

The Role of Community Colleges in Regional Economic Prosperity



Anne M. Kress and Gerardo E. de los Santos, Editors

League for Innovation in the Community College

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Preface

Regional Economic Prosperity is often broadly characterized by economic growth, partnerships that cross several jurisdictional boundaries of cities, counties, and states, and expanding *economic and educational* opportunities and career pathways for low- and moderate-income workers.

In a recent report from Education Testing Service (ETS), *Poverty and Education: Finding the Way Forward*, Irwin Kirsch, Director, Center for Global Assessment, describes a growing concern in our society and draws connections among poverty, education, and economic prosperity: "Poverty is a significant and growing problem for America—one that costs our economy hundreds of billions of dollars each year, and leaves poor families and individuals with a greatly reduced chance of achieving the American Dream" (p. 2).

As many research studies have well documented, educational attainment is directly correlated to income earning potential and is one of the keys to increasing economic prosperity opportunities in our communities. In many regions in North America, community and technical colleges serve a critical role in supporting, and often lead, regional economic prosperity planning and collaboration.

In this monograph, leaders from League for Innovation in the Community College member institutions share creative examples of how they are helping to advance economic prosperity in their regions.

We thank each author and college, as well as their regional partners, for their contributions to this important work and growing challenge.

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Anne Arundel Community College: At the Epicenter of CyberSecurity

By Kelly A. Koermer

Anne Arundel Community College (AACC) plays a significant role in regional economic development by preparing a highly skilled, highly qualified cybersecurity workforce to support the missions of several government agencies. The National Security Agency (NSA), established in 1952, is headquartered at Ft. George G. Meade, located in Anne Arundel County, Maryland. In 2010, the Department of Defense established the United States Cyber Command at Ft. Meade and, in 2011, relocated the Defense Information Systems Agency to the garrison. Additionally, the U.S. Department of Homeland Security (DHS) leads its cyber activities from Ft. Meade. The collocation of these agencies concentrates the nation's cyber offensive and defensive activities just miles from AACC. Further, in February 2012, the National Institute of Standards established the National Cybersecurity Center of Excellence in Maryland. Governor Martin O'Malley has called Maryland "the nation's epicenter of cybersecurity."

With an abundance of cybersecurity assets—the U.S. Cyber Command, the National Security Agency, and other federal agencies engaged in cybersecurity activities; major cybersecurity companies and entrepreneurs offering the full spectrum of cyber-related products and services; and the nation's top-rated public schools and renowned colleges and universities training future generations of cyber

warriors—Maryland plays a strategic role in discovery, detection, and defense in this emerging field. (O'Malley, 2011)

AACC is one of the top-rated public colleges training the cyber warriors. AACC was the first community college in the nation to map its courseware to the Committee on National Security Systems

Anne Arundel Community College serves over 53,000 students annually at its Arnold, Maryland, campus and two degree centers, and at multiple other locations. The college helps develop the workforce supporting the U.S. Cyber Command, the Defense Information Systems Agency, and the National Security Agency, which are expected to add 40,000 jobs regionally.

4011 standards. The college additionally mapped to the 4013 standards. The NSA and DHS designated AACC as a Center of Academic Excellence in Information Assurance 2-Year Education (CAE2Y). AACC's technical curriculum focuses on providing students with theoretical

foundations and, importantly, imparts hands-on applied and critical thinking skills. Additionally, many of AACC's courses prepare students for industry certification exams required by the Department of Defense Directive 8570.1.

With a nationally recognized curriculum, AACC established a CyberCenter to more fully support regional public and private sector employers who are expected to hire over 40,000 new employees over the next several years. The CyberCenter synthesizes AACC's credit and noncredit offerings that support cybersecurity workforce development, as cybersecurity jobs transcend multiple disciplines ranging from technical to legal to physical security (National Initiative for Cybersecurity Education, 2012). The CyberCenter works to

enhance the college's capacity to expand the pipeline of new workers and train the incumbent workforce. The CyberCenter strives to constantly update and grow technical curricula and professionally develop faculty in order to expand the college's capacity. As enrollment numbers have exploded, growing from 40 cyber technical majors to nearly 400, and 800 enrollments to over 3,500 in just six years, the CyberCenter also focuses on growing its laboratory capacity. Additionally, the CyberCenter works with employer and community partners to build solutions to this expanding workforce demand.

Cybersecurity program establishment and capacity building costs are significant and include expenditures for professional development, faculty and trainer salaries, virtual laboratory equipment, and physical laboratory space and equipment. Professional development for a faculty member for a single cybersecurity course averages \$5,000. Trainers can command up to \$12,000 to teach high-level cybersecurity courses. A bare-bones virtual laboratory environment costs approximately \$350,000, and the cost to equip a single networking or penetration testing (hacking) and defense lab runs about \$200,000. To help cover costs, the college has employed multiple funding solutions. The CyberCenter administers resources from various grants, including Perkins and the Department of Labor Pathways to Cybersecurity Careers grants to help build virtual and physical labs. It also has relied upon these grants—along with National Science Foundation funding to the CyberWatch Center, for which AACC is a co-principal investigator—to fund significant portions of faculty professional development. For physical space expansion, the college has leveraged public funding to pay for a portion of a physical laboratory expansion project. However, these external resources are still insufficient to enable AACC to fully meet

training demands. Against this background, AACC determined that entrepreneurial activities were also necessary.

