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# IT/IS Educational Pathways: The Road to Increased IS/IT Enrollments

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## ABSTRACT

The need for a qualified workforce in information technology and information systems (IT/IS) is reaching crisis proportions. The U.S. Department of Labor identified information technology as “the fastest growing sector in the economy with a 68% growth rate projected between 2002 and 2012”. In 2007 alone, two out of three Federal agencies listed information technology as a mission-critical occupation due to overwhelming increase in demand [Partnership for Public Service, 2007]. Moran [2006] identified 6 of the most attractive jobs into 2012 as IT-related. Couple this information with the declining enrollment of students entering a degree field of study related to information and communications technology (ICT, or simply IT/IS) and the rapid retirement of “baby boomers” from the technical workforce; the United States is facing a major crisis by the year 2012 [Becker, Hassan, Naumann, 2006; Luftman, 2008]. This paper describes the need for a major project (a.k.a., IT/STEM in Motion Project) that would by necessity involve a complete bottom-up realignment of K-12 educational programs, employing educational pathways (a.k.a., major tracts), that will excite, elicit, entice students into many different post-secondary educational, technology-related programs (e.g., Science, Technology, Engineering and Mathematics--STEM), and in particular the IT/IS field. NOTE: NSF funding is being sought to expedite this project.

## Keywords

IT/IS Enrollments, Education, Pathways, STEM, collaboration, K-12, IS/IT degrees, Society for Information Management (SIM), Denton TX

## INTRODUCTION

The U.S. Bureau of Labor Statistics in 2004 indicated that 85% of employment opportunities required advanced technical training or professional degrees. Texas House Bill 1 [2007] focused on the need for a seamless, integrated system of postsecondary education, strategically planned and funded to enhance economic development and quality of life.

At the State level, The Texas Industry Cluster Initiative has identified Information and Computer Technology as one of the five key career clusters that is struggling to find highly qualified workers to meet the employment demands: Communications Equipment, Computing Equipment and Semiconductors, Information Management. The Texas Education Agency (TEA) reported in 2007 that for every 100 students who entered high school only 18 would graduate from college. By the year 2030, between 30-40% of the Texas workforce will be dropouts per Interlink, 1997 and 58% of high school students said that high school did not prepare them for work [TEA, Achieve Inc, 2005]

In a recent survey that was distributed to over 2,000 respondents in sixteen counties in the North Central Texas region, survey respondents from governments and industry indicated that Information Technology was third in demand in the job sector in job growth [North Central Texas InterLink, 2007]. This follows Federal trends where it is predicted that the pool of available candidates through 2014 will be severely reduced [Becker, et. al, 2006; ITTA, 2003].

Innovations in computing hardware, software, and networks will continue to drive the need for skilled IT workers that can use cutting edge technologies to solve emerging business problems. The types of expertise needed by companies in the new millennium are expected to change as new technologies are brought into the market. For educators, this market trend suggests the need for integrating a variety of cutting edge software and hardware into the curriculum, because it has been shown to enhance the employability of information technology graduates [Koong, Liu, Liu, 2002].

At the local level, David Ward, president of the nonprofit American Council on Education stated, “One challenge will be looking at the interface between high schools and colleges and the issue of college readiness. Efforts have begun to introduce the notion of college preparation to middle school students and to students who traditionally would not have sought out college, but more needs to be done to improve K-12 school systems from which many of the students will come.” Steven Roy

Goodman, an educational consultant and admissions strategist stated, “Schools in more remote areas, with fewer resources and no particular academic focus, could struggle” [Strauss, 2008].

The 76% decline in undergraduate IS/IT enrollments at the University of North Texas between spring 2001 (488 majors) and spring 2006 (114 majors) is typical of the trend in IS/IT enrollments worldwide [Becker, et. al, 2006]. Two megatrends that have been widely associated with this precipitous downturn are: 1) the rapid run-up of Dot.Com/Ecommerce boom in the late 1990s followed by the Dot.Com market crash in April 2001; and 2) the outsourcing of IS/IT jobs by major US corporations to offshore locations [Benarzick 2005]. Even if the full-economic impacts of IT offshoring are ambiguous, it is unambiguous that the number of future native IT management personnel has been significantly reduced.

