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DISSERTATION

THE PROSTART SCHOOL-TO-WORK-PROGRAM: A FOLLOW-UP STUDY TO
ASSESS STUDENT OUTCOMES

Submitted by

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School of Education

In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

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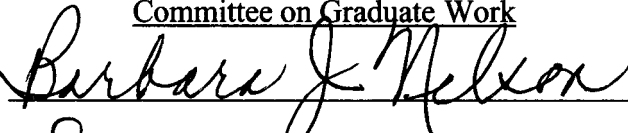
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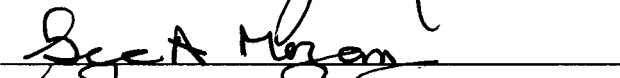
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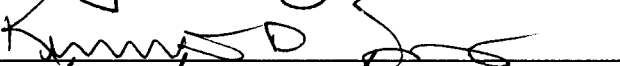
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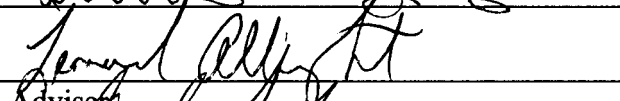
WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY DEENA S. KOESSL ENTITLED *THE PROSTART SCHOOL-TO-WORK PROGRAM: A FOLLOW-UP STUDY TO ASSESS STUDENT OUTCOMES* BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work









Adviser



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ABSTRACT OF DISSERTATION

THE PROSTART SCHOOL-TO-WORK PROGRAM: A FOLLOW-UP STUDY TO ASSESS STUDENT OUTCOMES

Since the ProStart school-to-work program began in the mid-1990s, there has been speculation about the post-secondary outcomes of its graduates. Knowing what ProStart graduates do after high school graduation, specifically if they stay in the industry either through education or employment, is important to stakeholders. Further, knowing which aspects of students' high school education are associated with matriculation to college and the workplace has implications for future program improvements. In addition to its use here, the methodology employed in this study should be of assistance to other professionals involved in similar career-oriented high school programs.

Student reported data from recent graduates was used to track their post-secondary education and employment paths; this information was obtained through individual telephone interviews with 100 students. The Colorado Restaurant Association Education Fund (CRAEF) supplied additional data about student engagement while in school. The information was then analyzed to determine significant relationships.

The results of this study showed that 68% of former ProStart students were attending college. Further, 27% of the total were attending a post-secondary institution *and* majoring in an industry-related field (18%) or business (9%); another 11% of the total planned to attend college and major in an industry-related field (8%) or business

(3%). In addition, 42% of the total worked in an industry-related occupation; another 9% were seeking employment in the industry.

There were several factors that seemed to influence ProStart students' matriculation into post-secondary educational environments. First, student engagement in *all* program components was associated with favorable ProStart high school outcomes. Second, the highly engaged students who received financial post-secondary support were more likely to have favorable outcomes—they were more likely to attend college, have a higher GPA, and be majoring or planning to major in an industry-related field.

There were several factors that seemed to influence ProStart students' matriculation into the industry. Again, student engagement in most of the program components was associated with favorable ProStart high school outcomes. Further, receiving the National Certificate as a result of being highly engaged was important; students who received the National Certificate were more likely to work in the industry post-secondarily.

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CHAPTER 1: INTRODUCTION

Since the 1980s, several issues have led to a national discussion involving educational reform, specifically the lack of connection between secondary education and workforce development (Hughes, Bailey & Mechur, 2001). First, the report, *A Nation at Risk* (1983), claimed that the United States was suffering from lack of productivity and competitiveness due to flaws within the educational system; because of the changing nature of work, students were lagging far behind those from other countries. The Commission on the Skills of the American Workforce (1990) claimed that many young adults, those without a post-secondary education, could not earn enough money to support a family while moving from one low-wage earning job to another.

Second, contextual learning became a topic of discussion among cognitive psychologists and educational constructivists (i.e., Resnick, 1999, 1987; Glaser, 1996). These groups argued that students learn most effectively when they are taught within the context of using those skills while constructing their own meaning from those experiences. It was hoped that these approaches would engage students in their own learning, and thus keep them in school.

The School-to-Work Opportunities Act (STWOA) of 1994 reflected the merging of these two issues. The STWOA has, according to Hughes, et al. (2001), made a great impact in the field of career and technical education. Its intent was to develop ongoing partnerships between businesses and schools by providing work-related curricula paired

with internships and apprenticeships with local employers. Over 1,000 local STW (school-to-work) partnerships involving 25.3 million students in 50,000 schools were involved in the STWOA; 3,450 post-secondary institutions also participated (Cutshall, 2001).

Vocationalism in American Schools

Vocationalism can be traced to the turn of the 20th century (Gray, 1996). During this time, high schools were preparing students in academic areas but were not addressing their employment needs. The solution during the early 1900s, posed by educators with significant input from social reform groups, was to introduce four occupational programs into the high school curriculum: commercial education, industrial education, home economics, and vocational agriculture. According to educational historians such as Lynch (2000) and Miller and Gregson (1999), this form of vocationalism persisted for 80 years until the early 1980s when enrollment in vocational classes began to dramatically decline. Students no longer saw the value of enrolling in these courses because the previously high-paying industrial jobs associated with vocational education were disappearing while academic standards in school systems were rising. As a result, the focus became college preparatory programs. Between 1982 and 1990, enrollment in vocational classes decreased in 32 states while the number of students in college preparatory classes increased by 10% nationally, in part, due to high school graduation of the baby boom generation. The education policies and initiatives leading to the STWOA will be further discussed in Chapter 2.

ProStart: A School-to-Work Program

The hospitality industry—including foodservice, lodging, and travel—employs more people in the United States than any other industry. According to the Bureau of Labor Statistics, the number of hospitality jobs will increase by nearly two million between 1998 and 2008. Food service, specifically, employs 10.2 million people; this figure is expected to increase to 12 million by 2006 (The Educational Foundation of the National Restaurant Association, 1998). As such, hospitality managers rank the availability of labor as their top priority (National Employer Leadership Council, 2000).

The hospitality industry is one of the few industries that approached STW as a national effort. According to the National Employer Leadership Council (2000), the industry came together and formulated a single initiative incorporating high standards, providing industry approved curriculum, and paid internships for students. It was formed by the Hospitality Business Alliance (HBA) in 1996, an educational partnership between the National Restaurant Association (NRA) and the American Hotel & Motel Association. The purpose of the HBA was to create a system of high school hospitality courses linked with mentored worksite experiences. One of the programs that evolved as a result of this alliance was ProStart. A technical program offered on a nationwide basis, ProStart was designed for those at the high school level (10th, 11th, 12th grades) who plan to start a career in the hospitality management industry. Further information about ProStart will be provided in Chapter 2.

Purpose of Study

Since ProStart began, there has been speculation among ProStart educators, employers, and prospective students and parents about the post-secondary outcomes of its

graduates. Knowing what ProStart graduates do after high school graduation, specifically if they stay in the industry either through education or employment, is of high importance to the ProStart stakeholders (i.e., teachers, administrators, corporate sponsors). Further, knowing which aspects of students' high school education are associated with matriculation to college and the workplace has implications for future program improvements to better meet the needs of ProStart graduates.

Prior to this research, there had not been a systematic study of the outcomes of ProStart graduates and, as a result, there was limited information about this program at national, state, and local levels. Although attempts had been made to collect data through student interviews (M. Mino, personal communication, September 23, 2003), there was still little known about student outcomes of this program over time. In addition, the methodology employed in this study should be of assistance to other professionals involved in similar career-oriented high school programs.

In an effort to determine these outcomes, two sources of information were used for this study. First, student reported data from recent graduates were used to track their post-secondary education and employment paths. Second, the Colorado Restaurant Association Education Fund (CRAEF) supplied additional data. The information collected was then analyzed to determine the relationship between student characteristics, student engagement, program characteristics and subsequent outcomes. The methodology used was associational in design; a combination of quantitative and qualitative data was collected from students and the CRAEF. It should be noted that this study was funded through the CRAEF from January, 2004 through February, 2005.

The information obtained through this study will be helpful in informing the major stakeholders, including corporate sponsors, administrators, and government agencies, of the program's merit. First, major corporate sponsors want to know if students in the ProStart program remain in the field after graduation. Second, ProStart administrators at state and national levels as well as local school districts want to know about student performance and whether students stay in the field. Third, since this is a nationally supported program, government and other supporting industry agencies will need to have evaluation information (Albright & Smith, 2002). In addition, and as mentioned previously, the methodology employed in this study should be of assistance to other professionals involved in similar career-oriented high school programs.

Statement of Research Problem

The research problem was to determine whether there were specific student or program characteristics that were associated or could be used to predict industry-related, post-secondary outcomes. More generally, what were the factors that seemed to influence ProStart students' matriculation into post-secondary, industry-related educational and employment environments?

The most rigorous and comprehensive report on STW program outcomes to date, *School-to-Work: Making a Difference in Education* (Hughes, et al., 2001), was used as the basic framework from which research questions for this study were derived. For the purpose of this dissertation, the research questions were based on three of the five categories used in that report.

Briefly, this study found that STW outcomes can be categorized into five areas:

1. STW supports academic achievement

2. STW supports career preparation
3. STW supports youth development
4. Teachers see value in STW
5. Employers are enthusiastic about STW

Since the study indicated specific outcomes over a wide range of STW programs, it is reasonable to surmise that ProStart should use these as benchmarks for their own assessments.

Research Questions

Given that this study was based primarily on student-reported data, three of the most pertinent areas from the Hughes et al. (2001) report were considered and incorporated into the research questions: Academic achievement, career preparation, and youth development.

Research Question 1. How can ProStart post-secondary outcomes be described?

- 1a. What percent of ProStart graduates attend college? What is their overall GPA?
- 1b. What percent of ProStart graduates attend college and major in an industry-related field?
- 1c. What impact do former ProStart students' report that the program had on their pursuit of a post-secondary education?
- 1d. What percent of ProStart graduates work in the industry?
- 1e. What impact do former ProStart students' report that the program had on their pursuit of a post-secondary career in the industry?

Research Question 2. Is there an association between level of support received and outcomes or self-reported program impact?

- 2a. Is there an association between level of ProStart instructor/program support and high school outcomes?
- 2b. Is there an association between level of employer support while in ProStart and high school outcomes?
- 2c. Is there an association between level of ProStart instructor/program support and self-reported program impact?
- 2d. Is there an association between level of employer support while in ProStart and self-reported program impact?
- 2e. Is there an association between level of ProStart instructor/program support and post-secondary outcomes?
- 2f. Is there an association between level of ProStart employer support while in ProStart and post-secondary outcomes?

Research Question 3. Are there differences between the levels of student engagement in regard to program outcomes or self-reported program impact?

- 3a. Are there differences between the two levels of competitions (did/did not participate) in regard to high school outcomes?
- 3b. Are there differences between the two levels of mentored internship (did/did not complete) in regard to high school outcomes?
- 3c. Are there differences between the two levels of year two of the program (did/did not complete) in regard to high school outcomes?

- 3d. Are there differences between the two levels of competition in regard to self-reported program impact?
- 3e. Are there differences between the two levels of mentored internship in regard to self-reported program impact?
- 3f. Are there differences between the two levels of year two of the program in regard to self-reported program impact?
- 3g. Are there differences between the two levels of competition in regard to post-secondary outcomes?
- 3h. Are there differences between the two levels of mentored internship in regard to post-secondary outcomes?
- 3i. Are there differences between the two levels of year two of the program in regard to post-secondary outcomes?

Research Question 4. Is there an association between outcomes and self-reported program impact?

- 4a. Is there an association between high school outcomes and self-reported program impact?
- 4b. Is there an association between high school outcomes and post-secondary outcomes?

Research Question 5. Is there a combination of instructor/program support and student engagement that predict self-reported program impact?

- 5a. Is there a combination of instructor/program support and student engagement that predict ProStart students' pursuit of more education?

5b. Is there a combination of instructor/program support and student engagement that predict ProStart students' pursuit of a career in the industry?

Variables

After conducting a literature review, the following variables were chosen as those most appropriate in terms of the information this study was seeking:

- Independent variables: gender, high school attended, course schedule, level of ProStart instructor/program support, level of ProStart employer support, participation in competitions, participation in mentored internship, completion of year two, and level of student engagement
- Dependent variables: ProStart Exam One score, ProStart Exam Two score, receipt of National Certificate, financial support to a post-secondary institution, self-reported program impact on pursuing higher education and an industry career, attending college, post-secondary education major, college grade point average, post-secondary employment

It is hoped that this combination of data will yield valuable findings to the ProStart stakeholders and further the knowledge base in this relatively new occupational program area and other like career and technical education programs.

Definition of Terms

Block schedule refers to courses that may be scheduled for two or more continuous class periods or days to allow students greater time for laboratory or project-centered work, field trips or work-based learning, and special assemblies or speakers (NRAEF, 1998).

Competitions refer to culinary events where teams of students demonstrate their creative abilities through the preparation of a three-course meal in 60 minutes; their performance is observed and rated by judges from leading post-secondary colleges and universities (www.nraef.org/prostart, 2005).

Engagement refers to the amount of time that is spent in teaching interactions or in activities in which the student is actively learning (www.cde.state.co.us, 2005).

Mentored internship refers to a situation where students work for an employer for a specified period of time to learn about a particular industry or occupation. Students' workplace activities may include special projects, a sample of tasks, from different jobs, or task from a single occupation (NRAEF, 1998).

Modified block schedule refers to a combination of a block and traditional schedule. For example, a student may have a traditional schedule for three days of the week and a block schedule for two days.

National certificate is awarded based on successful completion of both the academic and the work experience components of the ProStart program. To be eligible for the certificate, students must have their work experience requirements verified and pass the final exam (CRAEF, 1998).

Outcomes refer to an estimate of the net effects of an intervention (Rossi, Freeman, & Lipsey, 1999). In this case, both high school and post-secondary outcomes were examined.

Post-secondary educational institution refers to a school that provides formal instructional programs with a curriculum designed primarily for students who have completed the requirements for a high school diploma or equivalency certificate. This

includes programs of academic, vocational and continuing professional education purpose, but excludes vocational and adult basic education programs (CRAEF, 1998).

ProStart final exam is a comprehensive, broad based exam that covers both years of the ProStart program and represents core knowledge of food service skills (CRAEF, 1998).

Traditional schedule refers to a school day which is typically divided into six or seven classes, each lasting 45 to 55 minutes (NRAEF, 1998).

Trimester refers to a period or term of three months (www.cde.state.co.us, 2005).

Study Delimitations

This study focused on student-reported data and data collected from the CRAEF. Because of time/resource constraints and difficult accessibility, the actual examined data were not obtained directly from the involved school districts.

This study focused on the student outcomes of a single STW program, namely ProStart. Although the instruments developed were intended to be used as a model for other STW programs nationwide, there may be local and/or state guidelines that limit their use.

Although this study was based upon a review of national STW programs, the problem areas common to one site may not hold true for other sites. Because of this, broad implications for other STW programs and their outcomes may not be generalized. However, the methodology employed in this study should be of assistance to other professionals involved in similar career-oriented high school programs.

Finally, although the STWOA no longer exists in terms of federal policy, a substantial body of contemporary literature refers to STW programs and uses this term

generically to mean any type of program with similar features; the same holds true for its use here. Moreover, the ProStart program continues to receive fiscal support from federal and state career and technical education agencies through enabling federal legislation (www.ed.gov/about/offices/list/ovae/pi/reauth/perkins.html, 2005). The ProStart program in Colorado is currently funded under Perkins legislation which is further described in Chapter 2.

