAPTER FOUR: PRESENTATION AND ANALYSIS OF DATA

The purpose of this study was to determine if the same background demographic factors that have been identified in previous studies of adult student persistence in associate degree for-credit programs of study also influenced completion rates of adult students taking noncredit information technology (IT) certificate programs of study. The dependent variable was the completion of the IT program of study. Independent demographic variables (a) age, (b) family situation, (c) level of family support, (d) financial need, and (e) previous educational attainment were collected to determine if they affected respondents' completion of noncredit IT programs. Data were collected using the Advantage Valley Adult Student Persistence Questionnaire (AVASPQ) and statistical analyses were conducted using SPSS 14.0 software.

The Advantage Valley Adult Student Persistence Questionnaire was adapted with permission from a survey instrument that had been used in two previous studies (Greenberg, 1997; Heath-Thornton, 2002). Respondents provided background demographic data in part I and in part II provided enrollment information. Part III of AVASPQ asked students to address how they perceived their family situations, levels of family support, and financial aid needs may have influenced their persistence in completing their noncredit IT program of study. Responses for part III were provided using a Likert type scale.

Part IV gave respondents the opportunity to provide information about any IT certifications that they have attained, and promotions or pay raises that may have been

earned because of the training. To elicit any additional information that the respondent wanted to supply, the final question allowed individuals to provide additional comments.

Descriptive Data

Survey response rate

The population consisted of all students enrolled in noncredit IT programs at one of the three community and technical colleges that comprise the Advantage Valley Consortium (N=669). These students were enrolled in noncredit IT programs between 2000 and 2005 in the three institutions located in the area known as Advantage Valley: Marshall Community and Technical College (MCTC), West Virginia State Community and Technical College (WVSCTC), and West Virginia University Institute of Technology Community and Technical College (WVUITCTC). Students with multiple attendance dates were counted only once.

Three mailings were sent. The first mailing included copies of the Institutional Review Board (IRB) approval letter, survey instrument, and a postage-paid self-addressed return envelope. Two weeks later a second mailing included the documents from the first mailing and a letter requesting that the individual please complete the survey, if she/he had not already done so. The second mailing of the survey was followed in two weeks by a postcard with the same request.

Of the 669 surveys mailed, 116 (17.3%) were returned to the sender because of invalid addresses that, according to the U.S. Postal Service, were no longer eligible for mail forwarding. An additional nine surveys were found insufficient by reason of substantial missing data or incomplete return, and one was annotated that the individual was deceased. After deducting the number of invalid addresses and insufficient surveys,

the maximum number of possible valid surveys was reduced to 553. A total of 176 usable surveys were received and the data were entered into SPSS 14.0 for analysis. The response rate from the three mailings was 33.5%.

As noted by Gay (1976) mail surveys traditionally have a low response rate, typically in the range of 10 to 15%. Research by Fink (2003) found that unsolicited surveys have a response rate of 20%, which he attributed to individuals' not feeling obligated to respond. As observed by Fowler (2003), researchers rely on individuals to voluntarily respond and return surveys. However, in the past 20 years it has been observed that response rates to mailed surveys have been declining (Fink, 2003; Fowler, 2002). Gay (1976) asserted that when presenting research with response rates of less than 50% to the survey instrument, it is necessary for the researcher to report the response rate and leave it to the judgment of the report readers as to whether or not it is reasonable to generalize the results to the larger population.

Since the AVASPQ was mailed to all participants who had received noncredit IT training in the Advantage Valley geographic area, the research population is considered to be a census sample, a preferred research method when conducting surveys that are targeted to small populations (OMB, 2006). Census sampling is considered to be non-probability sampling by Babbie (1973) and OMB (2006). Fowler's (2002) research, however, indicated that when comparing non-probability and probability sampling, research data looked similar; he asserted that both types of research provide valuable data to researchers.

Probability research relies upon the use of pre-selected random samples of the population to garner research data that can be used to generalize about the population as a

whole. Because probability research uses a randomly selected smaller sample, it is important to have higher survey response rates in order to be able to generalize research findings to a population. Both Babbie (1973) and Kish (1965) stated that in order to use probability research data, survey response rates need to be 50% or higher. Babbie (1973) conceded, however, that there is no statistical basis for requiring response rates of 50% or higher for research findings results to be valid. Fink (2003) further stated that “no single rate is considered the standard” and that researchers should strive to attain the highest response rate possible.

More recent research on response rates and information reliability indicated that surveys with a return rate above 50% are not necessarily statistically more accurate than surveys with response rates of 10-15% (Bernick & Pratto, 1994; Rogelberg & Luong, 1998; Tourangeau, 2003). Tourangeau (2003) further argued that a low response rate does not automatically increase non-response bias in one-shot case studies. Rogelberg and Luong (1998), in their follow-up research of non-respondents to mail surveys, indicated that statistically there were limited differences in reported data between respondents and non-respondents.

Demographic data

Demographic data collected include age, sex, marital status, family size, race, and previous educational attainment. Every participant in this study was above the age of 25. Students were asked to select their age range when they attended training and 60% of the students reported that they were age 45 years and older (see Table 1). Twenty-two students (12.5%) responded that they were age 25 to 34, 44 students (25%) reported that

they were age 35 to 44, 53 students (30.1%) reported their age at 45-55, and 53 students were age 55 and above (30.1%). Four respondents did not provide a response.

Table 1
Age and Sex of participants when enrolled in classes:

Age Range	Male		Female	
	f	Percentage	f	Percentage
25 to 34	7	4.0	15	8.7
35 to 44	16	9.3	26	15.1
45to 54	11	6.4	43	25.0
55 plus	19	11.0	34	19.8

n = 172

One hundred and seventy-one students responded to the question that asked their sex with 121 (69.1%) reporting female and 54 (30.9%) reporting male. The survey question on marital status was answered by 174 respondents (see Table 2). The majority of individuals (129) indicated that they were married, comprising 74.4% of the students. Those reporting their marital status as single (25) were the second largest group, representing 14.2% of the respondents. Thirteen individuals reported that they were divorced (7.4%), and seven were widowed (4%).

Table 2
Marital Status and Sex:

	Male		Female	
	f	Percentage	f	Percentage
Single	14	8.1	11	6.4
Married	36	21.1	93	54.4
Divorced	2	1.2	11	6.4
Widowed	2	1.2	5	2.9

n = 171

Respondents were asked to include themselves in reporting their family sizes. One hundred seventy-five respondents replied to this question. As shown in Table 3, 71 students reported that their families consisted of two family members (40.3%). Nineteen respondents stated that they lived alone (10.8%) and another 85 reported that their families consisted of three to eight members.

Table 3
Family Size:

Number in Family	f	Percentage
1	19	10.8
2	71	40.3
3	28	15.9
4	44	25.0
5	6	3.4
6	4	2.3
7	2	1.1
8	1	.6

n = 175

Students were also asked the number of children under the age of 18, if any, that the respondents had in their households that required their care and supervision while taking classes. As shown in Table 4, the majority of the respondents (118) stated that they had no children while attending classes (67%). The largest number of children reported as being in the individual respondent's care and supervision was four, reported by three survey respondents (1.7%).

Table 4
Number of children requiring care and supervision while attending classes:

Number of Children	f	Percentage
0	118	67.0

1	18	10.2
2	33	18.8
3	4	2.3
4	3	1.7
<hr/>		
n = 176		

The survey question inquiring about race was not answered by three respondents. As shown in Table 5, the majority of the respondents (165) reported their race as white 94.9%. Three (1.7%) individuals reported being African-American, one (.6%) reported being Hispanic, and the two (1.1%) individuals who had reported “Other” described their race as mixed.