In 2011, the college reorganized its fledgling CyberCenter to equip it to become entrepreneurial. AACC charged the CyberCenter to undertake enterprise activity and appointed a CyberCenter director who had more than 20 years of experience in workforce development, with 12 of those years in higher education workforce development. The CyberCenter has provided customized training to the United States Cyber Command and numerous defense contractors. To date, the enterprise activity has been successful and has enabled the college to enter into a 10-year lease on a property within a few miles of Ft. Meade that will headquarter AACC's Center for Cyber and Professional Training (CCPT). This facility will house 13 labs and an industry testing center. The labs are being built with state-of-the-art equipment used in industry. One lab being built for digital forensics classes is designed to meet specifications of the Defense Cyber Crime Center (DC3), which is also headquartered in Anne Arundel County, and will enable students to work on real-world DC3 cases and learn through engaged scholarship. By bringing these new labs online, the college hopes to serve the employers who are in need of training but are having to wait because laboratory space has been filled to capacity. The CCPT lease costs will be paid through enterprise funds.

Customized, high-level cybersecurity training that delivers a strong return on investment is a signature CyberCenter offering. Unlike for-profit vendors, which primarily offer theory and test preparation, AACC's CyberCenter's educational offerings provide new and incumbent workers with foundational knowledge, critical thinking skills, and the ability to apply knowledge using industry-vetted equipment.

Additionally, workers equipped with AACC's well rounded education can earn college credit and are prepared to sit for DOD 8570.1 industry certification exams, including A+, Network+, Security+, Certified Cisco Network Administrator (CCNA), Certified Ethical Hacking (CEH), and Certified Information System Security Professional (CISSP). The CyberCenter works with industry to design delivery times and formats conducive to worker needs. AACC students have earned over 445 DOD 8570.1 compliant certifications. Additionally, when employers require training not already in AACC's inventory, the CyberCenter collaborates with industry professionals to develop specialized training. For instance, the CyberCenter worked with the U.S. Cyber Command and a defense contractor to develop a Windows Security course to prepare soldiers for cyber battle, a course unlike any offered anywhere in the world. This unique courseware is cutting edge and responds directly to employer needs.

Industry relations are critical to the CyberCenter's mission. The CyberCenter builds relationships to improve its capacity, ensure instruction on cutting-edge technology and topics, support the public in cybersecurity awareness, and assist employers in hiring highly qualified workers. The CyberCenter reaches out to industry subject matter experts to expand its bench of well qualified adjunct instructors. Subject matter experts mentor full-time faculty on rapidly changing technology topics and industry applications. Industry experts participate in curriculum development on a project basis and through advisory boards. Industry also collaborates with AACC in delivering public forums on topics such as security awareness, cyber entrepreneurship, and obtaining security clearances, and in offering continuing legal education for legal professionals on topics such as cyber law, e-discovery, and federal procurement. The CyberCenter, in collaboration with AACC's

Regional STEM Center, spotlights local employers, secures internship placements, and hosts recruitment events on campus. It also supports students by securing industry mentorship and coaching of cyber defense competition teams. The CyberCenter is currently working with a federal agency to define its labor categories and qualifications for cybersecurity employment.

A key community partner is the Anne Arundel Workforce Development Corporation (AAWDC). The CyberCenter collaborated on an application to the U.S. Department of Labor (USDOL) for a Community Based Job Training Grant, and in 2010, the USDOL awarded a three-year, \$4.9 million grant to AAWDC and its three educational partners to train 1,000 new and incumbent cybersecurity workers. Under the grant, Pathways to Cybersecurity Careers, education leader AACC has trained more than 550 new and incumbent workers, and AACC grant students have earned over 250 industry certifications.

The CyberCenter has also supported the TechAmerica Foundation in its successful bid for a USDOL H1B grant and will be the cybersecurity training vendor under the grant. In this role, AACC will provide cohort training to earn an AACC Cyber and Information Security Certificate and prepare students to sit for industry certification exams.

Most notably, AACC recently received a \$19.7 million award from the USDOL under the Trade Adjustment Assistance Community College and Career Training grant program funding the National STEM Consortium (NSC). Under this grant, ten partner colleges in nine states will design one-year STEM certificates in five different disciplines, one of which is cybersecurity. These certificates are designed to prepare displaced workers for immediate employment in high-demand career fields.

AACC's CyberCenter is the Cyber Team lead for the development of the cybersecurity one-year certificate.

The CyberCenter not only collaborates with its NSC educational partners, it also works with state and regional educational institutions. The CyberCenter has assisted in facilitating four cybersecurity articulation agreements with four-year institutions. It serves to foster a relationship with University of Maryland University College (UMUC), whereby AACC cybersecurity graduates can earn their bachelor's degree at AACC's Arundel Mills Regional Higher Education Center, which hosts UMUC's cybersecurity bachelor's program. Additionally, as the curriculum lead for the CyberWatch ATE center, AACC's curriculum has been adopted in whole or in part by many CyberWatch member community colleges in Maryland and throughout the nation. Furthermore, the CyberCenter mentors other community colleges in designing curricula, preparing for CAE2Y eligibility, and assisting in the application process for the CAE2Y designation. AACC's curriculum is being adopted by Carroll Community College with the long-term goal of qualifying for CAE2Y designation. Because Carroll Community College does not have laboratory capacity to support the complete cyber courseware, the CyberCenter is discussing a partnership through which Carroll students could access AACC's CCPT physical and virtual labs and articulate necessary courses for degree completion.