Assumptions

First, it was assumed that the data collection instruments would be reliable and valid. That is, the instruments would yield consistent results in the study and, additionally, they would accurately reflect or measure what they were designed or intended to measure.

In addition, assumptions were made about how the interview questions were interpreted. The interviews were done via telephone; it was assumed that the questions were interpreted to mean the same by all and were answered truthfully.

Need for Study

The proposed research was designed to study the effectiveness of a single STW program as measured by student outcomes via a follow-up study. Although various outcome evaluations of STW programs exist (Hughes, et al., 2001), there was not a single comprehensive evaluation that addressed the specific needs of ProStart based on the literature review conducted for this research. The needed study would include outcome data from students, track the education and career paths of students for a period of time,

provide empirical data, and correlate students' high school performance in a STW program with post-secondary performance.

Outcome studies frequently consist of three general designs: Randomized experimental, quasi-experimental, or descriptive studies (comparative, associational or purely descriptive). One study (Kemple & Snipes, 2000) used a randomized experimental design to compare participant and non-participant outcomes in ten career academies. Although the most methodologically rigorous of the three designs, there are not many educational environments conducive to such a study.

In addition to methodological considerations, one must consider gaps in the knowledge base when proposing a study. Hughes, et al. (2001) recommend that further research be done longitudinally to track college enrollment and labor market outcomes of STW graduates; large-scale longitudinal studies are currently underway. The Manpower Demonstration Research Corporation (MDRC) is following academy students for four years after graduation; the National Academy Foundation is also surveying alumni of their program (Hughes, et al., 2001).

In sum, the ProStart follow-up study needed to be designed to empirically answer questions posed by many stakeholders: Do ProStart graduates remain in education or occupations in the hospitality industry after graduation from high school? Further, what were the factors that seemed to influence ProStart students' matriculation into post-secondary, industry-related educational and employment environments? One way in which to answer these questions was to gather information over a period of time using a complex associational design.

In addition to their use here, this study should produce a set of data collection instruments and strategies that could be helpful to others involved in doing follow-up studies in this program and other like career and technical education programs.

CHAPTER 2: LITERATURE REVIEW

Legislative History

To understand the impetus behind the STWOA, it's necessary to briefly investigate the legislative history of vocational education along with the specifics of the STWOA itself. The following education policies and initiatives attempted to revitalize the failing and outdated vocational system that was harshly criticized in the early 1980's (Hughes et al., 2001).

Carl D. Perkins Vocational and Applied Technical Education Act (1984)

The intent of the original Perkins Act was to modernize and improve vocational education, especially for those from special populations, by ensuring access to quality programs. This Act was amended in 1990 to reflect the growing need for skill competencies necessary to work in a technological society. This legislation also supported Tech Prep, the initiative that combined academic and technical courses at the secondary and post-secondary levels.

The Carl D. Perkins Vocational and Applied Technical Education Act of 1998 (Perkins III) contained accountability language differentiating it from the STWOA. The goal of Perkins III was to bring all states together using a uniform accountability and assessment system to make states compatible with each other and the federal government (Shure, 2001). The accountability requirements framed in the 1998 legislation demanded that states adjust to new data collecting and reporting procedures. As such, each state, in

cooperation with the United States Department of Education, set expected performance levels for four categories or core indicators: 1) Student attainment of challenging state-established vocational, technical, and academic skill proficiencies; 2) Acquisition of secondary and/or postsecondary degrees or credentials; 3) Placement in, retention in, and completion of postsecondary education or employment; 4) Student participation in and completion of vocational and technical programs that lead to nontraditional training and employment.

Perkins III is a much more comprehensive accountability measure than that stipulated in Perkins 1990. As part of these requirements, states must express performance levels for the four indicators in percentages or numbers to make them objective, quantifiable, and measurable. In addition, states must report data to the Department of Education that will, in turn, be passed along to Congress who will issue public reports comparing states; federal funding can be withheld if states do not meet stipulated performance levels (Association for Career and Technical Education, 1998).

Perkins III expired on October 1, 2003. In order to facilitate the reauthorization process, an Independent Advisory Panel -- the National Assessment of Vocational Education (NAVE) -- was appointed to advise the U.S. Department of Education on the evaluation and assessment of programs under this statute. Although the final report is not yet available, interim recommendations have been made that should shape further discussion. First, the number of students in vocational programs has leveled off during the past decade rather than declining as was the case prior to the 1990s; millions of students are currently enrolled in secondary career and technical education (CTE) programs. Second, two-thirds of America's youth do not obtain a four-year college

degree; 25% go to work directly out of high school. Because of this, some students must obtain vocational skills through CTE programs while in high school to succeed in the workforce. Finally, youth must be educated, not only academically, but they must also possess technical skills that match the jobs in our nation's workforce (NAVE, 2002).

In conjunction with the analysis by NAVE, the Office of Vocational and Adult Education (OVAE) is in the process of studying issues related to this legislation by asking teachers, school leaders, students, and policymakers for input. This information will also be used by the Department of Education to frame its proposal for CTE that was submitted to Congress in 2003 (www.ed.gov/offices/OVAE/reauth/perkins, 2003).

Secretary's Commission on Achieving Necessary Skills (SCANS, 1991)

The purpose of SCANS was to examine the demands of the workplace and determine whether future workers would have the skills necessary to meet those demands. The SCANS report identified competencies, foundational skills, and personal qualities deemed essential for work (Phelps & Hanley-Maxwell, 1997).

Goals 2000: Educate America Act (1993)

The educational reforms of the past decade have focused on the skills and knowledge required to make a successful transition from high school to an established adult working world. Goals 2000, for example, delineated eight national education goals, three of which specifically addressed the outcomes of schooling for all students. Its overarching role was to develop stronger ties between the educational system and employers by increasing skills and knowledge required beyond school years (Phelps & Hanley-Maxwell, 1997).

National Skills Standards Act (1994)

The National Skill Standards Act, incorporated as Title V in Goals 2000, established a national system of voluntary skill standards and certification. The objective was to promote the creation, development, and endorsement of voluntary standards by industry in cooperation with education, labor, and community stakeholders through the identification of broad clusters of major occupations that share characteristics appropriate for the development of skill standards (National School-to-Work Office, 1997).

School-to-Work Opportunities Act (1994)

The national framework for improving relevance and quality in education was established primarily by two federal initiatives: The STWOA and the National Skills Standards Act (as mentioned above). The Act also paralleled the national education goals set forth by Goals 2000 and reinforced the SCANS basic employability skills (Orr, 1995).

The purpose of the STWOA was to link students, schools, and workplaces. This was a locally-driven and community-based initiative to facilitate efforts to reform education by combining high-level academic achievement with ties to the world of work by encouraging schools, both secondary and post-secondary, to cooperatively develop school-to-work systems. As such, the Act authorized funding for the development of programs that improved the work-related skills of students in school (American Vocational Association, 1994). The STWOA was not designed to establish a new secondary program but, instead, distributed seed money to states and allowed each to determine their own forms of STW activities. Because of this, some states promoted programs already underway (i.e. Partnership Academies in California) while others

started new programs (i.e. youth apprenticeship programs in Wisconsin). In either case, the focus was on system building (Hughes, et al., 2001).

The required components of the STWOA are as follows: School-based learning which provides “students with opportunities for career exploration, instruction in both academic and technical skills and guidance in identifying employment and education goals”; work-based learning that provides “students with a planned program of job training and other employment experiences related to a chosen career”; and connecting activities “to ensure coordination between the work-based and school-based learning components” (American Vocational Association, 1994, p. 24). Most local coordinators support the notion of using Tech Prep as a foundation for STW, and there are signs that collaboration is occurring (Bragg, Puckett, Reger, Thomas, & Ortman, 1996).

Although the STWOA expired as of October 2001, it is assumed by local coordinators that many of the existing programs will continue with funding from other long-standing education and work force development monies or be integrated into programs that already exist such as the New American High Schools, Small Learning Communities, and High Schools That Work (Hughes, Bailey, & Mechur-Karp, 2002).

ProStart

Colorado ProStart is a high school foodservice management and hospitality education program established in 1998 by the Colorado Restaurant Association Education Fund, Colorado Restaurant Association and Colorado Hotel & Lodging Association.

Junior and senior high schools students are introduced to careers in the foodservice and hospitality industry. They participate in on-the-job industry mentored training and are

taught a comprehensive curriculum focusing on all aspects of operating and managing a foodservice and hotel establishment (M. Mino, personal communication, May 10, 2005).

This two-year program offers a curriculum that covers 25 subjects including basic food preparation, customer relations, safety, and accounting. Students who successfully complete both the academic and work experience components of the ProStart program are awarded a certificate from The Educational Foundation of the National Restaurant Association. This certificate represents a major step in furthering the student's career in the foodservice industry (National Restaurant Association Educational Foundation, 1998).

ProStart began in Illinois in 1996 as a consumer and family studies program; it has since expanded to a national program. There are presently 921 high schools in 39 states taking part. This equates to 32,000 students currently in the program with a graduation rate approaching 100,000 students nationwide (W. Safstrom, personal communication, May 27, 2003). In Colorado, there are approximately 500 students in ProStart, most of whom are juniors and seniors (M. Mino, personal communication, January 25, 2002).

Outcome Evaluation

Scriven (1999) noted, "In program evaluation, we are concerned to establish the merit, worth, quality, or value of programs, in whole or in part, at the request of some client or clients, and for the benefit of some audience. To do this we do not need to know how the programs work or why they fail to work, or even what their components are"(p 2). He uses the term "black box evaluation" to describe programs where nothing is known about the inner workings of the program, and only outcomes are measured. Rossi

(1999) notes that outcome evaluations are best for programs that are mature, stable, and have effects supporting major decisions. Since the ProStart stakeholders are interested in program outcomes, it was necessary to consider existing research.

In a recent report, Hughes, et al. (2001) compiled the most comprehensive body of research to date summarizing the effectiveness of STW programs. The purpose of the study was to determine the effects of STW on students, teachers, and employers.

First, school-to-work supported academic achievement. Research indicated that STW students maintained good grades, even when they took challenging classes, in comparison to similar students (Table 1).

Table 1

STW Supported Academics

Focus	Conducted by	Methodology	Findings
California Partnership Academies	Foothills Associates	Non-experimental	Students' grades rose as with increased academy time.
NY State	Westchester Institute Bishop Associates	Quasi-experimental	STW students had similar grades, even with more difficult classes, compared to non-participants.
California Career Academy Programs	Human Investment Research Education Center	Quasi-experimental	Participation in well-implemented programs raised GPA's.
African-American high school students	Linnehan	Quasi-experimental	Students in work-based program showed increased GPA.
California Academy	Hanser & Stasz	Quasi-experimental	Students in program achieved similar GPA's to students in magnet program even though magnet was more selective.

Note. All tables in this chapter were adapted from the Hughes, et al. (2001) report.

As shown in Table 2, STW students had comparable or higher attendance than non-STW students.

Table 2

STW Students Had Better Attendance Than Comparable Students

Focus	Conducted by	Methodology	Findings
Career academy	MDRC	Random experiment	Career academy students considered “high-risk” were less likely to be chronically absent than control group.
NY State	Westchester Institute for Human Services Research	Quasi-experimental	Students who participated in STW had better attendance and missed fewer classes than non-participants.
Wisconsin Youth Apprentices	Orr	Quasi-experimental	STW students maintained good attendance while in program while comparative students’ attendance dropped.
California Academy	Hanser & Stasz	Quasi-experimental	Students in academy had similar attendance as students in more competitive magnet students in same school.

STW students were also less likely to drop out (Table 3), and they were more likely than comparison students to graduate on time.

Table 3

STW Students Were Less Likely to Drop Out of High School

Focus	Conducted by	Methodology	Findings
Career academies	MDRC	Random experiment	Participation in academy reduced drop out rate by 34% for “at risk” students.
California Partnership Academies	Foothills Associates	Non-experimental	At-risk students had lower dropout rate than statewide average.
Minority youth	Temple University Center for Research in Human Development and Education	Quasi-experimental	Participation in at least one STW program significantly reduced chance of dropping out of school.
JROTC Job Academies	RAND National Defense Research Institute	Quasi-experimental	A significantly higher number of students in JROTC Job Academy graduated than would have been expected for same students in standard JROTC or no program.

Additionally, STW students were just as likely to attend college as their peers (Table 4) and had the opportunity to earn college credits while in the program.

Table 4

STW Students Were Just as Likely to Attend College as Comparison Students

Focus	Conducted by	Methodology	Findings
NY State	Westchester Institute	Quasi-experimental	The college enrollment rate for STW students was statistically the same as that for the comparison group.
California Career Academy Programs	Human Investment Research Education Center	Quasi-experimental	STW students in a California Career Academy were 40% more likely than non-Academy students to enroll in a four-year college.
North Carolina and Colorado	Metis Associates, Inc.	Quasi-experimental	STW students in North Carolina and Colorado were 10% more likely to enroll in college than other students.

Additionally, STW students were more likely to choose a major early in their college career as compared to their peers (Table 5).

Table 5

STW Students Were More Likely to Choose a Major Early in Their College Career Than Comparable Students

Focus	Conducted by	Methodology	Findings
Colorado School-to-Career Partnership	Denver, CO	Quasi-experimental	Forty-three percent of students who had participated in three or more STW activities during high school had chosen a major when entering college versus 28% of comparison students.
NY State	Westchester Institute for Human Services, Inc.	Quasi-experimental	More of the students who had participated in STW experiences had chosen a major one year after high school graduation than comparison students.

Although preliminary research suggests that the postsecondary experiences of STW students are positive, several longitudinal studies (Manpower Research Demonstration Corporation and National Academy Foundation by the Institute on Education and the Economy) are currently underway. Longitudinal research is particularly relevant to the ProStart program since alumni will be surveyed.

The second major finding of this study was that STW supported career preparation. Research indicated that students in STW programs could better define their career interests and goals than comparable students (Table 6).

Table 6

STW Provided Valuable Opportunities

Focus	Conducted by	Methodology	Findings
STW students	Hershey, Silverberg, & Haimson	Quasi-experimental	College and non-college bound students felt that their STW experiences were valuable.
Wisconsin youth apprentices	Orr	Quasi-experimental	Eighty percent of apprentices felt their STW experience provided valuable career information and direction.
New York State	Hamilton & Hamilton	Non-experimental	Apprentices said that their STW experiences helped them identify career paths.

Students who were the most highly engaged in STW programs seemed to benefit the most (Table 7).

Table 7

Highly Engaged Students Received the Most Benefits

Focus	Conducted by	Methodology	Findings
New York State	Westchester Institute for Human Services Research, Inc.	Quasi-experimental	When compared to students who did not intensely participate, STW students had more interest in school.
STW students	Hershey, Silverberg & Haimson	Quasi-experimental	Almost two-thirds of STW surveyed had participated in four or more career development activities.
Career academies	MDRC	Random experiment	Career academy students were significantly more likely to have participated in both in-school and out-of-school development activities.
Arizona STW students	Morrison Institute for Public Policy	Non-experimental	The ability of STW students to define a career interest was directly related to the number of STW activities in which they were involved.