Table 5
Race and Sex:

	Male		Female	
	f	Percentage	f	Percentage
African American	2	1.2	1	.6
Asian	1	.6	0	0
Hispanic	0	0	1	1.2
White	49	28.7	116	67.8
Other	2	1.2	0	0

n = 173

Four individuals did not provide their highest level of previous educational attainment. As shown in Table 6, one individual reported that he had not completed high school earned his GED (.6%), and six indicated that their highest level of educational attainment was the GED (3.4%). Thirty earned their high school diplomas (17%). The largest number of students (39) reported that they earned their bachelor’s degrees (22.7%). Thirty-six respondents reported that they had earned their master’s degrees or higher (20.5%).

Table 6*Previous educational attainment and sex:*

Educational Level	Male		Female	
	f	Percentage	f	Percentage
Some High School	1	.6	0	0
GED	3	1.7	3	1.7
High School Grad	5	2.9	25	14.5
1-30 College hours	5	2.9	20	11.6
31-65 College hours	7	4.1	10	5.8
Associate Degree	5	2.9	11	6.4
Baccalaureate Degree	16	9.3	23	13.4
Masters or higher	10	5.8	26	15.1

n = 172

Research Findings

The major findings are described in direct relation to the research questions that were used to direct the study. Questions 1 and 7 answer specific questions to determine the attrition rates and financial benefits, if any, derived from attending noncredit IT programs of study. Questions 2-6 are used to determine if the same background demographic factors that have been found in previous research to adversely affect the completion of for-credit educational programs also negatively affect completion of noncredit IT programs of study. The findings for research questions 2-6 are presented based on logistic regression analysis, which was the statistical analysis used to determine which independent variables were related to attrition, the outcome measure or dependent variable. Logistic regression analysis was selected for statistical analysis to answer research questions because this statistical procedure is “used to explain or predict the values of a dichotomous dependent variable based on the values of one or more independent variable” (Johnson & Christensen, 2000).

Research Question 1: What is the attrition rate of students enrolled in noncredit IT certificate programs?

The survey asked the question “Did you complete your program of study?” Of the 176 respondents, 28 students (16%) indicated that they did not complete the program of study whereas 148 indicated that they had completed their training.

Research Question 2: Is there a relationship between age and the persistence of students enrolled in noncredit IT certificate programs?

This research asked whether the age of the student adversely affected her/his completion of the noncredit IT program of study in the same manner as age range affects students enrolled in for-credit educational programs of study. Respondents selected their respective age ranges as shown in Table 1. Unlike students enrolled in for-credit IT programs, logistic regression analysis did not show a statistical relationship between the age of the individual respondent and her/his completion of the training. A logistic regression significance of .644 indicates no statistically significant relationship ($p < .05$) between the student’s age and completion of a noncredit IT program.

Previous studies of adult students enrolled in college indicated that students between the ages of 28 and 38 are less likely to persist and complete their educational programs of study (Feldman, 1993; Greenberg, 1997); however, the literature about the effect of age on retention is contradictory. While Heath-Thornton’s (2002) research data indicated that the non-persistence rate of adult students is greater for students in their 30s, VanDerlinden’s (2002) study indicated that the non-persistence rate is greater for students in their late 20s. Feldman (1993) found the age group of adults enrolled in credit

programs with the highest drop-out rate was those students aged 36 years and older, with a non-persistence rate of 28%. Students aged 26-35 were found to have dropped out of postsecondary education at a rate of 14%, which is almost the same rate of traditional college students aged 19 years and younger (Feldman, 1993).

Research Question 3: Is there a relationship between family situation and the persistence of students enrolled in noncredit IT certificate programs?

This research asked whether the family situation of the student adversely affected the student's completion of the noncredit IT program of study in the same manner as family situation affects students enrolled in for-credit educational programs of study. Initially to answer this research question, it had been planned to use three questions from Part III, Student Persistence of the AVASPO. These family situation variable questions were answered via a Likert scale requiring respondents to circle their responses on a five-point scale. The selection of number 1 indicated that the individual "strongly agreed" with the statement, while the number 4 to indicated that the individual "strongly disagreed" with the statement. The number 5 indicated that the statement was "not applicable."

The three questions used to determine family situation were these:

- I had adequate childcare while attending classes;
- I had reliable transportation while enrolled in my program of study;
- and
- Family obligations hindered completion of my program of study.

A factor analysis was conducted to create the "family situation" variable. The three questions had a Cronbach's Alpha of .445 which, according to Gay (1976), is

considered inadequate for statistical predictions. In two previous studies these same questions had insufficient internal reliability to be used as a variable to answer this research question for this study.

To answer this research question, marital status was selected. Respondents identified their marital status as single, married, divorced, or widowed, and the response choices were factored to become one variable used in the logistic regression analysis. A logistic regression significance of .730 indicates that there is not a statistically significant relationship ($p < .05$) between the student's family situation and her/his completion of a noncredit IT program.

Berker and Horn's (2003) study of college students from 1999-2000 found that 52% of nontraditional students were married, and these students reported they felt that their primary roles were as employees who attend college versus college students who work. The necessity to support a family often detracts from a student's emphasis on academics, and frequently these students will accept lower grades or failing classes to accommodate work or family schedules. Research has further shown that having dependents other than a spouse had a negative effect on student persistence, with the impact increasing as the number of dependents increased (Berker & Horn, 2003; Berkner, Horn & McCune, 2000). Berker and Horn (2003) found that adults who viewed their primary roles as students and had only spouses as dependents had a correspondingly improved rate of persistence.

Metzner and Bean (1987), in their model of nontraditional student persistence, recognized that families play a key role in retention, and Heath-Thornton (2002) found that the majority of nontraditional students are caring for children. In their studies of

adults desiring to participate in federally funded workforce development programs, Golonka and Matus-Grossman (2001) reported that the majority of individuals with children state that the lack of childcare limited their ability to participate in postsecondary education. More recent research by Pusser, Breneman, Gansneder, Kohl, Levin, Milam, and Turner (2007) indicated that childcare is an area of concern for students enrolled in noncredit educational programs.

In a report on West Virginia noncredit students, it was found that 8.7% identified themselves as having the primary role of caring for family members or stay-a-home parents (ACT Educational & Social Research, 2001). The majority of the remaining noncredit students identified themselves as either working full-or part-time, and another 20% identified themselves as unemployed. Additionally, students reported that the primary reason that they decided to register for noncredit courses because they desired to have time for family or personal interests.

Research Question 4: Is there a relationship between level of family support and the persistence of students enrolled in noncredit IT certificate programs?

This research asked whether the level of family support adversely affected a student's completion of the noncredit IT program of study in the same manner that level of family support affects students in for-credit educational programs of study. Three questions from "Part III, Student Persistence" were used from the AVASPQ to develop the family support variable. These questions were answered on a 5-point Likert scale requiring respondents to circle their responses, with number 1 indicating that the individual "strongly agreed" with the statement and number 4 to indicating that the

individual “strongly disagreed” with the statement. The number 5 indicated that the statement was “not applicable.”

The three questions used to determine the level of family support were these:

- Members of my family were helpful in freeing my time for school work;
- My family members often asked me how school was going; and
- My spouse or significant other was supportive of my being back in classes.