AACC's CyberCenter initiative plays a key role in supporting state and local economic

development by training the cyber warriors of today and tomorrow. The CyberCenter constantly evolves to respond to rapidly changing technology and growing employer needs. It stays closely connected with national initiatives, contributing comments to the NIST NICE Framework and maintaining strong connections with the NSA, U. S. Cyber Command, DISA, DHS, DC3, and other federal agencies. The CyberCenter is connected to the state by serving on the Governor's Workforce Investment Board Cyber Subcommittee and supporting the state's CyberMaryland initiative. It works daily with the AAWDC and the local Workforce Investment Board. The CyberCenter leverages resources to maximize both capacity and quality in all cyber education initiatives at AACC with the goal of preparing the most highly knowledgeable and highly skilled workers to keep Maryland as the epicenter of cybersecurity.

References

National Initiative for Cybersecurity Education. (2012). NICE Cybersecurity Workforce Framework. Retrieved from <http://csrc.nist.gov/nice/framework>

O'Malley, M. (2011, May 12). Statement From Governor Martin O'Malley on President Obama's Cybersecurity Legislative Proposal. *Office of Governor Martin O'Malley*. Retrieved from <http://www.gov.state.md.us/pressreleases/110512b.asp>

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The Role of the Community College in Economic Development

By Mary Vickers-Koch and Tony Zeiss

Economic Development in a Struggling Economy

Economic and workforce development is most effectively achieved on a regional level. The Charlotte-Mecklenburg region of North Carolina has intentionally designed and implemented a regional economic development and workforce development system that proved to be flexible and responsive during the economic downturn of 2009. The collaborative response of Charlotte-area leaders and the integral role of Central Piedmont Community College (CPCC) in the process of economic development is the focus of this chapter.

As one of the top 25 metropolitan economies in the United States, the Charlotte region was known for the past two decades as a financial services hub, with two of the largest banks in the nation, Bank of America and Wachovia, headquartered there. During the recession of 2009, San Francisco-based Wells Fargo bought Wachovia, and Bank of America experienced financial and leadership upheaval.

Charlotte regional leaders did not wring their hands, but stepped up to diversify area industries based on existing regional assets. Energy was a targeted growth industry, an opportunity that was initially pointed out by Jim Rogers, chairman, president, and CEO of Duke Energy. At an

economic development forum hosted by the Charlotte Chamber of Commerce, Rogers suggested that the Charlotte region should explore the option of being an energy cluster, a tactic introduced by the leading strategist, Michael Porter. Mr. Rogers challenged the region with the question, "Is the Charlotte region recognizing and tapping the full potential of its energy assets for economic development?"

(Swenson, 2011). This became a rallying cry for leaders of economic development, including those at CPCC.

What emerged from Rogers' challenge was the building of the New Energy Capital, with local economic development leaders building a strong, integrated energy industry. The results were impressive, as more than 4,000 new energy-oriented jobs have been announced since 2007 across diverse energy

subsets (Swenson, 2011).

Mark Pringle, vice president of the Siemens Charlotte Energy Hub, noted the growing success of the New Energy Capital. He said, "We have 250 businesses here that have to do with energy, which is near the top for U.S. cities. And the education infrastructure is here. We have a kind of fraternity of folks in this city that are in the energy business, and we get to know each other and see where we can help each other" (Head, 2012).

Central Piedmont Community College is the largest community college in North Carolina, offering close to 300 degree and certification programs, customized corporate training, and market-focused continuing education. With a vision to be the national leader in workforce development, CPCC serves approximately 70,000 students annually at six campuses located throughout Mecklenburg County. In 2002, the National Alliance of Business named CPCC the Community College of the Year for its innovative response to the workforce and technology needs of local employers and job seekers.

Though there is still work to be done to continue to build the New Energy Capital, particularly with the transportation infrastructure, it is worth outlining how the stage was set over the past couple of decades to capitalize on the new energy economic development initiative. Then, we will explore the emerging vision that will help build the transportation infrastructure.

Leadership Is Key

In *The Coming Jobs War*, author Jim Clifton, the chairman of Gallup, stated that the next economic breakthrough will be due to the combination of the forces within cities and powerful local leaders. He said, "The feat these leaders have to pull off is doubling their entrepreneurial energy by aligning all their local forces."

There was a time when economic developers debated whether their role was to help create jobs. In the Charlotte area, the economic developers have moved past debate and are solidly behind the unified leadership of bringing jobs to the region. One of the fundamentals of attracting new jobs is a well-prepared workforce, requiring an even tighter partnership of economic development and workforce development. For the past twenty years, the vision of CPCC has been to be the national leader in workforce development.

CPCC President Tony Zeiss was an early supporter and board member of the Charlotte Regional Partnership (CRP), created to represent twelve North Carolina and four South Carolina counties in and around Charlotte. The idea of regional economic development was an innovative approach in the region when the CRP was established in 1991. The CRP is a public-private partnership with the purposes of positioning the Charlotte region as a business destination and helping diversify and deepen economic occupational clusters in the region.

In 1998, Zeiss saw the opportunity to replicate the CRP model with the ten colleges serving that sixteen-county region. He assembled the college presidents and senior workforce development officers to engage in innovative regional initiatives. Named the Charlotte Region Workforce Development Partnership (CRWDP), and considered a partner of the CRP, the CRWDP has worked together to apply for national grants, develop allied health partnerships, and most recently, compile an inventory of energy programs at each college for the benefit of regional energy companies. David Hollars, the executive director of the Centralina Workforce Development Board, said that it is remarkable that ten diverse community colleges have been meeting together for over a decade to address issues that affect the entire region.

When Rogers issued his challenge to the Charlotte region to recognize and tap the full potential of its energy assets for economic development, Ronnie Bryant, President and CEO of the CRP, initiated an energy task force to capitalize on economic and workforce development opportunities. The excitement surrounding the idea of creating an energy hub was so intense that people were calling the CRP asking to be on the task force. Richard Zollinger, Vice President of Learning at CPCC, heads the workforce development subcommittee that held two events to help link employers with potential employees that were attended by 1,200 people.