In addition, STW exposed students to various career opportunities and taught job-readiness skills. According to a study conducted by the Westchester Institute for Human Services and Research in New York State (as cited in Hughes, et al., 2001), 99% of employers involved said they were satisfied with student performance; 97% planned to continue involvement in the program. In another study of the Wisconsin Youth Apprenticeship conducted by Orr (1996), a majority of employers rated STW students' abilities better than other entry-level employees.

Further, STW students had better labor-market outcomes, including higher quality work with greater career pathways and better pay (Table 8).

Table 8

STW Students Obtained Higher Quality Jobs

Focus	Conducted by	Methodology	Findings
Career Academies	MDRC	Random Experiment	Academy students were significantly more likely to say that their jobs gave them opportunities to learn new things than those randomly assigned.
National Evaluation of STW Implementation	Mathematica Policy Research	Non-experimental	STW students had access to more diverse work environments than those students who were not in STW.
Employer Surveys	Bailey, Hughes, Barr	Quasi-experimental	STW interns were more likely to be in fields such as health, education, and business versus retail.
Wisconsin Youth Apprentices	Center on Education and Work	Non-experimental	STW students worked in areas such as finance, health, manufacturing, machining, printing, and biotechnology.
National Evaluation of STW Implementation	Mathematica Policy Research	Non-experimental	STW students spent more time in training and were much more likely to receive quality feedback about their performance than students who obtained work on their own.

Employers reported that these students were better prepared for work and had an easier time obtaining a job after high school (Table 9).

Table 9

STW Students Were Better Prepared and Had Greater Success Obtaining Employment

Focus	Conducted by	Methodology	Findings
Survey of Employers in North Carolina	Metis Associates	Quasi-experimental	Employers reported that STW participants required less training, had greater ability to work in teams, and had better work ethics than non-STW employees.
Wisconsin Youth Apprenticeship Graduates	Center on Education and Work	Non-experimental	Ninety percent of graduates received offers of part- or full-time employment from STW employers.
ProTech, STW Program in Boston	Jobs for the Future	Quasi-experimental	Graduates had unemployment rate of 3% compared to national average of 23%.
Wisconsin Youth Apprenticeship	Center on Education and Work	Non-experimental	Eighty-five percent of students believed that their STW experience helped them get a job.

Third, STW programs supported youth development by increasing positive adult/student interaction. The adults involved influenced students' academic achievement and helped with career decisions (Table 10).

Table 10

STW Provided a Network of Supportive Adults

Focus	Conducted by	Methodology	Findings
Arizona STW	Morrison Institute for Public Policy	Non-experimental	Middle and high school students who reported that the adults in their lives were helpful increased as STW expanded.
Wisconsin Youth Apprenticeship	Orr	Quasi-experimental	Students' relationships with adults at work gave them a network that supported career and learning.
Ten Career Academies	MDRC	Random Experiment	Academy teachers were much more likely to show personal support than non-academy teachers.

STW employers also played an important role in helping students make decisions about their post-secondary plans (Table 11).

Table 11

STW Employers Helped Students Make Career Decisions

Focus	Conducted by	Methodology	Findings
New York State	Hamilton & Hamilton	Non-experimental	STW supervisors made an effort to help students in their career paths.
Boston STW students	Almeida, Goldberger & Lalbeharie	Non-experimental	STW employers discussed post-secondary plans.
Wisconsin Youth Apprenticeship Graduates	Center on Education and Work	Non-experimental	Apprentices felt they had business contacts to obtain jobs in the future.
Wisconsin Youth Apprenticeship	Center on Education and Work	Non-experimental	STW students had a network of supportive adults at work.

Fourth, teachers believed that STW programs were positive for students and teachers alike (Table 12). They felt that STW helped students achieve at higher levels as well as provided increased motivation and professional development for the teachers involved.

Finally, employers were also enthusiastic about STW. They saw benefits to all involved: Students, society, and their own businesses (Table 13).

Table 12

STW Was a Positive Initiative for Students and Teachers

Focus	Conducted by	Methodology	Findings
Kentucky STW	Center on Education and Work	Non-experimental	Over 60% of STW teachers surveyed said they believed school to work was effective.
Arizona STW	Morrison Institute for Public Policy	Non-experimental	As STW was implemented over a three-year period, educator support grew significantly. The same study found that 69% of teachers and 70% of administrators felt that financial support should be incorporated into state budgets once federal funds expired.
Charleston County School District		Non-experimental	Survey of teachers indicated majority felt STW was appropriate for all ages regardless of college plans.

Table 13

Employers Benefited From Participation

Focus	Conducted by	Methodology	Findings
Wisconsin employers	Department of Workforce Development	Non-experimental	Over 80% of participating employers said the Youth Apprenticeship program benefited their company.
National Employer Survey	Shapiro & Iannozzi	Non-experimental	Data from survey showed that employment involvement with local high schools was associated with better experiences in hiring graduates and having lower turnover of young employees.
Boston Supervisor Survey	Almeida, Goldberger, Lalbeharie	Non-experimental	Over eighty percent of intern supervisors said that STW students' contribution to productivity was a benefit.
Survey of JobReady Employers	Metis Associates	Quasi-experimental	Compared to other employees, former interns performed more effectively, required less training, had better work ethics, more respect for supervisors, and greater ability to work in teams.
Career Academy Graduates	Linnehan	Quasi-experimental	Direct positive impact of the academy program on later job performance, compared with non-academy graduates.

In sum, the evidence from this report strongly suggests that STW programs are beneficial to all involved:

1. STW supported academic achievement: Studies indicated that STW programs improved student attendance, grades, and graduation rates; students were just as likely to attend college and chose their major earlier than their peers.
2. STW supported career preparation: Students could better define career interests/goals, were exposed to various opportunities and job-readiness skills, and had better labor-market outcomes.
3. STW supported youth development: Students had increased positive relationships with supportive adults.
4. Teachers saw value in STW: Teachers felt that STW helped students achieve at higher levels and provided increased motivation and professional development for the teachers involved.
5. Employers were enthusiastic about STW: Employers saw benefits to students, society and themselves.

Along with the positive outcomes associated with STW, there are also areas for improvement (Hughes, et al., 2001):

1. More research is needed in regard to the effects of STW on standardized testing.
2. Assessment of post-secondary education and career goals requires longitudinal research on well-established practices.
3. Since only a small proportion of students participate in all elements of STW, greater efforts are needed to include students in the total STW experience.

Methodologies

When evaluating STW programs, the biggest question is whether student outcomes can be attributed directly to the program or not. Only in a true well-controlled randomized experimental design can one be sure that there is direct causality. There are not many cases in the literature that use random assignment due to the nature of education; it is rarely possible to randomly assign students to experimental and control groups. Therefore much of the literature focuses on quasi-experimental designs where students in STW programs are compared to like counterparts who do not participate in these programs (Orr, 1995). The authors of other studies used a non-experimental research design and collected a variety of information to draw conclusions about the program. This information was in the form of qualitative data (i.e. opinions about the program from students, teachers, and employers) and/or quantitative data (difference in pre- and post-enrollment GPAs for the same person).

Randomized Experimental Studies

The Manpower Demonstration Research Corporation Career Academy (MDRC) used a randomized experimental design (Kemple & Snipes, 2000) when there were more applicants than there were openings in 10 career academies. MDRC randomly selected students from the list of applicants; those who were not admitted formed the control group and those who were admitted formed the experimental group.

Quasi-Experimental Studies

Many of the studies used a quasi-experimental design. For example, Orr (1996) compared the attendance, long-term career and long-term educational plans of students in

the Wisconsin Youth Apprenticeship Program (YAP) with their peers. Information was collected through interviews with students, graduates, employers, principals, and program coordinators; review of student records; and site visits.

Linnehan (1996, 2001) used this approach in two studies. First, he studied the effectiveness of a career academy using student/employer outcomes (i.e. job performance, work attendance); he compared these outcomes with non-academy graduates. Additionally, he compared the work-based outcomes (grades, school attendance) of African American high school students who were placed in a work-based mentoring program to those who were eligible but not placed in the same program.

In a RAND study (Stasz & Brewer, 1998), participants' experiences in two work-based learning programs within the same district were compared. One program provided unpaid internships each year of high school and the other provided paid work experience for one semester. The quality of students' work experiences in these programs were measured by a student survey and a case study of program operations.

In another study (Hanser & Stasz, 1999), the outcomes of students in a Transportation Career Academy Program (TCAP) were compared to nonparticipating students in the same school and in representative schools in the same district. Specifically, the study looked at attendance, grade point average, credits earned, and credit pace.

In a study conducted by Bailey, Hughes, and Barr (2000), motivation for employer involvement in STW programs was compared to non-participating employers in the same labor market, similar in industry and size, via a survey.

In another comparative study (Applied Research Unit and the Division of Career and Technology Education, 2001), the Montgomery County Public Schools in Maryland studied the education and employment patterns of high school students who participated in career and technical education were examined versus their non-CTE peers. Students' employment and college activities from 1993, the time of their high school graduation, through 1999 were studied to determine what students did after graduation. Information regarding quarterly earnings and areas of employment were obtained from the Maryland Department of Labor, Licensing, and Regulation. Information related to attendance at post-secondary institutions, first year academic performance, and highest degree earned was acquired through the Maryland Higher Education Commission. This information was then compared to students' academic performance, courses taken, and career preparation in high school and background characteristics.

Maxwell (2001) examined the records of more than 1,000 applicants (both academy and non-academy graduates) from a single inner-city school district to an urban university from 1990-1998. The positive findings for academy graduates were further strengthened by the fact that they had a lower socioeconomic status than the comparison group.

Some researchers (Rivera-Batiz, 2000) have used the National Longitudinal Survey of Youth-1997 (NLSY-97) to compare student outcomes with those of a control group. Data available from the survey are used to control for demographic and educational characteristics.

In several more broadly related studies, the Los Angeles Area Business/Education Partnership (consisting of seven school districts, four community colleges, three

California State Universities, 200 businesses, and 40 community-based organizations) is a program designed to help youth, a majority of whom are ethnic minorities, graduate from high school and continue to post-secondary education (Adler, 1995). Follow-up information was obtained from participants' and non-participants' school records, interviews with program participants and business representatives.

In a study headed by the National Center for Research in Vocational Education (Bragg, Dare, Reger, Ovaice, Zamani, Layotn, Dornsife, Vallee, Brown, & Orr, 1999), student outcomes in Tech Prep were examined within 8 consortia representing a wide range of approaches. Data was collected through site visits; follow-up survey of participants and non-participants; transcripts; interviews with parents, teachers, counselors, employers, and secondary and post-secondary students; and a follow-up study of 4,700 students from the 8 consortia.

In addition, the National Job Corps (Johnson, Gritz & Dugan, 2000) studied the programmatic experiences of Job Corps applicants and participants; their experiences were compared to the experiences of representative youth in the program group. The groups varied in the outreach and admissions practices used, as well as different center characteristics and practices.

Non-Experimental Studies

Researchers of many studies do not use a comparison group at all and, instead, ask students, teachers, and employers their opinions about STW programs. A survey of students and teachers in the Peoria Public Schools inquired about their experiences in the program; another survey conducted in the Charleston County School District surveyed teachers. In addition, alumni were surveyed about their experience in a travel and

tourism program by the Academy for Educational Development (Hughes, et al., 2001). The authors of other research, wishing to obtain more quantitative data through associational studies, compare the change in variables for the same person. For example, Foothills Associates was able to attribute the improvement in pre- and post-enrollment GPAs to participation in California Partnership Academies (Hughes, et al., 2001).

The Partnership Academy for at-risk high school students in Illinois was evaluated (Trybus & Li, 1998). This academy is based on a multi-year school-within-a-school, with integration of academic and vocational classes, block scheduling, and active employer involvement. The focus was on students' performance as indicated by attendance, credits earned, grade point averages, and achievement test scores. In addition, students and parents responded to a survey instrument aimed at the students' perceived success and involvement in the program. Students were also given a follow-up survey to document their post-secondary activities in college and work.

Another study (Blasczyk & Bialek, 1999) evaluated the state of Kentucky's STW system using surveys of teachers, phone interviews with participants, and randomly selected employers. From this information, the researchers were able to identify six themes relevant to improving and sustaining STW activities.

Mathematica Policy Research (1999) conducted a comprehensive evaluation of state and local STW programs. Information was obtained through surveys of the local partnerships, in-depth case studies of eight states and a sample of 39 local partnerships, survey of 12th grade and post-secondary students, and analysis of high school transcripts for the students in the sample in order to assess growth of STW activities over time.

In several more broadly related studies, the National Longitudinal Survey of Youth 1997 (Bureau of Labor Statistics, 2001) was conducted to determine the employment experience of youth interviewed three times from 1997-2000. The survey provided information on their experiences, schooling, background, and social behavior.

An Employer Satisfaction Survey was given to Tennessee employers to rate secondary vocation-technical education completers (McNelly, 1995). The survey contained Likert scale items pertaining to the vocational program completers as employees and the vocational programs themselves. Findings were reported by type of program, size of firm, state, and district.

In addition, each year a follow-up study is conducted by Wisconsin's Technical Colleges (WTC) to determine the current activities of graduates six months after leaving the program (Wisconsin State Board of Vocational, Technical, and Adult Education, 1995). The survey is designed to determine the extent to which current activities are related to educational programming: Number employed, percentage in jobs related to training, monthly salary range and median, and average hours per week.

In a similar study (Johnson County Community College [JCCC], 1994), a follow-up study was conducted four and five years after students graduated from career programs at JCCC. Information was obtained via surveys and telephone interviews regarding participants' employment, satisfaction with their jobs, and income among others.

In a follow-up study of Piedmont Virginia Community College (PVCC) graduates (Payne & Shields, 2001), 30 employers were asked to evaluate the academic programs

and occupational skills of the PVCC graduates compared to non-PVCC employees hired in a similar capacity.

In sum, there are many studies that investigated the differences between two groups using a quasi-experimental design; they usually compared the outcomes of participants to those of non-participants (Adler, 1995; Applied Research Unit and the Division of Career and Technology Education, 2000; Bailey, et al., 2000; Bragg et al., 1999; Hanser & Stasz, 1999; Johnson, Gritz & Dugan, 2000; Linnehan, 1996, 2001; Maxwell, 2001; Orr, 1996; Payne & Shields, 2001; Rivera-Batiz, 2000; Stasz & Brewer, 1998). These studies typically compared education and employment patterns of the two groups via school records, performance indicators, employment records, and used interviews or surveys of students, teachers, and employers.

Other studies used a non-experimental approach (Blasczyk & Bialke, 1999; Bureau of Labor Statistics, 2001; Hershey et al., 1999; Johnson County Community College, 1994; McNelly, 1995; Trybus & Li, 1998; Wisconsin State Board of Vocational, Technical, and Adult Education, 1995) in which either associations were made (i.e. differences in a student's pre- and post-enrollment GPAs were attributed to participation in the program) or descriptive statistics were generated (i.e. opinions about the program are collected from students, teachers, and employers).

Some smaller-scale, comprehensive studies tracked students longitudinally as well (Applied Research Unit and the Division of Career and Technology Education, 2001; Johnson Community College, 1994; Orr, 1996; Trybus & Li, 1998) and could be used as a framework, but they were not specific enough to provide answers to the

research questions posed in this study. In addition, much of the data collected was quantitative only.

