

Measuring the Value-Added of the CHOICE Institutes

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Executive Summary

Quality educational outcomes have always been important for parents, students, employers and educators. High wage jobs call both for good traditional skills, including mathematical and verbal development, and, increasingly for specialized and industry-specific skills. Young people that obtain excellent training during their high school career may be able to enter the workforce more rapidly and at a higher wage rate than many of their peers. The Okaloosa County School District has made a concerted effort over the last several years to increase the relevance and usefulness of programs targeted at specific skill training. The centerpiece of this effort is the CHOICE Institute program, which provides skills training and industry-recognized certifications in an environment designed to overcome some of the traditional shortcomings of vocational education.

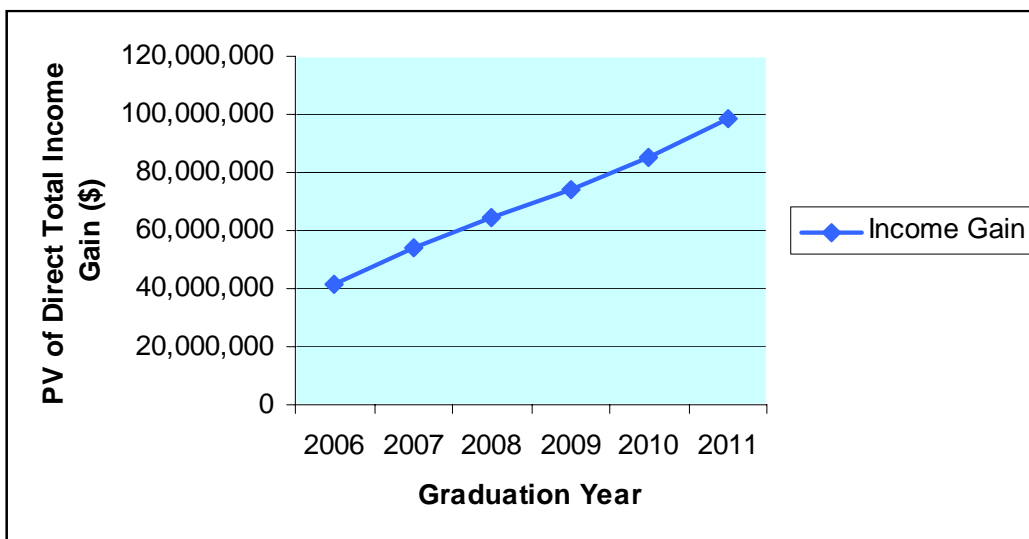
The Haas Center for Business Research was asked by the Okaloosa County School District to provide an assessment of the value that is added by the presence of the CHOICE program. Haas Center research staff collected information from Okaloosa District staff, employers and families, and gathered data from existing studies around the county in order to calculate value-added for students, parents, employers, and taxpayers. The objective of the research report is to assess the specific dollar value of the CHOICE Institute program across these groups and to provide calculations of the CHOICE program's impact on the regional economy. These values are reported below.

The first component of value-added is measured as income gains. The major findings are:

- The average CHOICE graduate is expected to have an additional \$298,915 in earned income across his or her working life, relative to the average high school graduate.
- The future income gain is worth \$128,930 when reduced to present money value terms.
- When additional "unearned" income (e.g., income flowing from investments) and additional retirement income are considered along with wage gains, the average CHOICE graduate is expected to have additional income of \$373,375 across his or her lifetime, relative to the average high school graduate.
- When reduced to present money value terms, this equates to an additional \$164,864.
- Aggregating across the actual number of CHOICE graduates in 2006, the present money value of the lifetime income gain is \$41.6 million.
- The annual regional impact of increased income due to the CHOICE program is \$46.2 million.

The present value of lifetime income gains for each school year is expected to rise in line with the growing number of students graduating from CHOICE. Figure ES1 provides a forecast of the present value of direct total lifetime income gains over the next five school years based on anticipated graduation rates.

Figure ES1 – Present Value of Direct Total Income Gains by School Year



An additional measure of the program’s value can be seen in student academic attainment. Statistical analysis of Okaloosa School student data across all high school students reveals that:

- There is a statistically significant positive correlation between participation in the CHOICE program and reading achievement level FCAT testing. After controlling for other socio-demographic factors, CHOICE students test higher for reading achievement levels than their high school counterparts.
- The data suggest that CHOICE students score higher in math achievement level FCAT testing, all else being equal, although the statistical evidence for this relationship is not as strong as the positive reading attainment.

We do not impute a specific dollar value to these FCAT attainment outcomes, because we do not know whether the CHOICE program creates value by enabling higher attainment, or whether higher attaining students choose to enroll in the CHOICE program. However, it is clearly an indication of the success of the program in attracting and retaining talented students.

Measuring the value-added of an educational program requires the consideration of a number of factors. This report provides a background to the relevant issues through a comprehensive literature review of related research before developing economic models that quantify the value-added of the CHOICE program.

Throughout the report a CHOICE student is defined as any student that graduates high school having received one of the CHOICE industry-recognized certifications.

The report also outlines the current and anticipated requirement for more skilled workers in the information technology, health care, construction, and aviation sectors due to the changing structure of the regional economy. Finally, the report discusses other value-added components of the CHOICE program, such as soft skills, high school drop out rates etc. and summarizes the findings of three conducted focus groups to augment the analysis.

Introduction

The goal of the report is to measure the value-added of the CHOICE program on participating students and the regional economy. We begin with an overview of the regional economy and a forecast of expected job growth in its critical sectors. The report then discusses the many facets of value-added and where appropriate, develops economic models to quantify the value-added of the program. Data for the analysis is collected from a number of student-specific, regional, state, and national data sources.

The analysis of the region's current and expected occupation growth serves to emphasize the value of effective vocational and technical training programs in an economic environment characterized by low unemployment and fast population growth. Relative to traditional stand-alone vocational education programs, CHOICE has the potential to attract new student enrollment to labor market training programs because it recognizes the enrollment decision factors that are critical for students and their families. Once students are enrolled either in a CHOICE institute or an affiliated certification program, the County is that much closer to educating and training students with the requisite skills to meet regional employment growth needs. The success of the program has been such that new state-level initiatives have been introduced and funded using the CHOICE program as an educational model to be replicated. The new Florida CHOICE program is designed to train students to fill high-wage, high-skill jobs in the adopting counties' critical industries

The report also discusses the Workforce Innovation in Regional Economic Development (WIRED) Initiative, announced in February, 2006, as a major component of President Bush's Competitiveness Agenda. The WIRED Initiative was set up to encourage regions to implement ground-breaking strategies that will result in their workforce investment system becoming a key component of the area's economic development strategy. Through a competitive grant process, the Employment and Training Administration of the U. S. Department of Labor, has made a commitment to invest \$195 million in thirteen regional economies. Florida's Great Northwest submitted one of the winning proposals and has the CHOICE Institute program as a workforce partner. The WIRED Initiative is empowering regions to implement ground-breaking strategies that will result in their workforce investment system becoming a key component of the area's economic development strategy. In August, 2006, Florida's Great Northwest announced its request for proposals for Secondary Education Career Academy Creation grants for the 2007 WIRED Northwest Florida Initiative funding cycle.

The overall purpose of the WIRED Northwest Florida Initiative is to create high-wage, high-skill jobs in target industries. The purpose of the WIRED Northwest Florida Secondary Education Career Academy Grant Program is to provide assistance to projects that promote the development of career skills training or accelerate math and science training at the secondary education level. The career skills training academies

are to be modeled after the CHOICE Institute due to its success in training students in the high-skill, high-wage occupations that are related to entry level employment in key regional targeted industries.

As a model of performance, CHOICE also reveals financial self-sustainability after an initial two-year launch period. Academies following the CHOICE model face a commitment to a start-up period incurring financial losses for a minimum of two years, followed by self sustainability in the third year of operation and beyond. An analysis from Okaloosa School District officials reveals that the five CHOICE Academies (Aviation, Creative Arts, Information Technology, Engineering, and Construction) that have been established for over two years all command a self-sustaining profit that will be re-invested into the academies for future growth. For example, the Information Technology Institute reported annual revenues of \$597,491 compared with a cost estimate of \$510,643, providing an estimated annual profit of \$86,848. Okaloosa School District officials have calculated the net profit to all four academies and results can be presented in the appendix if provided.

Region of Study

This section provides descriptive statistics for Okaloosa County, the state of Florida, and the nation. A demographic breakdown is also provided together with a comparison of educational attainment and workforce-related statistics.

Demographic Statistics

Okaloosa County has a population of over 177,000 residents earning a median household income of \$50,899 (in 2005 dollars). This compares favorably to the state median level of \$42,433 and the national median level of \$46,242. The latest Bureau of Economic Analysis personal income estimates¹ also reveal strong growth in the region's personal income compared to the national average. The estimates show declining personal income growth in 2005 compared to 2004 across the nation. On average, personal income grew 5.0 percent in 2005, a decline from 6.0 percent growth in 2004 and per capita income grew at 4.0 percent in 2005, down from 4.9 percent in 2004. The slowdown in personal income is evident in three-quarters of Metropolitan Statistical Areas (MSAs) in the U.S; however, estimates for the Fort Walton Beach-Crestview-Destin MSA show strong personal income growth at 6.5 percent between 2004 and 2005, as well as an impressive per capita personal income growth at 5.7 percent over the same period.

¹ September 6th, 2006 <<http://bea.gov/bea/rels.htm>>

Table 1 - County Descriptive Statistics

Descriptor	Okaloosa County	State	U.S.
Total population	177,284	17,382,511	288,378,137
Male (percent)	50.0%	48.7%	49.0%
Female (percent)	50.0%	51.3%	51.0%
White population (percent)	84.0%	76.8%	74.7%
Black population (percent)	9.0%	15.0%	12.1%
Median household income (\$2005)	\$50,899	\$42,433	\$46,242
Owner-occupied housing units* (percent)	66.4%	70.1%	66.2%
Renter-occupied housing units* (percent)	33.6%	29.9%	33.8%
Individuals below poverty level (percent)	9.9%	12.8%	13.3%

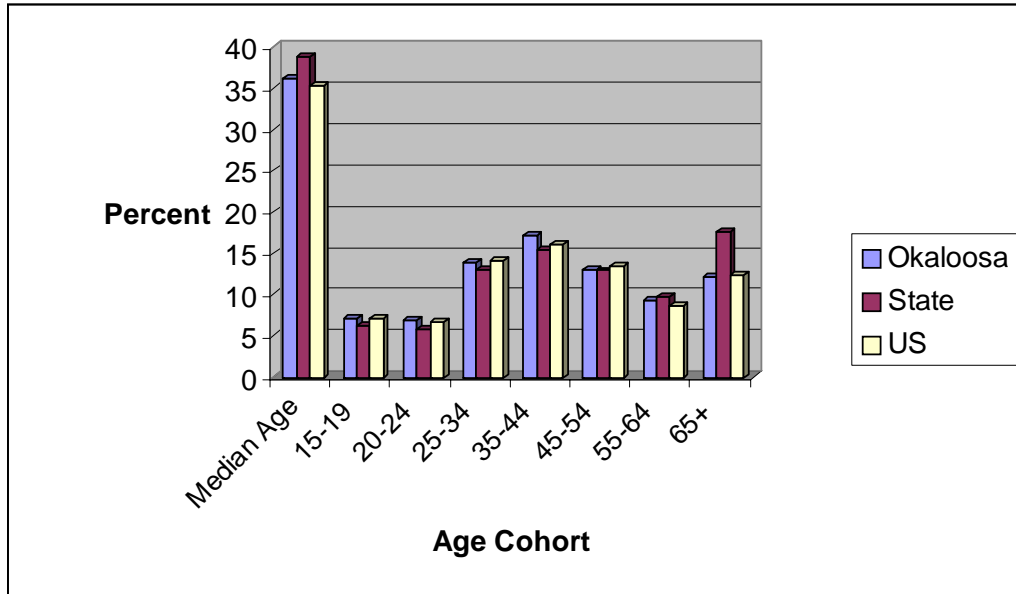
Source: U.S. Census Bureau, Fact Sheet, 2005

* Figures derived from 2000 Fact Sheet

Table 1 also shows that Okaloosa has a lower percentage of individuals below the poverty line than both the state and the national average, while the percent of owner-occupied housing units is marginally more in the county compared to the national average but less than the state average.

Figure 1 reveals that the median age of the county's residents (36.1 years) is below the state average (38.7 years) but above the national average (35.3 years). A further breakdown of the county population reveals a relatively younger workforce than the state and national average.

Figure 1 - Age Demographics



Source: US Census

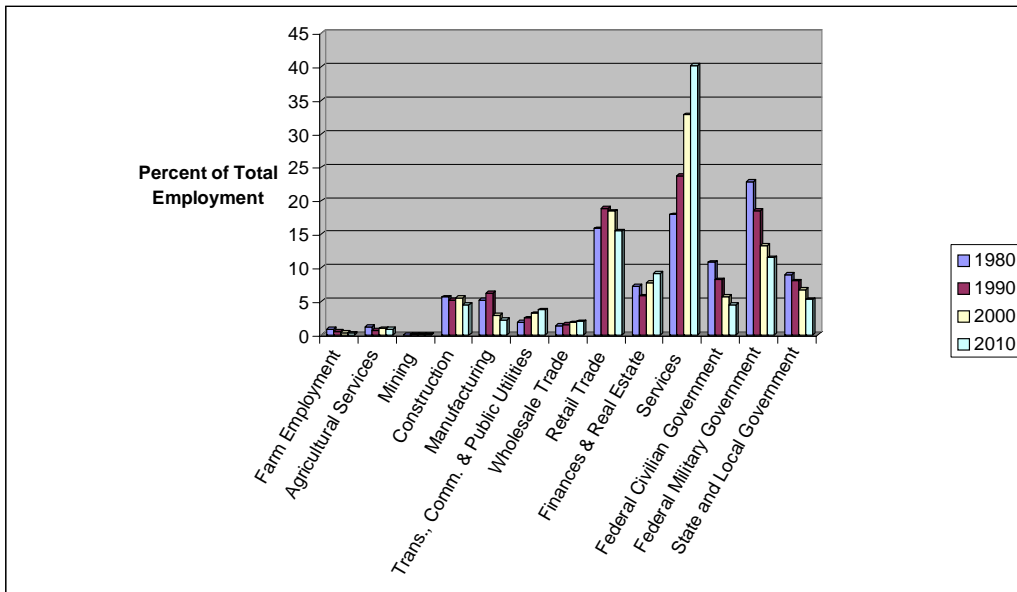
Figure 1 shows that the county has a larger share of its population in the 20 to 35 age cohort relative to the state and national levels, and a smaller share of the population approaching or at retirement age. Therefore, a greater proportion of the county's population is at working age than the state and national average. As expected, the state has a larger proportion of retirees than the national average, although it is anticipated that the proportion of retirees in the Panhandle region will rise over the coming years, enticed by the affordable lifestyle and pleasant year-round climate.

Employment-related Statistics

Figure 2 considers the trend in county-level employment through the growth in the services sector over the last two decades. Growth in regional employment in recent years has been primarily driven by tourism. The services sector (including hotels and accommodations and other tourist-related industries) has grown as a percentage of the county's total workforce, over the 30-year period. It is anticipated that by 2010, 40 percent of the county's employment will consist of service sector employment. Again, driven by tourism, retail trade remains an important driver of economic activity, and although the federal military share of total employment has declined, the presence of Eglin Air Force Base, Hulbert Field, and Duke Field still provides significant county-level employment. Military staffing will likely grow in the coming years due to the BRAC 2005 realignment of more than 4,000 military personnel into the region. However, the existing high-wage average

profile of the military may change somewhat due to the increased share of the 7th Special Forces in the overall presence.

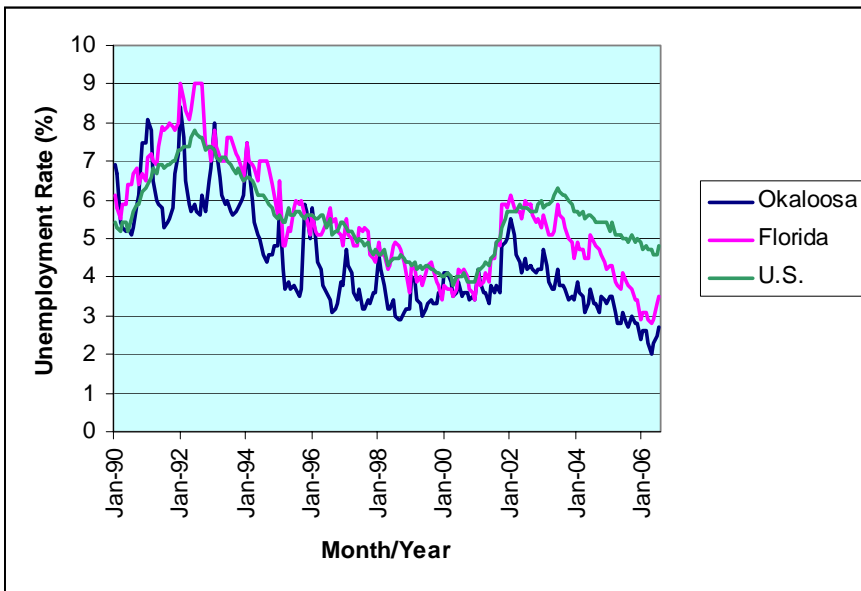
Figure 2 - Employment Trend by Sector



Source: Woods and Poole

Okaloosa County is known as a low unemployment, high participation labor market. Figure 3 shows the trend in the unemployment rate from 1990 to 2006. The figure shows that the general trend over the last 15 years, that Okaloosa County boasts an unemployment rate below the state and national average.

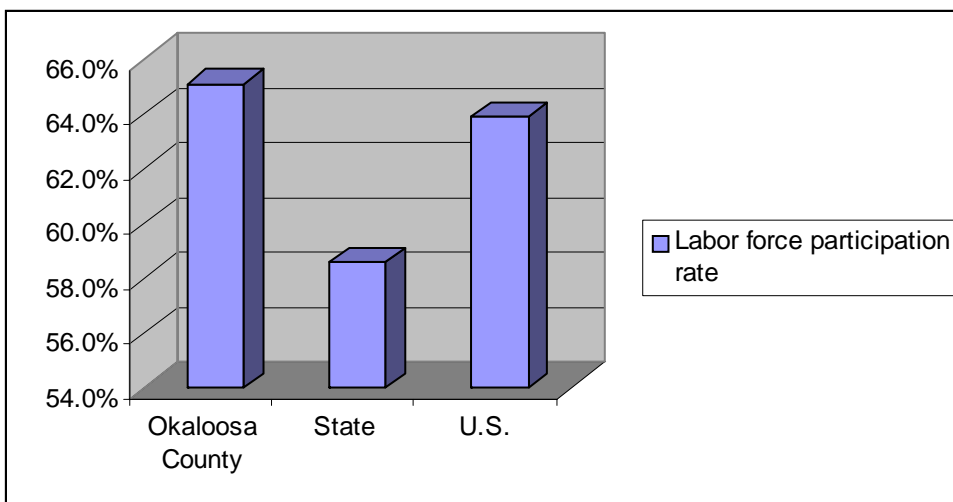
Figure 3 - Unemployment Rate (Percentage) – 1990-2006



Source: Economagic

The county's labor force participation rate (percent of the working population in the labor force) is traditionally higher than the state or national average. It measures the participating portion of the economy's labor force and is important in determining the number of individuals who are willing to work, are working, or are actively seeking work. Those that are not interested in working are not included in the calculation.