In addition, CPCC was proactive in the effort to build a regional energy hub by instituting three significant programs:

- The first mechatronics degree program in North Carolina that integrates mechanical and electronic engineering with computer controllers,
- The highly sophisticated and self-paced Integrated Systems Technology training

labs for new and existing energy sector workers, and

- The Charlotte Center for Energy Training that is comprised of CEOs and COOs of area energy companies. This high-powered body advises the college on the local energy industry training and curriculum needs and financially supports the equipment requirements of the college.

Partnership With an International Energy Company

President Obama acknowledged the nationally recognized partnership between CPCC and Siemens during his State of the Union Address in February 2012.

Siemens just completed a \$350 million project, adding 450,000 square feet to its plant. The Siemens Charlotte Energy Hub, now a total of one million square feet of manufacturing capacity, produces generators and steam and gas turbines for U.S. and worldwide customers. Building on a base of 700 employees in 2010, Siemens has hired an additional 430 hourly workers, as well as engineers and other salaried and administrative positions for a headcount of more than 1,400. Management expects to hire 400 additional employees by 2014.

CPCC has collaborated with Siemens for more than a decade to provide training for employees. With the Siemens expansion and the commitment of senior management to provide world-class training, the partnership between the company and the college has expanded. CPCC is now helping to assess the skills of potential new hires and provide post-hire training.

The training has been funded primarily by the state of North Carolina through a customized training grant from the North Carolina Community College System. CPCC administered \$1.2 million in the training

project from September 2010 through February 2012 and expects to provide a higher level of training over the next two years. Thus far, CPCC has provided more than 600 classes to 2,700 pre-employment candidates and employees.

The customized training program has enabled Siemens and CPCC to build partnerships in other ways as well. Apprenticeships are an important part of the workforce development at Siemens, and with the Charlotte expansion, the company has started an apprenticeship program the company expects to double in size each year for several years to come. Additionally, CPCC is providing the Associate Degree in the Mechatronics program for the Siemens apprenticeship employees.

CPCC is the first North Carolina community college to offer the Siemens Mechatronic Systems Certification Program. The college sent four instructors to the Siemens Technik Akademie in Berlin to become Level I and Level II certified so they were qualified to offer the Siemens Mechatronic Systems Certification to local companies, students, and apprentices.

The partnership with Siemens and CPCC strengthens the workforce at Siemens as well as the workforce pipeline with other local high tech companies, and enables the Charlotte region to reap the benefits of new capital investments and job creation.

Bob Morgan, CEO of the Charlotte Chamber of Commerce said,

Charlotte is recognized as an emerging energy capital in large part because of its skilled workforce. It matters greatly that institutions of higher learning have rallied around the energy sector and deployed resources toward the goal of matching worker skills with employer

needs. No institution is more “on the front lines” in this effort than Central Piedmont Community College. They are constantly in touch with employers, looking to provide the skills that are needed both for today and into the future. That is their mission and they do it exceptionally well.

Looking Toward the Future

Charlotte leaders are describing a new and developing economic development idea as a broader area vision to recognize the convergence of a number of factors that may lead to significant economic opportunities for our region.

Three visionary community leaders, Chase Saunders, Michael Galles, and Tony Zeiss, have been systematically sharing and refining this vision over the past year. The Charlotte region is poised to become the next global hub of commerce if it adopts the broad vision to be the best in the nation for creating things, making things, and moving things” (Saunders, Zeiss, and Gallis, 2011). By embracing and supporting Charlotte’s entrepreneurial spirit, by its remarkable ability to recruit and train skilled workers in advanced manufacturing, and by promoting its soon-to-be-finished multi-modal transportation center at the Charlotte Douglas International Airport, this region will seize its economic advantage.

Charlotte is located at a pivotal intersection where goods can economically be moved to half the United States within 24 hours or less. Its new intermodal center would be able to concentrate shipping containers from trucks, trains, and airplanes in one

area. The Charlotte region can create, import, manufacture, assemble, handle, ship, and provide just-in-time delivery. The foundation for this extraordinary economic capacity is the knowledge base and skill level of its workers.

The area is blessed with an abundance of fine colleges and universities that care about jobs and quality of life in this region, and chief among them is CPCC. Without this college’s Institute for Entrepreneurship, which serves 2,000 entrepreneurs each year, the ability to *create things* would be severely impacted. Without CPCC’s programs to respond rapidly to new and existing training needs for manufacturing skills, the ability to *make things* might not be realized in significant ways. Moreover, without the college’s training programs for transportation professionals, the capacity for *moving things* would also be diminished.

The economic future for the Charlotte region is bright and bold, and CPCC is at the core of its economic development initiatives.

References

- Head, Heather (2012 February). Energizing the Workforce. *Greater Charlotte Biz*, 23-27.
- Saunders, C., Zeiss, T., & Gallis, M. (2011). Create It, Make It, Move It, Charlotte 2030: A Global Intersection of Commerce. Unpublished manuscript.
- Swenson, D. (2011 Spring). Charlotte USA Energizes Economic Development. *International Economic Development Council Journal*, 18-22.
- Mary Vickers-Koch is Harris Campus Dean and Dean, Business and Industry Learning Services, and Tony Zeiss is President of Central Piedmont Community College, North Carolina.*

The Power of Partnership: Achieving Regional Economic Impact Through the Joint Apprenticeship Training Committee

By Jerry Sue Thornton

Economic conditions are gradually improving in the Northeast Ohio region, although real economic progress remains slow. The beginning of the area's recovery, however, is partially due to growth of the local construction industry. Construction is a large part of the Cleveland area economy, employing nearly 28,400 workers. More specifically, a multimillion dollar building boom, including a downtown casino, the Cleveland Medical Mart, and Convention Center, renovated riverfront mixed-use buildings, and substantial construction by local colleges and universities, hospitals, and cultural institutions is creating new, high-skilled construction jobs. The strength of the construction industry in the region is reflected in the number of local ads for construction workers, which has jumped 21 percent since June 2010.