This decline would suggest a need to develop an innovative action plan. Becker, Hassan and Naumann [2006] maintained that to be successful this plan should include a new type of broad-based and innovative collaboration, which included public and private sector organization, IS/IT professional societies, secondary schools, and even textbook publishers. A 2002 study conducted in Denton, TX by a planning subcommittee for the Advanced Technology Complex [DISD, 2002] found that college readiness is an issue that must be addressed in the middle school or elementary school, but not later than grade 6, or student performance in high school will be limited. This study reported that low-income families do not see college degrees as realistic and that parent involvement must be engaged early-on to help these children reach full potential. Denton Independent School District (DISD) has 20,841 students of which over 36% students are on a free or reduced lunch program and 37.7% are flagged as at-risk, with nine Title One campuses that have a high percentage of low income students..

The University of North Texas (UNT) is an ideal partner for DISD IT/STEM in Motion project. Founded in 1890, the UNT is the third largest university in Texas with more than 34,000 students. UNT is the most comprehensive university in the Dallas-Ft Worth region with 96 bachelor's, 111 master's and 50 doctoral degree programs, many nationally recognized. With a 20:1 student-faculty ratio UNT is regarded as a premiere student-centered public research university. In addition, it was named one of the nation's top 100 colleges for Hispanic students, and one of the top 100 colleges graduating the most African Americans.

There are four large IS/IT-related faculties housed within the following departments: Information Technology and Decision Sciences (ITDS) in the College of Business Administration, Learning Technologies in the College of Education, Computer Science in the College of Engineering, and the School of Library and Information Systems. There are more computers per student than any other public university in the Dallas-Fort Worth region and it is the largest provider of online credit courses among Texas public universities.

Over 60 research and service centers, including the internationally recognized Center for Collaborative Organizations and the Information Systems Research Center in the College of Business Administration are located on the UNT campus.

Finally, UNT is home of the Texas Academy of Mathematics and Science (TAMS), the nation's first accelerated residential program for gifted teens. This two-year highly competitive program permits students in their teens to take their last two year of high school at a major university where they can obtain up to 60 hours of dual-credit college-level coursework.

## **PROJECT GOALS AND OBJECTIVES**

The goal of the proposed project is to change the way in which K-12 and postsecondary education systems in the Denton County area view and respond to the need for a prepared 21<sup>st</sup> century workforce in information technology and integrate strategies across curricular areas for a high level of student interest and successful retention in IT/STEM programs.

This project will integrate workforce knowledge, with K-12 and postsecondary to find those strategies that will support student involvement in exploration and recruitment in the field of information technology and the integration of STEM at an early secondary level to support student involvement and interest.

In short IT/STEM in Motion will create an education pathway from K to College and/or ultimately into careers in the IT/STEM workforce. See Appendix 1 for an example of how activities would extend along the pathway.

## **EXPLANATION OF PRINCIPLES THAT GUIDED THE PLAN—CREATE A PATHWAY FROM K TO COLLEGE TO IT/STEM WORKFORCE:**

There are several principles that will be tested during this project:

- The vertical teaming in educational planning will increase performance and outcome
- Setting high standards that result in high performance
- Effective career counseling and personal career planning are essential

- Providing family outreach/involvement will significantly impact the performance of low income students
- Poor student performance in elementary and middle school (i.e.: attendance, grades, behavior) will undermine high school success and beyond
- Parents are a critical part of motivation and will be involved at an early stage of the process
- Early engagement is critical especially in the academic arena
- Most important, if you show them “early” what they can become and how it can be achieved—it is a win-win situation
- University level IS/IT programs will be designed to lure more students with specially tailored marketing and recruiting strategies, dual enrollment coursework opportunities, and student-friendly counseling experiences. This is also referred to as the Pathways Program [Gaskin, 2006], which has proven to be highly successful in increasing enrollments of IS/IT majors at Pasadena City College in California.