Figure 4 - Labor Force Participation Rate



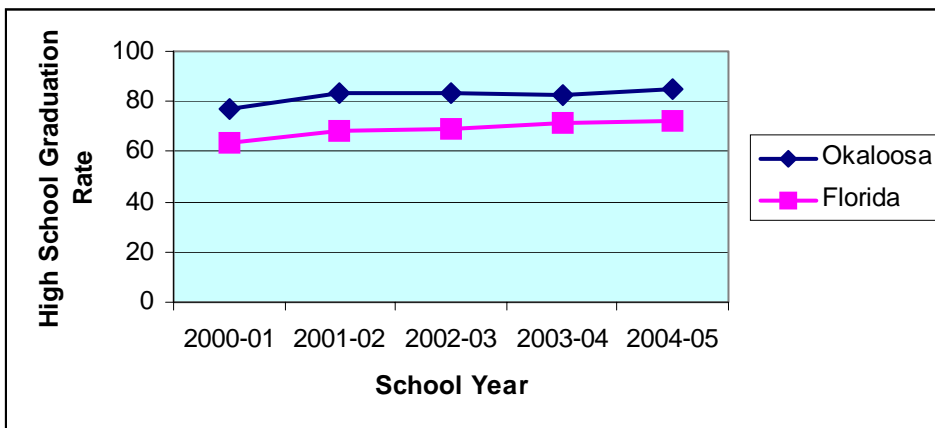
Source: US Census

Figure 4 shows that the county's current labor force participation rate of 65.1 percent is greater than the national rate of 63.9 percent, and the state average of 58.6 percent. Labor force participation rate differences can exist due to a number of factors; for example, demographic reasons such as differences among age cohorts. Younger and older population cohorts tend to have the lowest participation rates. Also, education level differences are important. Participation rates increase as education increases. For example, the participation rate for those not completing high school is approximately 60 percent, compared to 90 percent for those with a bachelor's degree.

Education-related Statistics

Okaloosa County schools rank among the best in the state in terms of academic achievement of students. Figure 5 shows the high school graduation rates for Okaloosa County compared to the state average over the past five school years².

Figure 5 - High School Graduation Rate – 2001-2005



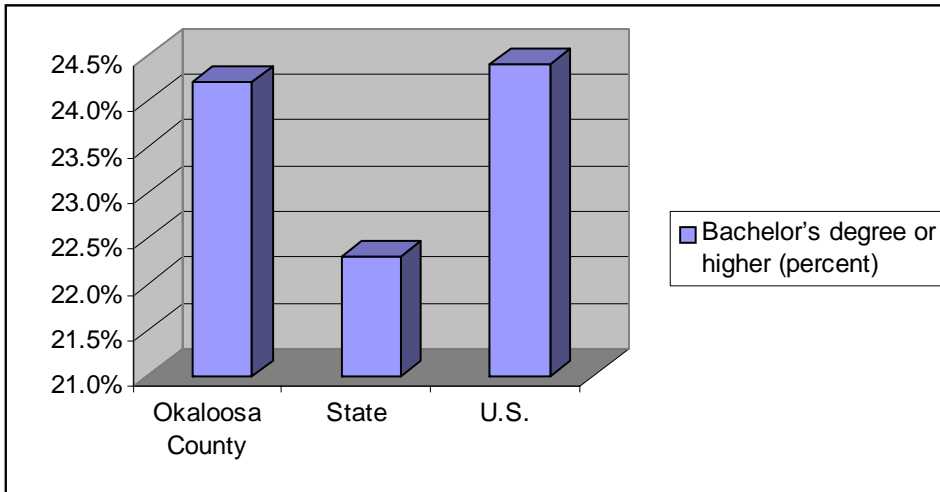
Source: Florida Department of Education

Figure 5 reveals a marginal increase year-on-year for both the county and the state, yet the county high school graduation rate consistently remains above the state average with the 2004-2005 county rate at 85.2 percent compared to the state average of 71.9 percent.

For post-secondary education, Figure 6 reveals the proportion of the population earning a bachelor's degree. While the percentage of the county population going into post-secondary education and earning a bachelor's degree (24.2 percent) is well in-line with the national average (24.4 percent), it is above of the state average of 22.3 percent.

² Figures for 2005-2006 are not available

Figure 6 - Percent of Over-25 Population with Bachelor's Degree



Source: US Census

Background

This section begins with a history of the evolution of vocational education in the United States, leading to a current description of vocational education in Florida. The report then provides an overview of the CHOICE Institutes, their structure, and the certifications provided. Finally, a discussion of the projected increase in occupational demand and the changing demographics of the region's critical workforce sectors are provided to identify the sectors that require the focus of local policymakers and educational programs to address anticipated workforce gaps.

History of Vocational Education in the United States

The historical development of vocational education within the United States centers on a number of Acts of Congress over the last century designed to provide students with academic and occupational skills required by industry at that moment in time. In essence, the direction of vocational educational programs has reacted to the changing needs of the economy, and as a result, the focus of legislation that began by concentrating on poorer students and blue-collar professions has shifted dramatically toward preparing all students to be more competitive in a dynamic, technically-challenged, and internationally-based working environment. The following section provides a brief breakdown of the key Acts of legislation that shaped vocational education programs, past and present.

From 1862 (Morrill Act) through 1914 (Smith-Lever Act), Congress passed a series of Acts that provided support for both agricultural and home economics extension programs, thereby democratizing and subsidizing education (Roberts, 1957). The Smith-Hughes Act (1917) created vocational education as an option for lower-class students to provide them with better skills relative to a general high school education that was structured toward middle or higher-level classes of students, and typically did not prepare working class students with an education that was transferable toward a professional career. The earliest vocational training programs were therefore geared toward providing blue-collar workers and immigrants with the practical skills required on farms, in factories, or at home. The Federal Board for Vocational Education was unconnected to regular education boards and attempted to provide a nontraditional learning environment for vocational education students prepare them for more traditional working class professions of farm and factory laborers or home-makers. To this end, the Federal Board imposed the 50-25-25 rule that directed student's time to be stratified by 50 percent of their time to be spent in shop work, 25 percent in closely related subjects, and a further 25 percent in academic learning (Haywood and Benson, 1993).

During this period, vocational education curriculums focused on preparing students with specific industrial or job-specific skills with scant regard to theoretical content. Over the next few decades, changing economic forces shifted the focus of federal legislation. For example, the Great Depression of the 1930s led legislators to recommend that states focus on reducing unemployment problems; then in the 1940s the focus shifted to

assisting the war effort; and in the 1950s and 1960s the focus shifted to peacetime economic development. As a consequence, separate teacher certifications and training programs were created to expand vocational education to more fields, such as business education, health occupations, technical education, and industrial arts, all of which remained under the auspices of separate state boards and administrators. As the development and direction of vocational education remained under the control of state practitioners of the federal government, vocational educational programs did not come under the same scrutiny as traditional education programs.

In the 1960s, the federal government passed the Vocational Education Act (1963) to provide a greater influence over state plans in order to promote vocation education programs for disabled or socioeconomic-disadvantaged students from poorer communities that may otherwise have been precluded from regular vocational education programs. This was followed by the Carl D. Perkins Vocational Education and Applied Technology Act (1984) that sought to improve vocational education programs and increase access to the programs for special-needs students. As a result, this had the counter-balancing impact of increasing enrollment in vocational education programs throughout the 1980s and early 1990s from special-needs students but also decreasing enrollment from general student groups who substituted away from vocational education toward more traditional academics.

Two subsequent amendments to the Carl D. Perkins Vocational Education and Applied Technology Act (1984) concentrated on school reform to improve student performance and achievement as well as direct vocational education to all students. Perkins II (1990) concentrated resources on improving programs that are geared toward improving the academic and occupational skills required in a more technologically advanced society. This shift in emphasis was also geared toward all segments of the population. Perkins III (1998) continues this approach but asks states to provide data on four indicators of performance:

1. Attainment of academic and vocational/technical proficiencies
2. Attainment of a secondary degree of General Educational Development certificate, proficiency credential in conjunction with a secondary diploma, and a postsecondary degree or credential
3. Placement in, retention in, and completion of postsecondary education or advanced training, placement in military service, or placement or retention in employment
4. Participation in and completion of programs that lead to nontraditional training and employment

As a result of the Carl D. Perkins Vocational Education and Applied Technology Act (1984) and subsequent amendments, there has been a shift in focus in vocational education programs such as CHOICE. Vocational

educational programs that focused on training lower-class students in low-wage blue-collar professions were no longer appropriate; instead the focus shifted toward providing opportunities for all students to be trained in the high-skill, high-wage professions that are required in a dynamic and technologically advanced society.

According to the National Center for Education Statistics, approximately 11 million people are served by the vocational education system in the U.S. Today's vocational educational programs are offered by over 33,000 public and private institutions (Lynch, 2000), with over 75 percent of all comprehensive high schools offering specialized courses in one or more occupational programs. Approximately 20% of all high school course work is career or technical education-related.

Approximately \$13 billion is spent each year on vocational education across the U.S., with 7 percent coming from the federal government under the Perkins Act, and the remainder from the respective states or local districts.

Florida

In the State of Florida, the provisions of the Perkins Act set forth a requirement that each agency receiving vocational education funds submit a plan for vocational education to the Department of Education, and to meet student performance standards.

The Office of Workforce Education and Division of Community Colleges provide leadership in an ongoing effort to meet or exceed the state's levels of performance. These activities include the identification of high wage/high skill occupations, the development of instructional programs, guidance strategies designed to increase student productivity, and professional development activities for teachers. The focus of these programs is to improve student academic proficiency and to increase vocational competencies and literary skills required to meet the needs of today's workforce or post-secondary education. This is designed to assist students to be more able to compete in an increasingly global society.

Florida developed a career ladder approach to vocational education training programs through implementing the Occupational Completion Points (OCP). OCPs are implemented within training programs and provide credentials for the student at points less than program completion, enabling a student to enter and exit the program without penalty or repetition of competencies. In addition, vocational education programs have a required minimum level of basic skills (math, English, language) which students are required to meet prior to completion of the program.

In Florida, there are currently 363 vocational education programs providing occupational and academic skill attainment from 6th Grade through an Associate in Science Degree. Perkins funds are used to support 67

school districts, 28 community colleges, 10 universities, 2 Indian tribes, correctional institutions, and other institutionalized adults. Programs provide training across a variety of disciplines – such as Agribusiness and Natural Resources, Marketing, Business Technology, Health Sciences, and Public Service Education. Secondary vocational educational programs are also aligned with the Florida Sunshine State Standards allowing students to take an academic route in preparation for entering the workforce or post-secondary education. Post-secondary programs are also aligned with each CHOICE Institute, business, and industry to ensure students are trained in the academic and technical skills that will best prepare them to be successful in the workforce.

The Florida Community College System (FCCS) is also focusing on improving training opportunities by strengthening its relationships with business and industry partners to build program specifications that accurately reflect industry's workforce requirements. The first phase of the strategy focuses on the four areas of silicon technology, information technology, health technology, and aerospace. In conjunction, an industry-driven certification process will be developed to ensure consistency at the institution level with revised curricula, new or updated equipment, and instructor training.

CHOICE Institutes

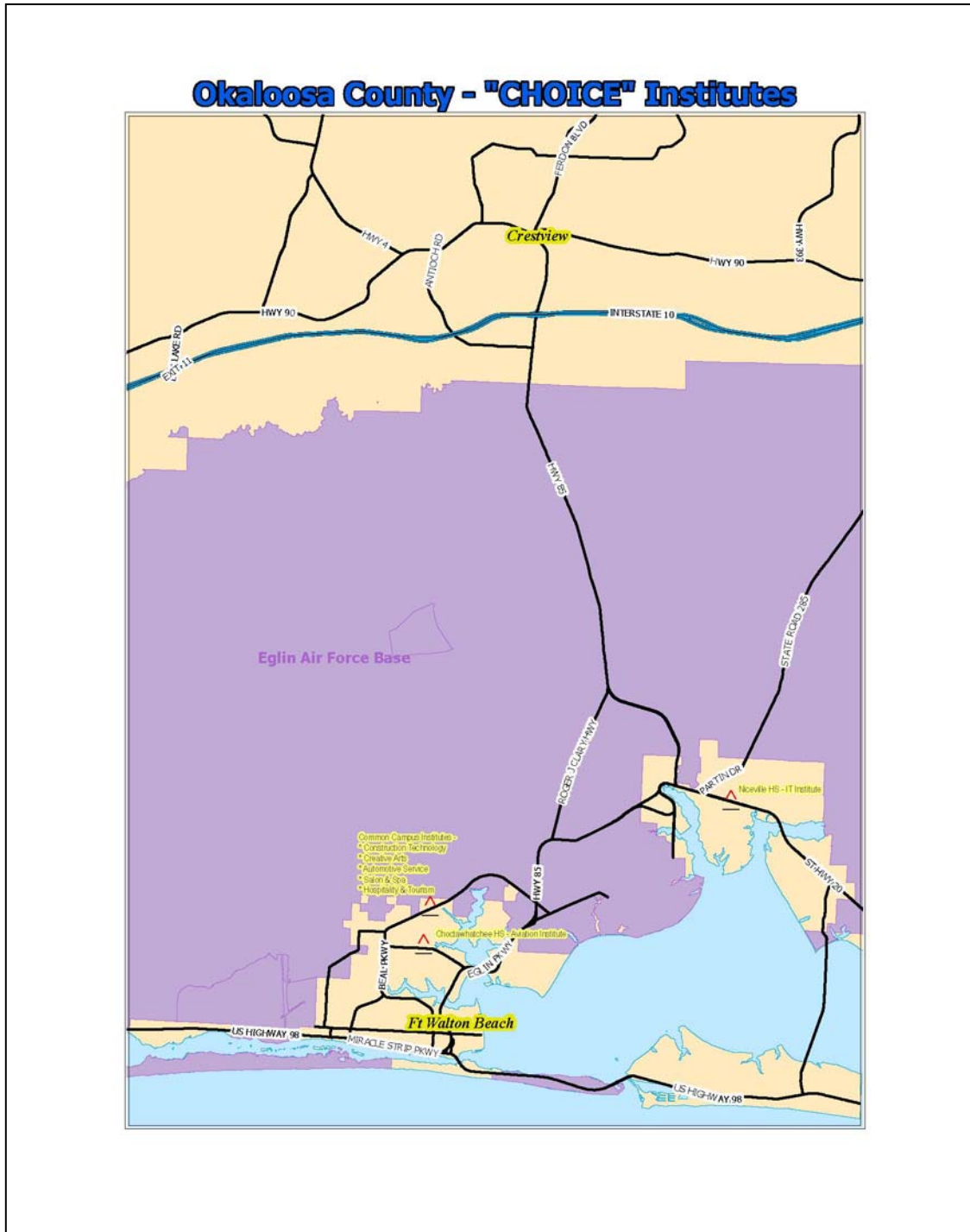
Okaloosa County created an initiative in 2003 called the Community High: Okaloosa Institutes for Career Education (CHOICE). This is a comprehensive plan to meet the Okaloosa County School District career/technical education requirements and overcome obstacles to its success. CHOICE is a secondary education program designed to integrate the best practices in secondary learning, and to provide an effective and efficient model for transitioning Okaloosa students to economic self-sufficiency and active local citizenship. More specifically, CHOICE focuses on students that are not well-served by traditional high schools who might otherwise spend their early working years moving in and out of the low-wage, low-skill jobs.

The CHOICE initiative, developed in the Okaloosa County School District, serves as a model for other state-wide charter schools (Career High-Skill Occupational Initiative for Career Education) that are located at or operated by community colleges in partnership with a local school district in Florida. Currently, CHOICE is replicated through Workforce Florida in ten school districts in Florida, and projected to be replicated in 22 districts by the end of the 2006-2007 school year.

As the name suggests, CHOICE is designed to provide students and their parents with a choice in their academic course expectations and a choice of pathway toward a future career. CHOICE is about career education, not just about jobs, and students have the freedom to choose their preferred pathway in terms of a desired career, postsecondary education, or industry certifications. Each CHOICE Institute provides recommended electives that will lead to the career of choice; yet within the program, students can move between electives if they change their preferred outcome.

The CHOICE program is effective because it provides a learning community where peers, business partners, and instructors become academic advocates, encouraging students to achieve high levels of academic performance. Local industry representatives provide internships, apprenticeships, and cooperative education opportunities, while dedicated instructors encourage student dedication and participation in order to enhance the learning environment. To generate a more productive educational environment, CHOICE Institutes are based on creating small learning communities within existing secondary schools, and combine training and post-secondary opportunities. This has numerous benefits for students. First, research has shown a positive correlation between student satisfaction with their educational experience and variables such as small schools, higher attendance rates, higher grades, and fewer disciplinary actions. Second, creating the institutes in existing high schools has social benefits for students through allowing them to stay at their local high school rather than having to transfer out, leaving peers behind. Also, this reduces transportation costs for students, minimizing lost learning opportunities.

Figure 7 - Map of Institutes



Information Technology Institute

The CHOICE Information Technology (IT) Institute combines a state-of-the-art business curriculum with new and emerging technology. Students can select from a variety of technical electives in the IT Institute; including computer graphics and animation, software programming, technical support services, and networking. All the technical electives are aligned with industry certifications.

A major attraction of the IT Institute for students is the relationship it yields with IT industry representatives, such as Cisco, Oracle, Microsoft, and Macromedia for training. Each of these IT industry leaders sponsors curricula aligned with their specific products and certifications. Once a student successfully completes a particular course curriculum, the student receives an industry-recognized certification in his/her field of interest. A brief overview of the individual academies is provided below:

Cisco Networking Academy

The Cisco Networking Academy Program is a comprehensive e-learning program providing students with Internet technology skills essential in a global economy. The Networking Academy delivers Web-based content, online assessment, student performance tracking, hands-on-labs, instructor training and support, and preparation for industry standard certifications. Initially created to prepare students for the Cisco Certified Network Associate (CCNA) certificate, the Academy curriculum has expanded with partner-sponsored courses including: Fundamentals of Web Design, sponsored by Adobe Systems; IT Essentials: PC Hardware and Software, and IT Essentials: Network Operating Systems, both sponsored by Hewlett-Packard; Fundamentals of Voice and Data Cabling, sponsored by Panduit; and Fundamentals of UNIX and Fundamental of Java, both sponsored by Sun Microsystems.

Academy of Creative Digital Arts

The Academy of Creative Digital Arts concentrates on products offered by Adobe Systems. By focusing on web design and digital media, students are taught essential skills for today's workplace. Adobe Systems are revolutionizing the way the world engages with ideas and information. The Academy of Creative Digital Arts prepares students by focusing on new media and digital imaging, including digital video and sound fundamentals.