Exemplary Program Components

Knowing which aspects of students' high school education are associated with successful transitions to college and the workplace has implications for future program improvements to better meet the needs of ProStart graduates. As such, the information obtained in a follow-up study can serve as a formative guide. Scriven (1996), who coined the terms formative and summative evaluation, distinguishes between the two types stating that the difference is not intrinsic, rather contextual, depending on how the results of the evaluation are put to use. He used the example of a restaurant critic evaluating a meal. For the purposes of the critic and the readers of the review, the evaluation of the food was summative, but formative for the chef who intended to use the information to improve his fare. Analogously, the outcomes of the ProStart follow-up study are summative for the group of completers and the stakeholders wanting to know if those students are staying in the field. Conversely, the evaluation results may be used formatively if administrators take the information to improve the program.

In a two-year study conducted by the MDRC (1994), 16 innovative school-to-work programs across the country were examined. Common components of these programs were as follows: 1) They served a substantial number of low-achieving students and also helped these students meet enrollment requirements for college; 2) They engaged both academic and vocational teachers in professional development activities to improve instructional practice; 3) They made unique adaptations to their respective communities by offering a wide range of school-to-work configurations such

as career academies, youth apprenticeships, tech prep, occupational/academic clusters, and expanded community co-op experiences; 4) They involved students in a personalized, family-like experience; 5) They provided mentoring by adult workers in local industries; 6) They increased the number of math and science courses offered to improve students' preparation for college or other post-secondary education; 7) They started the program in grade 9 or 10 before students become disengaged from school; 8) Many did not use specified grades or test scores as entry requirements as these can exclude some students; 9) They promoted new instructional methods; 10) They provided a school-level program coordinator with release time to monitor the implementation process; 11) They considered scheduling of courses and the fact that many STW courses are offered as electives which may limit student benefits if they only take several of the courses; 12) They gained school-wide support from guidance counselors, non-participating teachers, and administrators (Pauly, 1994).

The STW Outreach Project (1995), funded by the U.S. Department of Education, selected nine exemplary models/practices/strategies nationwide. This project assisted and supported STW initiatives through the identification of programs that are exemplary and included students with disabilities. Based upon the selection of the 1995 models, the following components were cited as being part of these programs. First, collaboration with outside agencies and stakeholders was deemed imperative. In addition, having a student-focus and allowing for program flexibility were cited. A strong support system of advisors, parents, schools, teachers, and businesses was seen as necessary. Other components of a successful program included ongoing evaluation, convenient location of

services, awareness of issues around cultural sensitivity, and effective organizational structure.

The Secretary's Awards for Outstanding Vocational-Technical Education Programs (1995) identified programs across the country that displayed excellence in the following areas: Articulation among secondary, post-secondary, and adult vocational-technical education; systematic reform efforts aligned with state policies and national reform initiatives; integration of academic and vocational-technical education; outcomes-based performance indicators in place; demonstrate that students have strong understanding and experience in the field for which they have prepared; special populations were served; and the program was one that could be replicated.

In several studies supported by the National Center for Research in Vocational Education (NCRVE), essential components of Tech-Prep programs were identified. The common denominators of these programs included a high level of support from involved stakeholders such as state agency personnel, vocational faculty, local two-year postsecondary administrators, business/industry representatives, local secondary administrators, students, and secondary school board members; professional development training of secondary and postsecondary personnel; skill attainment in the areas of academics and employability by students (Bragg, Layton, & Hammons, 1993; Bragg, Puckett, Reger, Thomas, & Ortman, 1996).

In sum, it appears that there are specific components that contribute to successful STW programs; the most important include integration of vocational and academic subjects, professional development activities for teachers, support from involved

stakeholders, collaboration with outside agencies, programs that serve a variety of students, and on-going evaluation.

CHAPTER 3: METHODOLOGY

The non-experimental designs use either comparative or associational research questions; the differences are subtle. Researchers who use this approach examine the presumed effect of an attribute independent variable. The comparative approach, like the experimental designs, uses an independent variable with several levels to make comparisons between groups. The difference between the comparative and associative design is the number of levels of the independent variable. The associational approach, unlike the comparative approach, has a continuous independent variable, typically five or more levels (Gliner & Morgan, 2000).

In the case of ProStart, all of the variables were attribute independent; some had five or more levels. Further, since the purpose of the study was to investigate whether there was a combination of factors, either program characteristics or student engagement that led to specific outcomes, it was necessary to use a complex design.

Participants and Site

The target population was composed of students who graduated from ProStart in 2003. The accessible population included ProStart students who graduated in 2003 from 29 high schools in Colorado ($N=303$). The selected sample was composed of 2003 graduates for whom the CRAEF had current contact information. The actual sample included 100 former ProStart students who graduated from one of 28 Colorado high schools in 2003. There were 43% males and 57% females in the sample; the students

were 19 and 20 years old at the time of the interview. The percentage of males and females in the entire population was 44% and 56% respectively; the students in the population were 19 and 20 years old, so the gender composition of the sample and population were very similar.

In terms of sampling procedure, a database was obtained from the CRAEF (See Letter of Support-Appendix B). The schools were listed in alphabetical order within the database with students listed, in no particular order, under their respective schools. The researcher called the entire accessible population of ProStart students in the state of Colorado. One-hundred students were interviewed; messages were left for an additional 69 students; 55 phone numbers were disconnected; 29 students had the wrong number listed; 19 students had moved and there was no forwarding number; there was no answering machine available to leave a message at 12 households; 9 students refused to participate in the interview once they were contacted; 8 students could not be reached due to busy phone lines; 1 student was deceased; another student had already participated in the pilot study.

As Table 14 illustrates, 13 programs were considered small (10 or fewer graduates) and 16 programs were considered large (more than 10 graduates). There was an average of 10.4 graduates per high school with a range of two to 19 graduates. The overall response rate was 56%.

Table 14

Response Rate Per High School as Delineated Into Small and Large ProStart Programs

	Total Graduates	Contacted	Number of participants	Response rate %
Small	2	1	1	100
	2	1	0	0
	3	1	1	100
	3	2	2	100
	4	4	2	50
	5	2	1	50
	6	4	1	25
	8	4	3	75
	8	6	5	83
	8	3	2	67
	9	5	5	100
	10	7	4	57
	10	5	3	60
	<i>Average</i>	6	3.5	2.3
Large	11	4	4	100
	11	8	6	75
	11	7	3	43
	11	7	2	29
	12	6	5	83
	12	5	3	60
	12	4	3	75
	12	6	5	83
	13	8	5	63
	14	8	6	75
	15	10	6	60
	17	11	4	36
	18	10	5	50
	18	10	6	60
	19	11	4	36
	19	9	3	33
<i>Average</i>	14	7.8	4.4	60
Total	303	169	100	56

Data Collection

The following methods were incorporated using a two-phase data collection process, as noted in Chapter 2, which is a common methodology used in studies of this nature:

- Phase One: The CRAEF sent 303 recruitment letters (Appendix C) to ProStart students from the graduating class of 2003. In addition, the following information was obtained from the CRAEF for each student: high school attended, student name, gender, date of birth, home phone, street address, city, zip code, ProStart final exam scores, and whether the student received the National Certificate.
- Phase Two: 100 students who graduated from ProStart in 2003 in Colorado were contacted via telephone (Appendix D) and asked to participate in an interview (Appendix A); questions related to post-secondary activities, including education and employment, were stressed. Information was also gathered on the specifics of the program in which the student was involved. Finally, Likert items regarding students' perceived level instructor/program and employer support, as well as level of student engagement, were included. The interview was designed using closed-ended questions so that specific information could be gathered as well as open-ended questions which allowed for opinions or information in participants' own words (Creswell, 2000).

Variables

The variables for this study were delineated into categories—student characteristics, student engagement and program characteristics were designated as the independent variables. The dependent variables were classified as high school outcomes, program impact, and post-secondary outcomes as shown in Table 15.

Table 15

Independent/Dependent Variables and Relationship to Interview Questions/CRAEF Data

Variables	Interview question/CRAEF data
<i>Student characteristics</i>	
<u>Gender</u> refers to whether the student was male or female.	CRAEF data
<u>High school</u> refers to the high school from which the student graduated.	CRAEF data
<i>Program characteristics</i>	
<u>Course schedule</u> refers to the type of schedule in which the student participated during their ProStart coursework (i.e., traditional, block, modified block, trimester).	2
<u>Level of ProStart instructor/program support</u> indicates the students' perceived level of support by the instructor and other school personnel.	3, 18, 20
<u>Level of ProStart employer support</u> indicates the students' perceived level of support by employer during ProStart ($n=41$).	21, 22, 23
<i>Student engagement</i>	
<u>Competitions</u> refer to whether the person participated in at least one culinary competition during his/her program.	1d
<u>Mentored internship</u> refers to whether the person completed 400 hours of work experience.	1c
<u>Year 2</u> refers to whether the student completed the second year of the program	1b
<u>Level of student engagement</u> is the self-reported level of engagement in the program by the student.	24
<i>High school outcomes</i>	
<u>ProStart exam one</u> refers to the score on the final exit exam from the first year of the program, which represents core knowledge of food service skills ($n=33$).	CRAEF data
<u>ProStart exam two</u> refers to the score on the final exit exam from the second year of the program, which represents core knowledge of food service skills ($n=26$).	CRAEF data
<u>National certificate</u> refers to whether or not the student received this certificate based on successful completion of both the academic and work experience components of the program.	CRAEF data
<u>Financial support</u> refers to whether a student received a scholarship to a post-secondary institution as a result of his/her performance in ProStart.	4
<i>Self-reported program impact</i>	
<u>Pursue education</u> is the self-reported impact of ProStart on post-secondary education.	25
<u>Pursue career</u> is the self-reported impact of ProStart on post-secondary career.	26
<i>Post-secondary outcomes</i>	
<u>College</u> refers to whether the person was attending college at the time of the interview.	5
<u>College grade point average (GPA)</u> refers to the person's grade point average after one year of college.	8
<u>Post-secondary education major</u> refers to the matriculation or planned matriculation of students into post-secondary institutions in the hospitality field after completion of the program.	7, 11
<u>Post-secondary job</u> refers to the matriculation or planned matriculation of students into post-secondary job placements in the hospitality field after completion of the program.	15, 17

Measures

The research was conducted using short, structured telephone interviews and review of pertinent student records. These data collection measures were selected based on their use in related studies from the review of literature and further supported by the CRAEF. Interviews are a commonplace methodology when the researcher is trying to gather specific information.

The Likert items contained in the interview were assessed for internal consistency reliability to determine if the instrument was consistent among the items and measured a single construct. In this case, Cronbach's alpha was used to determine inter-item reliability (Gliner & Morgan, 2000) and was computed to assess whether the two items that were summed to create the level of instructor/program support scale were consistent; the .74 alpha indicated acceptable reliability. Similarly, the alpha for the self-reported program impact (.80) indicated good internal consistency. The alpha for the three items on the employer support scale was .93, which indicated that the statements formed a scale that had very high internal consistency. Since the alpha was greater than .90, this indicated the items were somewhat redundant and may need to be modified on a future instrument.

Cohen's kappa was computed to check the reliability of two of the open-ended questions using two raters' observations. The resulting kappa of .73 indicated that both observers assigned similar coding to the answers of the open-ended question regarding the students' overall impression of the program. Similarly, a kappa of .77 was computed for another other open-ended question regarding the effect of ProStart on students' college/career choice.

In addition to reliability, validity was addressed. Content validity was assessed by those most familiar with ProStart, namely a ProStart teacher and the President of ProStart in Colorado. During Phase One, these people were given the opportunity to examine the appended data collection instruments for representativeness of the concept (Gliner & Morgan, 2000); their suggestions were incorporated. In addition, content validity was assessed based on a pilot test of the instruments by three students who graduated from ProStart but who did not participate directly in this study. The interviews were conducted over the phone with these students.

Data Analysis

Research Question 1. How can ProStart post-secondary outcomes be described?

- 1a. What percent of ProStart graduates attend college? What is their overall GPA?
- 1b. What percent of ProStart graduates attend college and major in an industry-related field?
- 1c. What impact do former ProStart students' report that the program had on their pursuit of a post-secondary education?
- 1d. What percent of ProStart graduates work in the industry?
- 1e. What impact do former ProStart students' report that the program had on their pursuit of a post-secondary career in the industry?

These questions were answered by descriptive statistics using information obtained during the interview.

Research Question 2. Is there an association between level of support received and outcomes or self-reported program impact?

- 2a. Is there an association between level of ProStart instructor/program support and high school outcomes?
- 2b. Is there an association between level of employer support while in ProStart and high school outcomes?
- 2c. Is there an association between level of ProStart instructor/program support and self-reported program impact?
- 2d. Is there an association between level of employer support while in ProStart and self-reported program impact?
- 2e. Is there an association between level of ProStart instructor/program support and post-secondary outcomes?
- 2f. Is there an association between level of ProStart employer support while in ProStart and post-secondary outcomes?

These questions were answered using information obtained during the interview and analyzed using a correlation matrix which showed how all the variables were related to each other.

Research Question 3. Are there differences between the levels of student engagement in regard to program outcomes or self-reported program impact?

- 3a. Are there differences between the two levels of competitions (did/did not participate) in regard to high school outcomes?
- 3b. Are there differences between the two levels of mentored internship (did/did not complete) in regard to high school outcomes?

- 3c. Are there differences between the two levels of year two of the program (did/did not complete) in regard to high school outcomes?
- 3d. Are there differences between the two levels of competition in regard to self-reported program impact?
- 3e. Are there differences between the two levels of mentored internship in regard to self-reported program impact?
- 3f. Are there differences between the two levels of year two of the program in regard to self-reported program impact?
- 3g. Are there differences between the two levels of competition in regard to post-secondary outcomes?
- 3h. Are there differences between the two levels of mentored internship in regard to post-secondary outcomes?
- 3i. Are there differences between the two levels of year two of the program in regard to post-secondary outcomes?

These questions were answered using information obtained during the interview and analyzed using independent t-tests or, in some cases, chi-square to compare two groups.

Research Question 4. Is there an association between outcomes and self-reported program impact?

- 4a. Is there an association between high school outcomes and self-reported program impact?
- 4b. Is there an association between high school outcomes and post-secondary outcomes?

These questions were answered using information obtained during the interview and analyzed using a correlation matrix which showed how all the variables were related to each other.

Research Question 5. Is there a combination of instructor/program support and student engagement that predict self-reported program impact?

5a. Is there a combination of instructor/program support and student engagement that predict ProStart students' pursuit of more education?

5b. Is there a combination of instructor/program support and student engagement that predict ProStart students' pursuit of a career in the industry?

These questions were answered using information obtained during the interview and analyzed using multiple regression, predicting a normally distributed dependent variable (each one required a separate analysis) from a combination of several normally distributed or dichotomous predictors (independent variables) or both.

CHAPTER 4: RESULTS

Description of Program Characteristics

To differentiate some of the individual program characteristics, students were asked in which type of high school schedule they participated. Thirty percent (30%) participated in a traditional schedule; 41% were on a block system; another 16% participated in a modified block; 13% were on a trimester system.

In addition, students were asked to use a Likert Scale of 1 to 5, with 1 indicating strongly disagree and 5 indicating strongly agree, to assess the support they received from their instructor/program as well as their intern employer. The mean scores, shown in Table 16, indicated that former students rated the instructors and curriculum highly; 84% and 81%, respectively, agreed or strongly agreed that support was strong in these areas. Staff support was rated somewhat above neutral, perhaps because they didn't know the staff or didn't come in contact with any staff other than their teachers. They also rated level of ProStart employer support highly. They agreed or strongly agreed that their internship employer supported their goals (81%), valued their work (90%), and provided a good learning opportunity (83%).