A factor analysis was conducted on these three questions to create the “family support” variable. The three questions had a Cronbach’s Alpha of .707, which, according to Gay (1976), is considered adequate for use in statistical predictions. As indicated in Table 7, the variable of “family support” had a significance level of .205 indicating that there is not a statistically significant relationship ($p < .05$) between the student’s family support and completion of a noncredit IT program.

Adult students reported that their family support for the completion of associate degree programs helped them to remain in school even after they had considered withdrawing prior to graduation (Greenburg, 1997; Metzner & Bean, 1983). On the other hand, divorced parents felt that support from their children was the most important factor in their persistence. Unmarried students received their support from immediate family members who had encouraged them to complete their programs of study (Greenberg, 1997; MacLellan, 2001; Tinto, 1983). Greenberg’s (1997) research further found that students with parents, siblings, or friends with postsecondary education experiences or degrees are more likely to receive support from them. Pusser, et al. (2007) indicated that

for single parents, support from immediate family was critical for encouraging students to complete their programs of study.

Research Question 5: Is there a relationship between financial aid needs and the persistence of students enrolled in noncredit IT certificate programs?

This research asked if the financial aid needs of the student adversely affected her/his completion of the noncredit IT program of study in the same manner that financial aid needs affect students in for-credit educational programs of study. Three questions were used from “Part III, Student Persistence” were used from the AVASPQ to develop the financial aid needs variable. These questions were answered on a five-point Likert scale asking respondents to select number 1 for “strongly agree” number 4 for “strongly disagree.” The number 5 indicated that the statement was “not applicable.”

The three questions used to determine financial aid needs were these:

- I considered withdrawing from my classes because of financial matters;
- I found it difficult to secure finances for tuition; and
- I worried about how to pay for college.

A factor analysis was conducted on these three questions to create the financial aid variable. The three questions had a Cronbach’s Alpha of .809, which, according to Gay (1976), is considered adequate for individual predictions. As shown in Table 7, financial aid needs had a significance level of .451. A logistic regression significance of .451, however, indicates that there is not a statistically significant relationship ($p < .05$) between the student’s financial need and completion of a noncredit IT program.

Wood’s (2002) research on community college students determined that financial

need was not a primary factor in student persistence, but contributed to a student's decision to stop attending college. In a nationwide study of community college students, Phillippe and Valiga (2000) found that personal financial problems adversely affected approximately 58% of the students. Phillippe and Valiga further found that 48% of first generation students and 42% of all community college students reported that financial aid was a very important source of funding for college. Previous studies have shown that although financial concerns were a factor in student non-persistence, students leaving college considered financial concerns as a contributing rather than primary reason for withdrawal from college (Sydow & Sandel, 1998; Tweedell, 2000).

Heath-Thornton (2001) found that there was a statistical correlation between financial aid and marital status as they affect persistence of adult students. Her research indicated that married students were less concerned about financial need. Greenberg (1997) reported that financial need affected just 8% of his respondents; however, Heath-Thornton (1997) found that 67.5% of the respondents considered withdrawing because of financial concerns. The difference in how many students considered withdrawing because of financial concerns between these two studies could be perhaps explained by the different populations surveyed. Greenberg's (1997) survey population were students who had attended a college located in a large urban area, however Heath-Thornton's (2001) survey population were students who had attended a college that located in a more rural setting.

A report on West Virginia noncredit students enrolled in all types of programs found that 21.1% earned less than \$10,000 a year, and that over 50% of the students had annual incomes of less than \$30,000 (ACT Educational & Social Research, 2001a).

Moreover, 41.7% of the students were employed full-time, and another 15.7% were employed part-time. Of the employed full-time students, 54.7% worked 40-plus hours a week. The top response provided for enrolling in noncredit training was to meet job requirements, followed by a desire to increase earning power and improve computer skills. Because of the limited ability to take advantage of tax benefits, most of the cost of noncredit training is absorbed by the individuals.

Research Question 6: Is there a relationship between previous educational attainment and the persistence of students enrolled in noncredit IT certificate programs?

This research question attempted to answer the question of whether previous educational attainment of the student adversely affected her/his completion of the noncredit IT program of study in the same manner that previous educational attainment needs affects students in for-credit educational programs of study. Respondents identified their education levels by selecting descriptors that best represent their highest educational attainment. There were eight possible choices, ranging from “not completing high school” to having “earned graduate level degrees.” The frequencies are indicated in Table 6, and a logistic regression significance of .644 indicates no statistically significant relationship ($p < .05$) between the student’s previous educational attainment and completion of a noncredit IT program.

Research indicates that the failure to earn a traditional high school degree has a negative effect on persistence in college courses. Individuals who earned their IT credentials from nontraditional sources are found to be less academically prepared than college students who graduated from high school. In traditional programs of study, this lack of academic preparation results in the necessity for these students to take

developmental courses (Golonka & Matus-Grossman, 2001; MacLellan, 2001).

Adelman (2000b) hypothesized that adult students gravitated to noncredit IT programs of study in lieu of college credit programs of study because noncredit programs allow students to more rapidly develop skills. A number of adult students decided not to pursue a college education upon graduation from high school because they felt unprepared for the academic requirements of for-credit postsecondary education (Choy, 2002). This lack of preparation is often a reflection that the individuals had opted to take non-college preparation courses while attending secondary education.

Research by Bailey, Alfonso, Scott, and Leinbach (2004) indicated that occupational degree programs attract students with lower previous educational attainment. Additionally, occupational programs have been found to attract a higher proportion of students who have earned GED's compared to students enrolled in academically oriented degree programs (Bailey, Alfonso, Scott, & Leinbach, 2004).

In an ACT Educational & Social Research (2001) report on West Virginia noncredit students enrolled in all types of programs, it was found that 53.9% had not enrolled in postsecondary education. Of the students who had not enrolled in postsecondary education, 3.5 had earned their GED and 5.2% had not completed high school. Of the students who had previously attended postsecondary education, 10.4% had attended some vocational or technical training programs, 4.3% had attended community college, 20% had attended baccalaureate institutions, and 11.3% had attended graduate college.

Research Question 7: What economic benefits, if any, did students attain as a result of being enrolled in noncredit IT certificate programs?

Respondents replied to the question “As a result of the information technology training did you receive a pay raise and/or promotion?” If the respondent selected “yes,” then the follow-up question asked the amount of the pay raise received. The majority of respondents (93.8%) indicated that they did not receive any direct benefit from their IT programs of study. Several individuals who had indicated that they received no economic benefit from attending noncredit IT training stated that their reason for enrolling was to improve their job skills for their current employment.

For the 13 students who indicated that they had received economic benefit from their IT training, the benefit amount varied from a pay raise of \$1.00 per hour to an individual who reported tripling her/his annual income. Two individuals reported receiving unspecified monetary amounts as pay raises and one other individual was able to find another better paying job.

In previous years, adult students often returned to postsecondary education for the primary purpose of self-enrichment (Adelman, 2000b). Other studies, however, showed that “individuals are motivated to attend postsecondary education because of the economic returns, and that there is a strong positive relationship between formal education and earnings” (Sanchez, Laanan, & Wisely, 1999, p. 87). In a California study, Sanchez, Laanan and Wisely (1999) found that an adult college student, 25 years and older, earned an average salary increase of 9.2% with the completion of a certificate and an increased income of 9.3% with the completion of an associate’s degree. Typically an IT certificate can increase the annual salary in the range of \$3,000 to \$5,000 per year (Adelman, 2000b). The average starting salary for IT workers with IT industry

certifications such as Microsoft Certified Engineer or CISCO is \$45,000 per year (Symes, 2001).