Academy of Microsoft Certified Desktop Technicians/Academy of Microsoft Software Development

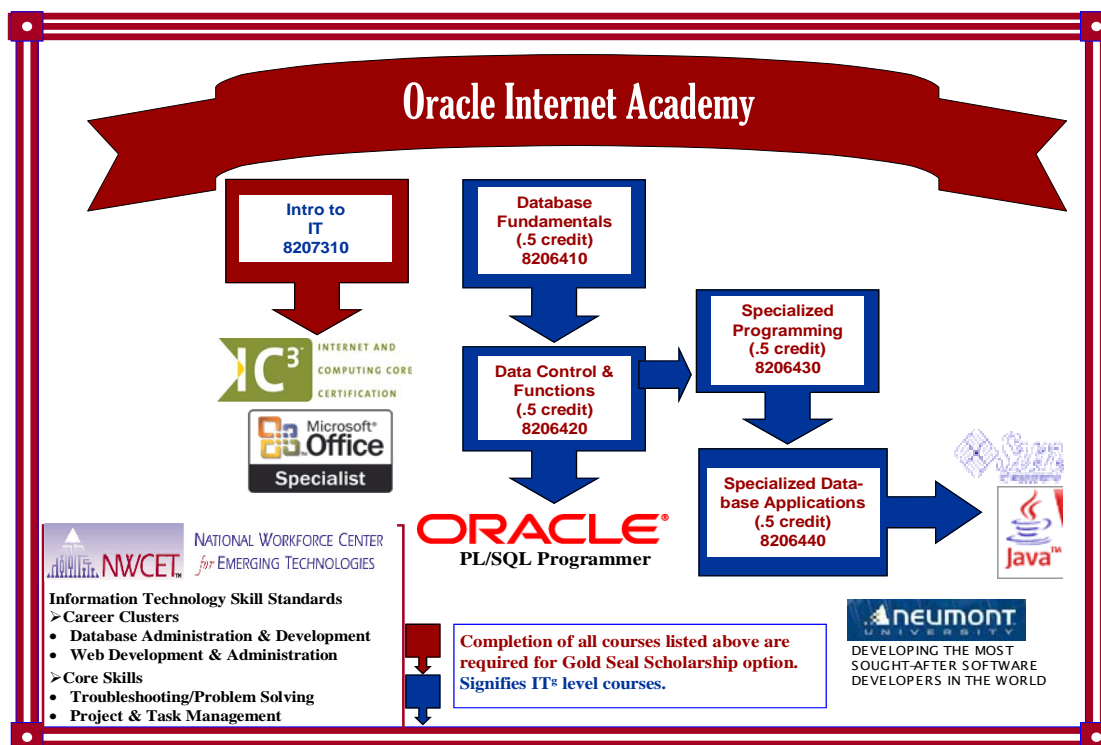
The Academy of Microsoft IT delivers a premium education on cutting-edge Microsoft technologies. The training delivered through the Academy of Microsoft IT prepares students for academic education tracks, rigorous Microsoft certification exams and for career opportunities such as Network Administrators, Technical Support Specialists, Software/Hardware Developers, Design Engineers, and Office Specialists. The

Academy of Microsoft Certified Desktop Technicians focuses on PC Support and Network Administrators, while the Academy of Microsoft Software Development focuses on programming from Programming I to Programming III. Students will be required to pass the Introductions to Programming with Visual Basic and Introduction of Web Development Technologies with a B or better in order to continue in the Microsoft Academy.

Oracle Academy

The Oracle Academy is a two-year commitment offering four courses consisting of lectures by the instructor, hands-on labs, projects, and soft skills (i.e. collaboration, problem solving, interviewing, resume building, and more). These courses provide students with credentials in Data Modeling, Database Programming, and Java. This provides students with an introduction to database structures, and credentials for attendance at Oracle Training. Figure 8 provides a schematic of the course outline and potential certifications in the Oracle Academy.

Figure 8 - Oracle Academy



Macromedia Academy









The Macromedia Academy is a total solution for learning interactive media including software, curriculum, and online training. This program provides instruction leading to exciting careers in multimedia. Students will use the Macromedia Studio MX tools including Dreamweaver MX, Macromedia Flash MX, and Fireworks MX for innovative learning – from building HTML pages to developing rich Internet application. Students will come away from the experience with the new soft skills employers demand – such as project-management, team-building, decision-making, and problem-solving skills, as well as hands-on technology experience.

Achievements in the IT Institute

Figure 9 reveals the current achievement level by industry certification. As an ancillary benefit to the program, CHOICE works with secondary providers of certifications so that those students graduating high school without completing one of the certifications can complete the course.

Figure 9 - Achievements in the IT Institute

Snapshot of student success – Students in the Information Technology Institute were able to obtain the following certifications in the first two years of the institutes existence. Some students earned multiple certifications while many were able to do additional course work to obtain certifications ahead of schedule.

	1		5
	21		1
	108		66
	21		3

Construction Technology Institute

There is a currently a gap between the demand for workers and the supply of workers in the construction sector, both on a national and regional level. The recent tropical storm and hurricane activity experienced along the Gulf Coast has increased the demand for workers in the construction sector at a time when the number of graduating engineers has steadily been on the decline since the 1980s.

The Construction Industry is the second largest industry and represents ten percent of all businesses in our nation today. The Department of Labor projects there will be 1,000,000 high paying new jobs added to the construction industry by the year 2012. The Brookings Institution Metropolitan Policy Program Report (December, 2004), states that "...Nearly half of what will be the built environment in 2030 doesn't exist yet." Unprecedented opportunities for careers in Architecture, Engineering, Construction Project Management, and Construction Trades are available for young people with the right training and credentials.

The Construction Technology Institute was established to provide the training and credentialing that will enable young people to take full advantage of those career opportunities. The Institute is comprised of three academies, (Construction Management Academy, Autodesk Design Academy, and Construction Trades Academy), where students earn high school elective credits, national industry certifications through the National Center for Construction Education and Research and pre-admission college credits at the University of West Florida. In addition, the training programs at the Institute qualify students for Florida Bright Futures Gold Seal Scholarships.

National Center for Construction Education and Research (NCCER)

A decade ago, more than 125 construction CEO's and various association and academic leaders united to revolutionize training for the construction industry. Sharing the common goal of developing a skilled, productive workforce, these companies united to create a standardized training and credentialing program for the industry. NCCER works in partnership with hundreds of leading contractors, manufacturers and national trade associations. NCCER's standardized training process of accreditation, instructor certification, standardized curriculum, national registry, and assessment and certification is a key component in the industry's workforce development efforts.

Autodesk Design Academy

The Autodesk Design Academy (ADA) is a comprehensive pre-engineering and pre-architecture program developed specifically for secondary institutions by experienced educators and technical experts. The curriculum meets national standards and provides materials that help students master the fundamentals of the engineering and architecture process while they learn to use the Autodesk software used by professionals. The program places an emphasis on math, geometry, the physical sciences, and the curriculum focuses on pre-architecture using the following Autodesk software.

- Autodesk Architectural Desktop
- Autodesk VIZ
- Autodesk Inventor Series

Construction Management Academy

The Construction Management is a comprehensive course of instruction incorporating NCCER curriculum in Construction Technology, Management Education and real world experience through Capstone Projects and Work-Based Experience. This program focuses on transferable skills and stresses understanding and demonstration of the technological tools, machines, instruments, materials, processes and systems in construction business and industry. The curriculum meets national standards and successful completion results in National Industry Certifications in preparation for employment as Project Managers, Construction Superintendents, and Field Engineers.

Construction Trades Academy

Enrollment in the Construction Trades Academy represents a commitment to a specific building trade. The NCCER curriculum is modular in structure, with a related cluster of modules comprising a level of certification. The curriculum is specifically designed to teach the skills necessary for successful employment in designated, high demand building trades. At the successful completion of each level the student receives documentation of certification and their name and credentials are submitted to the National Registry for access by members of the construction industry looking for qualified prospective employees.

Occupational Safety and Health Administration (OSHA) Training

In an effort to shift the paradigm of the construction industry to a more safety conscious workforce, the Construction Technology Institute in partnership with Red Rocks Community College, Rocky Mountain Education Center have developed a pilot program for the state of Florida whereby the institutes teachers are trained and certified as OSHA 500 Construction Safety Instructors. This qualifies these instructors to train and award upon successful completion OSHA 10 and 30 hour safety certification to high school students enrolled in CTI training programs. These safety credentials ensure a safer and more marketable employee upon graduation from CTI.

Aerospace Institute

The objective of the Aerospace Institute is to introduce selected high school students to the multi-billion dollar aviation industry, and prepare them for advanced standing matriculation into university-level aviation programs. Graduates can choose to continue their studies by taking an associate's degree in aviation maintenance technology or a bachelor's degree in professional aeronautics and obtain their pilot's license. Other students may choose aviation business administration, aviation computer technology, airport management, or pursue a military career. These options are supported by the Aerospace Institute's Flight School that prepares students for careers as professional pilots, co-pilots, or navigators, or by the Institute's Aviation Academy, that provides the students with a general introduction into the world of aviation.

Industry certification in the Aerospace Institution is provided by the Federal Aviation Administration (FAA). The FAA offers a number of certifications; such as Aircraft Dispatcher, Commercial Pilot, Flight Engineer, Inspector, Mechanic, and Private Pilot.

There are several college and university opportunities available to students. There are also several FAA approved providers of aerospace training leading towards FAA certification. For example, the program's partner, Embry-Riddle Aeronautical University offers an Associate's degree in Airway Space, intended for those students pursuing aviation careers in which full professional preparation and baccalaureate degrees are not required. Embry-Riddle Aeronautical University offers professional track opportunities to teach the science, practice, and business of the world of aviation and aerospace with a curriculum that covers operation, engineering, research, marketing, manufacturing, and management of modern aircraft and the systems that support them. The Engineering Accreditation Commission of the Accreditation Board has accredited the bachelor's degree programs in aerospace engineering, civil engineering, and engineering physics for engineering and technology.

The CHOICE Aerospace Institute allows students to obtain a high school diploma while earning fully-paid university credits from Embry-Riddle Aeronautical University and pursuing ten Federal Aviation Administration certification including aircraft maintenance, meteorology, and flight. The institute drew 160 students last year and has nearly twice as many enrolled for August 2006. The program has sites at Crestview High School, Bob Sikes Airport in Crestview, and Choctawhatchee High School.

CHOICE Teacher Named Aerospace Educator of the Year in United States

Ricardo Soria, one of the founding teachers of Okaloosa's CHOICE Aerospace Institute, will be honored as the National Aerospace Educator of the Year in Washington, DC, October, 2006.

Judith Rice, Director of the National Conference on Aviation and Space Education, says that Soria was chosen for the award because of his role in implementing the CHOICE Institute as a national center of excellence in aerospace education and because of his achievements in classroom teaching.

Soria's nomination for this national award was supported by the local chapter of the Air Force Association as well as by Okaloosa County school officials.

Labor Market Trends

This section describes the labor market trends for Okaloosa County. The section begins by providing a discussion on workforce gaps across the U.S. before considering regional demand and supply of labor. Forecasts of the projected fastest-growing occupations in the region and the critical labor supply issue of age demographics of the region's key industries are also addressed, and then regional workforce gaps are identified, together with a discussion of the current issues concerning worker's skills.

Workforce Gaps

Anecdotal evidence, reports from regional policy-makers, as well as academic research, broadly suggests that there is a skilled-worker shortage in the U.S. Many of these sources write that the gap is widening as business needs become increasingly high-tech and focused on services; with today's required skills being in stark contrast to the traditional manual labor skills that once dominated the labor force. In Okaloosa County, the problem of a skilled-worker shortage is exacerbated by the tight labor market, and the current low unemployment, high participation characteristics of the regional economy imply that regional companies are struggling to find both low-skilled and high-skilled employees.

The skills composition of the U.S. workforce has always been responsive to the changing demands of the labor market. A century ago, the vast majority of people lived and worked on farms, or were employed as manual laborers, in crafts, or in factories. Some fifty years later, mechanization of agriculture meant that the percentage of the total workforce employed in farming fell dramatically. Today, automation of production processes means that only 15 percent of American workers make their living from manufacturing. Labor markets have responded to these many changes over the last few decades, among the most profound of which has been the switch from production of goods to the production of services. As this process continues, white collar workers are slowly, but surely, replacing blue collar workers. The increasing sophistication of these services and the increasingly complex nature of producing goods and services in general, have raised the qualifications needed to hold certain service-sector jobs. As a result, an increasing proportion of the workforce now finds itself facing higher skill requirements that call for additional education and training.

Changing Structure of the U.S. Economy

Boesel (1994) states that three major developments since the 1970s have dramatically changed the academic and occupational skills required by workers in today's labor force. These economic developments include the emergence of a global economy, the growth of high-performance workplaces, and the continuing impact of new technology.

After World War II, the recovery of industrialized European and Asian economies led to the emergence of the global economy. This changed the competitive position of the U.S. economy as its share of the world market

began to shrink. Many of the competitive nations (such as Japan) were high-skill manufacturers with a relative abundance in well-educated workers; others had less-educated but disciplined workers that could perform many of the semi-skilled labor-intensive production that had been dominant in American production practices, at a lower wage (such as Mexico, India, Taiwan, and increasingly China). As a result, many areas of the U.S. economy (including Okaloosa County) have a high-participation employment rate in low-skilled non-transferable positions, such as retail sales assistants and restaurant workers. This implies that a large proportion of the county's labor force is employed in low-skill, low-wage positions. One major objective of the Carl D. Perkins Vocational Education and Applied Technology Act (1984) and its subsequent amendments was to substantially increase the skills of students most likely to leave school with low-level skills. This will provide students with the opportunity to train in the high-skill, high-wage professions required in today's dynamic and technologically-advanced workforce.

New forms of work organization are the second factor affecting the need for worker's skills. Organizational structures have adjusted due to the increased competition from abroad. The assembly-line system of industrial production pioneered by Henry Ford and rationalized by Frederick Taylor assigned most quality control and problem solving issues to managers. In recent decades, it has been replaced by a new system that has essentially eliminated layers of management and assigns more supervisory and problem-solving responsibilities to workers, and that emphasized the need for teamwork and job rotation, rather than task-orientated jobs in which workers were seen as cogs in a machine, repeating the same process. The new system requires more communication and collaboration between workers, and more complex thinking, problem solving and flexibility from workers.

Finally, the most recent factor concerns the change in skill requirements as a result of a period of rapid technological change, commencing with the development of the internet, email providers and then, the World Wide Web. This created a significant shift in industry practices and increased productivity as businesses invested heavily in computers and telecommunications equipment. For example, the use of computer-assisted design (CAD) technology, as offered in CHOICE's Construction Technology Institute, is estimated to have increased productivity in drafting at least six-fold relative to traditional methods (Boesel, 1994).

Friedman (2006) addresses the historical nature of changing economies by identifying three eras of globalization; Globalization 1.0, 2.0, and 3.0. Globalization 1.0 concerns the era from the 15th Century to the early 19th Century as explorers searched for and mapped out new lands, reducing the world from a size large to a size medium. Globalization 2.0 continued on through the turn of the 21st Century, as multinational corporations dominated the economic landscape. This era saw the birth and maturation of the global economy as the movement of goods and information between continents improved. Friedman (2006)

reasons that the world has now entered Globalization 3.0 that flattened the world through the technology boom that empowered individuals and companies to compete globally, from anywhere in the world.

The changing structure of today's economy creates two issues of concern. First, it is generally agreed by researchers that a wage inequality gap between the richest households in the U.S. and the poorest emerged in the 1980s, and that continues today. Second, the changing economic structure creates a need to restructure educational curricula to both address the wage inequality gap, and to supply today's industry with an adequately trained workforce that will help them compete on a global scale.

These changes have important implications for economic development and quality of life in regional and local economies. The availability of highly educated workers in a region encourages the development of industries that utilize advanced skills. The jobs created by these industries are those that raise the standard of living over time. Conversely, a lack of highly educated workers can impede regional economic development, causing living standards to lag in those areas that fail to hold on to their well-educated residents.

The long-running forces of globalization and technological change that foster the widening gap between the haves and have-nots are likely to remain firmly in place. Generally less-educated and skilled lower income households will continue to struggle in the competition with many lower-paid workers in the developing world. More highly educated and skilled higher income households, in contrast, will benefit enormously from their increasing ability to sell their wares to a rapidly expanding global marketplace. Regions need to adjust to changes in the economy and implement policies and initiatives that promote the development of education and training in skills commensurate with a region's interests.

Rapid technological change and growth in household incomes have spurred tremendous growth in the service industries over time. Widespread technological innovations, most notably within the computer industry, have altered efficiency and productive processes. As a result, a significant portion of the fastest growing occupations are demanding industry certifications and post-secondary training or degrees.

Such a shift is prevalent in Florida. Table 2 presents the expected fastest-growing occupations for the state of Florida through 2013.

Table 2 - Florida Fastest Growing Occupations

Rank	Title	Employment		Annual Percent Change	Average Hourly Wage (\$)	Education Code*
		2005	2013			
1	Network Systems Analysts	16,980	23,718	5.0	27.4	3
2	Medical Assistants	27,000	37,506	4.9	11.8	3
3	Kindergarten Teachers	11,279	15,229	4.4	26.7	5
4	Database Administrators	5,421	7,260	4.2	27.6	4
5	Health Specialties Teachers	8,397	11,231	4.2	57.8	6
6	Business Teachers	4,075	5,448	4.2	43.4	5
7	Health Information Technicians	10,278	13,624	4.1	13.4	3
8	Fitness Trainers	11,123	14,707	4.0	13.7	2
9	Self-Enrichment Teachers	14,343	18,856	3.9	14.7	3
10	Computer Software Engineers	16,058	21,101	3.9	36.3	5
11	Public Relations Specialists	19,401	25,469	3.9	22.1	4
12	Secondary School Teachers	35,583	46,366	3.8	28.3	5
13	Vocational Education Teachers	5,118	6,668	3.8	20.4	3
14	Veterinary Technologists	4,442	5,784	3.8	11.8	4
15	Tile and Marble Setters	6,562	8,538	3.8	15.8	3
16	Cement Masons	16,040	20,746	3.7	14.5	3
17	Dental Hygienists	9,434	12,194	3.7	24.0	4
18	Personal Financial Advisors	13,402	17,312	3.6	36.1	4
19	Computer Software Engineers	15,490	19,969	3.6	37.0	4
20	Computer Systems Analysts	28,552	36,798	3.6	30.4	4

* Refer to Table 4 for definitions of the education codes
Source: LMI, 2006

Table 2 shows that the state's fastest-growing occupations are service-producing occupations – predominantly classified in computer technology, teaching, or health fields.

Fastest-Growing Occupations

The changing economy is influencing the general make-up of the Okaloosa labor market. As revealed in Figure 2, the service sector contributes the largest proportion of workers to the regional economy. While tourism-related service sector employment is anticipated to continue to grow throughout the region, the global shift in industry practices, driven by rapid technological progress is anticipated to generate the fastest growth in demand for technological-related service employment. This change will have significant implications for regional education as the demand for high-skill workers rises.

In understanding the recent trend in labor market occupations, it is important to make a distinction between the “fastest-growing occupations” and the “occupations gaining the most jobs.” Fastest-growing occupations reflect the jobs anticipated to add the highest percentage increase in demand. A fastest-growing occupation can show a significant percentage increase in jobs and therefore receive a lot of attention as they represent emerging occupations. However, the same occupations may only be adding a relatively small number of jobs to the region as it may be a large percentage increase from a relatively small employment base. As a result, it is also important to consider a region’s largest job gaining occupations as these reflect the sectors adding a significant absolute number of jobs to the region.

The occupation projections are provided by the Agency for Workforce Innovation Labor Market Statistics databases. Table 3 shows the occupations with the highest projected growth rates for Workforce Development Region 2 (consisting of Okaloosa and Walton counties).