## DETAILED PROJECT DESCRIPTION

### Explain and describe the strategy for creating a linkage between STEM and workforce skills.

The *IT/STEM in Motion* overall strategy has a multi-tiered effect that addresses several key linkages: Rigorous and relevant advanced educational opportunities designed into IT/STEM career academies, innovative learning environments, early entry/intervention, professional development, development of career counseling events and materials, family outreach and a strong marketing campaign. Efforts will be driven first by professional business/industry input concerning the skills and knowledge required for IT/STEM workforce; and, second by the post-secondary expectations for successful transition to advanced degrees. This is referred to as “transformational planning.” It will address the creation of current and emerging high-demand IT/STEM occupations into educational models that transform education planning into reality.

### Describe the plans for implementation of the strategy.

- A) Systemic Alignment: Design and development of strong sixth grade through university degree IT/STEM educational models that reflects innovative learning activities and advanced level courses aligned with postsecondary programs and approved by professional organizations, such as “Society of Information Management”. These models will be designed around high demand occupations and developed specifically for specialized careers that encompass professional certifications/licensures and advanced postsecondary course credit. All educational models include four years of math and science and encourage advanced placement, dual credit, and added options of professional certifications. Parents and students will be able to see the relationship between academic performance and earning advanced credit early. This information will provide a clear model of sequential planning and provided to parents, students, and school personnel. The reflection of endorsements from universities, business/industry and professional organizations will add credibility.
- B) IT/STEM Learning Environment: Transform outdated computer labs into an innovative IT/STEM learning lab at key transitional grade levels. The rooms are 1,200 sq. feet and currently have basic lab furniture. Project Lead the Way “Gateway to Technical”-a national known Math, Science, Technology, Engineering program for middle school (6<sup>th</sup> grade-8<sup>th</sup> grade that earns advanced high school credit). One teacher (Mrs. Ruge) will have overall responsibility for operating and maintaining the IT/STEM labs (Detailed laboratory configuration available upon request).
- C) Counseling Workshops: K – 12 counselors throughout the Denton County area will be invited to a workshop to receive the IT/STEM DVD and newly developed counseling materials. Counselors will be touring the technical labs and participate in mini-lessons so they will have a stronger in-depth knowledge when counseling students or working with parents in regards to Information Technology. Focus on college majors, scholarships, financial aid and careers. (Materials can be used in counseling groups)
- D) Academic Instructor Training: Academic teachers many times do not know or understand the career opportunities that relate to their specific academic area. This training will introduce IT/STEM career information and allow for hands on training. Instructors will leave with information that will assist in answering that question, “Why do I need to know this?” when working with students.
- E) Advanced Credit: Develop opportunities such as CBE (credit by exam) for students to earn direct university credit and other avenues for students to shorten the educational process between secondary and postsecondary degrees. The inclusion of IT/STEM professional certifications/licensures within secondary education and the community college will provide professional level expectations as part of the overall IT/STEM experience.