Ancillary Findings

Open ended questions were included in the AVASPQ to elicit information that could not be ascertained from respondents by answering questions on a Likert scale. An analysis of respondent answers to open-ended questions was conducted to ascertain if emergent themes arose.

A review of the completion rate percentages found that of students experiencing a personal crisis, only 25% completed training. In comparison, the completion rate for students who had not experienced a personal crisis was 86.8%. The survey asked each respondent the question “Did the personal crisis cause you to seriously consider withdrawing?” For purposes of analysis, personal crisis was redefined as two variables with “noncritical crisis” and “critical crisis.” A noncritical crisis was a crisis that arose that did not lead the respondent to consider withdrawing from training, whereas a critical crisis was defined as a crisis that caused a student to consider withdrawing from training. The most common critical crisis that caused a student to withdraw from training was personal illness (8).

To determine the reason(s) why a student did not complete their program of study a logistic regression analysis was conducted (see Table 7) which revealed that statistically ($p < .05$), the odds of completing the program of study were reduced by 29.5% for students experiencing critical crises. A critical crisis was defined as a crisis which arose that led the respondent to consider withdrawing from training. The formula used to determine the odds of completing the program was $[e^b - 1.00] * 100$. After insertion of the numerical

values for the variables, the formula was expressed as $[(2.7182818)^{-.350}] * 100 = -$
29.5%, which reflects the negative relationship of a critical crisis to completion.

Table 7
Logistic Regression Analysis on Completion:

Variable	Coefficient	Standard Error	Significance Level
Age	.117	.235	.644
Male	-.006	.531	.990
African-American	.630	.882	.475
Married	-.197	.570	.730
MCTC	-.400	.690	.563
Education	-.194	.127	.126
Length	-.236	.195	.225
Worked	.119	.641	.853
Financial Aid Need	.186	.247	.451
Family Support	-.340	.268	.205
Noncritical Crisis	.306	.834	.713
Critical Crisis	-.3501	.997	.000
Intercept	3.251	1.677	.053

Naegelkerke $R^2 = .202$
 n = 176

Respondents were asked to provide information as to whether they had taken IT exams as result of their IT training, and, if so, to provide the type/name of certification examinations that they had taken. Individuals were not asked if they had passed the exams she/he had taken, but to identify if they still possessed IT certifications. Two individuals in written comments self-reported that they had failed their exams. As shown in Table 8, the Cisco Certified Network Associate (CCNA) examination was most frequently passed examination with 11 individuals, followed by A+ examination passed by nine respondents. Nine individuals indicated that they passed multiple IT certification examinations. Thirty-six respondents indicated that they could have taken but did not take certification examinations, and there was no predominant reason given to indicate why.

Table 8
IT Certification Examinations:

	Number
CCNA	11
A+	9
Network+	3
Other	13
n = 25	

The survey asked students to identify why they chose to attend their respective institutions for IT training selecting from the following reasons: size of classes, affordability, location, IT course offerings, reputation, make a living, and other. Respondents were not limited to selecting only one, and a number of them selected multiple reasons. The primary reasons that individuals selected their specific IT programs were training location and IT course offerings (see Table 9). The institution's reputation was not a significant factor in selecting the college for training purposes.

The respondents who selected "other" were asked to provide reasons for attending IT training, and 16 individuals indicated that they enrolled in classes to learn more about computers. Eighteen took classes because they were paid for by their employers to improve individual workplace skills.

Table 9
Reason for Attendance:

Reason	f	Percentage
Size of classes	26	14.8
Affordability	67	38.1
Location	105	59.7
IT Course Offerings	91	51.7
Reputation	18	10.2
Make a living	25	14.2
Other	40	22.7

n = 175

Summary

The purpose of this study was threefold: to determine the attrition rate in noncredit information technology (IT) programs of study in the Advantage Valley Area, to ascertain whether the background demographics that in previous studies have been found to adversely affect adult students' completion of for-credit programs of study also affected students' completion of noncredit (IT) programs of study, and whether students received any economic benefit from completing noncredit IT programs of study. This research of Advantage Valley Consortium students indicated that the attrition rate was 16%, and that most students received limited economic benefit from taking their noncredit IT classes.

Further, this initial research indicates that the background demographics that have been found to adversely affect adult students from completing for-credit programs of study cannot be used to predict completion of noncredit IT programs of study.

Importantly, the fact that background demographics did not adversely affect completion

of training programs this seems to contradict research by Golonka and Matus-Grossman (2001), who had found that the same background demographics that affect adult students in traditional degree programs also negatively influenced students who were enrolled in shorter term training.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of Purpose

The purpose of this study was to determine whether the same background demographic factors that have been identified in previous studies of adult student persistence in associate degree for-credit programs of study also influenced completion rates of adult students enrolled in noncredit information technology (IT) certificate programs of study, and the economic benefit (if any) students received as a result of their training. The following research questions guided this study:

Q1. What is the attrition rate of students enrolled in noncredit IT certificate programs?

Q2. Is there a relationship between *age* and the persistence of students enrolled in noncredit IT certificate programs?

Q3. Is there a relationship between *family situation* and the persistence of students enrolled in noncredit IT certificate programs?

Q4. Is there a relationship between *level of family support* and the persistence of students enrolled in noncredit IT certificate programs?

Q5. Is there a relationship between *financial aid needs* and the persistence of students enrolled in noncredit IT certificate programs?

Q6. Is there a relationship between *previous educational attainment* and the persistence of students enrolled in noncredit IT certificate programs?

Q7. What economic benefits, if any, did students attain as a result of being enrolled in noncredit IT certificate programs?

Statistical results from the above research questions and the ancillary findings may provide useful information on completion rates, student persistence, and economic benefits of students enrolled in noncredit IT programs.

Summary of Procedures

This research was a descriptive study which used a survey instrument to gather data. This survey instrument was mailed to all students (N=669) who had been enrolled in noncredit IT programs between 2000 and 2005 in the three institutions located in the Advantage Valley: Marshall Community and Technical College (MCTC), West Virginia State Community and Technical College (WVSCTC), and West Virginia University Institute of Technology Community and Technical College (WVUITCTC). A total of 176 usable surveys out of 553 yielded a return rate of 33.5%.

The survey instrument, the Advantage Valley Adult Student Persistence Questionnaire (AVASPQ), was adapted with permission from a research instrument that had been used in two previous studies. Part I of the AVASPQ solicited demographic data, which included each participant's age at the start of her/his training program, sex and race. Additional information was collected to ascertain marital status, family size, number (if any) of dependents, and previous educational attainment. These data were used to answer research questions two, three, and six.

Questions in Part II solicited general information from IT students. The purpose of these questions was to determine if students had completed their programs, the reasons for institution and program selection, issues of life-long learning, and reasons or

justifications that the students had for returning to an educational setting. Responses in this section were used to answer research question one and provided information included in ancillary findings. Part III consisted of statements designed to measure adult student perceptions of three other independent variables: level of family support, financial need, and family situation. Respondents were asked to reflect back to when they were taking their course(s) and indicate on a 5-point Likert scale the extent to which they agreed or disagreed with each of the 14 statements measuring these three independent variables. Their responses to these statements were recorded on a 5-point Likert scale and were used to answer research questions three and five.