Table 3 - WR2 Fastest-Growing Occupations

Rank	Title	Employment		Annual Percent Change	2005	Education Code
		2005	2013		Average Hourly Wage (\$)	
1	Slaughterers and Meat Packers	56	86	6.70	NA	1
2	Medical Assistants	200	291	5.69	10.41	3
3	Database Administrators	62	90	5.65	26.57	4
4	Network Systems and Data Analysts	341	492	5.54	22.26	3
5	Home Health Aides	231	333	5.52	8.01	3
6	Sales Engineers	59	85	5.51	28.29	4
7	Avionics Technicians	100	142	5.25	NA	3
8	Social and Human Service Assistants	153	216	5.15	11.43	3
9	Mental Health and Social Workers	80	112	5.00	14.87	6
10	Cement Masons	189	263	4.89	15.70	3
11	Tile and Marble Setters	241	335	4.88	NA	3
12	Respiratory Therapists	67	93	4.85	19.32	4
13	Dental Hygienists	185	255	4.73	24.26	4
14	Dental Assistants	228	311	4.55	13.39	3
15	Pharmacists	147	199	4.42	40.59	6
16	Computer Software Engineers	215	291	4.42	35.87	5
17	Public Relations Specialists	337	456	4.41	NA	4
18	Community Service Managers	54	73	4.40	21.40	4
19	Cost Estimators	213	287	4.34	23.04	4
20	Family, and School Social Workers	122	164	4.30	13.88	6

Source: LMI, 2006

Table 3 reveals that the majority of the projected fastest-growing occupations in the region are service-related, requiring a level of education beyond a high school diploma (Education Code 2), and command relatively high wages. While slaughterers and meat packers are anticipated to show the highest growth, the absolute increase in jobs (32 positions) is relatively small. Other occupations projected to show the highest growth require a vocational certificate or higher; many of which provide wages in the region of \$15/ hour to \$40/hour. The dominance of technological-based positions (database administrators, network analysts, avionics technicians etc.) reveals the region's anticipated need for high-skill, high-wage labor as the regional economy continues to move toward a technological-sector based economy.

Table 4 - Education Levels

Education Level	Definition	Description
1	Less than a High School Diploma	Occupations in which workers can receive the training they need on the job and are not required to have earned a High School Diploma or GED.
2	High School Diploma or GED	Occupations that generally require a High School Diploma or GED for employment
3	Post Secondary Adult Vocational Certificate	Occupations that generally require completion of Career and Technical training. Some programs last only a few weeks while others may last more than a year. In some occupations, a license is needed that requires an examination after completion of the training.
4	College Credit Certificate, Applied Technology Diploma, Associate of Applied Science, Associate Degrees	Occupations that generally require the completion of a college credit credential. College Credit Certificate and Applied Technology Diploma's are specialized college credit credentials that vary in length. Associate of Applied Science and Associate Degree's generally require at least 2 years of full-time equivalent academic work.
5	Bachelor's Degree	Occupations that generally require a Bachelor's Degree. Completion of the degree program generally requires at least 4 years, but not more than 5 years, of full-time equivalent academic work.
6	Master's Degree or Higher	Occupations that generally require a master's, doctoral, or first professional degree. Completion of one of these degree programs usually requires from 1 or 6 years of full-time equivalent academic work beyond the bachelor's degree.

Source: LMI, 2006

Table 4 shows that 19 of the top 20 fastest-growing occupations require a vocational certificate, Associate's degree, Bachelor's degree or higher. The shift toward a technological-based economic structure drives the need for better educated and trained workers in Okaloosa County.

In association with the forecast for increased demand for high-skilled and more educated workers is the wage structure. High-skill positions are accompanied with higher wages. For example, database administrators, data analysts, sales engineers, computer software engineers, and other positions all command hourly wages in excess of \$20. This will have a significant impact on the regional economy as higher wages are spent, generating secondary ripple effects that further increase regional income and gross regional product levels.

The current and anticipated shift in the economic profile of the region is further expected to follow the growth trend of the I-4 corridor region in Florida's Workforce Development Region 12 (WDR12). The growing population in WDR12 led to enrollment growth at the University of South Florida (USF) and the University of Central Florida (UCF), as well as other universities in the region. These institutions adopted strong pro-industry economic development missions. As a result, many high-tech companies (in areas such as microelectronics, telecommunications, medical technologies, and aerospace) were attracted to the region and clustered along the I-4 corridor in order to share a common pool of technologically educated workers. To further develop the I-4 corridor, the Florida High Tech Corridor Council was established in 1996 to help establish pro-industry legislative initiatives, such as an innovative sales tax rebate system whereby manufacturers locating in the corridor can channel their sales tax expenditures for new capital equipment toward university research projects of their choosing, which is then matched dollar-for-dollar from the state. The success of the scheme and the growth of the I-4 corridor's reputation has led to a population growth of over 700,000 residents along the seven counties adjacent to the I-4 corridor over the last ten years, with more than 2,700 high-tech companies, corporate distribution centers, and warehouses locating along I-4, looking for cheap land within proximity of demand from big cities. In turn, these companies employ more than 100,000 people. These big picture changes helped steer the nature of workforce demand toward high-skill, high-wage jobs.

A similar trend is developing and expected to continue along the 1-10 corridor. As revealed in Table 3, a large number of the fastest-growing occupations in the Okaloosa region are technology-based positions. For example, the region's Aerospace Industry is a "target industry" that will link national, state, regional, and local workforce goals. Okaloosa supports three military installations; namely Eglin Air Force Base, Hulbert Field, and Duke Field. The military presence in Okaloosa is a major driver of economic growth, creating a technical foundation in the region. Defense contracting firms are locating in the region forming a cluster of technology-based institutions that drive demand for technically-trained workers. The cluster resulted in the Economic

Development Council of Okaloosa County (EDC) creating TeCMEN – a collaborative network of high-technology manufacturing and engineering service companies that work as a collective unit to promote economic and technological growth in the region. The strength of the military in the region was recently further augmented with the BRAC relocation of almost 6,000 workers into the region. As a result, it is anticipated that the regional economy will continue to mirror the economic growth in technology-, health-, and aerospace-related occupations realized along the I-4 corridor.

While the economic make-up of the region shifts toward technology-based occupations and demand for high-skilled, high-pay workers, the ‘traditional’ tourist-driven service-sector positions will also continue to be a major driver of regional economic growth as more migrants are attracted to the area by economic opportunity and quality of life issues. Table 5 details the occupations at the regional level with the largest projected increases in the absolute number of jobs.

Table 5 - WR2 Largest Job Gaining Occupations

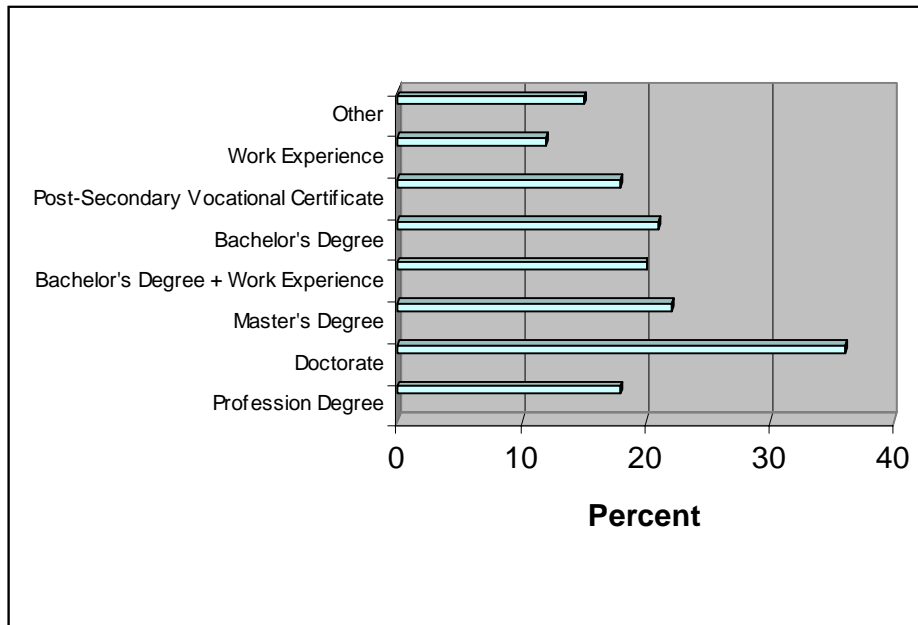
Rank	Title	Employment		Jobs	2005	
		2005	2013		Average Hourly Wage (\$)	Education Code
1	Retail Salespersons	5,502	6,634	1,132	10.41	2
2	Food Preparation & Servers	3,477	4,439	962	6.78	1
3	Waiters and Waitresses	4,031	4,913	882	6.97	1
4	Cashiers	3,446	4,002	556	7.89	2
5	Janitors and Cleaners	2,059	2,533	474	8.81	1
6	Office Clerks, General	2,609	3,020	411	10.20	2
7	Customer Service Representatives	1,553	1,937	384	10.84	3
8	Registered Nurses	1,291	1,657	366	21.86	4
9	Maintenance and Repair Workers	1,445	1,783	338	13.30	3
10	Maids and Housekeeping Cleaners	1,925	2,252	327	8.68	1
11	Construction Laborers	1,057	1,383	326	10.15	1
12	Correctional Officers and Jailers	1,188	1,514	326	16.91	3
13	Carpenters	1,196	1,501	305	12.39	3
14	Cooks, Restaurant	1,248	1,528	280	10.51	3
15	Supervisors of Construction Workers	970	1,248	278	20.96	4
16	Supervisors of Retail Sales Workers	1,619	1,892	273	17.74	3
17	Nursing Aides & Orderlies	867	1,137	270	9.06	3
18	Receptionists and Information Clerks	851	1,093	242	9.56	2
19	Accountants and Auditors	923	1,155	232	25.44	4
20	Sales Reps., Wholesale & Manuf.	923	1,152	229	19.59	3

Source: LMI, 2006

Table 5 shows that traditional service-sector positions (retail salespersons, waiters, servers etc.) remain an important component to the region’s economic development, yet absolute demand for skilled workers in professional services, construction, and health care will also be significant. Again, such positions require a level of educational attainment beyond high school.

The demand for a more educated and trained workforce in Okaloosa County is representative of the growing demand for high-skilled workers across the U.S. as a whole. Figure 10 shows the projected growth in job openings by educational attainment or training level required at the national level. While growth in jobs requiring doctoral degrees are projected to grow substantially (by 36 percent), jobs requiring other educational or training programs are expected to grow quite rapidly (between 18 to 22 percent).

Figure 10 - Projected Growth in Job Openings by Educational Attainment or Training Level Required (2002 - 2012)



Source: US Census

This highlights the importance of education in general beyond the high school level but also that the projected national demand for workers with vocational education certificates is very much in line with other academic qualifications.

Overall, the changing structure of the Okaloosa economy has resulted in a growth in labor demand for high-skill, high-wage workers. More students will be required to continue their education beyond the high school level in order to meet the growing demand. CHOICE Institutes link high school with post-secondary opportunities for students to support life-long learning.

Age Demographics – The Supply of Labor

The previous section provided a forecast of occupations likely to experience the largest expected growth in labor demand over the next decade. They are largely in the service sector of the economy. This reveals the anticipated demand side of the labor market. Another important component in considering labor market trends is the age demographics of key regional industries. Age demographics provide important information on the anticipated change in supply of the region's workforce. As a consequence, workforce gaps (excess of demand over supply of workers) may appear in specific regional industries.

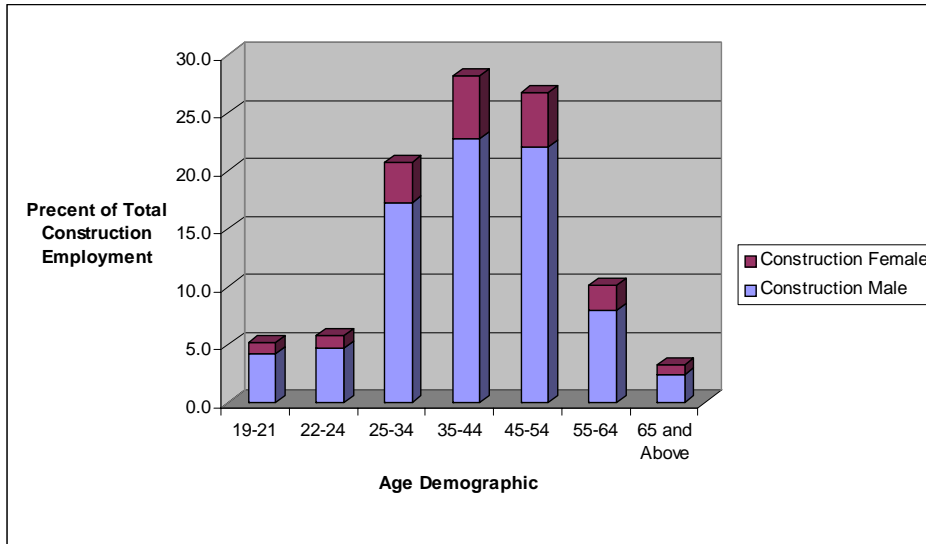
All industries that are anticipated to show strong growth in labor demand should be addressed when choosing training programs to provide a sufficient and well-trained regional workforce. Over the coming decades, an aging workforce will exacerbate imbalances between demand and supply. Policymakers and local education planners can specifically address the sectors of the economy that face growing labor demand and falling supply. If the gaps are not addressed, the region faces the possibility of firms moving away to other areas that can satisfy their labor requirements.

As the population across the Panhandle region increases, the construction industry will remain a primary driver of regional economic growth. Anecdotal evidence from regional construction industry representatives suggests that the industry faces a "critical need" for more and better trained workers. Malcolm Patterson, the Executive Vice President of the Building Association of Okaloosa and Walton counties stated that "the future of the industry is dependent upon attracting young people into construction careers."

The average age of a skilled tradesman in the construction industry is 47 while 250,000 skilled tradesmen leave the industry every year and do not get replaced³. As Figure 11 shows that, a large proportion (40 percent) of the construction industry is aged 44 years or older. In an industry where the average retirement age is earlier than many other industry occupations, and only 12 percent of high school seniors graduate with career technology training, the construction industry in Okaloosa County faces a potential workforce gap problem.

³<http://www.workforceflorida.com/wages/wfi/rfp/CHOICE_construction_%20powerpoint_files/frame.htm#slide0011.htm>

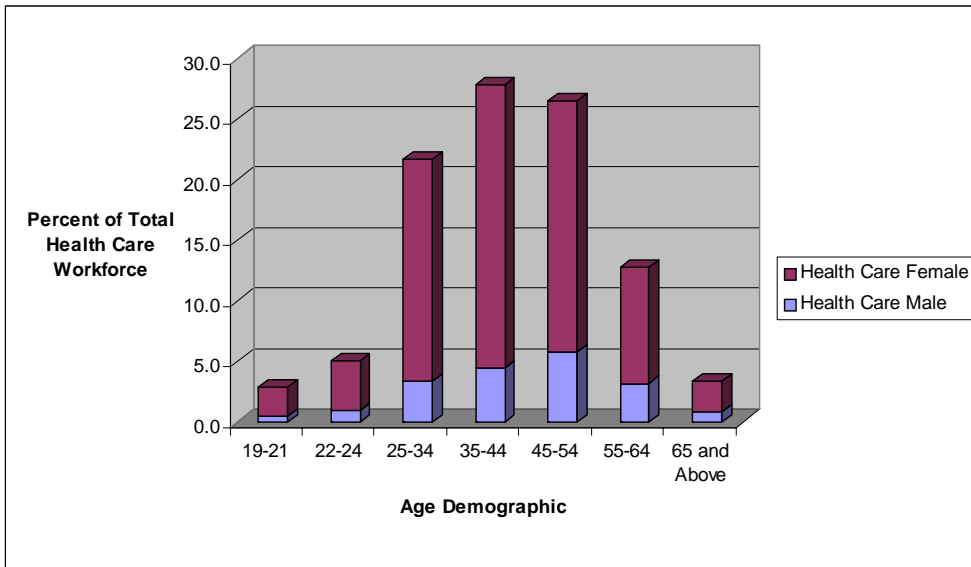
Figure 11 - Age Demographics - Construction Sector



Source: LED, US Census

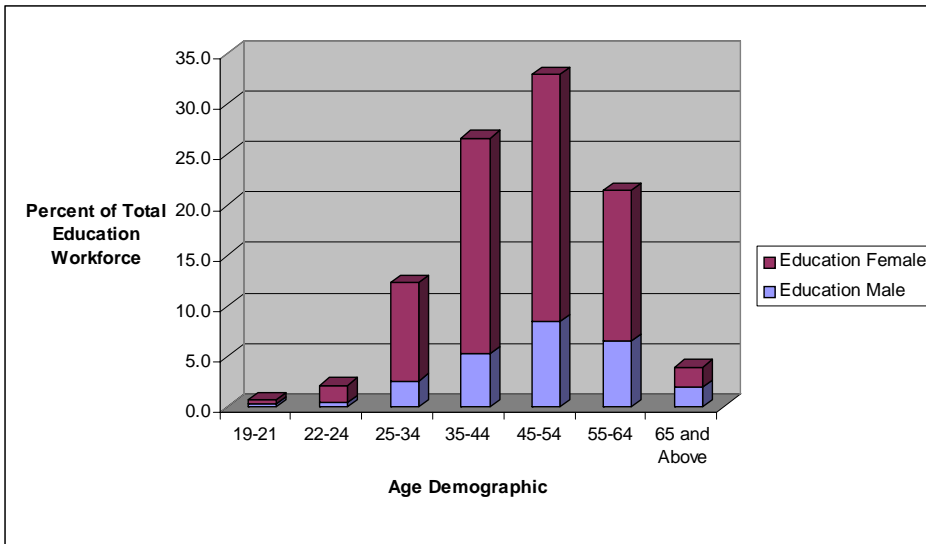
Both the regional health care and education sectors exhibit similar trends of a relatively aging workforce (see Figures 12 and 13). Approximately 40 percent of the health care sector and 56 percent of the education sector are aged 45 or above. This indicates that these sectors face an expected decline in the supply of workers as many approach retirement age. As the regional demand for health care and education workers is expected to increase, regional planners and policy makers need to address the potential for workforce gaps in these sectors.

Figure 12 - Age Demographics - Health Care Sector



Source: LED, US Census

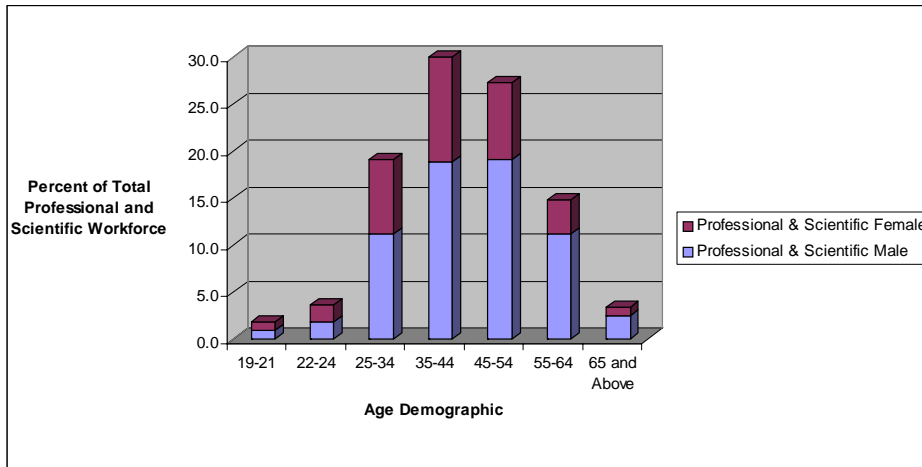
Figure 13 - Age Demographics - Education Sector



Source: LED, US Census

Figure 14 reveals the age demographics of the professional and scientific sector. As revealed in the previous section, the changing structure of the economy will increase regional demand for workers in the professional and scientific sector (that includes database administrators, network analysts, avionics technicians etc.). A breakdown of the age demographics suggests that the potential for a workforce gap also exists in this sector as approximately 45 percent of the workforce is aged 45 and above. .