One of the challenges facing this otherwise thriving construction industry is a sufficiently trained workforce, with both entry level and incumbent workers needing higher level skill sets. Construction workers need advanced skills to use the increasingly complex technology in the construction industry. Additionally, construction workers must have sufficient math and language skills for comprehension and problem solving, which leads to a more productive

workforce. Demand for skilled workers in all construction occupations has placed pressure on the construction training system to quickly prepare new construction employees. Future employment in the construction industry will require some kind of education past high school, including formal training.

Cuyahoga Community College (Tri-C) is Ohio's largest community college and one of the largest institutions of higher education in the state. Students can choose from 1,000 credit courses in more than 140 career and technical, science, and liberal arts programs. Tri-C also offers more than 500 unique, noncredit workforce and professional development programs to 32,000 credit and 20,000 noncredit students each year. Classes are held at four traditional campuses, two Corporate College® locations, the Brunswick University Center, the Unified Technologies Center, the Advanced Technology Training Center, the Hospitality Management Center on Public Square, and over 50 off-campus sites.

Tri-C's Response

To address this important regional business need, Cuyahoga Community College's (Tri-C) Workforce and Economic Development Division and local building trades unions worked together to create the Joint Apprenticeship Training Committee (JATC). This comprehensive partnership helps entry level and incumbent workers enhance their skills by participating in college-sponsored apprenticeship training as

part of a credit degree program to achieve educational credentials that are vital for ongoing worker career success. Registered apprenticeships and training are offered for the following trades: asbestos worker, boilermaker, bricklayer, carpenter, cement mason, drywall/finisher, electrician, floor layer, glazier, ironworker, laborer, millwright, operating engineer, painter and taper, pipefitter, piledriver, plasterer, plumber, roofer/waterproofer, sheet metal worker, telecommunications installer, and tile layer.

The JATC program also strengthens the community by providing education and higher incomes to its residents. Research shows that for each year of community college credit received, an individual's annual earnings increases by 5 percent to 8 percent over that of a high school graduate. Additionally, higher levels of education are linked not only to higher incomes, but also to faster rates of income growth. Tri-C and its JATC partners know that delivering a comprehensive credit degree program to participants will not only ensure the success of the local construction industry, but can provide for increased socioeconomic benefits in the region through increased tax revenues and consumption, and a decreased reliance on government financial support.

The program creates uniform standards for training qualified men and women for successful employment within the construction industry. Apprentices develop along a structured career path specific to a construction trade, and ultimately acquire the competence consistent with the knowledge, skill, and ability standard of the trade, while concurrently earning college credits towards an Associate of Applied Science/Applied Industrial Technology (AAS/AIT) degree.

The program consists of a strong partnership between the college and 17 JATC building trade union affiliates in 11 trades and 18 specific disciplines. A leadership council comprised of journeyperson representatives from each union affiliate and college instructional experts meets at least twice per year. More than merely an advisory committee, this dedicated leadership council makes curriculum changes and program updates as needed by closely monitoring workplace requirements and technological advancements. This leadership group ensures that adjunct faculty members

employ teaching techniques and student engagement strategies specific to each trade in order to retain apprentices through the entire program. Furthermore, participation in the program is available free of charge to members of the 17 local union affiliates.

Courses are taught by adjunct faculty who are journey-level trade instructors. These instructors bring specialization and focused expertise to their teaching role, allowing them to give student participants a connection between education and the work world. A student in the program must be accepted as an apprentice and be given work through the union affiliate partner.

Apprentice student participants receive their related technical instruction and academic core classes in cohort groups that have been tailored and contextualized to align with the occupational area of focus. Hands-on training, job instruction, and work experience are necessary to become a qualified journey-level worker versed in the theory and practice of a construction trade. The construction trades apprentice program offers student participants an opportunity to earn as they learn; while obtaining between 144 and 250 hours of trade-related classroom instruction during a three-to-five year period, students perform between 6,000 and 8,000 hours of paid on-the-job training. Students also earn 30 credit hours in technical coursework and 32 to 36 hours of academic preparation.

Student participants work directly with Tri-C coordinators throughout their program. Although classes are held at off-site union facilities, apprentices have direct access to college counseling, admissions, and registrar services through onsite and distance options. Participating JATC partners receive financial support from the college in the form of student tuition

support, classroom rent, computer allowance, and instructor compensation.

In order to provide practical application of newly learned skills, apprentices earn competitive wages and draw benefits while working through the program toward their journey-level certificate. During training, the more an apprentice learns the more pay he or she receives. By climbing the skill and education ladder, wages increase at regular intervals until the end of the apprenticeship when students become journeypersons and draw full pay for their skills. In addition, AAS/AIT degrees are transferable and recognized through articulation partnership agreements to baccalaureate studies in technology management or construction management from both Kent State University and the University of Akron.

Model Apprenticeship Program

This model educational partnership produces the highly trained and highly skilled workforce the local construction industry needs while effectively helping workers qualify for stable jobs with good wages and promising career pathways. The program has seen a steady rise in enrollment year after year, and over 14,000 workers have participated in the program to date.