Part IV of the AVASPQ was written with open-ended questions designed to solicit from the research participants expanded information that could not be answered by limited choice survey questions. This portion of the survey instrument addressed research question seven as to what, if any, economic benefit was derived from attending the noncredit IT training. Data generated by the survey were entered into and analyzed using SPSS 14.0. Analysis was conducted using logistic regression, and an alpha level of .05 was established to determine statistical significance.

Logistic regression analysis allows the researcher to determine if there is a statistical relationship between a dichotomous dependent variable and an independent variable by assuming a logistic relationship rather than the usual linear relationship. In addition to identifying statistically significant relationship(s) between the independent variables and the dependent variable, logistic regression enables the use of a variety of goodness-of-fit measures, comparable to the usual R^2 statistics used with linear regression. Nagelkerke's R^2 was chosen because it is the most commonly used and

easiest to interpret. The primary advantage of using Nagelkerke's R^2 is that it ranges from 0 to 1, with 0 being no association and 1 being perfect association (UCLA: Academic Technology Services, Statistical Consulting Group, 2007).

Summary of Descriptive Data

The demographic data collected were determined by responses to the research questions from Part I of the survey instrument. Demographic data collected included age, sex, marital status, family size, race, and previous educational attainment. Twenty-two students (12.5%) reported ages in the range of 25 to 34 years, 44 students (25%) in the range of 35 to 44 years, 53 students (30.1%) in the age range of 45-55 years, and 53 students (30.1%) in the age range of 55 years and above (Table 1 in Chapter IV).

One hundred seventy-one students responded to the question that asked their sex, with 121 (69.1%) reporting female and 54 (30.9%) reporting male. The survey question on marital status was answered by 174 respondents (Table 2 in Chapter IV). The majority of individuals (129) indicated that they were married, comprising 74.4% of the students. Those reporting their marital status as single (25) were the second largest group, representing 14.2% of the respondents. Thirteen individuals reported that they were divorced (7.4%) and seven were widowed (4%).

Respondents were asked to include themselves in reporting family size. One hundred seventy-five respondents replied to this question. Seventy-one students (40.3%) reported that their families consisted of two family members (Table 3 in Chapter IV). Nineteen respondents stated that they lived alone (10.8%) and another 85 (48.1%) reported that their family consisted of three to eight members. Each respondent was also asked the number of children under the age of 18, if any, that required the respondent's

care and supervision while taking class(es). The majority of the respondents (118) stated that they had no children (67%) requiring their care (Table 4 in Chapter IV).

The survey question soliciting the student's race was not answered by three respondents. The majority (165) of the respondents reported their race as white, 94.9%. Three (1.7%) individuals reported being African-American, and one (.6%) reported being Hispanic. Two (1.1%) individuals reported their race as "Other," describing their race as mixed (Table 5 in Chapter IV).

Four individuals did not provide their highest level of previous educational attainment (Table 6 in Chapter IV). One individual reported that he had not completed high school or earned a GED (.6%) and six indicated that their highest educational attainment was a GED (3.4%). Thirty respondents reported that they had earned high school diplomas (17%). The largest number of students (39) reported that they had earned their bachelor's degrees, 22.7%. Thirty-six respondents reported that they had earned their master's degrees or higher (20.5%).

Conclusions

The purpose of this study was threefold: to determine the attrition rate of students enrolled in noncredit IT programs in the Advantage Valley geographical area, if the background demographics that have been found in past studies to hamper adult students from completing for-credit educational programs also hinder noncredit students, and if noncredit IT students derived economic benefits from their training. The major findings of this study resulted from a review of the data to answer research questions and ancillary results.

Q1. What is the attrition rate of students enrolled in noncredit IT certificate programs?

In this study the attrition rate of students enrolled in noncredit IT programs was 16%. In their research Horn and Carroll (1996) found that only 27% of adult students who started work on an associate's degree in 1989 had completed their degrees within five years. The low attrition rate of students in this survey supports Adelman's (2000a, 2000b) assertion that adults will complete shorter duration noncredit IT program at a higher rate than students taking for-credit IT programs.

Q2. Is there a relationship between age and the persistence of students enrolled in noncredit IT certificate programs?

Unlike students enrolled in for-credit IT programs, logistic regression analysis did not show a statistical relationship between the age of the respondent and her/his completion of the training. Therefore, in this study the age of the student did not affect the persistence in completing the noncredit IT program of study. A logistic regression significance of .644 indicated that there is not a statistically significant relationship ($p < .05$) between the student's age and completion of a noncredit IT program.

Previous research indicated that the age of adult students in for-credit programs would affect persistence (Feldman, 1993; Greenberg, 1997; Thornton-Heath, 2002). Age was not a factor in the persistence of students in this survey, however; this perhaps can be explained by the fact that the majority of respondents reported that they were aged 45 years and older. In for-credit programs of study, students 45 and older have been found to have a persistence rate than adult students aged 25-39 (Feldman, 1993; Greenberg, 1997; Thornton-Heath, 2002).

Q3. Is there a relationship between family situation and the persistence of students enrolled in noncredit IT certificate programs?

Although previous research indicates that when adult students have dependents other than a spouse the student's likelihood of completing her/his program of study is significantly reduced (Brawer, 1996; Horn, Premo & Malizio, 1996; Matus-Grossman & Gooden, 2000a). In this study a logistic regression significance of .730 indicated that there is not a statistically significant relationship ($p < .05$) between the student's family situation (family size and marital status) and completion of a noncredit IT program.

Matus-Grossman and Goodman (2000a & 2000b) in their research of for-credit students had indicated that an adult's family situation would adversely affect completion of educational programs. The result of this study does not support their findings. The difference in findings can perhaps be explained by the difference in age demographics of survey populations. The survey population in Matus-Grossman and Goodman (2000a & 2000b) research had a majority of respondents who were younger and had young children at home, whereas the majority of students in this survey were older and 76% reported no children under the age of 18 in the household.

Q4. Is there a relationship between level of family support and the persistence of students enrolled in noncredit IT certificate programs?

Research on students taking for-credit courses indicates that family support for academic endeavors improves a student's retention in her/his programs of study (Greenberg, 1997; Golonka & Matus-Grossman, 2001; Heath-Thornton, 2002). In their model of nontraditional student persistence, Metzner and Bean (1987) had hypothesized that families and their support play a key role in retention. A logistic regression

significance of .205 indicates that there is not a statistically significant relationship ($p < .05$) between the student's family support and completion of a noncredit IT program. Support by family members for students in noncredit IT programs to attend training had no effect on retention as indicated by the respondents of this survey.

Although research by Golonka and Matus-Grossman (2001) indicated that family support would be necessary for the education of adult students, the results of this survey do not support their findings. This contradiction could perhaps be explained by the fact that the majority of survey respondents were above the age of 45 and indicated that they did not have children below the age of 18 in the household. Golonka and Matus-Grossman (2001) in their study of for-credit students, had reported that the primary concern of the adults in their survey was the need of family support in providing child care while the students were in training.

Q5. Is there a relationship between financial aid needs and the persistence of students enrolled in noncredit IT certificate programs?