Table 16

Means, Standard Deviations, and Likert Scale Percentages on the Measure of Support Received by Instructor/Program and Intern Employer

	<i>n</i>	<i>M</i>	<i>SD</i>	% agree	% disagree
<i>I/P support</i>					
Instructor	100	4.34	1.1	84	10
Staff	100	3.28	1.1	42	22
Curriculum	100	4.19	1.0	81	6
<i>Employer support</i>					
Supported goals	41	4.22	1.2	81	15
Valued work	41	4.44	1.1	90	10
Good opportunity	41	4.34	1.1	83	10

Description of Student Engagement

In order to assess how much they participated in the program, students were asked if they were involved in the competitions, participated in the mentored internship and completed year two of the program. Forty-eight percent (48%) were involved in at least one competition; 41% participated in the mentored internship. Fifty-six percent (56%) of the students completed year two of the program.

In addition, students were asked to indicate their level of student engagement using a Likert Scale of 1 to 5. Students' average self-reported level of engagement (4.08) was rated slightly above agree; 74% agreed or strongly agreed that they participated in as many of the ProStart components as they could have.

Description of High School Outcomes

In order to assess high school outcomes, the CRAEF provided final exam scores (when available) for both phases of the program. The mean score for Exam One was

79.97 ($n=33$) and the mean score for Exam Two was 84.81 ($n=26$); of those who took the exams, 94% passed (scored 70% or greater) Exam One, and 96.2% passed Exam Two. In the entire population ($N=303$), the mean score for Exam One was 80.78 ($n=40$) and the mean score for Exam Two was 77.49 ($n=37$). This indicated that the score for Exam One was almost the same for the sample and population; the score on Exam Two was somewhat higher (approximately 7%) for the sample.

In addition, the CRAEF provided information as to whether the student received the National Certificate (14%); 11.9% ($n=36$) received the National Certificate in the total population of 303 students. This indicated that the sample of 100 was only slightly more likely than the Colorado ProStart population to receive the National Certificate. Students were also asked if they received financial support to attend a post-secondary institution as a result of their performance in the program. Twenty-six percent (26%) of the students received financial support.

Description of Program Impact and Post-Secondary Outcomes

Research Question 1. How can ProStart post-secondary outcomes be described?

1a. What percent of ProStart graduates attend college? What is their overall GPA?

Students were asked questions related to their post-secondary education outcomes. Sixty-eight percent (68%) of former students were attending college at the time of the interview; their overall GPA ($n=55$) was 3.17.

1b. What percent of ProStart graduates attend college and major in an industry-related field?

Of those attending college, 26.4% ($n=18$) were majoring in an industry-related field and another 13.2% ($n=9$) in business. Of those not currently attending college, 90.6% ($n=29$) planned to attend; 27.5% ($n=8$) of those planned to major in an industry-related area and another 10.3% ($n=3$) in business. So, 26% of the total were majoring or planned to major in an industry-related field; another 12% were majoring or planned to major in business. In sum, 38% of the total were majoring or planned to major in an industry-related field or business.

1c. What impact do former ProStart students' report that the program had on their pursuit of a post-secondary education?

Students were asked to indicate whether ProStart helped them pursue more education using a Likert Scale from 1 to 5, with 1 representing strongly disagree and 5 indicating strongly agree. The mean score, 3.69, showed that students rated this between neutral and agree; 61% agreed or strongly agreed that ProStart helped them pursue more education.

1d. What percent of ProStart graduates work in the industry?

Students were asked various questions regarding their post-secondary employment status. Seventy-five percent (75%) of former students were employed; of these, 56% ($n=42$) were working in the industry. Of those not employed, 96% ($n=25$) were seeking employment. Of those seeking employment, 36% ($n=9$) planned to seek employment in the industry. So, 51% ($n=51$) of the total were either working in the industry or hoped to work in the industry.

1e. What impact do former ProStart students' report that the program had on their pursuit of a post-secondary career in the industry?

Students were asked to indicate whether ProStart helped them pursue a career in the industry using a Likert Scale from 1 to 5. The mean score, 3.26, showed that former students rated this somewhat above neutral; 50% agreed or strongly agreed that ProStart helped them pursue a career in the industry.

Open-Ended Questions

In addition to the information described above, students were asked open-ended questions about their experience in the program. The first question was “Who was the most influential person in your program and why?” Seventy percent (75%) of the students indicated that their teacher was the most influential person in the program. An unanticipated finding was that 14% of the students said fellow classmates in the program influenced them. Guest speakers (13%) such as chefs and other restaurant personnel and internship supervisors (7%) were also cited as being influential. Students indicated that these people were the most influential because of their knowledge of the industry, insight, helpfulness, caring attitude, encouragement, willingness to provide extra help, ability to relate to students, and hands-on learning they provided. In addition, 2% cited their parents as being influential; one person said that she was her own motivation. It should be noted that the sum of these figures exceed 100%, because some students provided more than one answer.

The next question was “What is your overall impression of the ProStart program?” Ninety-one percent (91%) of the students had a favorable impression of the program and cited the following reasons: Networking; helped with job preparation; hands-on experience; college credits; tool for creativity; allowed students to explore opportunities in the industry; bridged the gap between high school and college; chance for

collaboration with other students; educational; interesting. Nine percent (9%) felt that the program did not meet their needs in some way and cited the following reasons: Poor teacher; not beneficial for people who didn't want to go into the industry.

The third open-ended question was "What opportunities did ProStart provide you with that would not have been available otherwise?" Thirty-two percent (32%) cited that the opportunities provided by ProStart included the real-life experiences gained through field trips to industry locations and the hands-on applications used in the classroom. Twenty-two percent (22%) said that it was the valuable information they gained through the program. They cited the usefulness of the curriculum, how they were able to get an overall picture of the hospitality industry, and how they learned safety rules related to food and sanitation. Seventeen percent (17%) said ProStart provided them with job opportunities; 16% cited the competitions; 14% thought networking with others in the industry was a valuable part of the program; 12% cited the scholarship money that they obtained because of their participation in the program; 8% were able to obtain college information through their participation. Again, it should be noted that these figures exceed 100%, because some students provided more than one answer.

Finally, students were asked "How did ProStart affect your college/career decision?" They were given several answers from which to choose: The program definitely made me decide to go into the industry; the program changed my mind about going into the industry; or the student provided another answer if he/she did not feel the others were applicable. Forty-two percent (42%) of former students either decided to go into the industry (21%) or changed their mind (21%) about pursuing more education or a career in the industry after participating in the program. Twenty-seven percent (27%)

were not influenced by the program because they were already pursuing an industry-related education/career previous to ProStart (5%) or they were not interested in pursuing an industry-related education/career before or after ProStart (22%). Thirty-two percent (32%) said that the program made them decide not to pursue an education or career in the industry. It should be noted that this question was added to the interview once it became apparent that it would add information not already gained from the other questions; therefore, there were 83 respondents rather than 100.

Results of Inferential Research Questions

Research Question 2. Is there an association between level of support received and outcomes or self-reported program impact?

2a. Is there an association between level of ProStart instructor/program support and high school outcomes?

As shown in Table 17, there was a statistically significant correlation between receiving financial support to a post-secondary institution and having a helpful ProStart curriculum, $r(98) = .24, p < .05$. The direction of the correlation was positive, which means that students who agreed they had a helpful ProStart curriculum tended to receive financial support to a post-secondary institution. The r showed a small to medium effect size. The r squared indicates that 6% of the variance in receiving financial support to a post-secondary institution can be predicted from having a helpful ProStart curriculum while in the program.

There was no systematic association found between perceived level of instructor/program or staff support and any of the high school outcomes. There was no

association between having a helpful curriculum and the exam scores, in part, because less than half of the students had exam scores. There was also no association between having a helpful curriculum and receiving the National Certificate.

Table 17

Correlations for Level of ProStart Instructor/Program Support and High School Outcomes

Variable	<u>Level of instructor/program support</u>		
	Instructor support	Staff support	Curriculum helpful
Exam one	-.24	.16	-.24
Exam two	.03	.32	.01
National certificate	.11	.08	.07
Financial support	.10	.17	.24*

* $p < .05$

2b. Is there an association between level of employer support while in ProStart and high school outcomes?

Table 18 shows that there was a significant correlation between the score on ProStart Exam One and having an intern employer that was supportive of the students' goals, $r(18) = -.45, p < .05$, indicating a medium to large effect size. The direction of the correlation was negative, which means that students who felt their employer was supportive of their goals tended to do less well on ProStart Exam One, and vice versa.

There was no systematic association found between the first component of employer support (supported goals) and the score on ProStart Exam Two, receiving the National Certificate, or receiving financial support. There was no association between

the other two components of employer support (valued work, provided a good opportunity) and any of the high school outcomes.

Table 18

Correlations for Level of ProStart Employer Support and High School Outcomes

Variable	<u>Level of employer support</u>		
	Supported goals	Valued work	Good opportunity
Exam one	-.45*	-.32	-.43
Exam two	-.31	-.31	-.40
National certificate	.15	.26	.12
Financial support	.03	-.03	-.10

* $p < .05$

2c. Is there an association between level of ProStart instructor/program support and self-reported program impact?

Table 19 shows that three of the six pairs of variables were significantly correlated. The strongest correlation, with a medium to large effect size (Cohen, 1988) was between self-reported ProStart influence on pursuing more education and instructor/program support received during the program, $r(98) = .46, p < .01$. The direction of the correlation was positive, which means that students who agreed they had good instructor/program support while in the program tended to indicate that ProStart helped them pursue a post-secondary education, and vice versa. The r squared indicates that 21% of the variance in self-reported ProStart influence on pursuing a post-secondary education can be predicted from the level of ProStart instructor/program support received.

There was also a positive correlation between self-reported ProStart influence on pursuing more education and having a helpful ProStart curriculum, $r(98) = .44, p < .01$; the effect size was medium to large. In addition, there was a statistically significant correlation between self-reported ProStart influence on pursuing a career in the industry and having a helpful ProStart curriculum, $r(98) = .27, p < .01$. The direction of the correlation was positive, which means that students who agreed they had a helpful curriculum tended to indicate that ProStart helped them pursue a career in the industry, and vice versa. The effect size was small to medium.

As shown in Table 19, there was no systematic association found between instructor support and self-reported ProStart influence on pursuing a career in the industry. There was also no association between staff support and self-reported ProStart influence on pursuing more education or a career in the industry.

Table 19

Correlations for Level of ProStart Instructor/Program Support and Self-Reported Program Impact

Variable	<u>Level of instructor/program support</u>		
	Instructor support	Staff support	Curriculum helpful
Pursue education	.46**	.06	.44**
Pursue career	.17	.01	.27**

** $p < .01$

2d. Is there an association between level of employer support while in ProStart and self-reported program impact?

There was no systematic association found between level of employer support and self-reported ProStart influence on pursuing a post-secondary education or influence on pursuing a career in the industry.

2e. Is there an association between level of ProStart instructor/program support and post-secondary outcomes?

There was no systematic association found between level of instructor/program support and attending college, college GPA, majoring/planning to major in an industry-related field, or working/planning to work in the industry.

2f. Is there an association between level of ProStart employer support while in ProStart and post-secondary outcomes?

There was no systematic association found between level of ProStart employer support and attending college, college GPA, majoring/planning to major in an industry-related field, or working/planning to work in the industry.

Research Question 3. Are there differences between the levels of student engagement in regard to program outcomes or program impact?

3a. Are there differences between the two levels of competitions (did/did not participate) in regard to high school outcomes?

Table 20 shows the Pearson chi-square results and indicates that receiving financial support was different for those who did and did not participate in the competitions ($\chi^2 = 6.35$, $df = 1$, $N = 100$, $p < .012$). Phi indicates that the strength of the association between the two variables is .25 and, thus, the effect size is small to medium.

Students who participated in the competitions were more likely to receive financial support to a post-secondary institution.

Table 20

Chi-square Analysis of Participation in Competitions and Financial Support Received

Variable	n	Competitions		χ^2	p
		Yes	No		
Financial support				6.35	$\leq .01$
Received	26	18	8		
Not received	74	30	44		
Total	100	48	52		

An independent samples *t* test was executed comparing the levels of competition on the average score for ProStart Exam One and ProStart Exam Two; no significant differences were found. The same holds true for levels of competition and receiving the National Certificate.

3b. Are there differences between the two levels of mentored internship (did/did not complete) in regard to high school outcomes?

Table 21 shows the Pearson chi-square results and indicates that receiving the National Certificate was different for those who did and did not complete the mentored internship ($\chi^2 = 18.10$, $df = 1$, $N = 100$, $p < .001$). Phi indicates that the strength of the association between the two variables is .43 and, thus, the effect size is medium to large. Students who completed the mentored internship were more likely to receive the National Certificate.

In addition, receiving financial support was different for those who did and did not complete the mentored internship ($\chi^2 = 4.05$, $df = 1$, $N = 100$, $p < .04$); a phi of .20

indicates a small to medium effect size. Students who completed the mentored internship were more likely to receive financial support to a post-secondary institution.

Table 21

Chi-square Analyses of Completion of Internship, Receipt of National Certificate, and Financial Support Received

Variable	n	Mentored internship		χ^2	p
		Yes	No		
National Certificate				18.10	<.001
Received	14	13	1		
Not received	86	28	58		
Total	100	41	59		
Financial support				4.05	.04
Received	26	15	11		
Not received	74	26	48		
Total	100	48	52		

An independent samples *t* test compared the levels of the mentored internship to the average score on ProStart Exam One and ProStart Exam Two; no significant differences were found.

3c. Are there differences between the two levels of year two of the program (did/did not complete) in regard to high school outcomes?

Table 22 shows the Pearson chi-square results and indicates that receiving the National Certificate was different for those who did and did not complete year two of the program ($\chi^2 = 6.00, df = 1, N = 99, p \leq .01$). Phi indicates that the strength of the association between the two variables is .25 and, thus, the effect size is small to medium. Students who completed year two of the program were more likely to receive the National Certificate.

In addition, receiving financial support was different for those who did and did not complete year two of the program ($\chi^2 = 6.52, df = 1, N = 99, p \leq .01$); a phi of .26 indicates a small to medium effect size. Students who completed the second year of the program were more likely to receive financial support to a post-secondary institution.

Table 22

Chi-square Analyses of Completion of Year Two, Receipt of National Certificate, and Financial Support Received

Variable	n	Completion of year two		χ^2	p
		Yes	No		
National Certificate				6.00	$\leq .01$
Received	14	12	2		
Not received	85	43	42		
Total	99	55	44		
Financial support				6.52	$\leq .01$
Received	26	20	6		
Not received	73	35	38		
Total	99	55	44		

An independent samples *t* test compared the levels of year two of the program on the average score for ProStart Exam One and ProStart Exam Two; no significant differences were found.

3d. Are there differences between the two levels of competition in regard to self-reported program impact?

As shown in Table 23, an independent samples *t* test was conducted comparing the two levels of competition on self-reported ProStart influence on pursuing a career in the industry, $t(98) = -2.06, p < .04$. This indicates that the student who participated in the competitions ($M = 3.57$) was significantly more likely to have stated that ProStart had

an influence on pursuing a career in the industry than those who didn't participate in the competitions ($M = 2.96$). The 95% confidence interval indicates that the mean difference between those who did and didn't participate in the competitions in the population is probably between -1.20 and -.02. The d effect size (approximately .41) is medium to large.