Evaluation data is used to ensure that the desired outcomes are achieved, specifically job placement and degree attainment. Program effectiveness is measured through student evaluation of instruction, demonstration of skill attainment, number of one-year certificates of proficiency awarded, completion rate of those finishing the apprenticeship program, number of those earning the journey-level credential, and number of those attaining an AAS/AIT degree.

While more than 200 types of jobs are offered via apprenticeship training programs in Northeast Ohio, this program is one of the few that allows participants to earn degree credentials affiliated with an institution of higher learning while providing on-the-job training for some of today's most in-demand, high-wage jobs. Results of a study examining construction craft training conducted by the National Center for Construction Education and Research (NCCER) found that investing 1 percent of a project's labor budget in training could have double digit returns in productivity, reduced absenteeism, and the need for rework, among other things. Workforce training is the best investment against the hidden cost of low productivity.

By developing and delivering apprenticeship programs tied to education credentials, Tri-C provides the region with basic-skill instruction for new workers, upgrade training for incumbent workers, and opportunities for continued learning. This is important as research has shown that U.S. cities with better educated populations not only have significantly higher per capita incomes, but also enjoy faster rates of income growth. This creative partnership between Cleveland area building trade unions and Tri-C helps to promote the economic development of the region by providing workers with postsecondary knowledge and skills, and by ensuring the continuation of skilled trade crafts men and women, critical to building a solid infrastructure that promotes regional growth.

Jerry Sue Thornton is former President of Cuyahoga Community College in Ohio.

Johnson County Community College: Economic Engine for the County

By Terry Calaway

Johnson County Community College (JCCC) in Overland Park, Kansas, serves as an economic engine for the county. This is accomplished through a number of partnerships and activities that reflect the diversity of the county's economy and the agility of the college to meet a variety of economic needs.

Johnson County is a suburb of Kansas City, Missouri, with a growing population of over 544,000. The county, one of the most prosperous in the country, has the highest median household income and the highest per capita income in Kansas. The county's workforce is among the most highly educated in the nation and its economy is well diversified, albeit concentrated in the high-growth service-providing sectors. This diversity affords JCCC a number of opportunities to affect economic development in a number of sectors, including transportation, health care, information technology, and entrepreneurship.

Transportation

Kansas City has developed into one of the most important freight transportation hubs in the Midwest. To take advantage of that, BNSF Railway is building a 443-acre intermodal facility in the southern part of Johnson County. The facility will help the region's economy grow by shifting more freight traffic from the highway to the rails. The increasing demand to move more

freight by rail coupled with the number of current rail workers who will be retiring means that freight railroads will hire more than 15,000 employees this year alone.

JCCC is prepared for these changes, thanks to a long and beneficial relationship with BNSF Railway. The college first entered into partnership discussions with BNSF in 1986. The result is the largest railroad training facility in the country, founded on the college campus. Originally intended to train

only BNSF employees, the training center over the years has come to serve other railroads as well. As many as 14,000 railroad employees from the U.S. and Mexico come to JCCC each year for training.

As part of its agreement with BNSF and the city of Overland Park, JCCC built the Industrial Technical Center (ITC) on campus (dedicated in 1988) to

house the railway's national training programs and provide additional office and classroom space for the college. The \$2.9 million building was financed through city revenue bonds, with the college assuming one-third of the cost of construction and receiving ownership of the building after 10 years. BNSF exercises its option to lease the facilities on a five-year basis. The college initially received nine classrooms, warehouse space, and laboratory access, in addition to the responsibility for building maintenance. An expansion to the ITC that opened in 1993 increased space for both BNSF and JCCC, and in 2001 the warehouse moved to a separate structure so the entire

With more than 40,000 credit and continuing education students, Johnson County Community College, Overland Park, Kansas, is the state's largest institution of undergraduate higher education. JCCC offers more than 50 career and certificate programs that prepare students to enter the job market. Its noncredit workforce development program is the most comprehensive in the Kansas City area.

building could be used for educational purposes. The college was awarded a presidential citation by Vice President George Bush in 1987, recognizing the partnership as a successful model of cooperation between education and industry.

In 1993-1994, the college and BNSF established the National Academy of Railroad Science (NARS) at JCCC, leading to the first associate degree programs in railroad operations in the nation. More than 500 students are enrolled each year in credit programs leading to associate of applied science degrees and vocational certificates in railroad electronics, railroad industrial technology, and railroad operations.

A railroad welders program began in January 2004 at JCCC. NARS and JCCC offer the welder training program to meet the need for qualified and technically trained welders in the railroad industry. The program consists of eight weeks of classroom and laboratory training, followed by 120 days of paid on-the-job training. Major railroads recruit on campus; railroad welders are among the highest paid entry-level workers in any industry, with salaries ranging from \$40,000 to \$60,000 a year.

The economic impact on the community and the city of Overland Park as a result of the partnership between JCCC and BNSF is about \$60 million, created by the thousands of students who come to campus for training and who need to book hotel rooms, take their meals in restaurants, and shop at local stores.

Health Care

In Johnson County, employment of licensed practical nurses is expected to grow faster than the average for other occupations through 2020, thanks to the long-term care

needs of an aging population and growth in home health care services.

Anticipating this need, JCCC built an allied health education center, the Olathe Health Education Center (OHEC). The process began in 2008, when Olathe Medical Center donated 5.8 acres of land to JCCC. The building, which opened in August 2011, offers classes in practical nursing, certified nurse assistant; certified medication aide; rehabilitation aide; home health aide; IV therapy for LPNs; medical office, transcription, and coding; dietary manager; phlebotomy; and ECG technician. First responder, anatomy, physiology, and general education courses are also offered at OHEC.