- F) Professional Certification/Licensures:** Scholarships for identified low-income students recommended for professional certification testing in IT/STEM technical field (A+, Server+, Certified Cisco Networking Associate, Oracle, Microsoft, MasterCAM, Engineering Credit by Exam for university credit, etc.).
- G) Reality Professional Development:** Student/instructor placement into IT/STEM internships within the local workforce with the expectation of teacher generated lesson plans and/or student generated commercial about IT/STEM careers. (Special emphasis on participation of under-represented students). UNT provides one of the largest cooperative education programs in the country with a high percentage of IS/IT majors already involved. Furthermore, our professional organization partner, the Society for Information Management (SIM) has committed to providing suitable IT-related internships for DISD high school students.
- H) Competitive IT Events:** This will allow middle school students the opportunity to compete and “tour” advanced technical locations. Events and judging will be IT/STEM related industries. Continue with these competitive events at the college level with competitions like the Association of Information Professionals (AIP) National Collegiate IT Competition.
- I) Learning Moments:** Identify and implement key transition “learning moments” with students and parents: Career camps, lesson units on IT/STEM in elementary and middle schools, IT/STEM lesson plans for substitute days provided to non IT/STEM instructors, counseling activities and events, technical competitive events, internships, technical advanced courses, educational models, career counseling, parent meetings, course options for adults and students in the evening.
- J) Family Outreach:** Special effort will be used to engage parents and students early in the educational process. Summer career camps for 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade will allow for exploring of non-traditional career opportunities and provide the IT/STEM Academy educational models. The last day includes breakout with the universities. Quarterly evening meetings with low-income families (Family Career Nights) to let families explore a different technical lab providing hands on learning and information about the career. Information will be available in English and Spanish and in our ESL (English as a Second Language) courses in elementary, middle, and high school will be receiving additional career counseling and events.
- K) Marketing:** Create an informative DVD package that will market IT/STEM careers to different levels. Parents, secondary, elementary and the general public via DVD marketing for schools will have supportive lesson units for instructional use. These will be disbursed through in-service training, used on public announcement spots, and with group presentations.
- L) Professional Dissemination:** The development, materials, data and results will be shared through presentations for other professional organizations: Educational, service, workforce, government, etc. at the state, regional and federal level. Several large IS/IT professional associations, the Association of Information Systems (AIS) and SIM, provide national and international opportunities for disseminating study results.

Collaboration between secondary, postsecondary, professional organizations and invested business/industry will become the Denton IT/STEM Coalition. This group will be responsible for the study, design and implementation of the *IT/STEM in Motion* innovative plan of action and quarterly evaluation. The basic group will include the University of North Texas Information Technology & Decision Sciences Department with supportive members from the Engineering Department, Center for Nonlinear Science, School of Education and Applied Technology, Training and Development. In addition, the North Central Texas College will participate to add additional opportunities for associate degrees and expand IT certification/licensures elements for students while still in high school.

Secondary, middle and elementary school involvement will be spearheaded by the Advanced Technology Complex representing a consortium of eight small school districts (Krum, Sanger, Pilot Point, Lake Dallas, Little Elm, Aubrey, Argyle and Ponder) and the large central school district of DISD. The ATC was developed to house the highly technical programs that high school junior/senior students could choose to use as elective credit. The courses are designed to offer opportunity for advanced credit and/or certification/licensure. These courses are open to DISD and the small surrounding school district and expand high school options to a higher level of expectation. The ATC opened in 2006 with over 1,200 students and currently has 1,400 attending. The ATC has over 48% low-income students attending with 60% Caucasian, 27% Hispanic, 2% Asian, 1% African Americans and 1 % other.

Other representation and support will be provided by related professional organizations -Society of Information Management (SIM), Association for Information Systems (AIS), City of Denton Economic Development, the ATC Taskforce (Business/industry advisory council), DISD Counseling Department and the North Central Texas Workforce.

## OUR COLLABORATION ACTION PLAN

Our Collaboration Action Plan will include, but is not limited to:

- Develop academic educational models that span 6<sup>th</sup> grade through university degree based on high demand IT/STEM careers
- Develop units of study that are challenging and innovative that will be related to above educational models for elementary/middle schools
- Design several IT/STEM short lesson plans that could be used for substitute teacher days or when a “filler” is needed per grade level and provided to all DISD K-6 schools
- Align and restructure secondary programs (middle/high school) to reflect recommended knowledge and skills for successful transition to postsecondary (examples: Information Management, Oracle, IC3, Networking, Fiber Optics, IT security, Global Information System, Microsoft Office, Web Design, etc.)
- Develop of a STEM course/training lab at the middle school level that earn high school credit
- Develop strong career counseling components that address students, parents and community at various transition activities and events.
- Develop IT/STEM family outreach activities to address underrepresented nontraditional enrollment at early age: female, minority, low income (example: Summer Career Camp for 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade students for early engagement, competitive technical events, tours)
- Develop “family” events to nurture parent’s understanding and knowledge that will support and assist in educational planning
- Develop advanced credit opportunities for students. (High school credit in middle school, postsecondary credit for high school courses, etc.)
- Joint professional planning meetings between secondary, postsecondary and related business/industry
- Joint across curricular instructor professional development
- Joint K-12 counseling workshops
- Summer internships for students and instructors in the IT/STEM area
- Professional testing site for certifications/licensures
- Guest lecturers of current university, business professionals (SIM member; see attached letter of commitment) graduates, postdoctoral students into middle/high school programs
- Developing next generation DVD program to inspire first generation

## QUALIFICATIONS OF THE PROJECT LEADERSHIP TEAM (BIOGRAPHICAL SKETCHES AVAILABLE UPON REQUEST)

Dr. Jack Becker (PI), Associate Professor of Business Computer Information Systems at the University of North Texas (UNT) has over thirty years of IS/IT curriculum development experience at all college levels.

Marty Thompson (Co-PI), Dean of the ATC achieved a strong diverse background in education, administration and the workforce spanning over 40 years.

Melanie Lewis, Counseling Director has the capabilities to install new counseling requirements and professional development for school counselors. Mrs. Lewis background is international and brings a commitment to change in defining the role and expectation of school counselors (K-12) within the Denton area.

Carla Ruge, Assistant Career & Technical Director has an extensive background in information technology and teacher training at the district, state and community college level. She will be an integral part of staff and curriculum development. Mrs. Ruge will be the coordinator and director of the IT Summer Career Camp. She is the career and technical liaison for DISD and has the authority to implement software and hardware needed for courses and programs.

Project Director (To be hired) must have extensive background in higher education, secondary education and the workforce. This individual must have project experience and the ability to interact effectively with professional groups and the necessary skills to encourage collaboration between the different educational entities and the workforce.

## OTHER SIGNIFICANT COLLABORATION INVOLVEMENT

Denton IT/STEM Coalition will provide guidance, planning and oversight committee that will meet quarterly with the Project Director to review and direct project expectations:

Leadership:

(PI) Dr. Jack Becker, University of North Texas, Information Technology & Decision Sciences, Professor, and member Society for Information Management, DFW Chapter (SIM DFW)  
 (Co-PI) Marty Thompson, Dean of the Advanced Technology Complex (8 small school districts)  
 Project Director (To be hired)

Committee Members:

Dr. Jim Roberts, UNT Center for Nonlinear Science, Professor  
 Carla Ruge, Asst. Dean of ATC and Adjunct IT/STEM Instructor for NCTC  
 Cindy Miller, UNT Learning Technologies Program, Project Coordinator  
 Andrew Milton, UNT, Education Department, Adjunct Professor  
 Doug Akins, North Central Texas College, Dean of Applied Technology  
 Melanie Lewis, DISD, Director of Counseling  
 Cindy Doyle, North Texas Workforce, Workforce Development Specialist  
 Kimberly Keith, DISD, Middle School Career Counseling Coordinator  
 Jeanie Bragg, DISD, Elementary School Career Counseling Coordinator  
 Patsy Chilcote, DISD, Tech-Prep Coordinator  
 Cindy Powell, Texoma Tech-Prep, Executive Director  
 Ernie Strickland, DISD, Chief Information Officer  
 Jay Reed, Chief Information Officer, Trammell Crow Residential, and with SIM DFW  
 Colby Springer, Sr VP, CIO, Estes, Inc., and with SIM DFW  
 Michelle Cunningham, City of Denton-Economic Development, Coordinator  
 Rick Woolfolk, DISD ATC Taskforce, Chairman

**ANTICIPATED RESULTS:**

**Explain the immediate and longer-term outcomes that are anticipated and describe how these outcomes are related to the strategy.**

Immediate outcome: The collaboration and open discussion that bridges the gap between secondary, postsecondary and the high demand technical workplace to achieve a rigor and relevant seamless education environment that is quality-based. The input from business and industry will provide the real world skills and knowledge necessary for meeting the global market and the professional standards that should be the foundation. The upgrading of technical courses to reflect IT/STEM identified skill and knowledge. The design and planning for the marketing and summer camp will be completed within the first year. In addition, improvement in grades, attendance, IT enrollment, counseling, parent participation should become evident.