Table 23

Group Differences for Self-Reported ProStart Influence on Pursuing a Career in the Industry for Those Who Did and Did Not Participate in the Competitions

	<u>Did participate</u>		<u>Didn't participate</u>		$t(98)$	p
	M	SD	M	SD		
Influence on career	3.57	1.43	2.96	1.53	-2.06	.04

An independent samples t test compared the two levels of competition on self-reported ProStart influence on pursuing more education; no significant difference was found.

3e. Are there differences between the two levels of mentored internship in regard to self-reported program impact?

As shown in Table 24, an independent t test was conducted comparing the two levels of mentored internship on self-reported ProStart influence on pursuing a career in the industry, $t(98) = -2.28, p < .03$. This indicates that the student who completed the mentored internship ($M = 3.66$) was significantly more likely to have stated that ProStart had an influence on pursuing a career in the industry than those who didn't complete the mentored internship ($M = 2.98$). The 95% confidence interval indicates that the mean difference between those who did and didn't complete the mentored internship in the

population is probably between -1.28 and -.09. The d effect size (approximately .47) is medium.

Table 24

Group Differences for Self-Reported ProStart Influence on Pursuing a Career in the Industry for Those Who Did and Did Not Complete the Mentored Internship

	<u>Did complete</u>		<u>Didn't complete</u>		<i>t</i> (98)	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Influence on career	3.66	1.43	2.98	1.51	-2.28	.03

A Pearson chi-square indicated that completing the mentored internship was not different for those who did and did not state that Prostart influenced them to pursue more education.

3f. Are there differences between the two levels of year two of the program in regard to self-reported program impact?

An independent samples *t* test compared the levels of year two of the program on self-reported ProStart influence on pursuing more education and pursuing a career in the industry; no significant differences were found.

3g. Are there differences between the two levels of competition in regard to post-secondary outcomes?

An independent samples *t* test compared the levels of competition on attending college, college GPA, and working/planning to work in the industry; no significant differences were found. In addition, a Pearson chi-square indicated that participating in

the competitions was not different for those who were majoring/planning to major in an industry-related field.

3h. Are there differences between the two levels of mentored internship in regard to post-secondary outcomes?

An independent samples *t* test compared the levels of mentored internship on attending college, college GPA, majoring/planning to major in an industry-related field and working/planning to work in the industry; no significant differences were found.

3i. Are there differences between the two levels of year two of the program in regard to post-secondary outcomes?

An independent samples *t* test compared the levels of year two of the program on attending college, college GPA, majoring/planning to major in industry-related field and working/planning to work in the industry; no significant differences were found.

Research Question 4. Is there an association between outcomes and self-reported program impact?

4a. Is there an association between high school outcomes and self-reported program impact?

As shown in Table 25, there was a statistically significant correlation between self-reported ProStart influence on pursuing more education and receiving the National Certificate, $r(98) = .26, p < .01$. The direction of the correlation was positive, which means that students who received the National Certificate tended to state that ProStart helped them pursue more education. The *r* showed a small to medium effect size.

Similarly, there was a positive correlation (.32) between self-reported ProStart influence

on pursuing a career in the industry and receiving the National Certificate; the effect size was medium.

There was a statistically significant correlation between ProStart influence on pursuing more education and receiving financial support to a post-secondary institution, $r(98) = .38, p < .01$. The direction of the correlation was positive, which means that students who stated that ProStart helped them pursue more education tended to receive financial support to a post-secondary institution. The r showed a medium effect size. Similarly, there was a positive (.42) between self-reported ProStart influence on pursuing a career in the industry and receiving financial support to a post-secondary institution; there was a medium to large effect size.

There were no systematic associations between ProStart Exam One or ProStart Exam Two and self-reported program impact.

Table 25

Correlations for High School Outcomes and Self-Reported Program Impact

Variable	<u>High school outcomes</u>			
	Exam one	Exam two	National certificate	Financial support
Pursue education	-.01	.25	.26**	.38**
Pursue career	.02	.25	.32**	.42**

** $p < .01$

4b. Is there an association between high school outcomes and post-secondary outcomes?

The two strongest correlations (Table 26), both with a medium effect size, were between working/planning to work in the industry and receiving the National Certificate,

and attending college and receiving financial support to a post-secondary institution, $r(98) = .31, p < .01$. Similarly, receiving financial support was also moderately correlated with college grade point average (.30) and with majoring/planning to major in an industry-related field (.29), both with medium effect sizes. There was no systematic association between receiving financial support and working/planning to work in the industry.

There was also no systematic relationship between ProStart Exam One or ProStart Exam Two and any of the post-secondary outcomes. There was no association between receiving the National Certificate and attending college, college GPA, or majoring/planning to major in an industry-related field.

Table 26

Correlations for High School Outcomes and Post-Secondary Outcomes

Variable	High school outcomes			
	Exam one	Exam two	National certificate	Financial support
Attending college	-.01	.17	.15	.31**
College GPA	.44	.09	.12	.30*
Major/planning industry major	-.17	.27	.10	.29**
Working/planning industry work	-.11	.14	.31**	.17

** $p < .01$

* $p < .05$

Research Question 5. Is there a combination of instructor/program support and student engagement that predict self-reported program impact?

5a. Is there a combination of instructor/program support and student engagement that predict self-reported ProStart influence on pursuing more education?

As shown in Table 27, multiple regression was conducted to investigate the best predictors of self-reported ProStart influence on pursuing more education. The assumptions of multiple regression were checked.

Table 27

Means, Standard Deviations, and Intercorrelations for Self-Reported ProStart Influence on Pursuing More Education/Career and Predictor Variables (N=99)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Pursue education	3.70	1.26	.46**	.45**	.12	.20*	.04	.31**
Pursue career	3.26	1.51	.17*	.27**	.21*	.23*	.14	.20*
Predictor variable								
1. Instructor support	4.34	1.15	--	.59**	.10	-.01	.14	.33**
2. Curriculum helpful	4.18	.98	--	--	-.01	.06	.08	.30**
3. Competition	.47	.50	--	--	--	-.04	.32**	.31**
4. Mentored internship	.40	.49	--	--	--	--	.28**	.09
5. Year two	.56	.50	--	--	--	--	--	.14
6. Student engagement	4.08	1.12	--	--	--	--	--	--

** $p < .01$

* $p < .05$

As shown in Table 28, when the combination of variables to predict self-reported ProStart influence on pursuing more education included instructor support, curriculum helpful, competitions, mentored internship, year two, and student engagement, $F(6, 98) = 7.36, p < .001$. The adjusted R squared value was .280 which indicates that 28% of the variance in self-reported ProStart influence on pursuing more education was explained by the model; this is a medium effect size. Three predictors (instructor support, curriculum helpful, mentored internship) were all significant; the other variables (competitions, year two, student engagement) were included since they did not violate the other assumptions.

Table 28

Simultaneous Multiple Regression Analysis Summary for Instructor Support, Curriculum Helpful, Competitions, Mentored Internship, Year Two, and Student Engagement Predicting Self-Reported ProStart Influence on Pursuing More Education (N=99)

Variable	<i>B</i>	<i>SEB</i>	β
Instructor support	.32	.12	.29**
Curriculum helpful	.31	.14	.24*
Competitions	.27	.24	.11
Mentored internship	.56	.23	.22**
Year two	-.33	.24	-.13
Student engagement	.13	.11	.11
Constant	.34	.56	

Note. Adj $R^2 = .28$, $F(6, 98) = 7.36$, $p < .001$

** $p \leq .01$

* $p < .05$

5b. Is there a combination of instructor/program support and student engagement that predict self-reported ProStart influence on pursuing a career in the industry?

As shown previously in Table 27, multiple regression was conducted to investigate the best predictors of self-reported ProStart influence on pursuing a career in the industry. The assumptions of multiple regression were checked.

When the combination of variables to predict self-reported ProStart influence on pursuing a career in the industry included instructor support, curriculum helpful, competitions, mentored internship, year two, and student engagement, $F(6, 98) = 3.09$, $p < .01$ (Table 29). The adjusted R squared value was .113 which indicates that 11% of the variance in ProStart influence on pursuing a career in the industry was explained by the model; this is a small effect size. Three predictors (curriculum helpful, competitions, mentored internship) were all significant; the other variables (instructor support, year two, student engagement) were included since they did not violate the other assumptions.

Table 29

Simultaneous Multiple Regression Analysis Summary for Instructor Support, Curriculum Helpful, Competitions, Mentored Internship, Year Two, and Student Engagement Predicting Self-Reported ProStart Influence on Pursuing a Career in the Industry (N= 99)

Variable	<i>B</i>	<i>SEB</i>	β
Instructor support	-.01	.16	-.01
Curriculum helpful	.39	.19	.25*
Competitions	.64	.32	.21*
Mentored internship	.69	.31	.22*
Year two	-.05	.32	-.02
Student engagement	.06	.15	.04
Constant	.88	.74	

Note. Adj $R^2 = .11$, $F(6, 98) = 3.09$, $p < .01$

* $p \leq .05$

Supplemental Analyses

There was a statistically significant correlation between self-reported ProStart influence on pursuing a career in the industry and self-reported ProStart influence on pursuing more education, $r(98) = .68$, $p < .01$. The direction of the correlation was positive, which means that students who indicated that ProStart helped them pursue more education tended to indicate that ProStart helped them pursue a career in the industry, and vice versa. The r indicates a very large effect size. The r squared indicates that 46% of the variance in ProStart influence in pursuing a career in the industry can be predicted from ProStart influence pursuing more education.

A Pearson correlation was conducted between the student engagement Likert item and high school outcomes. The strongest correlation, with a medium to large effect size, was between taking ProStart Exam Two and the students' self-reported level of

engagement, $r(24) = .45, p < .05$. This means that students who reported a high level of engagement tended to do well on ProStart Exam Two. Similarly, a high level of self-reported student engagement was also positively correlated with receiving financial support (.35), with a medium effect size, and receiving the National Certificate (.20), with a small effect size. There was no systematic relationship between self-reported student engagement and ProStart Exam One.

Another Pearson correlation was conducted between the student engagement Likert item and self-reported program impact. The strongest correlation, with a medium effect size, was between self-reported ProStart influence on pursuing more education and self-reported student engagement, $r(98) = .31, p < .01$. This means that students who reported a high level of engagement tended to state that ProStart helped them in pursuing more education. Similarly, a high level of self-reported student engagement was also positively correlated (.20) with self-reported ProStart influence on pursuing a career in the industry, with a small effect size.

There was no systematic association between the student engagement Likert item and post-secondary outcomes.

Summary

The following summary is provided as a means of combining the findings of the individual research questions. First, Research Question 2 is addressed: Is there an association between level of support received and outcomes or self-reported program impact? As shown in Table 30, the results indicate that the perceived level of instructor/program support was not significantly correlated with high school outcomes, with one exception: those who found the curriculum helpful tended to receive financial

support. However, the level of instructor/program support was reflected in the self-reported impact of the program. Those students who felt more highly supported by their instructor/program tended to state that ProStart helped them pursue more education and/or a career in the industry. There were, however, no associations between instructor/program support and post-secondary outcomes.

Table 30

Relationship Among Level of Support, High School Outcomes, Self-Reported Program Impact, and Post-Secondary Outcomes

	<u>Instructor/program support</u>			<u>Employer support</u>		
	Instructor support	Staff support	Curriculum helpful	Supported goals	Valued work	Good opportunity
<i>High school outcomes</i>						
Exam one	--	--	--	*	--	--
Exam two	--	--	--	--	--	--
National certificate	--	--	--	--	--	--
Financial support	--	--	*	--	--	--
<i>Self-reported program impact</i>						
Pursue education	**	--	**	--	--	--
Pursue career	--	--	**	--	--	--
<i>Post-secondary outcomes</i>						
Attending college	--	--	--	--	--	--
College GPA	--	--	--	--	--	--
Major/planning industry major	--	--	--	--	--	--
Working/planning industry work	--	--	--	--	--	--
** $p \leq .01$						
* $p < .05$						

Further, the level of employer support was not significantly positively correlated with any of the outcomes; in fact, the only significant finding was negative. In addition, no relationships were found between the level of employer support and self-reported program impact or post-secondary outcomes.

Next, the results of Research Question 3 are shown in Table 31: Are there differences between the levels of student engagement in regard to program outcomes or self-reported program impact?

Table 31

Relationship Among Student Engagement, High School Outcomes, Self-Reported Program Impact, and Post-Secondary Outcomes

	<u>Student engagement</u>			Likert item
	Competitions	Internship	Year two	
<i>High school outcomes</i>				
Exam one	--	--	--	--
Exam two	--	--	--	*
National certificate	--	**	**	*
Financial support	**	*	**	**
<i>Self-reported program impact</i>				
Pursue education	--	--	--	**
Pursue career	*	*	--	*
<i>Post-secondary outcomes</i>				
College	--	--	--	--
College GPA	--	--	--	--
Major/planning industry major	--	--	--	--
Working/planning industry work	--	--	--	--

** $p \leq .01$
* $p < .05$

As shown, those who completed the mentored internship and year two of the program and also reported a high level of student engagement were more likely to receive the National Certificate. Similarly, those who received financial support were highly engaged students—they were more likely to have participated in the competitions, mentored internship and year two of the program; they also reported a high level of engagement. In addition, students who reported a high level of engagement tended to score well on Exam Two.

Further, students who participated in the competitions and mentored internship and also reported a high level of student engagement were more likely to have said that ProStart helped them pursue a career in the industry. Likewise, those who reported a high level of engagement were more likely to have said the ProStart helped them pursue more education. There were no associations, however, between student engagement and post-secondary outcomes.

Last, Research Question 4 is addressed: Is there an association between outcomes and self-reported program impact? As shown in Table 32, those students who received financial support were more likely to say that ProStart helped them pursue more education and a career in the industry. In addition, they were more likely to attend college, have a higher college GPA, and be majoring or planning to major in an industry-related field.

Table 32

Relationship Among High School Outcomes, Self-Reported Program Impact, and Post-Secondary Outcomes

	<u>High school outcomes</u>			
	Exam one	Exam two	National certificate	Financial support
<i>Self-reported program impact</i>				
Pursue education	--	--	**	**
Pursue career	--	--	**	**
<i>Post-secondary outcomes</i>				
Attending college	--	--	--	**
College GPA	--	--	--	**
Major/planning industry major	--	--	--	**
Working/planning industry work	--	--	**	--

** $p < .01$

* $p < .05$

Similarly, those students who received the National Certificate tended to state that ProStart helped them pursue more education and a career in the industry. Students were also more likely to be working or planning to work in the industry when they received the National Certificate.

CHAPTER 5: DISCUSSION

Five research questions were investigated in this study. This discussion section will address patterns of findings, including those which were statistically significant at the $p < .001$, $p < .01$, and $p < .05$ levels. Research questions that may not have provided significant results, yet were unexpected in some way, will also be discussed. While the research questions were addressed in order in Chapter 4, three of the thematic groupings as originally designated in Hughes, et al. (2001), will be used for discussion in this chapter. The first section will discuss the how the ProStart program supports academic achievement as evidenced by the findings in this study. The second section will discuss how the ProStart program supports career preparation; the third section will discuss how the ProStart program supports youth development. In addition, a fourth area which emerged out of this study, self-reported program impact on post-secondary decisions, will also be discussed.