Many of the OHEC classrooms have a hospital atmosphere and are equipped with the same equipment—beds, privacy curtains, nurse call buttons, and medical headwalls—that furnish hospital rooms. Four simulation bays with one-way glass allow instructors to watch students perform procedures.

The up-to-date equipment and extra space have helped the medical billing and coding and the medical transcription programs grow and enabled the college to introduce the dietary manager program this year.

In response to requests from local hospitals, JCCC has developed a new course, Patient Care Assistant - Acute Care, offered for the first time in summer 2012. This course provides classroom, lab, simulation-based, and clinical instruction for basic care of patients in acute-care hospitals. During the clinical portion of the course, students will have a closely supervised opportunity to care for hospitalized patients. The course is designed to prepare entry-level workers for hospital nursing departments to prepare pre-nursing students for the nursing curriculum.

HITECH at JCCC

The health information systems field is expected to grow significantly as healthcare providers such as hospitals, care centers, doctors' offices, and health clinics implement the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009. This act mandates that every United States citizen have an electronic health record. The transition from paper records to electronic records is also tied to Medicaid reimbursements, with Medicaid providers needing to meet the October 2013 deadline for meaningful use.

In 2010, JCCC became one of 17 community colleges in the Region C Midwest Health Information Technology Consortium to deliver HITECH training and the only Kansas community college selected to participate. Hutchinson Community College (HCC) joined JCCC in reaching out to deliver the training statewide. At this writing, JCCC's HITECH program has enrolled 116 students and demonstrated less than 3 percent attrition with more than 80 percent of students employed.

The college received \$292,247 as part of the American Recovery and Reinvestment Act of 2009 to implement two health information technology workforce training roles that will be needed in physicians' offices and related businesses. Certificate program training is offered for two career roles, technical/software support staff and workflow and information management redesign specialists.

In 2011, the HITECH program expanded and strengthened, thanks to a \$2.9 million grant from the U.S. Department of Labor. The grant allows HITECH to advance curriculum development, offer new career pathway options, provide internship opportunities with leading industry employers, and develop a statewide workforce network.

New to JCCC's HITECH program will be the implementation support specialist and the training certificate programs. These new certificate programs teach students how to implement electronic records systems and how to train others to support and transition to electronic medical records systems.

The grant also creates internship opportunities for program participants in various health care settings, strengthens the partnership with HCC to recruit and train students from across Kansas, and creates an alliance with the Workforce Partnership Center to work with industry employers and capitalize on internship and job opportunities. Partnerships with employers are growing, and students are receiving job offers before completing the program.

External institutional collaborative efforts have proven effective to truly address industry workforce needs and deliver timely training solutions that affect local, regional, and statewide economic development, from start-up companies to companies with global industry footprints.

Information Technology

In Johnson County, 9.2 percent of the workforce is involved in the information industry, far above the national average of 2.8 percent. Network security is a top priority for nearly every business and organization that uses computers.

To facilitate the learning process at JCCC, the college's Computing Sciences and Information Technology (IT) division worked with the Information Services branch to set up a virtual learning system whereby faculty manage large numbers of complex and diverse student server networks.

Faculty found that complex student network projects were causing unacceptably long

system boot times on the individual student servers installed in the classrooms. The long cycle times made the learning process difficult for students, and replacement server options offered little improvement.

Because a cloud environment offered students faster response with the ability to leave systems running but idle, thereby providing more usable instruction time, JCCC deployed a VMware vSphere private cloud infrastructure, leveraging the latest in IT computer, data, and networking resources from a joint vendor solution known as a flex pod. Cisco, NetApp, and VMware provide this solution; more than 3,200 virtual machines are deployed and supported to create a collaborative systems lab that forms into a true working network.

Using the private cloud, faculty have the flexibility to teach a range of IT classes using a shared infrastructure that students can access anytime, anywhere, and from any platform, including mobile devices. As an added benefit, the environment can be used to expand course offerings to teach virtualization for public and private cloud resource management that will help students negotiate the real world of work.

Entrepreneurship

According to the County Economic Research Institute (CERI), in 1998 Johnson County's economy consisted of 14,971 private sector firms with payrolls—the state's largest concentration of business establishments. By 2008, the county had expanded to 17,352 firms. Over that 10-year period, the county economy added an average of 20 new business establishments per month, many of them small businesses. That figure is not likely to change. A Kauffman Foundation study of recent college graduates, as reported at the National Association of Community College Entrepreneurship Conference in October 2010, found that 70 percent would like to

one day own their own business, regardless of what their majors might have been.

With that in mind, Entrepreneurial Mindset is a new course at JCCC, based on a best-selling book that is now part of the associate's degree in entrepreneurship and a component of an entrepreneurship certificate. While the entrepreneurship associate's degree and certificate are not new, the addition of this course and its groundbreaking curriculum is a major shift in classroom focus.

The class curriculum is based on *Who Owns the Ice House? Eight Life Lessons From An Unlikely Entrepreneur*, by Clifton Taulbert. Taulbert grew up in the deep South in the 1950s, fully prepared to follow in the generational footsteps of fieldhands all over the Mississippi Delta—descendants of slaves who were without means or opportunity. The exception was Taulbert's uncle Cleve, who ran the ice house in town. Uncle Cleve taught his nephew the life lessons needed to succeed as an entrepreneur.

As Taulbert matured, he realized those same lessons remain true more than 50 years later. With the help of co-author Gary Schoeniger, Taulbert identified eight lessons of successful entrepreneurship from his uncle Cleve and backed it up with present-day examples.