Figure 14 - Age Demographics - Professional and Scientific Sector



Source: LED, US Census

Of the key regional industries, the construction, professional and scientific, health care and education sectors have a relatively aging workforce, creating the potential for a shortage in regional workers unless local businesses can address the issue of an aging workforce through innovative measures to extend the working age of their employees or policymakers can promote education and training programs specifically designed to increase the labor supply.

An anticipated decline in the supply of skilled workers is a national and international problem that many companies are now acknowledging. For example, IBM, drawing from its 2005 survey of human-resources directors, concluded that: "When the baby-boomer generation retires, many companies will find out too late that a career's worth of experience has walked out the door, leaving insufficient talent to fill the void."⁴

As a result, many companies are beginning to adjust working practices to accommodate their older employees. For example, they are offering more flexible work hours and telecommuting in order to extend the working lives of key employees. Other firms are actively recruiting former employees and bringing them

⁴ "Turning Boomers into Boomerangs" The Economist, February, 2006

back into the workplace to stave off the worker shortage. For example, BMW opened a new factory in Leipzig, Germany, and only hired workers over the age of 45, while Ernst and Young (the accounting firm) rehired approximately 30,000 former workers to increase its skilled workforce.

Companies are also adjusting working practices to bring more educated women back into the workforce. In the U.S., there has been an uneven playing field between men and women, preventing educated women from attaining the same professional status as equally educated men. The Wall Street Journal coined the term “glass ceiling” to describe a job market that prevents women from reaching executive-level positions in the private sector. The Glass Ceiling Commission, appointed in 1995, reported that women held 45.7 percent of American jobs but held more than half of the Master’s degrees awarded. At that time, 95 percent of senior managers were men, and women earned on average, 68 percent of male earnings.⁵ Today, evidence of the glass ceiling still exists. Women with MBAs are fast dropping out of the workforce. One study found that one out of every three such qualified women in America is not working full-time. For men, the comparable figure is one in 20. However, as the labor force ages, women will provide a great source of educated workers to broaden the diminishing talent pool. To capitalize on this, firms will need to change their working procedures. A major cause of women being under-represented in the workforce is that they take maternity leave to start a family and don’t return. However, a more flexible working week may tempt more women back into the workforce. KPMG, one of the major accounting firms, is attempting to increase its percentage of partners that are women by doing exactly that.

Development Initiatives in Northwest Florida

Policies are required to drive new strategies in workforce development as the region faces increasing demand and potential workforce gaps in its high-skill occupations, On February 1, 2006 U.S. Secretary of Labor Elaine Chao announced the Workforce Innovation in Regional Economic Development (WIRED) Initiative as a major component of President Bush’s Competitiveness Agenda. Through the WIRED Initiative, the U.S. Department of Labor, via the Employment and Training Administration, will invest \$195 million in thirteen regional economies, including Northwest Florida. The WIRED Initiative is empowering regions to implement ground-breaking strategies that will result in their workforce investment system becoming a key component of the area’s economic development strategy. The 100 percent match built into the WIRED Northwest Florida program turns a \$15 million grant into a \$30 million initiative.

Florida’s Great Northwest will function as the lead partner in a coalition composed of workforce development, secondary and post secondary education, entrepreneurial and new business development, economic development organizations, and area businesses. Ultimately, the WIRED Initiative will expand employment

⁵ “The Conundrum of the Glass Ceiling” The Economist, July, 2005.

and advancement opportunities for Northwest Florida workers and catalyze the creation of high-skill and high-wage job opportunities.

The coalition's focus is on developing training initiatives designed to create a skilled workforce in the target industries of aviation, allied health, information technology, and construction.

Also in Northwest Florida TIP Strategies, Inc. an economic development firm was hired to complete a target market study and an economic diversification strategic plan for the Northwest Florida area. Most of the industries targeted for the WIRED Initiative are the same as the TIPS findings. TIPS added logistics and distribution, recreation and leisure, and financial and professional services to the list. Both TIPS and the WIRED Initiative through Florida's Great Northwest are working to focus the development in Northwest Florida towards a more technically advanced economy. These initiatives are taking into account the wealth of resources currently available in Northwest Florida including a well-recognized aerospace and defense industry and solid population growth.

TARGET INDUSTRIES FOR WIRED GRANT

- Aerospace and defense – Maintenance, repair and overhaul for civilian and defense contracting; Avionics and flight training.
- Life sciences – Medical device manufacturing, medical technologies, biotechnology, and health services where a minimum of 70 percent of the organization's or the division's revenue is generated by sales outside of the Northwest Florida region.
- Information technology, software development and electronics engineering – Software and products development to support simulation healthcare, accounting, digital arts and media, building systems, construction systems.
- Construction services and building products.

Wage Inequality Gap

The forces of globalization and technological change and the associated need for a better trained and more educated workforce has created increasing returns to education. Data shows a positive relationship between employment and labor force participation with respect to educational attainment. However, research shows that the returns to education have created a wage-inequality gap between the richest and poorest workers in the U.S.

The cause of the gap is debated by economists yet the general consensus is that the supply of highly educated workers has grown in the U.S. over the past few decades. Wheeler (2005) notes that in 1950, 17

percent of the workforce had a college-level education. In 1990, the figure rose to 57 percent. As a result, the returns to investment in technologies that complement the skills of these highly educated workers (such as information technology) also rose as the search costs associated with hiring workers declined. Other researchers (Levy and Murnane, 1992; and Katz and Murphy, 1992; Boras, Freeman, and Katz, 1997) suggest that the associated boom in technology increased the demand for skilled workers and at the same time, supply of trained and educated workers declined.

As a result, real wages fell for workers without the appropriate education and skills to meet the demands of an increasingly competitive and technical marketplace, while real wages for those with a college degree have increased. Another potential cause of the imbalance between demand and supply of skilled workers (Boras, Freeman, and Katz, 1997) is the increase in unskilled immigrant migration into the U.S. since the 1960s or declining power of unionization (Fortin and Lemieux, 1997).

The latest Current Population Survey from the U.S. Department of Commerce reveals unemployment and labor participation rates across educational attainment classifications.

Table 6 - Employment Status of the Civilian Population 25 Years and Over by Educational Attainment

Education	Employed	Unemployed	Unemployment Rate	Participation Rate
Less than high school diploma	11,942	905	7.0	46.1
High school graduate	37,032	1,565	4.1	63.3
Some college or associate degree	33,738	1,234	3.5	72.5
Bachelor's degree or higher	41,494	885	2.1	77.6

Source: Bureau of Labor Statistics, 2006

The relationship is highlighted by considering the extremes of educational attainment. The labor force for those without a high school degree is approximately 13,000 workers, with a labor participation rate (percentage of population in the labor force) of approximately 46 percent. Close to 12,000 of the labor force are employed, leaving almost 1,000 workers in this category unemployed. This equates to an unemployment rate among non-high school graduates of 7.0 percent. For workers with a post-secondary bachelor's degree

of higher, the labor force participation rate is 77.6 percent with an unemployment rate of 2.1 percent. For high school graduates, the unemployment rate is 4.1 percent compared to 3.5 percent for those with some college experience or an associate's degree.

These figures suggest that education and skills are in high demand in today's workforce while those without the requisite education or skills find it more difficult to find a job, or stay in a job.

In theory, the demand for workers with more education and job-specific skills leads to wage inequality. Data also supports this notion.

Table 7 - 2004 Median Earnings by Age Cohort, by Educational Attainment

Age Cohort	No High School Grad	High School Grad	Some College, No Degree	Associate Degree	Bachelor's Degree	Master's Degree	Professional Degree	Doctorate Degree
18+	\$16,282	\$23,064	\$30,576	\$13,471	\$45,216	\$40,588	\$51,116	\$81,833
25-34	\$16,416	\$23,041	\$25,647	\$28,481	\$36,748	\$42,551	\$52,404	\$52,379
35-44	\$18,013	\$27,117	\$31,394	\$32,865	\$47,046	\$52,257	\$90,602	\$71,790
45-54	\$19,280	\$28,606	\$34,453	\$36,568	\$46,796	\$55,643	\$96,936	\$77,102
55-64	\$20,504	\$26,464	\$31,337	\$32,368	\$45,055	\$54,298	\$100,000	\$76,270
64+	\$11,321	\$12,366	\$18,127	\$17,781	\$22,243	\$23,656	\$52,379	\$48,958

Source: U.S. Department of Commerce. Bureau of Census

Table 7 shows the 2004 earnings by age cohort and educational attainment. Generally, there is a positive relationship between earnings and educational attainment. For example, in 2004 for those aged 25 through 34, a non-high school graduate earned \$16,416. An average high school graduate earned approximately \$6,500 above that, representing an approximate 40 percent wage-premium for completing high school (see Table 8). With an associate's degree, the premium rises to approximately 73 percent, while it rises further for a bachelor's degree to roughly 160 percent.

Table 8 - 2004 Wage-Premiums for Median Workers by Age Cohort, by Educational Attainment (Percent)

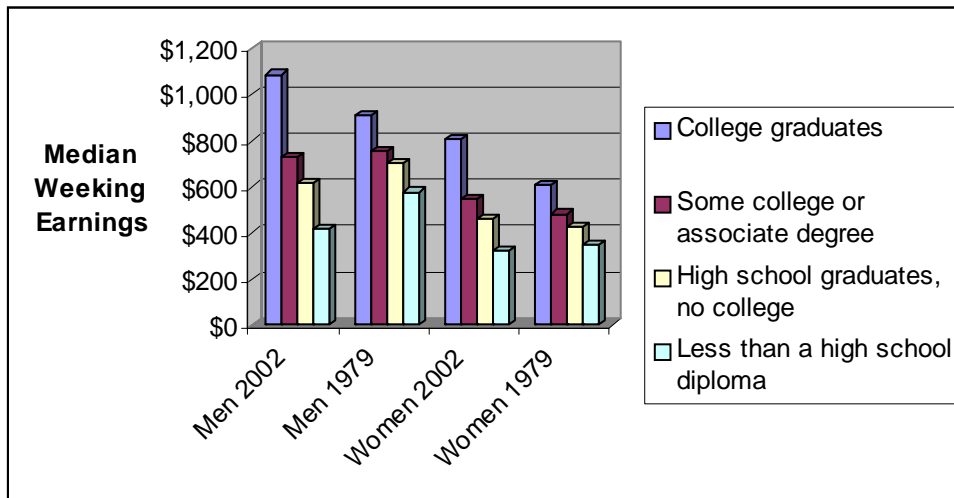
Age Cohort	High School Grad	Some College, No Degree	Associate Degree	Bachelor's Degree	Master's Degree	Professional Degree	Doctorate Degree
18+	41.6	87.8	-17.3	177.7	149.3	213.9	402.6
25-34	40.4	56.2	73.5	123.9	159.2	219.2	219.1
35-44	50.5	74.3	82.5	161.2	190.1	403.0	298.5
45-54	48.4	78.7	89.7	142.7	188.6	402.8	299.9
55-64	29.1	52.8	57.9	119.7	164.8	387.7	272.0
64+	9.2	60.1	57.1	96.5	109.0	362.7	332.5

Source: U.S. Department of Commerce, Bureau of Census

Generally, the wage inequality increases as workers reach their mid-forties to early-fifties, then the inequality diminishes through the retirement years. For example, the premium for a median worker that graduated high school aged between 45 and 54 rises to approximately 50 percent as the worker approaches middle age, then declines to approximately 29 percent and 9 percent as they approach retirement.

Conventional wisdom suggests that income inequality in the U.S. began in the 1980s. During the 1950s and 1960s, America's middle classes prospered as productivity boomed and the benefits were shared across workers. The 1973 oil shock slowed productivity, and by the early 1980s, the income gap between the rich and poor began to emerge. Since then, the gap between the top and lowest 10 percent of earners in the U.S. has widened by a third. A common finding in the economic literature is that the wage inequality gap increased between workers with different education levels, such as college graduates and those not completing high school. However, the rise in between-education-groups (for example, those graduating high school and those with associate's degrees) only accounts for a small fraction of the gap. The widening of the wage inequality gap is supported in Figure 15.

Figure 15 - Median Weekly Earnings - 1970 to 2002 (\$2004)



Source: U.S. Department of Commerce, Bureau of Census

For men, while the median earnings for college graduates, in real 2004 dollars, increased from 1979 to 2002, the median earnings for lesser educational attainment levels have declined over this time. For women, the gap has also widened by to a lesser extent. While the median earnings for college graduates has also increased, so have the median earnings for high school graduates and those with associate’s degrees, although earnings have declined slightly for non-high school graduates.

Literature Review

The literature review provides a detailed description of the main research that considers the statistical relationship between vocational education and student attainment.

Vocational Education and Student Attainment

Given the direction of the Perkins Act on improved academic performance for vocational education students and the mandate on student performance assessment, some researchers have attempted to measure the impact of vocational education on student performances. The questions become, how exactly does one measure student performance? What criterion should be employed? Is student performance a function solely of academic ability, as measured by test scores, or are other measures or a combination of measures more applicable? To this end, researchers have considered a variety of measures related to student performance.

The traditional view of a vocational education is that students going through the system give up a degree of academic achievement in order to pursue occupational or job-specific skills. A number of studies consider standardized test scores as the main measure of student achievement.

Some early research supported the traditional view. Alexander and Dill (1978) use regression analysis to control for a number of factors that they assume to influence student achievement, including background factors (socioeconomic status, gender etc.) and student peer characteristics (academic aptitude, education expectations etc.) and find that students in an academic track scored 0.80 standard deviation units higher than comparable students in nonacademic tracks; however, these results do not disaggregate nonacademic students into vocational or general high school student categories so it is not possible to observe which students are causing the disparity. Also, subsequent studies have found some of the basic assumptions contained within their framework to be invalid.

More recent research use longitudinal data on student performance to provide more reliable estimates. For example, Rasinski (1994) uses data from the 1988 National Education Longitudinal Survey (NELS) to assess the contribution of vocational education course taking to gains in academic achievement in Grades 10-12. A general analysis of the data suggests that students in vocational education programs achieve lower test scores than academic-track students. However, using a two-stage multiple regression to Control for different vocational education courses, student and school background characteristics, he finds that vocational educational courses do not explain significant variation in mathematics, science or reading. Rather, he further finds the principal contributing factor to test score gains across the sample to be prior achievement on tests.

Rasinski (1994) also finds that, while students in vocational education programs do not score as well in mathematics, science, and reading as academic (college preparatory) students, there is no significant difference in mathematics and science test scores between vocational education students and general high school students when controlling for student background and educational characteristic variables. These findings are in line with other research (for example Alexander, Cook, and McDill, 1978; and Meyer 1992).

Kulik (1994) reviews the literature and finds that generally, vocational student's test scores are in line with those of general high school students, although they are lower than academic students. Again controlling for performance-related variables, Kulik's (1994) results also support the findings of Rasinski (1994) as there is no significant difference between the test scores of vocational and general high school students. However, Kulik (1994) also finds that controlling for performance-related variables accounts for 80 percent of the difference between the scores of vocational and academic students, indicating that only 20 percent of the difference is due to the programs themselves.

Weber (1982) finds that vocational students' test scores are very similar to those of general high school students. On average, vocational students scores are 0.43 standard deviations below the norm compared to 0.42 standard deviations below the norm for general high school students. This puts test scores of vocational and general high school students in the 34th percentile. Weber (1982) also finds that the percentile scores of both groups are roughly the same at the beginning of high school as at the end, suggesting that students in different programs grow academically at the same rate. Hilton (1971) adds to this discussion by comparing academic growth rates in different areas of knowledge. He finds that vocational students learn a significant amount in the field of industrial arts during high school compared to other academic and general high school students.

Cullen et al. (2000) consider the Chicago Public Schools (CPS) where students can choose to opt out of their assigned school if they would rather attend another district school. In analyzing whether students who choose to opt out of their neighborhood assigned school fair better academically than those who do not, they find that those who choose to opt out are more likely to graduate than observationally similar students who remain in their assigned schools. However, these gains are spurious – driven by other factors, such as a student that is more likely to opt out is more motivated to succeed. Interestingly, the one factor that is correlated to better academic performance is those students who opt out and choose to attend career (vocational) academics. Further, they consider the relationship between distance and performance. They find no statistical relationship between living near to a school (even a high-achieving school) and higher graduation rates, but they do find that living close to a career academy does increase the probability of graduating, especially for students in the middle of the ability distribution of their sample population. Another interesting component of their research considers a comparison of students within schools – comparing

those who opt in with those who were assigned there. They find that those opting in perform better than those already assigned. However, making the same comparison for career academies, they find that those who opt in do no better than those who are assigned. This suggests that it is the structure and course content of career academies that have real effects on student graduation, rather than the quality of students attending.

A review of the literature suggests that vocational education student's education attainment is statistically in line with similar students pursuing a general high school degree. While vocational education students' scores may be lower compared with academic students, a large component of the difference is due to pre-existing differences among students (for example, test-taking ability), and not due to participation in different curricula. This implies that if the same standard of student enrolled in academic or vocational education programs, there would be no discernible difference in test scores at the end of high school.

Another component of educational attainment considered in the literature relates to whether vocational students move onto postsecondary education (college). Traditionally, this is seen as the tradeoff of a vocational education program, as students train in job-specific skills for occupations traditionally not requiring a college degree. Therefore, vocational education students tend not to attend college, rather opting toward moving into a career. Not surprisingly, these studies do find that students from academic programs are more likely to enter college than vocational education students. For example, Campbell and Basinger (1985) find that vocational education students are 8 percent less likely to enter college than academic program graduates, and 3 percent less likely than similar general high school graduates. However, these correlations are tenuous at best as the groups being compared are not compatible in terms of educational aspiration. Vocational education students typically enter the programs to train in job-specific skills and may not intend to go on to college. Kulik (1994) reasons that making such comparisons is the equivalent of comparing medical school enrollments from pre-med to pre-law programs.

A more meaningful comparison of education and its impact on student attainment is revealed through high school completion rates. Peng and Takai (1983) estimate that over 500,000 high school students drop out every year, placing an increased burden on social welfare programs for employment, housing, and health care. Programs that encourage participation and reduce drop out rates therefore have a significant social value.

Proponents of vocational education cite that it can help reduce high school drop out rates. To support the argument, there are a few studies that consider the impact of vocational education on reducing drop out rates of students. Generally, these studies suggest that vocational education students are less likely as general high school students to drop out before graduation.

Rasinski (1994) tests for any differences in drop out rates between vocational education students, general high school students, and academic students. Across all students in the sample, the average drop out rate (defined as the ratio of students who dropped out by 12th Grade that were not classified as dropouts in 10th Grade) was 5.6 percent. Separating the sample by program, he finds that almost 25 percent of students in general programs drop out of high school during their junior and senior years compared to only 4 percent of vocational students, and less than 1 percent of academic students. Rasinski (1994) uses a logistic regression model to control for background characteristics (10th Grade achievement levels, race, sex etc.) test whether these differences are statistically significant. He finds that the proportion of vocational education students that drop out of 11th and 12th Grade is significantly less than their general high school counterparts. This supports other research that has also analyzed student drop out rates. For example, Peng and Takai (1983) find that vocational education students are slightly more likely to drop out than academic students, but considerably less likely than general high school students. Kulik (1994) provides a meta-analysis of relevant research and finds that participation in vocational programs increases the likelihood that non-college-bound students will complete high school. Kulik (1994) estimates that participation in vocational education decreases drop out rates of this group of students by approximately 6 percent. Rasinski (1994) concludes that vocational students are 8 to 10 times less likely to drop out of high school in their third and fourth year than general high school students. Catherall and Stern (1986) separate students into two groups – vocational participants and non-vocational participants. From their results, Kulik (1994) calculates overall dropout rates for vocational concentrators to be 5 percent compared to 12 percent for non-vocational concentrators.