Implications for policy and practice in STW programs, specifically the ProStart program, will be addressed as will the possibilities for future research in the area of program evaluation.

ProStart Supports Academic Achievement

ProStart students were more likely to go to college

According to the existing body of research literature, school-to-work students are just as likely, if not more likely, to attend college as comparable students. Studies of students in New York State (Westchester Institute for Human Services Research, Inc.,

1998 [as cited in Hughes, et al., 2001]), North Carolina (Metis Associates, 1999 [as cited in Hughes et al., 2001]), Colorado (Colorado School-to-Career Partnership, 1999 [as cited in Hughes et al., 2001]), and a California career academy (Maxwell & Rubin, 2000) all showed that college enrollment for STW students was equivalent to or higher than that of comparison students.

The students interviewed in this study showed a similar pattern as that found in the existing literature. Sixty-eight percent (68%) of former ProStart students were attending college at the time of the interview. Although this study did not use a comparison group as the above cited studies did, the National Information Center for Higher Education Policy Making and Analysis (www.higheredinfo.org, 2005) showed that 57.3% of high school graduates from the class of 2002 (the latest year listed) in Colorado went directly to college. ProStart graduates, then, were 11% more likely to attend college than students from the graduating class of 2002 in Colorado. Further, 61% of students agreed or strongly agreed that ProStart helped them pursue more education.

ProStart students chose a major early in their college career

In addition, current research suggests that STW students are more likely to choose a major early in their college career. Several studies (Colorado School-to-Career Partnership, 1999 [as cited in Hughes, et al, 2001]; Westchester Institute for Human Services Research, Inc., 1998 [as cited in Hughes, et al, 2001]) have shown that students who participated in STW activities during high school chose a college major sooner than those who did not participate in STW activities.

Likewise, the students in this study showed a similar inclination to select a major early in their college career. Of those attending college, 26.4% were majoring in an

industry-related field and another 13.2% in business; 51.5% were majoring in another area; only 8.8% were undecided about their major approximately one year after enrollment.

ProStart students had a chance to earn college credit in high school

Students in several studies (Orr, 1996; Phelps, Scribner, Wakelyn, & Weis, 1996 [as cited in Hughes, et al., 2001]) cited that the opportunity to earn college credits in high school as a result of their participation in a STW program provided incentive for them to attend a post-secondary institution. Similarly, when students in this study were asked their overall impression of the ProStart program, 91% had a favorable impression; one of the reasons cited was the chance to earn college credits.

ProStart Supports Career Preparation

ProStart students were employed in the industry

Seventy-five percent (75%) of former ProStart students were employed; of those, 56% were working the industry. Of those seeking employment, 36% planned to seek employment in the industry. So, 51% of the total were either working in the industry or planned to work in the industry. Further, 50% of the students in this study agreed or strongly agreed that ProStart helped them pursue a career in the industry. Related studies (Center on Education and Work, 1999 [as cited in Hughes, et al., 2001]; Metis Associates, 1999 [as cited in Hughes, et al., 2001]; Scholl & Smyth, 2000 [as cited in Hughes, et al., 2001]) showed that graduates of STW programs had better labor market outcomes than non-STW students; many believed that their STW experience helped them get their job.

ProStart provided valuable opportunities

Orr (1996) found that apprentice students believed STW participation provided them with valuable career information and direction. In another study (Hershey, Silverberg, & Haimson, 1999), college and non-college bound students felt that their STW experiences were valuable in helping them define their career goals. Students in a New York State apprentice program (Hamilton & Hamilton, 1997) also reported that SWT activities helped them identify career paths.

Likewise, students in this study felt that the program provided them with valuable career information and opportunities. When participants in this study were asked what opportunities ProStart had provided them, 32% cited the real-life experiences gained through field trips to industry locations and the hands-on applications used in the classrooms; 22% said it was the valuable information they gained through the program; another 17% cited the job opportunities the program provided; 16% cited the competitions; 14% thought the networking was helpful; 12% cited the scholarship money; and 8% were able to obtain college information through the program.

Highly engaged students received the most benefits

Studies (Hershey, Silverberg, & Haimson, 1999; Kemple, Poglinco, & Snipes, 1999) have shown that STW students participated in many different career development activities to prepare for the world of work. One study (Larson & Vandegrift, 2000) suggested that students who were more highly engaged in the STW experience, not surprisingly, benefited most. For example, the ability of STW students to define a career interest was directly related to the number of STW activities in which they were involved. In a related study (Westchester Institute for Human Services Research, Inc.,

1998 [as cited in Hughes, et al., 2001]), the more highly engaged students had a greater interest in school.

Students in this study also showed similar outcomes. As shown previously in Table 31, highly engaged students were more likely to receive the National Certificate. This finding is not unexpected, however, since students are required to successfully complete both the academic and work experience components of the program in order to receive the National Certificate.

Similarly, those who received financial support were highly engaged students. This, also, is not an unexpected finding since financial support is based on participation in the program and, it can be assumed, given to those who have participated in most, if not all, aspects of the program.

In addition, the results suggest that the highly engaged students were more likely to have attributed their post-secondary career choice to their experience in ProStart; however, their engagement in the program components did not affect their post-secondary education choice.

In sum, the findings from this study indicate that highly engaged students were more likely to have favorable ProStart outcomes (Exam Two, National Certificate, financial support); they were also more likely to attribute their pursuit of an industry-related career to their experience in Prostart. Participation in the *individual* program components, however, was not indicative of favorable post-secondary outcomes.

ProStart Supports Youth Development

ProStart students felt supported by their instructors and employers

ProStart students rated the instructor's and curriculum highly; 84% and 81%, respectively, agreed or strongly agreed that support was strong in these areas. In fact, 70% of students cited their teacher as being the most influential person in their program because of their knowledge of the industry, insight, helpfulness, caring attitude, encouragement, willingness to provide extra help, ability to relate to students, and hands-on learning. Similarly, other studies (Center on Education and Work, 1999 [as cited in Hughes, et al., 2001]; Kemple 1997; Larson and Vandergrift, 2000; Orr, 1996) have shown that students thought that their STW teachers were supportive and approachable; they felt that their program provided a sense of community.

This study also showed that students rated employer support highly at 81% (supported goals), 90% (valued work), and 83% (provided a good learning opportunity). Other studies (Almeida, Goldberger, Lalbehari, 1999 [as cited in Hughes, et al., 2001]; Hamilton & Hamilton, 1997; Orr, 1996; Phelps, Scribner, Wakelyn, & Weis, 1996 [as cited in Hughes, et al., 2001]) have shown the benefits of having a supportive employer--one who can act as a role model, career guide, and can provide networking opportunities for their employees.

Level of instructor/program support influenced post-secondary decisions

As shown previously in Table 30, the results of this study indicate that the perceived level of instructor/program support was not significantly correlated with high

school outcomes, with one exception. However, the level of instructor/program support was reflected in the self-reported impact of the program.

In addition, the level of employer support was not significantly positively correlated with any of the outcomes. So, even though the majority of ProStart students felt supported by their employer, this support was not reflected in the outcomes. This contradicts the findings of a study (Linnehan, 1998 [as cited in Hughes, et al., 2001]) that found students who spent more time with adults at the workplace had better high school outcomes.

Further, no relationships were found between the level of employer support and program impact or post-secondary outcomes. This finding contradicts a study (Orr, 1996) that found 80% of SWT students indicated that their apprenticeship had influenced their post-secondary educational plans.

In sum, students rated overall support highly; however, the effects of the supportive environment were positively correlated with only one high school outcome. Further, only the instructor/program support seemed to influence their pursuit of a post-secondary education and career, but the effects did not carry over to post-secondary outcomes.

ProStart Impacts Post-Secondary Decisions

When asked how ProStart influenced their college/career decision, 42% of former students either decided to definitely go into the industry (21%) or changed their mind in favor of pursuing more education or a career in the industry (21%) after participating in the program. Twenty-seven percent (27%) said that they were not influenced by the program because they were already pursuing an industry-related education/career

previous to ProStart (5%) or they were not interested in pursuing an industry-related education/career before or after ProStart (22%). In addition, 32% said that the program made them decide not to pursue an education or career in the industry.

Although many of the post-secondary relationships were non-significant (Tables 30, 31, 32), the multiple purposes of the program should be considered. ProStart is a career exploration program whereby students make decisions about entering the industry during a finite period of time (i.e. while in the program during high school). On one hand, 42% of the students *were* influenced by the program and chose to pursue an industry-related education and/or career. On the other hand, the current study found that 32% of the students chose not to pursue an industry-related education or career. Because ProStart is a career exploration program, it should be stressed that even though approximately one-third of the students did not pursue an industry-related education or career after participating, ProStart was able to “filter” the students who did not wish to stay in the industry. Since it can be reasonably assumed that industry employers and post-secondary educators prefer to recruit and retain highly interested and motivated students, ProStart served its purpose even for the students who decided not to stay in the industry.

Further, those students who stated that ProStart helped them pursue more education also tended to state that ProStart helped them pursue a career in the industry. These results are similar to those found in a study (Griffith, Wade, & Loeb, 1998) where students who participated in a Maryland Career and Technology Education program cited that their high school STW program had provided greater relevancy to their current jobs and post-secondary schooling than students who didn't participate in STW.

Receiving financial support influenced post-secondary education decisions

As shown previously in Table 32, those students who received financial support were more likely to have favorable post-secondary outcomes. This finding is not unexpected in that those who received financial support were probably more likely to pursue more education because of this support. Receiving this support, however, was not associated with working in the industry. It could be that students who were attending college were either not working or were not working in the industry.

Interestingly, when the *individual* aspects of student engagement were examined, there were no associations with post-secondary outcomes. Yet, when the student engagement factors were examined collectively (as in receiving financial support), there were significant relationships with post-secondary outcomes. Namely, students who received financial support were more likely to remain in the industry through post-secondary education.

Receiving the National Certificate influenced post-secondary career decisions

This study found that students who received the National Certificate tended to state that ProStart helped them pursue more education and a career in the industry. Other studies (Institute for Workforce Education, 1998 [as cited in Hughes, et al., 2001]; Phelps, Scribner, Wakelyn, & Weis, 1996 [as cited in Hughes, et al., 2001]; Westchester Institute for Human Services Research, Inc., 1997 [as cited in Hughes, et al., 2001]) have also shown that students tend to use the information gained in their STW program to help make post-secondary education and career choices.

This study also found that students were more likely to be working or planning to work in the industry when they received the National Certificate. This is not a surprising

finding; students who are working toward the National Certificate while in the program, it can be assumed, are those most interested in pursuing an education and/or career in the field post-secondarily. It does show, however, that receiving this certificate is related to post-secondary career choice, but it does not have an influence on their post-secondary education path.

Again, there were no associations between the individual engagement components (competitions, internship, year two, self-reported student engagement) and post-secondary outcomes; yet, when the student received the National Certificate (a high school outcome) as a result of being engaged in most of these activities, post-secondary outcomes, namely working or planning to work in the industry, were associated. So, in order to retain students in the industry through work, it seems to be important that they receive the National Certificate.

A combination of ProStart components may influence post-secondary decisions

This study indicates that if a student reports that ProStart influenced them to pursue a post-secondary education, this can be predicted from knowing the level of instructor/program support and their level of engagement (self-reported Likert item) in the program. The same combination of factors can be used to predict whether the student will pursue a career in the industry, but the variance in self-reported ProStart influence is smaller.

Implications for Policy and Practice in the ProStart STW Program

Two questions were posed in Chapter 1 that will now be addressed based on the findings of this study.

Do ProStart graduates remain in education or occupations in the hospitality industry after graduation from high school?

Twenty-seven percent (27%) of former ProStart students were attending a post-secondary institution *and* majoring in an industry-related field (18%) or business (9%); another 11% were planning to attend college and major in an industry-related field (8%) or business (3%). Thus, a total of 38% were either majoring or planning to major in an industry-related field or business.

Forty-two percent (42%) of former ProStart students were working in an industry-related occupation; another 9% were seeking employment in the industry. Thus, a total of 51% were either working in the industry or planned to work in the industry.

What were the factors that influenced ProStart students' matriculation into post-secondary, industry-related educational and employment environments?

There were several factors that influenced ProStart students' matriculation into post-secondary educational environments. First, student engagement in *all* program components was associated with some favorable ProStart high school outcomes. Specifically, students who participated in the competitions, mentored internship, and year two of the program were more likely to receive financial support. Second, the highly engaged students who received financial support were more likely have favorable post-secondary outcomes—they were more likely to attend college, have a higher GPA, and be majoring or planning to major in an industry-related field. Further, ninety-two percent (92%) of those who received financial support were attending college. Of those, 58% were majoring in an industry-related field (50%) or business (8%). It is, therefore, imperative that ProStart teachers and students be aware of the support available, methods

of obtaining it, and the impact that this financial support has on their post-secondary education.

As with post-secondary education, there were several factors that influenced ProStart students' matriculation into the industry. Again, student engagement in most of the program components was associated with favorable ProStart high school outcomes. Further, receiving the National Certificate as a result of being highly engaged was important; 85% of the students who received the National Certificate were either working in the industry (71%) or planning to work in the industry (14%).

Approximately half of the students did not participate in the competitions, mentored internship, or year two of the program; yet 74% reported that they participated in as many of the ProStart components as they could have. In light of this discrepancy, it seems that there may either be a lack of knowledge about the various ProStart components on the students' part, or maybe a lack of initiative to complete all of the aspects of the program. As such, finding ways to engage students in the total ProStart experience, and subsequently obtain the National Certificate, should be a top priority.

The ideal combination, based on these findings, is for the student to obtain both financial support and the National Certificate. The chances that the student will matriculate into industry-related post-secondary educational *and* employment environments will be increased.

Future Research

As recommended by Hughes, et al.(2001), greater efforts need to be made to include more students in the total STW experience. The authors also suggested that post-secondary education, including college enrollment and completion, and labor market

outcomes be researched longitudinally—perhaps these two recommendations can be combined into one study.

As the results of the current study show, students who were highly engaged were more likely to pursue an industry-related education and/or career. In terms of future research, it would be advisable to track the students who were highly engaged in ProStart—they received financial support and/or the National Certificate—and monitor their retention in the industry on a longitudinal basis, both their education and career path.

The question, then, remains the same: Do highly engaged ProStart students remain in the industry, either through education or employment, longitudinally? The focus, however, shifts to longitudinal, rather than short-term, post-secondary outcomes. This study may be primarily qualitative in nature as the number of students would greatly diminish; in-depth data collection and analysis would be necessary. It could include student-reported data as well as that obtained from employers and post-secondary instructors. Further, the focus may even be on post-secondary support systems. Since instructor/program or employer support during high school was not associated with post-secondary outcomes, post-secondary support and its implications may be an important area of further study.