As shown in Table 7 (found in Chapter IV), financial aid needs had a significance level of .451, which exceeds the level of $p < .05$ indicating that there was not a statistical relationship between financial aid needs and the persistence of students. Previous research has indicated that because of financial considerations, many for-credit students are unable to afford the cost of reducing their incomes to pursue further education or training (Golonka & Matus-Grossman, 2001; Horn, Premo & Malizio, 1996; Matus-Grossman & Gooden, 2000a). Students enrolled in noncredit programs of study are ineligible for traditional financial aid such as Pell Grants or student loans.

Because of limited reimbursement from employers, it is frequently more expensive for students to take noncredit IT courses versus for-credit IT courses, even if the learning outcomes are similar. Adelman's research (2000a) indicated that approximately 50% of employers provided financial support for students enrolled in IT programs of study. In this survey, only 18 students (10.4%) indicated that the employer paid for training. The majority of survey respondents indicated that while taking their classes they were working more than 40 hours per week. Since the majority of respondents were employed and more likely economically self-sufficient, this may explain why, unlike the survey population from Matus-Grossman and Gooden (2000a & 2000b) the participants were not negatively affected by financial concerns.

Q6. Is there a relationship between previous educational attainment and the persistence of students enrolled in noncredit IT certificate programs?

Adelman (2000a), reported that noncredit IT training providers expected students to arrive at training with minimal academic skills in areas such as mathematics and English. Frequently, the actual academic entry criterion for IT programs of study is verification of either previous completion of IT courses or demonstration of minimal IT competencies. In this study there was no statistical relationship between a student's previous educational attainment and persistence in noncredit IT certificate programs. There were eight possible choices that ranged from "not completing high school" to having "earned a graduate level degree"; the frequencies are indicated in Table 6 contained in Chapter IV. A logistic regression significance of .644 indicated that there is not a statistically significant relationship ($p < .05$) between the student's previous educational attainment and completion of a noncredit IT program.

The results of this survey do not confirm Adelman's (2000a & 2000b) assertion that noncredit IT programs would attract underprepared students. In this survey only one student had not graduated from high school or earned her/his GED. In an ACT Educational & Social Research (2001) report on West Virginia noncredit students, it was found that 53.9% had not attended postsecondary education; the majority of respondents in this survey (79.2%) had indicated that they had previously attended post-secondary institutions. This seems to indicate that noncredit IT training in the Advantage Valley geographic attracts academically better prepared students than are enrolled in other types of noncredit programs.

Q7. What economic benefits, if any, did students attain as a result of being enrolled in noncredit IT certificate programs?

Adelman (2000b), reported that an IT certificate can increase annual salary in the range of \$3,000 to \$5,000 per year. Symes (2001) found that individuals who have IT industry certifications as a Microsoft Certified Engineer or CISCO Network Associate had an average starting salary of \$45,000 per year. The primary advantage to students enrolling in noncredit versus for-credit IT programs is that for-credit programs generally take a student a longer time to complete the program of study. Adelman (2000a & 2000b) asserted that the shorter time to complete a noncredit program of study encourages adult students to attend noncredit IT programs versus attending for-credit programs of study. Since the primary requirement to work in the IT field would be demonstrated skills or industry certifications, the attraction of taking a shorter term noncredit program would be for adult students to more rapidly attain the economic benefit from completing an IT program of study (Adelman 2000a; 2000b).

In West Virginia Senate Bill 653 (2000), state legislators clearly held community colleges responsible for the mission of workforce development. The majority of respondents (93.8%) indicated that they did not receive any direct economic benefit from the noncredit IT training. However, respondents reported that they participated in training for the purpose of maintenance of job skills required for their current jobs or for personal growth. Maintenance of job skills does meet one aspect of workforce development as prescribed in West Virginia Senate Bill 653 (2000).

Ancillary Conclusions

The primary reason given for students' not completing the noncredit program was a personal crisis that arose after the student started training. This is a variable that had not been identified in previous studies as adversely affecting students in completing their training. Since the majority of individuals stated that the crisis that arose was an illness, this is usually hard to predict.

When asked if they had taken any Information Technology industry recognized certification exams, the majority of respondents indicated that they had not pursued taking IT certification exams after their training. As shown in Table 8 located in Chapter IV, Cisco Certified Network Associate (CCNA) examination was the most frequently passed industry certification examination (n=11). The second most frequently passed examination was the A+ certification examination which was passed by nine respondents. A significant number of individuals who had taken IT certification exams indicated that they passed IT certification examinations in multiple areas.

The low number of students who took IT certification exams does not confirm Adelman's (2000a; 2000b; 2003) assertion that IT certifications would be valued by

employers and a required certificate for individuals to be employed. Thirty-six respondents indicated that they could have taken, but for various reasons did not take certification examinations. There was no predominant reason provided to explain why individuals did not take the certification examinations. Several individuals stated that they had passed their certification exams but allowed the certifications to lapse; this seems to indicate that the individuals used the training to achieve their goals, but once achieved, these certifications were no longer necessary.

The low number of individuals attempting certification exams and individuals allowing their IT certifications to lapse contradicts the assertion of Adleman (2000a; 2000b; 2003) that industry IT certifications would be the credential that employers would seek in their employees. By allowing IT certifications to lapse, respondents are implying that the certification was important, but in the field the value is in the employee's proven job site skills. A number of respondents stated that their primary reason for taking classes was to maintain IT skills required for their current jobs, which implies that required job skills are becoming more technical and employees have to improve their skills to remain competitive.

When asked why they chose their institutions, respondents reported that the primary reasons were training location and IT course offerings (see Table 9 in Chapter IV). The institution's reputation was not a significant factor in selecting the college for training purposes. Respondents who selected "other" were asked to provide reasons for attending IT training, and the two most common reasons were learning more about computers (n=16), and because their employers paid for the training to improve individual workplace skills (n=18).

Implications

The most important finding of this study is that there is no statistical evidence that community college administrators can use the same traditional background demographics that have been found to hinder nontraditional students from completing for-credit courses and apply these same demographics to predict success of adult students enrolled in noncredit IT programs. The primary factor that caused students to drop out of training was a critical crisis, such as personal illness, which arose unexpectedly and cannot be anticipated.

One of the missions assigned to community and technical colleges by West Virginia Senate Bill 653 (2000) is to offer “continuing development assistance and education credit and noncredit courses for professional and self-development, certification and licensure” to develop the workforce. West Virginia Council for Community and Technical College Education in Policy 135-06, Performance Indicators (2005) established as evaluation criteria a college’s performance in meeting workforce development goals using student enrollment and successful completion rates. With a completion rate for noncredit programs was 86% it appears that the community and technical colleges in the Advantage Valley geographic region are fulfilling this mission.

Although West Virginia Senate Bill 653 (2000) does not specifically define workforce development, the bill does state that programs are for “students seeking immediate employment, individual entrepreneurship skills, occupational development, skill enhancement and career mobility.” In this study a majority of respondents indicated that they received no economic benefit from their IT training. However, a number of respondents did indicate that they took classes to for skill enhancement for their current

job skills and from this perspective community and technical colleges from within the Advantage Valley Consortium are fulfilling their legislated mission.

More individuals (n=36) indicated that they had not pursued taking IT certification exams than the number of individuals who had taken and passed IT certification exams (n=25). Aldeman (2000a, 2000b, & 2003) postulated that IT industry certifications would be the primary entry level credential that employers would seek when hiring employees. Since more students reported that they did not take their certification exams than those who had tested, the results of this survey seem not to support Adleman's (2000a, 2000b, & 2003) assertion that IT industry certifications would be the necessary credential for IT employees.