Wagner (1988) performs regression analysis on dropout rates, and finds the likelihood for dropping out to be 2.7 percentage points lower for vocational education students. She also finds the added benefit that vocational education students are 3 percentage points less likely to fail a course and were absent from school less often than general high school students.

The reduced dropout rate among vocational education students is considered more remarkable as a significant proportion of these students are perhaps, less academically inclined, and would otherwise dropout of traditional high school programs. Lotto (1986) reasons that “high-risk” vocational students have reduced dropout rates because they find the occupational or job-specific training more interesting, relevant, and rewarding than general high school programs.

Another meaningful comparison of the value-added of different educational programs is revealed through job satisfaction once students graduate. A major component of job satisfaction is the ability of a worker to find a job that matches their skills. Research shows that vocational education graduates are generally more satisfied with their jobs than other program graduates. The reasoning is that as more vocational educational

students find jobs in their field of interest, they are more satisfied in their daily activities, relative to students with bachelor's degrees, who often leave university and find work that requires a post-secondary education degree but is not necessarily in their field of interest or expertise.

The literature suggests that vocational education, on average, increases student participation and reduces student dropout rates as the job-specific training provides a more rewarding experience. Research also dismisses the view that a focus on training necessitates a tradeoff in terms of reduced academic performance. Research shows that any statistical differences in academic performance are primarily a function of other factors, such as prior academic ability. Post-training job satisfaction also suggests that vocational education students enjoy greater job satisfaction as they work in areas of specific expertise.

Restructuring Education

Opponents of vocational education programs argue that these results show that such programs have no economic benefits. Studies show otherwise. For example, Grubb (1995) argues that critics of vocational education and community colleges are incorrect in their belief that such programs provide no economic benefits. Grubb (1995) uses data from the Survey of Income and Program Participation (SIPP) and finds that the certifications or associate degrees have a positive impact on earnings, although not as great an impact as a bachelor's degree. Grubb (1995) also finds a "programs effect" (also known as the "sheepskin" effect) whereby completion of a certification is more beneficial, in terms of increased earnings, than those that complete one year of college, and completion of an associate's degree is more valuable than two years of college. This implies that obtaining credentials is the wisest course for most individuals.

Grubb (1995) also argues that having completing a certified training course also has the advantage of finding employment in a related field. Table 9 shows the proportion of individuals in education-related employment.

Table 9 - Proportion of Education-related Employment

Education	Male	Female
B.A./B.S.	61.9%	61.2%
Associate's degree	47.2%	63.0%
Certificate	55.3%	55.3%
Some college – no credential		
4 years	39.4%	52.6%
3 years	44.1%	43.2%
2 years	45.5%	44.9%
1 year	35.2%	50.2%
< 1 year	33.5%	44.1%

Source: Grubb (1995)

For both males and females in the survey, 55.3 percent of students attaining a certification find employment in their related field. This is a larger proportion than for those students with various levels of college education but do not graduate. For males, this also exceeds the proportion of students obtaining associate's degrees and finding related employment, but is less than students graduating with bachelor's degree.

Grubb (1995) also considers the economic benefit of finding employment in an education-related field in terms earnings. Using the longitudinal database, he finds that in that in 92 percent of cases, returns to related employment are higher than returns to unrelated employment. The implications of these results for educational institutions and policymakers is that there is a clear economic benefit in linking programs to employers to help provide a direct link between education and employment.

Others regard the widening wage inequality gap as further evidence of a need to re-structure the education system in order to provide students with a synthesis of academic and job-specific skills or certifications that make graduates more capable of performing productively. Friedman (2006) notes that the roots of the current education system in the U.S. developed in the early 20th Century, when the education system was organized by delegating power and responsibility for education to local school boards. The major flaw of the system is that this created a patchwork system in which education power was delegated to local school boards organized by wealth. As a result, the wealthiest school districts attracted the best teachers, principals, curriculum planners relative to poorer districts. Consequently, schools in wealthier neighborhoods provided an education that reinforced creativity and innovation, while schools in poorer districts focused on getting the students through the system with just the basic skills necessary to graduate. This system worked providing there was a plentiful supply of basic production-line jobs, paying reasonable wages.

Friedman (2006) describes the flattening of the world and associated decline in low-skill production positions and increased outsourcing as a major turning point for the need to change the education system to better educate or train students in the requisite skills to compete in today's workforce. Many proponents of vocational education agree that the changing economic make-up of the economy toward a more technological-based structure creates an additional need for career-related education and training. The technology boom of the 1990s led to vast improvements in computer technology, the internet, and telecommunication, which in turn created a learning-based economy. As a result, work and learning are becoming increasingly inseparable commodities and programs that promote the integration of academics and work-based learning will become increasingly important in today's educational structure. As an example, Friedman (2006) discusses the realignment of Georgia Tech's College of Computing, from a vertically orientated curriculum whose goal was the creation of students with a fixed set of skills and knowledge, toward a horizontally structured program, whose goal is to give students the broad collection of skills and learning experiences required to thrive in a globally competitive workforce. The new curriculum provides

students with an intuitive, flexible, and mutually strengthening set of courses that allows a student to craft his or her own distinctive future.

The need for education to adjust to a changing economy is also highlighted in a report by C.J. Schramm on American M.B.A. programs.⁶ Education within business schools, and M.B.A. programs in particular developed as a response to a vast change in the nation's economy in the late 19th and early 20th centuries. At that time, small, owner-managed companies were replaced by large, dominant, and complex corporations. The new economy of large-scale corporations required large quantities of professional managers, in turn requiring new M.B.A. programs to train such personnel. Exogenous forces, such as two World wars, a Great Depression, and a Cold War meant that throughout the majority of the 20th Century, large-scale corporations were a reassuring form of stability for workers.

However, since 1980, and certainly in more recent years, the structure of the economy has changed, with the bureaucratic capitalism of the early 1980's being replaced by more dynamic, entrepreneurial capitalism, as revealed by the boom in dot com companies of the 1990s. Schramm argues that a more dynamic economy requires a change in teaching habits – even at the post-graduate level. Traditional education techniques largely ignore new economic forces and M.B.A. course curriculums have not adapted to the modern importance of technology in entrepreneurial growth. Schramm provides example of some university's that are beginning to address this concern. For example, Stanford University's business school is now collaborating with other schools and institutions (such as engineering and health care) to foster the necessary skills required to meet an entrepreneurial capitalist society. However, Schramm reveals that many business schools are not adjusting their education curriculum and remain in the bureaucratic age. Finally, one of the key components to making business education more relevant is to emphasize the role that technology plays as a main driver of today's economy. To this end, education today, even at higher levels, must focus on providing a synthesis of theory and skills that make graduates more capable of performing productively, and that training must be considered an investment, not a consumer good.

New career academies or magnet schools will also provide students with both an academic and vocational training that will provide students with stronger connections to the job market, as well as occupational training and a level of academic proficiency that will help them perform better inside and outside the classroom, but also to maintain an option of continued education if they choose to go onto attaining a post-secondary degree.

⁶ Schramm, C.J.,(2006) “The Broken M.B.A., – Chronicle of Higher Education: <<http://www.chronicle.com>>

Hard and Soft Skills

While the change in structure of the economy creates an increased need for skilled workers, company's demands for traditionally unskilled positions has also altered. While traditional service sector occupations may not require technical skill levels, workers are expected to possess social, critical-thinking, communication, problem-solving, and basic academic skills.⁷ Such skills are often termed 'soft' skills and are beyond the job-specific technical skills that employers look for in potential employees, yet soft skills are becoming increasingly important in the employment-decision. More and more employers are looking for employees that can relate to colleagues and customers as the firm attempts to create a competitive advantage over other service-based businesses.

Research reveals the soft-skill priorities employers seek in obtaining new workers. Employees are increasingly interested in workers that demonstrate soft-skills, such as a strong work ethic, appropriate social behavior, and time management. Recent research shows that employees frequently complain about worker absenteeism, inability to adapt, a lack of discipline, and negative work behaviors. Table 10 shows the most common reason companies reject production workers is inadequate basic skills, with 69 percent of manufacturers surveyed citing this as a problem.

Table 10 - Most Common Reasons Companies Reject Production Workers

Skill	Response Rate
Inadequate Basic Employable Skills (attendance, timeliness, work ethic)	69%
Insufficient Work Experience	34%
Inadequate Reading/Writing Skills	32%
Applicants Do Not Pass Drug Screening	27%
Inadequate Math Skills	21%
Poor References From Previous Employers	20%
Inadequate Oral-communication Skills	18%
Inability to Work in Team Environment	12%
Inadequate Problem Solving Skills	11%
Inadequate Technical/Computer Skills	11%
Lack of Degree or Vocational Training	8%
Problems with Citizenship/Immigration	7%
Other	4%

Source: National Association of Manufacturers, 2001

In a low-unemployment, high-participation region such as Okaloosa County, these traits are increasingly important to employers of low-skilled positions seeking to create a competitive edge.

⁷ U.S. Department of Labor, *Skills and Tasks for Jobs: A SCANS Report for America 2000* (Washington, D.C.: 1990).

In response to the criticisms regarding the workforce, the Secretary's Commission on Achieving Necessary Skills (SCANS) identified the soft-skills that all workforce participants should uphold as responsibility, self-esteem, sociability, self-management, and integrity/honesty.

SCANS also identified the basic skills that all workforce participants should have - reading, writing, arithmetic, and mathematic skills, as well as thinking skills – creative thinking, decision making, problem solving, knowing how to learn, and reasoning.

Low-income workers with limited work experience may lack many of the soft skills to obtain a job, and stay in the position. While there are different methods to provide soft skills training, soft skills training can be incorporated within vocational education programs to provide students with the basic skills that match with employer demands.

A major new initiative by the U.S. Chamber of Commerce recognizes the need in today's labor market to provide students with better soft skills required by industry. The initiative will develop, test, and validate a new assessment of readiness for entry-level work is scheduled for release in September 2006, provides guidance toward high school reform efforts to provide students with the necessary soft skills that employers are looking for in today's job market. The assessment will identify what new workers in entry-level positions need to be able to do in the areas of communication, interpersonal, decision-making, and lifelong learning skills. In September 2006, the National Work Readiness Council (NWRC) will launch the National Work Readiness Credential (WRC) in approximately 50 sites around the country. This will extend through December 2006 and is estimated that up to 10,000 individuals will take the assessment. The WRC is being developed in response to a general business need for competent entry-level workers and is designed to address employers demand for:

- An accurate reflection of the full range of knowledge and skills critical to competent entry-level performance
- A valid and reliable measure of performance in real world applications
- A reliable, legally defensible predictor of effective entry-level performance
- A consistent standard across the country
- An appropriate foundation for industry-specific skill standards and certifications

CHOICE remains ahead of the curve for student training that can raise student levels of communication, decision-making, and lifelong learning skills, and its collaboration with business provides students with industry-specific skills and nationally-recognized certifications.

Overall, recent projections anticipate that traditional service sector demand for labor will continue. Employees in these employment areas are required to possess a number of soft skills to maintain or advance firm competitiveness. Training and education can enhance a student's soft skills (such as problem solving) as well as generate better social skills through working with colleagues and peers.

Anticipated growth is greater for high-skill occupations requiring vocational education training, industry certifications, an associate's degree or a higher level of post-secondary education. Today's dynamic and technological economy has increased the demand for job-specific skills and this is expected to remain a critical issue in the Okaloosa region.

Value-Added of CHOICE

The value-added from an educational program is a function of several components. This section addresses three main factors of the value-added of the CHOICE program. First, the gains to education in terms of additional income that a CHOICE student can expect to earn over his/her working life are examined. Then a model and discussion on the relative academic achievement of CHOICE and high school students is presented. Finally, a discussion on the qualitative value-added components of the CHOICE program is provided to summarize the findings from focus group surveys of CHOICE employers, students, and teachers.

Gains to Education

The following section describes the gains to education, focusing initially on the gains yielded from a traditional vocational education compared to a traditional high school education. The focus will then shift to comparing the gains associated with the CHOICE program relative to a high school education. The data used in the analysis is for Florida residents only.⁸

The Census data in Table 11 support the widely-held view that income gains to education exist.⁹ As an individual's education level rises, on average, annual earned income rises. Taking the extremes, an individual with a doctorate earns, on average, \$67,904 per year, compared to \$19,684 for an individual that does not complete high school.

Focusing on individuals that completed a vocational education, Table 11 reveals a wage premium relative to high school graduates. For those aged 18 or older with earned income, the average vocational education

⁸ U.S. Census

⁹ Table 11 and Table 12 summary tables are derived from the Census Supplemental Survey (CSS) Public Use Microdata Samples (PUMS), a comprehensive survey of approximately 60,000 Florida persons. CSS surveys now present respondents with a broader set of educational attainment criteria, including a new category of a degree or certificate from a vocational or technical school.

student in Florida earns over \$5,500 more per year than an individual with no educational education beyond the high school level.

Table 11 - Educational Attainment of the Florida Population Aged 18 Years and Over (2004)

Educational Attainment	Aged 18+ with Earned Income		Annual Hours Worked
	Annual Wage	Hourly Wage	
No High School Diploma	\$19,684	\$11.73	1,678
High School Grad	\$24,849	\$13.91	1,786
Some College, No Degree	\$27,541	\$15.34	1,795
Vo-tech Grad	\$30,595	\$16.63	1,840
Associate's Degree	\$31,991	\$17.42	1,837
B.A. Degree	\$47,781	\$24.50	1,950
M.A. Degree	\$54,708	\$28.03	1,951
Professional Degree	\$97,844	\$45.64	2,144
Ph.D.	\$67,904	\$32.78	2,071

Source: Census 2003 Supplemental Survey Public Use Microdata Samples (PUMS)

Table 11 also shows that a student that completes a vocational training program earns a greater income level per year than an individual that attends college but does not graduate. An average vocational education graduate's annual income is also in line with an individual with an associate's degree. These figures also hold up on an hourly wage basis with individuals, on average, that have completed a vocational education program earning a greater hourly wage than those that do not continue their education through to the college level. For example, a vocational education graduate earns, on average, in excess of \$2.50 per hour more than a high school graduate.

These figures reflect average earnings aggregated across an individual's working life. A more revealing diagnosis of the gains to vocational education is provided through a breakdown of earnings, by educational attainment, by age cohort. Table 12 presents hourly income levels of the Florida population, aged 18 years and above, by age cohort.

Table 12 - Income of the Florida Population 18+ Years by Educational Attainment and Age

Age	Hourly Income Earned								
	No High School Diploma	High School Grad	Some College, No Degree	Vo-tech School Degree	Assoc. Degree	B.A. Degree	M.A. Degree	Prof. Degree	Ph.D.
18-20	8.0	9.4	7.2	8.4	10.7	NA	NA	NA	NA
21-25	11.1	10.3	11.7	11.9	11.2	14.9	14.7	NA	NA
26-30	10.6	12.7	13.1	13.9	14.6	20.9	23.9	29.0	17.0
31-35	12.5	14.2	16.0	17.0	16.4	21.3	22.9	33.1	30.8
36-40	12.5	14.8	16.6	17.6	17.8	29.1	28.2	41.1	33.1
41-45	14.7	17.3	16.3	18.8	19.4	26.8	32.3	42.0	40.1
46-50	16.4	16.2	19.5	19.6	21.2	33.2	31.5	52.2	41.1
51-55	14.7	16.0	17.3	20.2	26.6	30.6	31.1	59.3	31.3
56-60	17.0	16.0	18.4	21.2	20.7	37.8	34.8	50.2	34.4
61-65	17.6	16.5	18.6	19.3	31.2	40.5	34.7	57.2	73.0
65+	15.8	17.6	21.3	19.2	32.0	31.1	28.8	61.7	67.9

Source: Census 2003 Supplemental Survey Public Use Microdata Samples (PUMS)

As expected, the general trend revealed by the data is toward greater hourly income for individuals with more education, for each age cohort. For example, a 41-45 year old individual with a Master's degree earns, on average, \$32.30 per hour, compared to \$17.30 per hour for a comparably-aged high school graduate.

Table 12 also suggests that individuals completing a vocational degree can expect to earn a significantly higher income across their working life than those that complete no formal education beyond high school. Even though the data reveal a starting salary (18-20 year olds) for vocational education graduates below high school graduates, this scenario reverses for all other age cohorts as the returns to vocational education are realized. Table 12 also reveals that hourly wages for vocational education graduates are highly comparable to workers with associate's degrees, across all age cohorts.

The time profile of earnings for workers with less than an associate's degree is shown in Figure 16.

Figure 16 - Time Profile of Earnings

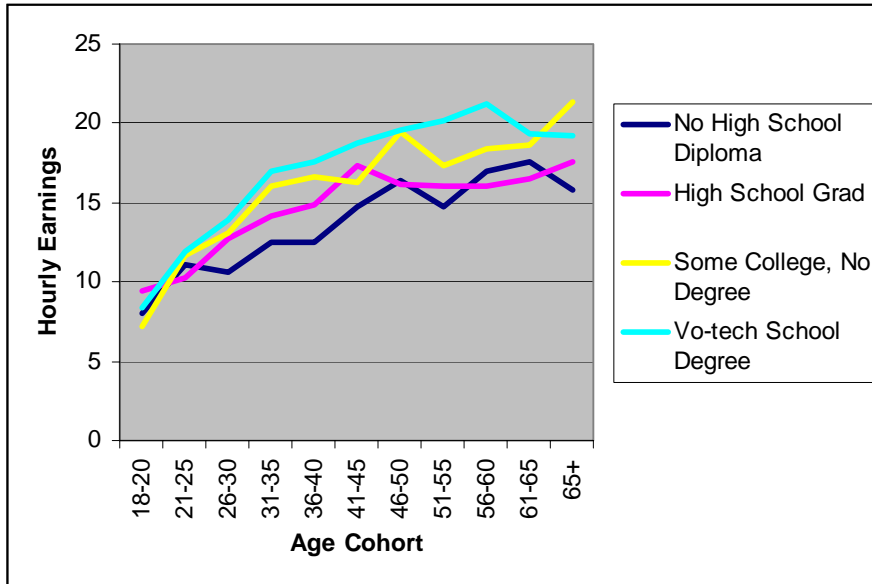
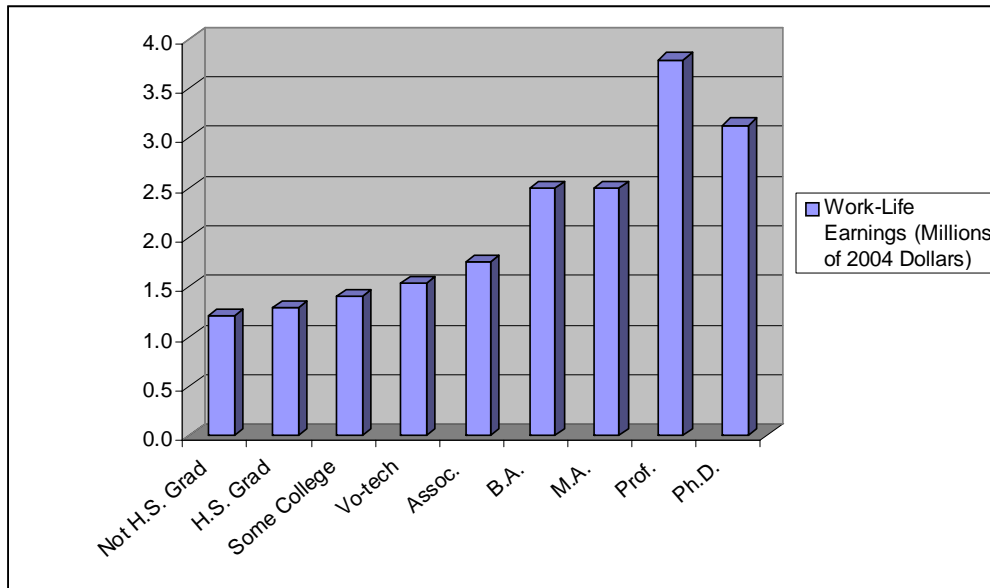


Figure 16 reveals that while starting salaries for all for education groups are comparable, inflation-adjusted salaries for workers with a vocational education background rise at a greater rate than the other groups. The disparity in the time profile of earnings has significant implications for a worker's expected earnings across their working life.