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APPENDICES

Appendix A: Interview Protocol

PROSTART FOLLOW-UP INTERVIEW

Part I: ProStart Program

1. Which of the ProStart components did you complete? (check those that apply)
a)Year 1 _____ b)Year 2 _____ c)Mentored internship _____ d)Competition(s) _____
e)National Certificate _____

2. In which type of high school schedule did you participate? (check the one that applies)
Traditional _____ Modified Block _____
Block _____ Trimester _____

3. Who was the most influential person/people during your program? Why?

4. Did you receive scholarship money to attend a post-secondary institution? If so, how much?

Part II: Post-Secondary College Path

5. Are you attending college? (If not, skip to 9)

6. Where are you attending college?

7. What is your major?

8. What is your approximate cumulative college grade point average?

9. Do you plan to attend college? Expected date of enrollment?

10. Where will you attend?

11. What will be your major?

Part III: Post-Secondary Career Path

12. Are you currently employed? (If not, skip to 16)

13. If you are currently employed, where are you working?

14. Full-time or part-time?

15. Is this job in the food service or hotel industry?

16. Do you plan to seek employment soon?

17. Will it be in the food service or hotel industry?

Part IV: Level of ProStart Instructor/Program Support

Directions: Using a scale of 1-5, with 1 representing strongly disagree and 5 indicating strongly agree, indicate your level of agreement with the following statements.

18. My instructor was an important part of my program.

1 2 3 4 5

19. Other staff members were an important part of my program.

1 2 3 4 5

20. The ProStart curriculum was a helpful part of my program.

1 2 3 4 5

Part V: Level of ProStart Employer Support

21. My employer during ProStart was supportive of my goals.

1 2 3 4 5

22. My employer during ProStart valued my work.

1 2 3 4 5

23. My employer during ProStart provided a good learning opportunity.

1 2 3 4 5

Part VI: Level of Student Engagement in ProStart

24. I participated in the various ProStart components (Year 1, Year 2, internship, competitions, etc) as much as I could have.

1 2 3 4 5

Part VII: Overall Impressions of ProStart

25. ProStart helped me in pursuing more education.

1 2 3 4 5

26. ProStart helped me in pursuing a career in the industry.

1 2 3 4 5

27. What is your overall impression of the ProStart program?

28. What opportunities did ProStart provide you with that would not have been available otherwise?

Appendix B: Letter of Support

July 23, 2004
Human Subjects Committee at CSU
Colorado State University,
Fort Collins, CO 80523

RE: Colorado ProStart Program Evaluation

Dear Committee Members,

My name is Mary Mino, president of the Colorado Restaurant Association Education Fund (CRAEF) and Colorado ProStart Program Director. I am pleased to submit the following letter in support of Deena Koessl and her proposed doctoral thesis, a program evaluation for Colorado ProStart, a high school foodservice management and hospitality CTE Program. Ms Koessl's findings will be important to Colorado ProStart's future survival in an educational climate that is moving Colorado students to take more core academic courses and provides less opportunity for students to take career and technical education electives.

Ms. Koessl approached me about working directly with CRAEF on a Colorado ProStart evaluation for her doctoral thesis. Given the seriousness of Colorado's state funding and the ever-changing college admission core academic requirements as defined by CCHE (Colorado Commission for Higher Education), the CRAEF board felt it was necessary to pursue a Colorado ProStart program evaluation. CRAEF has negotiated with Ms. Koessl to complete the evaluation by December 2004.

The CRAEF will provide Ms. Koessl with access to data from the students and schools being evaluated. As such, student phone numbers and other information owned by the CRAEF (i.e. demographics, exam scores) will be provided to her as part of the data collection process.

All of Ms. Koessl's findings will be reported in aggregate form; specific names will not be attached to the data. Confidentiality will be protected and individual responses to interview questions will be known only to Ms. Koessl and the head of her committee, Dr. Leonard Albright.

In sum, the CRAEF is familiar with and understands the scope of this project, the individuals involved will be adequately protected as human research subjects, and the subjects' participation is completely voluntary.

Sincerely,

Mary Mino
President
Colorado Restaurant Association Education Fund

Appendix C: Recruitment Letter

August 20, 2004

Dear ProStart Alumnus:

The Colorado Restaurant Association Education Fund (CRAEF) is extending the opportunity for you to contribute to the betterment of the ProStart school-to-work program in which you were involved.

The CRAEF has contracted with Colorado State University (CSU) to perform an independent evaluation of the outcomes of the ProStart program. A doctoral student, Deena Koessl, from CSU will be contacting you via telephone and asking you to participate in a brief phone interview. If you agree, she will be asking you questions about your current employment and education status along with your opinions about the program itself. Your participation in this study is completely voluntary and, if you choose to participate, you may end the interview at any time.

The CRAEF feels the results of this study will help improve the program for future students and establish better connections/relationships with outside agencies, employers, post-secondary institutions.

We sincerely appreciate your help in making ProStart a better program for future students.

Mary Mino
President
Colorado Restaurant Association Education Fund

Appendix D: Phone Script/Oral Consent

PHONE SCRIPT/ORAL CONSENT

Researcher: Hello, my name is Deena Koessler, and I'm calling from Colorado State University on behalf of the Colorado Restaurant Association Education Fund. The purpose of my call is to ask if you would be willing to participate in a brief telephone interview regarding an evaluation of the ProStart program in which you were involved in high school. You were sent a letter from Mary Mino from the CRA regarding this research. There are 28 questions, and the interview should take approximately 20 minutes. Are you willing to participate?

Student: "No" (Researcher to say, "Thank you for your time.")

Student: "Yes" (proceed with consent)

First, I will briefly discuss the risks, benefits, and who to contact if you have questions.

Risks: There are no known risks to you and we will make every effort to prevent any loss of your privacy or confidentiality which will be protected by separating and destroying your name and address from the answers you give to the questions.

Benefits: Although you will not receive direct benefits from participating in this study, future ProStart students may benefit from your participation.

Your participation in this study is completely voluntary and you may end the interview at any time during our conversation. Please contact me, Deena Koessler, at 970-686-0656 if you have any questions about this research. Questions about participant rights can be directed to Celia Walker at 970-491-1563.

Researcher: There are three purposes for this research. First, the CRAEF is interested in your education and employment outcomes. I will be asking you questions about your current employment and education status along with your opinions about the program itself. Second, the CRAEF feels the results of this study will help improve the program for future students and establish better connections/relationships with outside agencies, employers, post-secondary institutions. Third, this research is also being done as my dissertation study as part of the doctoral program in education at Colorado State University.

Are you ready to begin? (If yes, proceed with interview protocol)

Appendix E: Human Subjects Protocol Information

PART C: PROTOCOL INFORMATION-THE PROSTART SCHOOL-TO-WORK
PROGRAM

Objectives- The researcher has been hired by the Colorado Restaurant Association (CRA) to do a follow-up evaluation of a school-to-work program. The research problem is to investigate if there are specific program or student characteristics that are predictors of post-secondary achievement as indicated by students staying in the hospitality industry, either through work or post-secondary education, after graduation from the program. It should be noted that these students do not work for the CRA or Mary Mino (President of the Colorado Restaurant Association Education Fund) after graduating from ProStart.

Source of participant population-The researcher will use the pool of high school students who participated in ProStart and graduated from one of 30 Colorado high schools in 2003.

Number of participants-There will be up to 150 participants.

Characteristics of participants- The participants will be ProStart graduates from Colorado (and also graduated from high school in 2003) who have current telephone contact information with the CRA; those for whom the CRA has complete information (see #12) will be contacted first.

Recruitment procedures-The students will be sent a letter from the CRA (Appendix C) stating that they have been selected to participate in a follow-up study related to ProStart outcomes. Following the recruitment letter, the co-PI will contact the students using telephone information from the CRA. The co-PI will keep a dated written record of oral consent (Appendix D) for each person stating whether they agreed to participate or not; these forms will be kept in locked storage in the PI's office (Room 242, Education Building) after completion of the study.

Recruiting materials-See Appendix C and Appendix D.

Criteria for excluding participants-Participants will be excluded if they do not give oral consent to continue the telephone interview, hang up, or do not complete the entire interview.

Rationale for using “at risk” populations-NA

Original letters of HRC agreement/approval-See Appendix B.

Other matters-NA

Specify location of study-The telephone calls will be made from the home of the co-PI using a calling card supplied by the CRA.

Variables to be studied-Students will be asked questions about the following variables: Competitions (refers to whether the student participated in at least one culinary competition during his/her program); level of student engagement (the self-reported level of engagement in the program by the student); mentored internship (refers to whether the student completed 400 hours of work experience); Year 1 (refers to whether the student completed the first year of the program); Year 2 (refers to whether the student completed the second year of the program); course schedule (refers to the type of schedule in which the student participated during their ProStart course work); level of ProStart employer support (indicates the student’s perceived level of support by employer during ProStart); level of ProStart instructor/program support (indicates the student’s perceived level of support by instructor and other school personnel); financial support (the amount of money a student received in scholarships to post-secondary institutions as a result of his/her performance in ProStart); national certificate (refers to whether or not the student received this certificate based on successful completion of both the academic and work

experience components of the program); college GPA (refers to the person's grade point average after one year of college); post-secondary education placement (refers to the matriculation of students into post-secondary institutions in the hospitality field after completion of the program); and post-secondary job placement (refers to the matriculation of students into post-secondary job placements in the hospitality field after completion of the program).

The CRA will provide information regarding the following variables: ProStart final exam scores (refers to whether the student passed the final exit exam, which represents core knowledge of food service skills, with 70% or better from year 1 and year 2); workplace competency checklist completion (refers to whether the student completed all items on a checklist as determined by his/her employer while in ProStart); gender; and high school attended.

Describe method of data collection-Data will be collected via a telephone interview (Appendix A) and student records from the CRA.

Describe activities involving participants-Participants will be asked to participate in a telephone interview (Appendix A); the estimated time for the interview is 20 minutes.

Describe equipment used-NA

Specify what factors will lead to stopping procedures- Although there are not anticipated procedures that would lead to either physical or emotional stress, a person may end his/her participation at any time during the study.

Describe biological samples-NA

Provide de-briefing methods-NA

Other aspects-NA

Describe potential risks-There are no known risks to the participants. In addition, the researcher will make every effort to prevent any loss of privacy or confidentiality which will be protected by separating and/or destroying names and personal information from the interview protocol (Appendix A).

Describe methods for minimizing risks-All student data will be collected from the CRA in the form of an electronic database in advance of contacting the participants. A hard copy of the database will be printed and each individual's information, with his/her corresponding data, will be cut into paper strips. Starting with those who have complete information, students will be contacted via telephone. Once the participant has been contacted, the strip of paper will be stapled to the interview protocol and the name and contact information will be blacked out. In addition, data will be reported aggregately and will be kept in locked storage in the PI's office after completion of the study.

Describe other methods that were considered-A mailed questionnaire was also considered, but the CRA does not have current addresses for the students, only telephone numbers. It was also felt that participation in the study would be higher if the contact was more personal, thus telephone interviews were selected.

Other matters relative to risks-NA

Describe the direct benefits-There are no direct benefit to the students, however, they may obtain insight from taking part in the interview.

Describe the benefits accruing to class of participants- Future students in the ProStart program may benefit by way of program improvement.

Describe the benefits accruing to society at large-Same as above

Other aspects of benefits-NA

Describe how potential participants will be informed-Informed consent will be obtained over the telephone as part of the script (Appendix D).

Attach consent-See Appendix D.

Other aspects of consent-NA

Describe method used to protect identity-As described above, participant names will be blacked out once they are contacted; data will be reported aggregately.

Describe plans form maintaining data after completion-Data will be destroyed and/or kept in locked storage by the PI upon completion of project for the required amount of time.

Describe how federal requirement will be met for consent forms-There will be no written consent, but dated written records of oral consent will be kept in locked storage by the PI upon completion of project for the required amount of time.

If audio or video taping, specify tape storage, use and when disposition-NA

Other aspects of confidentiality-NA

Appendix F: SPSS Codebook

File Information

List of variables on the working file

Name (Position) Label

hschool (1) high school attended
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	Arvada West
2	Battle Mtn
3	Bear Creek
4	Boulder
5	Broomfield
6	Central
7	Columbine
8	Coronado
9	Dakota Ridge
10	Douglas County
11	Durango
12	Fountain/Ft. Carson
13	Fruita/Monument
14	Ft. Collins
15	Grand Junction
16	Grandview
17	Green Mtn
18	Jefferson
19	JFK
20	Montrose/Olathe
21	Palmer
22	SandCreek
23	Smoky Hill
24	Standley Lake
25	Summit
26	Thornton
27	Wasson
28	West
29	Wheat Ridge

gender (2) gender
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	male
1	female

ex1 (3) ps exam 1
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	lowest score
100	highest score

ex2 (4) ps exam 2
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	lowest score
100	highest score

wcc (5) workplace checklist
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	not completed
1	completed

natlcert (6) national certificate
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	not received
1	received

year1 (7) completed year one
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	not completed
1	completed

year2 (8) completed year two
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	not completed
1	completed

intern (9) completed internship
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	not completed
1	completed

comp (10) competitions
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	not completed
1	completed

sched (11) high school schedule
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	traditional
2	block
3	modified block
4	trimester

ss\$ (12) scholarship money
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	no
1	yes

college (13) attending college
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	no
1	yes

typecoll (14) type of college
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	four year
2	2-year college
3	culinary institute
4	other training program

major (15) major
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	culinary arts
2	hotel/restaurant
3	culinary arts/hotel/restaurant
4	business
5	business/culinary arts or hotel restaurant
6	other
7	undecided

gpa (16) grade point average
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8.2
Write Format: F8.2

Value	Label
.00	all f's
4.00	all a's

plancoll (17) plan to attend college
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	no
1	yes

plantype (18) type of college plan to attend
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	four year
2	2-year college
3	JW or Art Institute
4	other training program
5	undecided

planmjr (19) planned major
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	culinary arts
2	hotel/restaurant area
3	culinary arts/hotel/restaurant
4	business
5	business/culinary arts or hotel/restaurant
6	other
7	undecided

employ (20) employed
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	no
1	yes

ptftemploy (21) part-time/full-time
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	part-time
1	full-time

industry (22) employed in industry
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	no
1	yes

seekemp (23) seeking employment
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	no
1	yes
2	undecided

seekindust (24) ue seeking industry work
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	no
1	yes
2	undecided

psinstr (25) instructor support
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	strongly disagree
5	strongly agree

psstaff (26) staff support
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8.1
Write Format: F8.1

Value	Label
1.0	strongly disagree
5.0	strongly agree

pscurr (27) curriculum helpful
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	strongly disagree
5	strongly agree

empgoals (28) employer support goals
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	strongly disagree
5	strongly agree

empvalue (29) employer value work
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	strongly disagree
5	strongly agree

emlearn (30) employer good learning opp
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	strongly disagree
5	strongly agree

stuengage (31) student engagement
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	strongly disagree
5	strongly agree

psedu (32) pursue more education
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
1	strongly disagree
5	strongly agree

psindust (33) pursue industry career
Measurement Level: Scale
Column Width: 8 Alignment: Right
Print Format: F8.1
Write Format: F8.1

Value	Label
1.0	strongly disagree
5.0	strongly agree

indmajor (34) industry-related major
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8.2
Write Format: F8.2

Value	Label
1.00	industry related
2.00	business
3.00	other/undecided

postmjr (35) ind/planned ind mjr
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	no
1	yes

postjob (36) ind/planned ind work
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	no
1	yes
2	undecided

qualla (37) program impression
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	unfavorable
1	neutral
2	favorable

qual1b (38) program impression
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	unfavorable
1	neutral
2	favorable

qual2a (39) effect college/career
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	changed mind-uf
1	neutral
2	changed mind-f
3	definitely made decide

qual2b (40) effect college/career
Measurement Level: Nominal
Column Width: 8 Alignment: Right
Print Format: F8
Write Format: F8

Value	Label
0	changed mind-uf
1	neutral
2	changed mind-f
3	definitely decide to go