From this study it is apparent that the preponderance of noncredit IT training was conducted by one college, Marshall Community and Technical College. The other colleges from the Advantage Valley Consortium, conducted limited IT training. The reduced amount of students trained by the other colleges may indicate that either the demand for these skill sets is limited or students were funneled into for-credit IT programs.

Further, when looking at the educational background of the respondents the majority had previously attended college. This does not support Adelman's (2000a & 2000b) assertion that noncredit IT programs would attract students who would prefer noncredit IT courses to avoid taking non job essential courses, such as English or mathematics required when enrolled in for-credit educational programs. The high number of students who had previously completed college level work may indicate that noncredit

IT programs were being used by individuals for continuing educational purposes or job skill tune up, in lieu of education for a career change.

Limitations of the study

The following limitations of this study were observed:

1. This survey was mailed to a small population comprising students who had taken noncredit IT classes with the three community and technical colleges within the Advantage Valley Consortium. The number of students enrolled in each institution varied greatly with a preponderance of students receiving their education from a single institution, Marshall Community and Technical College.
2. This study was limited only to students enrolled in information technology programs. The limited population insufficiently addresses the issue of whether community and technical colleges are fulfilling the state legislated mandate to develop the workforce, since there are significantly more types of workforce development programs than students can enroll in. An expanded study of students enrolled in all types of noncredit workforce development programs would help community and technical colleges to determine if they are helping to fulfill the legislated workforce development requirements as mandated by West Virginia SB 653 (2000).
3. This survey asked respondents to identify if they had taken and passed IT certification examinations. However, there were no follow-up questions to identify why respondents had not taken certification examinations and this information would have been useful to workforce development professionals.

4. Data from this survey are quantitative, which confined respondents to specific choices to each question. A qualitative survey might provide more complete answers to questions.
5. The data in this survey were generated using a self-reporting instrument which is limited by the accuracy of the participants' responses (Kerlinger & Lee, 2000).

Recommendations

Analysis of descriptive data and the findings from the research questions and ancillary findings form the basis of the following recommendations:

1. Conduct a follow-up study with all community and technical colleges in West Virginia. Generalizability would be improved by enlarging the population to include students from other colleges within the state.
2. Conduct follow-up studies of noncredit students to determine if Adelman's (2000a; 2000b) assertion is correct, which is that individuals enroll in noncredit programs of study to learn a workforce skill to attain economic benefits. The reduced length of time required to attain such skills in comparison to for-credit programs of study is thought to be appealing.
3. Conduct follow-up survey to determine reason(s) that students did not take industry IT certification examinations. The findings of such research can help determine what factors might hamper students from taking industry IT certification examinations and perhaps spur development of policies/procedures to help encourage students to take IT certification exam.
4. Conduct a survey of students enrolled in similar IT programs with private for-profit education providers to determine if the findings are similar to this

5. An extrapolation on the level of family support for training and whether an individual had taken IT certification indicated a negative correlation. Since the questions on level of family support were focused on the time that an individual was in training, it is recommended that follow-up surveys incorporate questions dealing with level of family support for completing IT certification examinations which occurs post-training, usually within six months.
6. Continuing education components develop a more thorough and detailed record keeping system so that attrition rate and demographic data can more easily be extracted by the institutions so as to be able to report to legislators the success of training/educational programs.

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APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL

APPENDIX B
ADVANTAGE VALLEY ADULT STUDENT PERSISTENCE QUESTIONNAIRE

Advantage Valley Adult Student Persistence Questionnaire

Part I. Demographic Information

1. Age when you enrolled in classes: 25-34 35-44 45-54 55+

2. Sex: Male Female

3. Race: African American Asian Hispanic
 Native American White
 Other (please specify)_____

4. Number of children requiring your care and supervision while attending classes_____

5. Including yourself, what was the size of your immediate family in your home when you began taking noncredit Information Technology classes?_____

6. Prior to starting your Information Technology classes indicate the highest level of education you completed.
 Some High School GED
 High School 1-30 college credit hours
 31-65 college credit hours Associate Degree
 Baccalaureate Degree Masters or higher

7. Marital Status: Single Married Divorced Widowed

8. Did you possess any Information Technology Industry Certifications prior to the start of your classes? Yes No If yes, please list them below:
a. _____ b. _____
c. _____ d. _____

Part II. Information Technology Enrollment:

Please answer all of the questions in this section as they applied to you at the start of your Information technology classes.

Institution attended:

- Marshall Community and Technical College
- West Virginia State Community and Technical College
- West Virginia University Institute of Technology Community and Technical College

1. What was the length of the Information Technology Program that you enrolled in?

- 1-2 weeks 3-4 weeks 5-6 weeks 7-8 weeks 9 weeks or longer

2. The reasons you chose to attend the institution. (check all that apply)

- Size of classes
- Location
- Reputation
- Affordability
- IT course offerings
- Make a living

Other: _____

3. In addition to being a student, what other responsibilities did you have while attending Information Technology classes? (check all that apply)

- Worked outside the home (approx. hours per week? _____)
- Took care of children
- Took care of other family member(s)
- Primary caregiver to ailing or aging parent

4. Did a personal crisis occur while you attended classes? Yes No

If yes, please indicate the category: (check all that apply)

- Divorce
- Lost Job
- Personal illness
- Family Illness
- Fire, flood, or other disaster
- Other (please specify): _____

If yes, please answer the following:

Did the personal crisis cause you to seriously consider withdrawing? Yes No

If you did not withdraw please specify the reason(s) that you decided not to withdraw?

5. Did you complete your program of study?

- Yes No

6. As you continued with your IT program did your reasons for attending change in any way?

- Yes No If yes, please indicate in what way(s) they changed.
- Job/career Change
 - Encouragement of an instructor
 - Friendship with class members
 - Other: _____

Part III. Student Persistence

Thinking back to your experiences during your Information Technology classes, indicate the extent to which you agree or disagree with each statement below. There is no right or wrong answer.

<i>Statement</i>	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>	<i>Not Applicable</i>
1. Enrolling in classes had a negative effect on my family relationships.	1	2	3	4	5
2. I worried about how I would pay for college.	1	2	3	4	5
3. I had adequate childcare while I attended classes.	1	2	3	4	5
4. Members of my family were helpful in freeing my time for school work.	1	2	3	4	5
5. Family obligations hindered completion of my program of study.	1	2	3	4	5
6. I received tuition reimbursement from my employer.	1	2	3	4	5
7. I had reliable transportation while enrolled in my program of study.	1	2	3	4	5
8. My family members often asked me how school was going.	1	2	3	4	5
9. Members of my family were not supportive of my attending classes.	1	2	3	4	5
10. My spouse/significant other was supportive of my being back in classes.	1	2	3	4	5
11. My friends outside of school often asked me how classes were going.	1	2	3	4	5
12. I considered withdrawing from my classes because of financial matters.	1	2	3	4	5
13. I found it difficult to secure finances for tuition.	1	2	3	4	5

Part IV. Training Results

1. After attempting the Information Technology program of study did you take any Information Technology industry recognized certification exams? Yes No

a. If yes, please specify _____

b. Of the attempted Information Technology certification exams, which certification(s) do you now possess? _____

c. If no what was the reason(s) you did not attempt to take any Information Technology industry recognized certification exams? _____

2. If you attempted an Information Technology industry recognized certification exam and did not pass it, why do you think this happened? _____

3. As a result of the Information Technology training did you receive:

Pay Raise and/or Promotion?