Long term outcome: To remove the educational and other barriers of educational institutions working in isolation between secondary, postsecondary and the reality of 21<sup>st</sup> century workforce. Collaborated top down educational planning that focus on identified high demand occupations will bring the 21<sup>st</sup> global market into the course sequence and create a truly unique community learning environment that expand the traditional classroom. The end product is to provide a highly-trained motivated workforce that will build and attract business and industry to Denton County and build a strong community leadership team that will serve as the “visionary” to the future. Once each of the action items have been created, implemented, tested and refined, it is our expectation for this to become the standard model for the State of Texas and be shared with other community sites throughout the nation.

The potential for student contact with one or more of the IT/STEM initiatives are estimated at 33,000 per year. An average of 99,000 students will be potentially impacted over the three-year project period and certainly beyond. The long-term outcome will be increased enrollment in the IT/STEM postsecondary programs and a strong college readiness sequence plan model. The intent is to disseminate results, materials and proven processes with other groups of interest through professional presentations: government, educational and workforce at the state, regional and federal levels.

Sustainability: The plans to sustain the project efforts beyond the funding of this project will be met by the newly established IT/STEM scope and sequence of learning objectives, the established IT/STEM career counseling and the enhanced IT/STEM knowledge and skills gained through the professional development. The IT/STEM 6<sup>th</sup> grade through a university degree will become standard. The overall expectation is that the elements of design, implementation, and professional development will remain active and supported by the expectation of the Denton IT/STEM Coalition.

**Evaluation:** Several levels of evaluation will be used throughout the project period. A professional evaluator will be hired to do a yearly formal evaluation each year. Methods will include student surveys, enrollment data, testing, documentation of timeline completion, evidence of curriculum innovation products, interview and surveys with graduates, and employer surveys. In addition, the Denton IT/STEM Coalition will meet quarterly to review project process and timeline.

Critical success factors for the *Denton IT/STEM in Motion Project* will include both quantity and quality assessments:

- Did the early outreach effectively motivate students to enter and prepare for a career in the IT/STEM field?
- Are secondary and post-secondary programs aligned to ensure student transition success?
- Do the programs prepare and inspire students for emerging career fields such as Global Information Systems, Biomedical Technology, Networking, and Semiconductors,
- Do the programs meet the rigor and relevance of industry?
- Are counselors in middle and high school providing career counseling opportunities?
- Was the marketing strategy to outreach to parents, staff and students successful?
- Did the efforts directed to attract females and other minorities (especially Hispanics and African-Americans) to the IT/STEM field prove effective?
- How many “at-risk” students were impacted?
- Other types of assessment will include analysis of enrollment trends, graduation rates, the number of IT certifications awarded, post-secondary enrollments, initial employment success, and follow-up employment satisfaction.

## CONCLUSION/SUMMARY

The shortage of IT/IS graduates from college and university programs has reached crisis proportions. The solutions to this nationwide (even worldwide problem) will depend upon the cooperation and collaboration of many people and organizations, including: academia (K-12, colleges, universities, etc.), industry, professional societies, and the public sector. This paper describes the need for a prototype, major project (IT/STEM in Motion Project) that would by necessity involve a complete bottom-up realignment of K-12 educational programs, employing educational pathways (a.k.a., major tracts), that will excite, elicit, entice students into many different post-secondary educational, technology-related programs (e.g., Science, Technology, Engineering and Mathematics--STEM), and in particular the IT/IS field. In brief, the success of the *IT/STEM in Motion* project will ultimately depend on the successful creation of a carefully coordinated and directed educational pathway from K-to-College to IT/STEM workforce. NOTE: NSF funding is being sought to expedite this project