Figure 17 shows the synthetic work-life earning estimates for full-time, year-round workers by educational attainment, based on 2004 average income levels¹⁰. As shown in Figure 17, estimates of work-life earnings illustrate the significant differences in lifetime earnings that develop in regard to workers with different educational backgrounds.

¹⁰ These figures are based on five-year earnings by cohort, assuming an average 40-year working life

Figure 17 - Synthetic Work-Life Earnings Estimates for Full-Time, Year-Round Workers by Educational Attainment



Considering income premiums across the working life of an individual, a worker with a professional degree might expect work-life earnings of approximately \$3.8 million compared to \$1.2 million for a worker without a high school diploma. A typical worker with a vocational education degree might expect work-life earnings in the region of \$1.5 million. This will add approximately \$250,000 to their inflation-adjusted future earnings relative to a high school graduate.

The differences in average work-life earnings among education attainment levels (specifically between workers with vocational education degrees and those with high school diplomas) reflect both differences in starting salaries and disparate earnings trajectories, as revealed in Figure 16.

A Model of Income Gains to CHOICE Students

This section considers the income gains for students that graduate from the CHOICE program. The report defines a CHOICE graduate as a student that graduates their respective high school having attended at least one CHOICE program and earned an industry-recognized certification.

A model of income gains is constructed to quantify income gains for CHOICE students. The model uses a combination of CHOICE-specific data, results from existing income gain studies, and Census data to provide the analysis. Specifically, the model uses a conservative framework that combines Florida-specific income profile survey data by age, CHOICE-specific estimates of post-training wage gains from conducted focus groups, and national estimates of the expected life-of-training.

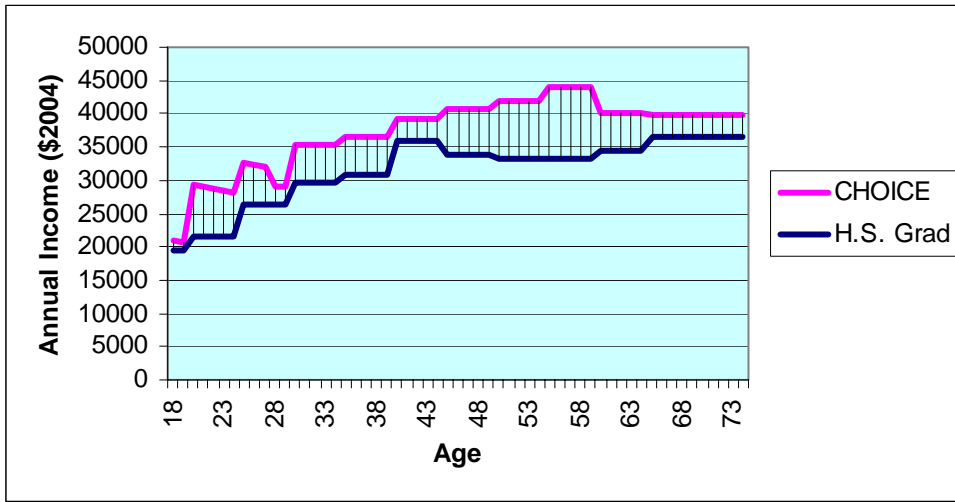
The underlying framework of the model is to quantify the income gains that a worker who graduates from the CHOICE program can expect across their working lives. This includes a CHOICE-specific wage premium. The model adjusts to include two types of student:

1. CHOICE students that, in the absence of the CHOICE program would have chosen to pursue a general high school diploma.
2. CHOICE students that, in the absence of the CHOICE program would have chosen to pursue a traditional vocational program.

Figure 18 shows the expected time profile of earnings for a CHOICE graduate relative to a high school graduate. Actual expected lifetime earnings for CHOICE students are not available due to the infancy of the program. The report assumes an expected lifetime earnings profile of CHOICE graduates to mirror that of other Florida vocational education programs.

For CHOICE students that would otherwise have chosen a general high school education, as revealed in Table 11, annual expected earnings exceed those of a high school graduate in all but the first two years upon graduation.

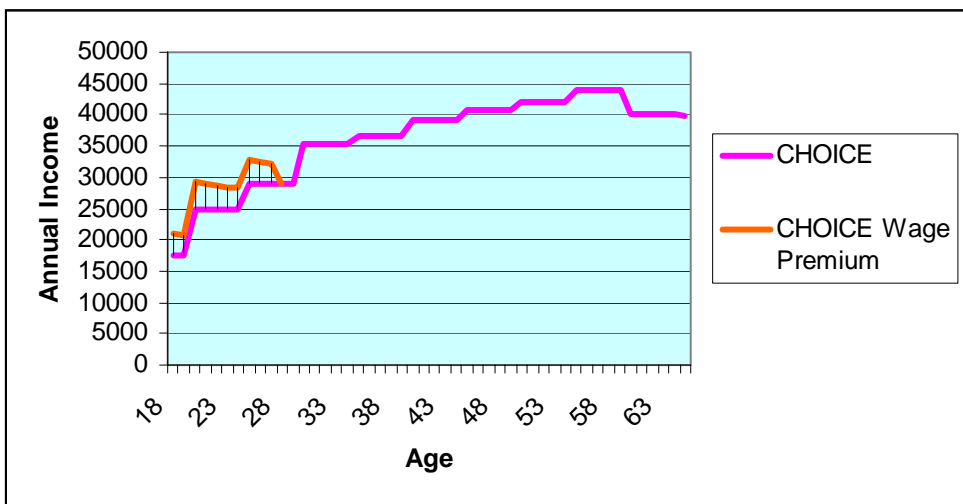
Figure 18 - Gains in Income for CHOICE Students



The shaded area represents the difference in expected earnings in each age category of the assumed working life. The summation of which represents the total gain in income that a CHOICE student can expect over a lifetime of work relative to a high school graduate.

The second type of student of interest represents those CHOICE students that otherwise would have chosen to pursue a traditional vocational education program. The underlying assumption is that the expected earnings over a working life for such students follow the path of other vocational education students; however, the CHOICE program provides an entry wage premium. Results from the completed focus groups of regional employers of CHOICE students suggest that CHOICE students' entry wage is approximately 20% higher than those of other vocational education programs in Florida. Due to the relative infancy of the program, data on the expected life of the entry wage premium is not known; however, other related research suggests a conservative estimate of premiums diminishing over a 10-year period. The analysis assumes that the CHOICE entry wage premium diminishes over a ten year period at a linear rate. The shaded area in Figure 19 shows the area of interest for this group of students.

Figure 19 - CHOICE Entry Wage Premium



The overall model disaggregates expected income gains for CHOICE students into four categories:

1. Faster growth in earned income across a working life;
2. Faster growth in non-earned income (i.e. interest and dividends) across a working life;
3. Higher earned income after the traditional retirement age of 65; and
4. A CHOICE-specific wage increase upon completion of the program and entry into the workforce

To measure each component of income gain, certain qualifying assumptions are required.

The first component of income gain refers to the relative levels of expected earned income across a working life. As detailed in Table 12 and Figure 16, data on income earned by workers with a vocational education background and a general high school diploma, across age cohorts, is derived from the CSS and PUMS. It is assumed that the full-time working life of a worker between the ages 18 to 65. As the data is cross-sectional in nature, real growth rates for inflation-adjusted income are assumed to be 1.25 percent for CHOICE graduates and 0.25 percent for high school graduates.

The second component refers to non-earned income. The assumption herein follows the model of Snead (2004) in which non-earned income for workers having graduated high school is 5.3 percent of earned income and 5.8 percent of earned income for vocational education graduates.

The third component considers retirement income. It is assumed that retirement income is earned between the ages of 66 and 75 and retirement income levels are derived from CSS and PUMS data.

The final component of income gains for an average worker completing the CHOICE program refers to the wage premium realized by workers upon entry into the labor force. Results from the focus groups suggest that CHOICE students' entry wage is approximately 20% higher than for other vocational education programs in Florida.

Model results are presented in Table 13. The results show the expected future income gains to a CHOICE graduate relative to a high school graduate. A CHOICE graduate should expect to earn an additional \$298,915 over a lifetime of work relative to a high school graduate. Additional non-earned income over a lifetime is estimated at \$23,011. Additional retirement earnings are estimated at \$33,280, and an entry wage premium for CHOICE students is expected to be in the region of \$23,000. Combined, the total gain in future income for a CHOICE graduate relative to a high school graduate is in excess of \$373,000.

Results also show the present value of the expected future income gain. The present value is the most appropriate measurement as it accounts for the time value of money. The time value of money reflects the concept that people prefer a given amount of money today rather than the same amount of money in the future, all else being equal. Money today is more valuable than money in the future so \$100 a year from now is not worth \$100 in current dollar terms, but rather, something less (dependent upon the discount rate). The time value of money takes into account risk aversion – primarily inflation risk, as individuals realize funds in the future are subject to inflation, therefore discounting a future stream of money into current dollars removes the uncertainty associated with time. The present value of the future income stream is presented in this report due to the extended time frame of future income streams of a typical individual's working life.

The present value of a future stream of earnings represents the current value of all future earnings if they were earned today. The present value of a future stream of earnings is calculated using the formula:

$$\sum_{t=1}^T 1/(1+r)^t$$

where t = time period and r = the discount rate¹¹.

¹¹ We assume a real discount rate of 3% as is standard throughout present value calculations in economic research.

Table 13 - Estimated Income Gains Due to Vocational Education

Category	Future Income Gain	Percent Gain	PV of Income Gain	Percent Gain
Entry Wage Gain	\$23,011	6.2%	\$19,649	11.9%
Income Gain Across Working Life	\$298,915	80.1%	\$128,930	78.2%
Non-Earned Income Across Working Life	\$18,169	4.9%	\$9,209	5.6%
Retirement Earnings Gains	\$33,280	8.9%	\$7,076	4.3%
Total	\$373,375	100.0%	\$164,864	100%

Table 13 shows that while the future income gains for an average vocational education completer are approximately \$373,000, the present value of all future income gains for a CHOICE graduate is approximately \$165,000 in current dollars¹². Again, the model breaks out the gain across four components.

The majority of the income gain is realized through earnings across a working life. As shown in Table 12 and Figure 18, an average worker with a vocational education background earns greater annual income levels than a comparable worker with a high school diploma. The present value of the expected income gains to a CHOICE graduate gains is approximately \$129,000, accounting for almost 78 percent of the total income gains.

Non-earned income over the working life is another component of the expected income gain to a CHOICE graduate and accounts for roughly 6 percent of the total income gain. This equates to more than \$9,000 in current dollars.

The third component is retirement earnings. They make up 9 percent of the total gain in earnings with the present value of retirement gains equating to roughly \$7,000.

Finally, focus group responses from employers of CHOICE students revealed that an average CHOICE student receives an approximate 20 percent entry wage premium above a traditional vocational education student. The entry wage gain specific to CHOICE students accounts for roughly 6 percent of the total gain in income, with the 20 percent entry wage gain across a 10-year period translating into almost \$20,000 in current dollars.

¹² Refer to appendix for discussion on caveats to model results

Aggregate Measures of Income Gains

The \$165,000 present value of expected income gains for CHOICE graduates reflects the gains for one student. To aggregate the results across all graduates in a given school year, the model accounts for the two categories of CHOICE students that were previously defined.

The first category of CHOICE student of interest within the study concerns students that, in the absence of the CHOICE program would have chosen to pursue a general high school diploma. The value-added in terms of income gains to this set of students is the present value of the difference between the time profile of earnings for CHOICE students and traditional high school students. This includes the entry wage premium.

As revealed in Figure 18, this is the present value of the shaded area between the two time profiles of earnings. Based on the findings from Table 13, this represents the full \$164,864 in current dollars.

The second CHOICE student type concerns those that would have gone into a traditional vocational education in the absence of the CHOICE program. The value-added in terms of income gains to this group of students is the present value of the entry wage gain associated with the CHOICE program. As shown in Table 13, this is \$19,649 in current dollars.

To aggregate the findings to all CHOICE students, an estimate of the number of students within both categories is required. Based on the enrollment numbers for vocational education programs, it is conservatively estimated that 85 percent of students graduating the CHOICE program would otherwise have graduated with a high school diploma had the CHOICE program not been available to them. The remaining 15 percent would have attended a traditional vocational education institution.

In the last school year, 2005 to 2006, there were 304 students that graduated from high school having completed one of the CHOICE programs and received a certification. Of these, 258 expect the gain in income from graduating the CHOICE program as the difference in lifetime earnings as shown in Figure 18. The remaining gain in income for the remaining 46 CHOICE students is the difference in lifetime earnings revealed in Figure 19. Figures are also adjusted for a labor force participation rate of 70 percent and to capture out-migration over time. Following the Snead (2004) model, the assumed annual out-migration rate is 2.7 percent, with the total number of CHOICE graduates remaining in the state leveling out at 55 percent in approximately the twentieth year after graduation.

Table 14 - Aggregate Present Value og Income Gains to CHOICE Graduates

Institution Attended Without CHOICE	Number of Students	PV of Income Gain	Aggregate PV of Income Gain
High School	258	\$164,864	\$41,057,656
Traditional Votech	46	\$19,649	\$577,151

Table 14 shows the 258 CHOICE graduates in 2006 that would otherwise have attended high school create an additional present value income gain of over \$40 million, while the 46 that would have attended a traditional vocational education institution create over \$577,000 in additional current dollar income.

Regional Impact of CHOICE Income Gains

The total gains in current dollar terms represent the expected additional income derived over a working life for an average individual that graduates the CHOICE program. In terms of the Okaloosa economy, this is the direct effect of the CHOICE program. This will impact the Okaloosa economy through additional income being spent on regional products, plus secondary effects. As a result, the total regional impact will be highly significant as the direct, indirect, and induced benefits trickle through the economy. As the direct income gains to workers support additional income and employment across the region, the region will also realize fiscal benefits from greater aggregate income levels through additional direct and indirect tax revenues.

The migration-adjusted aggregated present value estimates are the direct effects that form inputs into the model. The model of choice for this project is the Regional Economic Modeling Inc. (REMI) Policy Insight model. REMI is a dynamic input/output model, which means it forecasts what will happen and when it will happen. REMI brings together all of the elements of an interactive economy to determine the value of each of the variables in the model for each year of the forecast. The model output is presented as the total income gains to the regional economy.

A key component of the REMI model that provides a conceptual insight into the relationship between direct, indirect, and induced effects is the multiplier process.

The total economic impact estimates are shown in Table 15. The aggregated present value of total income gains is derived from the estimates in Table 14.

Table 15 - Total Economic Impact

Year 2006 Completers	PV of Direct Total Income Gain	Indirect and Induced Earnings	Total Direct, Indirect, & Induced Income Gain
304	\$41,634,807	\$4,615,910	\$46,250,717

Despite the assumed out-migration as graduates leave the region, the results in Table 15 reveal that the added wage gains of \$41.6 million received by CHOICE students graduating in 2006 that stay within the county results in additional county-level income totaling \$4.6 million. The total income gain is approximately \$46 million to the regional economy.

Student Attainment

Describing and comparing student attainment for CHOICE students relative to Okaloosa high school students is presented in two stages. First, descriptive statistics for both groups of students are presented. Data for the analysis is provided by merging a student-specific dataset with census tract data using Geographic Information Systems (GIS) software. This allows student-specific attainment to be analyzed as well as other performance-related variables, such as the socioeconomic profile of a student's background. The second stage is to control for performance-related factors in order to provide an econometric comparison between CHOICE student and high school students attainment levels.

Descriptive Statistics

Table 16 presents the descriptive statistics for CHOICE students. In terms of student educational attainment, the data focuses on Florida Comprehensive Assessment Test (FCAT) scores. FCATs measure student performance on related benchmarks in reading, writing, and science, as set out by the Sunshine State Standards (SSS). FCAT achievement levels describe the success a student has achieved in math and reading, based on a scale of 1 to 5; with Level 1 indicating a student has little success with SSS content, and Level 5 indicating that a student has success with SSS content and answers most of the challenging questions correctly. A Level 3 is considered a pass.

Table 16 - Descriptive Statistics - CHOICE Students (2005-2006 Graduates)

Variable	Number of Students	Average
CHOICE Students		
Sex (Male = 1, Female = 0)	1028	0.79
Race (White = 1, Non-white = 0)	1028	0.86
GPA	1028	2.81
Reading Achievement Level	508	2.78
Math Achievement Level	508	3.43
Socioeconomic Data		
White (percent)	849	83.6
Black (percent)	849	8.3
Native American (percent)	849	0.6
Asian (percent)	849	2.3
Hawaiian (percent)	849	0.1
Other (percent)	849	1.2
Multi Race (percent)	849	2.7
Hispanic (percent)	849	3.9
Median Household Income	1028	\$40,499
Average Household Size	1028	2.1
Owner Occupied (percent)	849	65.4

Table 16 shows that 79 percent of students are male with 86 percent white. FCAT achievement levels reveal that the CHOICE students achieve higher scores in math than reading with an average math achievement level of 3.43 and reading achievement level of 2.78. With a passing level set at 3, this implies that the average CHOICE student passes the math FCAT but does not pass the reading FCAT. The average GPA across all CHOICE students is 2.81.

Socioeconomic data reveals that CHOICE students come from dominantly white areas with median household income levels of \$40,499, an average household size of 2.1 persons, and with 65.4 of households owning their home.

Table 17 - Descriptive Statistics - High School Students (2005-2006 Graduates)

Variable	Number of Students	Average
CHOICE Students		
Sex (Male = 1, Female = 0)	7427	0.46
Race (White = 1, Non-white = 0)	7427	0.77
GPA	7427	2.82
Reading Achievement Level	4440	2.60
Math Achievement Level	4196	3.27
Socioeconomic Data		
White (percent)	6189	82.8
Black (percent)	6189	8.9
Native American (percent)	6189	0.6
Asian (percent)	6189	2.4
Hawaiian (percent)	6189	0.1
Other (percent)	6189	1.2
Multi Race (percent)	6189	2.8
Hispanic (percent)	6189	4.0
Median Household Income	7427	\$40,469
Average Household Size	7427	2.1
Owner Occupied (percent)	6189	62.6

The majority (54 percent) of Okaloosa high school students are female with a 77 percent white majority. GPA scores are very much in line with CHOICE students with an average GPA of 2.82 across all high school students. Table 17 reveals that the average math and reading achievement levels for high school students are below their CHOICE counterparts. The average math and reading achievement levels are 2.60 and 3.27 respectively compared to 2.78 and 3.43 for CHOICE students.