If you received a pay raise, how much was the annual pay raise? _____

4. Is there any other information that you would like to share that was not addressed by this questionnaire?

Thank you very much for participating in this survey!

APPENDIX C
SURVEY MAILING COVER LETTER



MARSHALL UNIVERSITY *This is consent to participate in a research survey.*

www.marshall.edu

Graduate College
School of Education & Professional Development
Office of Doctoral Programs

June 21, 2006

Dear Sir/Madam:

You been selected to participate in a study titled A study of persistence factors of nontraditional students enrolled in noncredit information technology programs in the Advantage Valley Community College Consortium. I am conducting this research as part of my dissertation for the Ed.D. in Educational Leadership at Marshall University Graduate College. I also work at Marshall Community and Technical College as director of off-campus programs and often advise adult students in selecting the best type of training program for them to pursue. With your help in this study, I will be able to do a better job of advising adult students in selecting of the correct type of information technology program to meet their individual needs.

In the past there has been research on the factors that influence adult student's success in traditional college programs. However, there has been limited research on students taking noncredit information technology courses, your participation will help fill this void. Since you participated in noncredit Information Technology training through the Continuing Education component of a community and technical college your answers will help to identify if the same factors that negatively affect adult students enrolled in noncredit programs also adversely influence student success in noncredit programs.

Your participation in the survey is entirely voluntary, and you are not required to respond to every question. Your responses will not be coded, tracked, and your individual responses will remain anonymous. Once the information is collected from all respondents then the results will be tabulated in aggregate form. Confidentiality will be maintained through out the entire process.

This survey will take approximately, 10-15 minutes to complete. Please take a few minutes from your busy schedule to complete and return this survey instrument in the self-addressed, stamped envelope by October 15, 2006. Returning the survey using the self-addressed envelope indicates your consent for use of the answers you supply. If you have any questions about the study, you may contact Dr. Dennis Anderson at (304) 746-8989, or Steven Brown at (304) 696-3366. If you have any questions concerning your rights as a research participant you may contact the Marshall University Office of Research Integrity at (304) 696-7320.

If you wish to receive an electronic copy of the completed survey please email me at brown175@marshall.edu. In advance I would like to thank you very much for your participation and assistance in this research project.

By completing this survey and returning it you are also confirming that you are 18 years of age or older.

Sincerely,

Steven L. Brown, Ed.D. Candidate
Education Leadership Studies Program
Marshall University Graduate College

Please keep this page for your records.



SDE

MU IRB

JUN 21 2006

APPROVED

APPENDIX D
SURVEY SECOUND MAILING COVER LETTER

Dear Sir/Madam:

You may have already completed and returned the attached survey for my Doctorial study titled A study of persistence factors of nontraditional students enrolled in noncredit information technology programs in the Advantage Valley Community College Consortium. However, more responses are needed to ensure the accuracy of this study. If you have not completed and returned this survey, please take a few minutes to do so. Please return the survey in the self- addressed and postage paid envelope by the extended deadlines of November 10, 2006. If you have already completed and returned this survey please disregard this notice and I thank you for your participation.

Your participation in the survey is entirely voluntary, and you are not required to respond to every question. Your responses will not be coded or tracked, and your individual responses will remain anonymous. Once the information is collected from all respondents then the results will be tabulated in aggregate form. Confidentiality will be maintained through out the entire process.

This survey will take approximately 10-15 minutes to complete. If you have any questions about the study, you may contact Dr. Dennis Anderson at (304) 746-8989, or Steven Brown at (304) 696-3366. If you have any questions concerning your rights as a research participant you may contact the Marshall University Office of Research Integrity at (304) 696-7320.

If you wish to receive an electronic copy of the completed survey please email me at brown175@marshall.edu . I would like to thank you in advance for your participation and assistance in this research project.

Again, thank you for your assistance with this study.
Sincerely,

Steven L. Brown, Ed.D. Candidate
Education Leadership Studies Program
Marshall University Graduate College

Please keep this page for your records.

APPENDIX E
CURRICULUM VITAE

Steven L. Brown
Brown175@marshall.edu

Education

A.B.D., Leadership Studies doctoral program in Higher Education Administration
Marshall University Graduate College

Ed., Specialist (area of emphasis Leadership Studies)
Marshall University, 2002

M.S., Management (area of emphasis Organizational Behavior)
Troy State University, 1988

B.S., Criminal Justice
Troy State University, 1986

Professional Experience

Dean Continuing and Corporate Education
Marshall Community and Technical College
January 2008- Present

Associate Dean and Director, Off-Campus Programs
Marshall Community and Technical College
August 2004- December 2007

Adult Recruiter and Academic Recruiter
Marshall Community and Technical College
August 2002- July 2004

Training Director
TRISM Inc.
July 1995- November 1999

Assistant Professor of Military Science
Georgia State University
September 1990- July 1995

Infantry Officer
U.S. Army
Numerous leadership positions from platoon leader to battalion executive officer
March 1981- September 1990

Infantry Enlisted Solider

U.S. Army
Served in leadership positions to include machine gun team leader, squad leader, and
jumpmaster.
September 1975- March 1981

Part Time Professional Experience

Adjunct Professor Lewis Business College
Marshall University
January 2003- December 2004

Adjunct Professor Marshall Community and Technical College
August 2002 to Present

Management Skills and Experience

Chief administrator of academic (for-credit) programs and courses, as division leader, promotes collegiality and links off-campus concerns, interests and objectives to the goals of the College, the strategic plan, and the needs of the community. Is the primary operational and management link between the off-campus sites, faculty, and administration. Responsible for the day to day, year-long issues and decisions about staffing; division leadership; enrollment management; data gathering/analysis; report compilation; off-campus course scheduling/sequencing; budget monitoring; program/curriculum development; and assisting with off-campus program marketing; student recruitment and retention.

Leadership and Military Experience

U.S. Army Infantry:

As company commander of a 220 person infantry company, I was responsible for the health, welfare and training of all assigned soldiers. Coordinated training from individual, team, squad, platoon through company level.

Duties as battalion executive officer include serving as second in command of a 1,100 person infantry unit with responsibilities that included coordinating all support staff activities, mess officer, and ensuring that all logistical support is provided to subordinate units.

Infantry School instructor with the responsibility to teach newly commissioned infantry lieutenants about the principles of leadership, counseling techniques, and available Army supportive services.

Military Honors: Meritorious Service Medal with oak leaf cluster (second award); Army Commendation Medal with V device for Valor; Army Commendation Medal with 1 Oak leaf cluster (second award) for service; Army Achievement Medal; Good Conduct Medal; National Defense Service Medal; Armed Forces Expeditionary Medal with Arrow Head; Reserve Officer Service Medal; Noncommissioned Officer Professional Development Medal with number 2; Army Service Ribbon; Army Foreign Service Ribbon; Valorous Unit Award; Combat Infantryman's Badge; Ranger Tab; Master Parachutist Wings with combat jump star; Senior Freefall Parachutist Wings, Pathfinder Badge; and Egyptian Jump Wings.

Community Service

Elder Bates Memorial Presbyterian Church: 2003-2004 and 2005- present.

Presentations

Panelist at the W.O. Farber Center for Civic Leadership, University of South Dakota on
Citizenship, Leadership, and Character: The WWII Generation to the Baby Boomers.