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**Appendix 1. Denton Collaborative Sequential Outcome Sustainability Matrix**

<b>Denton Collaborative Sequential Outcome Sustainability</b>				
<p><b>Description:</b> The outcome expectation with documented sustainability indicated by (S) that will impact an estimated 99,000 students (3 year period), (est. 40%-48% disadvantaged and under-represented population) 1,000 instructors, 10 school districts, one community college and two universities at the local level. The potential impact at the state, federal and global level is endless.</p> <p><b>Goal:</b> To create a strong effective educational model that addresses IT/STEM national needs from K-16 and beyond</p>				
<b>K-5<sup>th</sup> grade</b>	<b>6<sup>th</sup>, 7<sup>th</sup> 8<sup>th</sup> grades</b>	<b>9<sup>th</sup>-12<sup>th</sup> grades</b>	<b>Community College University</b>	<b>IT/STEM Workforce</b>
-Career Month (S) -IT/STEM learning moments (S) -Family Career Nights (S) -Tours of IT/STEM labs with emphasis on academic skills -Summer Career Camp (S) (5 <sup>th</sup> grade) -IT/STEM DVD and lesson units for all instructors (S) -Est. population: 9,800 @ 3 years	Begin early entry into IT/STEM academy (S) -IT/STEM (Intro. Level earning advanced credit for high school) (S) "Gateway to Technology" -Career Counseling (Counseling/planning course for high school credit) (S) "Career Connections" -Computer skills (Introductory level for computer operational skills for high school credit) (S); "Keyboarding" -Tours of IT/STEM labs with emphasis on required academic skills -Summer Career Camp (S) (6 <sup>th</sup> -7 <sup>th</sup> grade) -IT/STEM competitive events (S) -Family Career Nights (S) -Learning Moments for all academic teachers (S) -IT/STEM Guest Lecturer -IT/STEM DVD and lesson units (S) -Est. population: 9,600 @ 3 years	Specialized IT/STEM Academy (S) with advanced credit and professional certifications <ul style="list-style-type: none"> <li>• Information Management</li> <li>• A+/Server+</li> <li>• Computer Networking</li> <li>• Computer Technology</li> <li>• Bio-Medical Technology</li> <li>• Global Information Management</li> <li>• Engineering</li> <li>• Adobe</li> <li>• Oracle</li> <li>• Microsoft Office</li> <li>• Computer Numeric Control</li> <li>• Technology</li> </ul> -Evening Programs for adults and students for community college credit (S) -Career Counseling activities at each grade level (S) -Family Career Nights (S) -IT/STEM competitive events (S) -IT/STEM guest lecturer -IT/STEM DVD and lesson units -College Tour -College Planning(S) -IT/STEM -Post-secondary/Business Industry advisory team required (S) -Est. population: 13,000 @ 3 years	IT/STEM Associate Degrees with agreements for transferable credit to the university level (S) -IT/STEM certification and licensure opportunities (S) -Granting of credit for high school IT/STEM courses (S) -IT/STEM Degrees with agreements for transferable credit from the community college (S) -Creation of Credit by Exam university credit for high school students (S) -IT/STEM Tours -Family Career Nights -Judging for IT/STEM competitive events -Guest Lecturers (preferred under represented students speakers) and design of IT/STEM DVDs -Expected Outcome: Increase enrollment Of 5%, 10%, 15%	-Professional Organization (SIM, AITP, etc.) and related IT/STEM business and industry involved (Microsoft, CISCO, etc.) in planning, process, objectives and evaluation -Involved in the marketing development -Involved in evaluation -Involved in IT/STEM Advisory Committee (S) -Guest Speakers -Tours - Internships placement -Long Term expected outcome: Significant increase in highly trained IT/STEM workforce