As expected, the socioeconomic background of students is comparable to that of CHOICE students as all students reside in the same county. Median household income levels are \$40,469, with an average household size of 2.1 persons, and a 62.6 percent owner occupancy rate.

Comparing math and reading FCAT scores for both CHOICE and high school students provides a worthwhile initial indicator of relative program performance, yet a more sophisticated analysis is required to control for performance-related factors. Such analysis is called regression analysis. Regression analysis is a tool that uses statistical techniques to identify otherwise unknown correlations between variables. Correlation is simply a statistical term that indicates whether or not two variables move together. In an analysis of this nature, a student's GPA is perhaps expected to be positively correlated with his/her math achievement score. Such correlations are straight forward enough to identify as long as there are only a couple of variables involved. With multiple variables, the process becomes more difficult. Not accounting for such factors is called selection bias. For example, it may be that the CHOICE students in the sample population

are academically better students, therefore, are expected to perform better in FCAT testing. Also, CHOICE students may come from wealthier households with the assumption that educational performance is promoted more feverishly than poorer households. Not controlling for such factors can provide misleading results and unsupported policy implications.

Regression analysis is the tool that enables correlations to be identified by artificially holding constant every variable in the model except the two that are of concern. As such, the regression model controls for all variables of interest and allows inferences to be made on which variables are correlated and which are not.

Regression Analysis

Data for the regression models comes from a student-specific dataset merged with census tract data to allow socioeconomic variables to be controlled for. In the analysis, only students in Grades 9 and 10 were considered as these are the grades in which FCAT testing in math and reading is administered. Two sets of linear results are provided. Table 18 provides the model results using FCAT reading scores as the dependent variable.

Table 18 - Regression Results: FCAT Reading Scores

Variable	Coefficient	Standard Errors	t-value
Intercept	1550.4	16.6	93.1
Sex	9.0	6.6	1.4
Race	76.3	7.9	9.7
Grade	-30.0	6.4	-4.7
GPA	167.1	4.0	41.4
CHOICE	24.5	10.8	2.3
Income	0.0	0.0	0.1

The coefficients on the independent variables reveal the size of the impact of each variable on a student's FCAT reading score. For example, male students in the sample population score an additional 9 points on their FCAT reading scores than females, and white students score an additional 76 points compared to non-whites. The t-value reveals the level of significance of the relationship between the independent and dependent variable. A general rule of thumb is that a t-value greater than 2 reveals a statistically significant relationship. In this case, the relationship between sex and FCAT reading scores is not statistically significant.

Most variables have the expected signs. The strong positive coefficient on the GPA variable indicates that students with higher GPAs score higher on FCAT reading scores. The negative and significant coefficient on the GRADE parameter indicates that a higher grade level is associated with a lower reading scores. This suggests that as students move up a grade they find it increasingly difficult to attain the passing Level 3.

The variable of interest in the model is the CHOICE parameter. While controlling for all other variables, the positive coefficient indicates that CHOICE students perform better on FCAT reading scores than high school students. This is statistically significant at the 2 percent confidence level, indicating a high degree of statistical correlation between the two variables.

Table 19 presents the results from the regression model that use the FCAT math scores as the dependent variable.

Table 19 - Regression Results: FCAT Math Scores

Variable	Coefficient	Standard Errors	t-value
Intercept	1637.2	10.3	159.6
Sex	43.6	4.1	10.7
Race	37.5	4.9	7.7
Grade	10.0	4.0	2.5
GPA	115.8	2.5	46.4
CHOICE	12.4	6.6	1.9
Income	0.0	0.0	1.6

The signs of the coefficients remain largely the same as the reading model apart from the Grade parameter, which is now positive. A student's sex, race, grade, and GPA all have a statistically significant positive effect on FCAT math scores. Results again reveal that the CHOICE program has a positive and significant coefficient, providing statistical evidence that students in the CHOICE program score higher than comparable high school students on the math FCAT.

The two regression models reveal a value-added for students in the CHOICE program through higher FCAT reading and math scores compared to high school students, having controlled for other performance-related variables. In both models, there is a statistically significant relationship between students in the CHOICE program and higher FCAT scores. This finding provides statistical support for recent research (Rasinski, 1994; Meyer, 1992, and Kulik 1994) that provides statistical evidence contrary to the traditionally-held view that vocational education students give up a degree of academic achievement in order to pursue occupational or job-specific skills. The results show that CHOICE students perform better than comparable school students in FCAT testing.

Focus Groups

In order to consider any qualitative value-added impacts of the CHOICE program, the Haas Center conducted three focus groups to attain direct feedback of the other value-added components of the CHOICE program.

The three focus groups were conducted with employers of CHOICE program students, CHOICE students, and CHOICE teachers. Each focus group asked respondents open-ended questions regarding the CHOICE program and its strengths and weaknesses. A summary of each focus group is provided below.

Employers

Focus group feedback from employers suggests that local companies see a number of components of value-added in new employees that have been through the CHOICE program.

Reduced business search time and recruiting cost are revealed as important value-added components of the program to local companies. In a tight labor market that exists on Okaloosa County, companies can spend value time and resources searching for appropriate employees to meet the business needs. Focus group feedback suggests that the CHOICE program helps local businesses reduce search times and recruiting costs through screening the students and sending the best and most appropriate students to companies that are in need. Essentially, program Deans act as a “Personnel Department” for local businesses and as such, save time and valuable company resources by reducing recruiting costs.

In a related measure of value-added, focus group feedback also suggests that local businesses gain from reduced employee training costs. Students have already learned many hard skills by the time they enter the workforce, so employers do not have to spend much time training new employees up in their practice. Feedback also suggests that any additional training that is required beyond the skills developed through the CHOICE program are readily acquired as they have a background of skill-based training.

The value-added in regard to soft skills is also prevalent from focus group feedback. Employers revealed that workers from the CHOICE program have problem solving skills along with the necessary academic qualifications. They are also resourceful in learning new processes - a result of an education background of training in finding and applying new information online.

Students

Focus group feedback from students reveals that the CHOICE program promotes students’ interest in academics, allows students to earn more money through industry-recognized certifications, and provides students with more direction upon graduating from high school.

Many students revealed the value-added in learning in a subject area that they have a deep interest in. Developing skills and working towards industry certifications in fields of interest increase the enjoyment of going to school and create an additional incentive succeed. Students revealed that CHOICE helped them find programs in which they can get credit for something they enjoy doing. This can have a positive influence

on grades. Some students also revealed that the program gave direction in terms of what the students wanted to pursue. Without this direction, students would otherwise continue along a traditional academic path, not knowing where it was taking them. Others see the potential benefits in signing up for one of the programs in order to try out a particular profession. This helps the students decide if it's a good fit for them instead of spending years at college training in an area that you later discover is not for you.

A major value-added component revealed by students concerns the benefits of obtaining industry-recognized certifications. Students acknowledged the importance of obtaining the certifications, at no cost to them, in improving access to the job market upon completion. Also, students that wish to continue their education to the college level revealed the value in being better prepared to work part-time positions in order to fund their college tuition. Also revealed is the value-added from earned internships while in the program, and the connections made with local companies, as well as the opportunity to learn more "on-the-job" skills.

Focus group feedback also suggests that students regard the CHOICE program as a good stepping-stone toward their future endeavors. Many revealed a desire to continue education and attend college. In this regard, the CHOICE program provides a good focus for students to know choose the most applicable college program. Others indicated that they intend to use all the skills developed throughout the program to start their own business. The CHOICE program provides the skills and the confidence for students to leave and be successful in the labor market.

As students reveal several value-added components of the CHOICE program, the overall benefit to the regional economy cannot be overstated. This report discussed the growing importance of education beyond the high school level. The CHOICE program encourages students to graduate with an industry-recognized certification, or perhaps even continue their education to the college level. Whichever route is chosen, the regional economy benefits from more educated and trained workers in high-skill positions that will continue to drive growth in the regional economy.

Teachers

A third focus group was conducted with teachers from the IT and Construction Institutes. Generally, teachers stated their observed benefits in terms of what the students gain from attending the program. Many of the comments support those of the students themselves as teachers discussed the importance of the program in teaching students applied, practical skills, as well as the soft skills that are important in today's workforce.

Focus group feedback from CHOICE teaching staff reveals the general philosophy to equip students with the necessary practical skills required in today's workforce, but also to motivate students to take their education to the college level. Industry representatives come into the classroom so students learn the practical side.

This leads to more qualified, higher paying jobs full-time upon graduating from the program, or students can earn money in part-time positions to help put themselves through college. CHOICE can be regarded as a stepping stone toward higher education.

Teachers reveal that they do not accept mediocrity in student's work. Standards are high and as a result, students learn, not only valuable hard skills but soft skills; such as interpersonal skills, leadership, and working as a team. For example, the IT Institute provides many team-based projects to give students the opportunity to interact with each other and improve their communication skills. They compare such practices to a general high school curriculum that is based on individual performance. Such practices add significant soft skills to a student's profile. Companies require new employees to have these basic skills.

An additional benefit is revealed even if students leave the program and do not go into a related field. Students learn skills that they can use throughout their lives. A student leaving the Construction Institute that gets a job in the finance sector has skills that will be useful in repairing his/her home or even building a home in the future.

Teachers also reveal that parents of CHOICE students see the benefits of the program. Parents observe their children getting more from the CHOICE program than regular high school. This changes their perception. The program encourages their children to stay in high school and complete a certification.

Appendix

Discussion on Model Results for Income Gains to CHOICE Students

In referring to the findings of the report, certain caveats need to be highlighted. In regard to the validity of the results, certain exogenous factors may affect the findings. First, the report does not attempt to quantify income gains across course disciplines. Workers with a vocational training background in information technology, aerospace, or construction may realize greater income gains than those presented, or perhaps those with a vocational background in another discipline may experience lower gains. The results present an average across all disciplines.

Results may be a conservative lower bound as other research shows that returns to vocational education are significantly higher for those that find work in their field of expertise. The CHOICE program has a strong track-record of placing students in related employment positions due to its collaboration with local industry representatives. The income gains to CHOICE graduates may be understated in the findings.

The report does not account for differences between sex and race of students. Research shows that both sex and race matter in terms of the time profile of earnings; however, the results are taken as an average across all workers.

Possibly the most important caveat concerns selection bias. Selection bias complicates the process of identifying the gains to vocational education as it may be the case that those with greater technical or academic ability choose the CHOICE program above a general high school education. Parent's income and education is also shown to influence a student's ability to choose an education path and can influence lifetime earnings. If selection bias is present then income gains attributed to vocational education may be in part, attributable to greater ability of the average student. Two factors reduce the probability of selection bias when considering lifetime earnings of CHOICE and high school graduates. First, traditionally, vocational education programs attracted students from lower socioeconomic backgrounds, and therefore students with, on average, lower academic ability. Second, the presence of CHOICE institutes within existing high school provides students with greater flexibility in choosing a path in career education, reducing the potential for only more academically qualified students joining the program.

Projected Benefits and Costs by Institute

Information Technology Institute

Table A1 – Cost Breakdown

INSTRUCTORS	COST BREAKDOWN			TOTAL COST PER CLASS
		Menu Cost Teacher	UFTEx\$1000/EA	
BRANSCOME		\$ 64,550.00	\$ 24,166.67	\$ 88,716.67
COOK	100%	\$ 57,950.00	\$ 22,333.33	\$ 80,283.33
DURRETT	60%	\$ 34,770.00	\$ 14,333.33	\$ 49,103.33
MCSHEEHY	60%	\$ 34,770.00	\$ 16,333.33	\$ 51,103.33
SHUMAN	60%	\$ 34,770.00	\$ 13,500.00	\$ 48,270.00
WIGGINS		\$ 64,550.00	\$ 23,333.33	\$ 87,883.33
TONEY	100%	\$ 57,950.00	\$ 24,333.33	\$ 82,283.33
CRIME SCENE (contract)		\$ 13,000.00	\$ 10,000.00	\$ 23,000.00
TOTAL COSTS		\$ 362,310.00	\$ 148,333.33	\$ 510,643.33

Table A2 – Projected Profit/Loss per Class

INSTRUCTORS	WFTE	TOTAL REVENUE	LESS: COST PER CLASS	PROFIT/(LOSS) PER CLASS
BRANSCOME	28.0092	\$ 97,344.06	\$ 88,716.67	\$ 8,627.40
COOK	25.8843	\$ 89,959.34	\$ 80,283.33	\$ 9,676.01
DURRETT	16.6123	\$ 57,735.10	\$ 49,103.33	\$ 8,631.77
MCSHEEHY	18.9303	\$ 65,791.16	\$ 51,103.33	\$ 14,687.83
SHUMAN	15.6465	\$ 54,378.41	\$ 48,270.00	\$ 6,108.41
WIGGINS	27.0433	\$ 93,987.37	\$ 87,883.33	\$ 6,104.04
TONEY	28.2023	\$ 98,015.40	\$ 82,283.33	\$ 15,732.07
CRIME SCENE	11.5900	\$ 40,280.30	\$ 23,000.00	\$ 17,280.30
REVENUE/(LOSS)		\$ 597,491.14	\$ 510,643.33	\$ 86,847.81

Construction Technology Institute

Table A3 - Cost Breakdown

INSTRUCTORS	COST BREAKDOWN			TOTAL COST PER CLASS
	Menu Cost Teacher	UFTE	\$1000/EA	
WILLIAMS	100%	\$ 57,950.00	\$ 19,500.00	\$ 77,450.00
CAMPBELL	50%	\$ 28,975.00	\$ 13,000.00	\$ 41,975.00
PRESTON	100%	\$ 57,950.00	\$ 12,000.00	\$ 69,950.00
CHIVERS	60%	\$ 34,770.00	\$ 12,500.00	\$ 47,270.00
CAWTHON	50%	\$ 28,975.00	\$ 12,500.00	\$ 41,475.00
COOK	100%	\$ 57,950.00	\$ 21,000.00	\$ 78,950.00
EGLIN	100%	\$ 57,950.00	\$ 20,000.00	\$ 77,950.00
FLEMING	100%	\$ 57,950.00	\$ 17,666.67	\$ 75,616.67
TOTAL COSTS		\$ 382,470.00	\$ 128,166.67	\$ 510,636.67

Table A4 - Projected Profit/Loss per Class

INSTRUCTORS	WFTE	TOTAL REVENUE	LESS: COST PER CLASS	PROFIT/(LOSS) PER CLASS
WILLIAMS	22.6005	\$ 78,546.59	\$ 77,450.00	\$ 1,096.59
CAMPBELL	15.0670	\$ 52,364.39	\$ 41,975.00	\$ 10,389.39
PRESTON	13.9080	\$ 48,336.36	\$ 69,950.00	\$ (21,613.64)
CHIVERS	14.4875	\$ 50,350.38	\$ 47,270.00	\$ 3,080.38
CAWTHON	14.4875	\$ 50,350.38	\$ 41,475.00	\$ 8,875.38
COOK	24.3390	\$ 84,588.63	\$ 78,950.00	\$ 5,638.63
EGLIN	23.1800	\$ 80,560.60	\$ 77,950.00	\$ 2,610.60
FLEMING	20.4757	\$ 71,161.87	\$ 75,616.67	\$ (4,454.80)
REVENUE (LOSS)		\$ 516,259.20	\$ 510,636.67	\$ 5,622.54

Creative Arts Institute

Table A5 – Cost Breakdown

INSTRUCTORS	COST BREAKDOWN			TOTAL COST PER CLASS
	Menu Cost Teacher	UFTE	\$1000/EA	
FRAKES	100%	\$ 57,950.00	\$ 22,000.00	\$ 79,950.00
				\$ -
			\$ -	\$ -
TOTAL COSTS		\$ 57,950.00	\$ 22,000.00	\$ 79,950.00

Table A6 - Projected Profit/Loss per Class

INSTRUCTORS	WFTE	TOTAL REVENUE	LESS: COST PER CLASS	PROFIT/(LOSS) PER CLASS
FRAKES	25.4980	\$ 88,616.66	\$ 79,950.00	\$8,666.66
REVENUE(LOSS)		\$ 88,616.66	\$ 79,950.00	\$8,666.66

Engineering Institute

Table A7 - Cost Breakdown

INSTRUCTORS	COST BREAKDOWN			TOTAL COST PER CLASS
	Menu Cost Teacher	UFTE	\$1000/EA	
RIGBY	100%	\$ 57,950.00	\$ 20,333.33	\$ 78,283.33
				\$ -
			\$ -	\$ -
TOTAL COSTS		\$ 57,950.00	\$ 20,333.33	\$ 78,283.33

Table A8 - Projected Profit/Loss per Class

INSTRUCTORS	WFTE	TOTAL REVENUE	LESS: COST PER CLASS	PROFIT/(LOSS) PER CLASS
RIGBY	23.5663	\$ 81,903.28	\$78,283.33	\$3,619.95
REVENUE(LOSS)		\$ 81,903.28	\$78,283.33	\$3,619.95

Aviation Institute

Table A9 - Cost Breakdown

INSTRUCTORS	COST BREAKDOWN			TOTAL COST PER CLASS
	Menu Cost Teacher	UFTE	\$1000/EA	
HESTER (OCSD)	40%	\$ 23,180.00	\$ 9,166.67	\$ 32,346.67
MURPHY	0%		\$ 8,500.00	\$ 8,500.00
HANSEN		\$ 13,400.00	\$ 3,333.33	\$ 16,733.33
BECKER		\$ 13,400.00	\$ 4,166.67	\$ 17,566.67
BECKER		\$ 13,400.00	\$ 4,333.33	\$ 17,733.33
ESWORTHY	40%	\$ 23,180.00	\$ 10,500.00	\$ 33,680.00
HANSEN		\$ 13,400.00	\$ 3,666.67	\$ 17,066.67
JANAZZO		\$ 16,700.00	\$ 6,333.33	\$ 23,033.33
TOTAL COSTS		\$ 116,660.00	\$ 50,000.00	\$ 166,660.00

Table A10 - Projected Profit/Loss per Class

INSTRUCTORS	WFTE	TOTAL REVENUE	LESS: COST PER CLASS	PROFIT/(LOSS) PER CLASS
HESTER	10.6242	\$ 36,923.61	\$ 32,346.67	\$4,576.94
MURPHY	9.8515	\$ 34,238.26	\$ 8,500.00	\$25,738.26
HANSEN	3.8633	\$ 13,426.77	\$ 16,733.33	(\$3,306.57)
BECKER	4.8292	\$ 16,783.46	\$ 17,566.67	(\$783.21)
BECKER	5.0223	\$ 17,454.80	\$ 17,733.33	(\$278.54)
ESWORTHY	12.1695	\$ 42,294.32	\$ 33,680.00	\$8,614.32
HANSEN	4.2497	\$ 14,769.44	\$ 17,066.67	(\$2,297.22)
JANAZZO	7.3403	\$ 25,510.86	\$ 23,033.33	\$2,477.52
SUBTOTAL		\$ 201,401.51	\$ 166,660.00	\$34,741.51
Projected additional cost for 3rd Class/Second Semester (Instructor + Overhead)				(\$17,400.00)
Projected additional revenue for 3rd class 1 semester only (2.414 WFTE)				\$8,388.78
REVENUE(LOSS)				\$25,730.29