JCCC is an academic partner with the Kauffman Foundation, which has supported efforts for the Ice House project, offering training for teachers and facilitators at its Kansas City, Missouri, headquarters. On its website, it describes the Ice House project this way: "From young adults to higher education and workforce training, this highly interactive and engaging program is designed to inspire and engage participants in the fundamental concepts of an entrepreneurial mindset and the unlimited opportunities it can provide."

JCCC's total tangible economic impact on the community is more than \$182 million each year. Through the range of its offerings, the college serves as an economic engine that helps the county, and the state,

to meet current workforce needs and prepare for a prosperous future.

Terry Calaway is former President of Johnson County Community College in Kansas.

Ongoing Dialogue and a Focus on the Workforce: Kirkwood Community College and the Eastern Iowa Skills Reports

By Mick Starcevich and Kim W. Johnson

For more than 40 years, east central Iowa employers and Kirkwood Community College have engaged in many collaborative efforts to train generations of people to find their best fit in the state's economy. Over the past two decades, one crucial process has produced tangible results that address the basic conundrum of such work: staying focused on the core abilities of workers to address the evolving needs of major employers and emerging new businesses.

The result of this process has been the development of a series of skills reports—an evolving set of surveys and assessments of the industry sectors, occupational categories, and projected employment needs within the Eastern Iowa service area. The first report, Skills 2000, studied the immediate employment needs of a representative cross section of large and small employers in both the public and private sectors. Subsequent studies provided a reassessment of the original study and expanded the scope and size of the process, while noting progress or lack of it in the areas of employee knowledge, needed skills, and recruitment needs across the region. Each study was titled to focus on the near future (e.g., the Skills 2000 Report was released in 1998). The newest

study, the Skills 2014 Report, was released in the spring of 2011.

Each iteration of the survey asked a series of questions that have to be front and center in the mind of any college leader:

What are regional employers forecasting for future employment? Are Kirkwood's programs producing the kinds of skilled graduates the community needs? Beyond a degree or certificate title, are graduates prepared for the roles employers have available? From the other perspective, does the college understand what partner employers need today? How have those needs changed in the past several years? What is the best course of action to meet those needs and anticipate emerging and developing demands in the local and regional economies?

Kirkwood Community College has grown as the Eastern Iowa region evolved from a predominantly agricultural and manufacturing economy into one that serves a more broad and diverse collection of industries, from insurance and communications to national and international hubs for customer contact, biotechnology, and green energy production. The college has a local presence in seven service counties and serves more than 26,000 credit students and about 60,000 lifelong learners in its Continuing Education and Training programs. Kirkwood is the main transfer college to the University of Iowa, with hundreds more students taking their Kirkwood credits and degrees to a host of colleges and universities in Iowa and beyond.

The Kirkwood-led Skills 2000 survey was conducted by a commission of officials from Iowa's 15 community colleges and top executives from 33 large employers, predominately located in the Cedar Rapids end of the Cedar Rapids-Iowa City Corridor. The strength of this new process was that participants recognized the local focus and autonomy of Iowa's community colleges and their personal awareness of direct community needs.

Working in collaboration with area chambers of commerce and economic development groups, follow-up studies built upon the original study model, seeking to deepen the understanding of wider employment and workforce development needs from the detailed information provided by leading employers. The primary differences between the Skills 2000 and Skills 2006 reports included the number of employers surveyed and the expansion of the geographic region to better reflect the local workforce base. The Skills 2010 Report built from this foundation, increasing once again the number of employers surveyed and deepening the quantitative data available on the region. The most recent survey, Skills 2014, aimed to provide employers and local leaders the data to analyze differences and trends regarding workforce issues.

The Skills 2014 study was conducted in two parts. The first part, an Employer Workforce Needs survey, asked employers to identify their current worker headcount and anticipate replacement and new job growth from 2011 through 2014. These employers were also asked to identify minimum educational levels needed for current, replacement, and new job projections.

The second part, the Training and Workforce Climate survey, asked employers to respond to questions determining satisfaction levels with and skills of job applicants and incumbent workers. Other queries included their investments in training, declining occupations, workforce supports and impediments, work-based learning opportunities, and skills credentialing tools. The 2014 study reached 272 employers, who completed one or both parts of the two-part survey.

Amid these surveys, we cannot ignore the deep impact of natural disaster on the region. In June 2008, devastating floods hit several areas of the Corridor, with Cedar

Rapids—home to the main Kirkwood campus—being most severely affected. The total cost in losses and damage to home and commercial property exceeded a billion dollars. The Skills 2014 study noted that 53 of the 272 employers were flood impacted. This was set amid the backdrop of the Great Recession, and the region is still trying to rise above those challenges.

This process of continually identifying community workforce needs and assessing Kirkwood's response to them reflects the first words of the college's mission statement: identify community needs. Beyond a single study for a moment in history, this set of surveys and resulting reports reflects what every good communication process should be. Each set of questions and answers grows and develops from mutual listening and studied reflection. Each new conversation nods to a shared past and recommits to a shared future.

From Data to Action

The information gathered from the Skills 2000 and Skills 2006 reports resulted in a series of initiatives and partnerships that addressed the leading concerns and opportunities discovered in the surveys.

- Early results included the central justification for Accelerated Career Education (ACE) funding, with the Iowa legislature focusing more than \$6 million annually to the state community college system, beginning in 2000. Statewide funding of about \$5.5 million also supported infrastructure projects for programs that addressed the core workforce needs cited in the initial statewide surveys. This funding source remains intact today.
- Kirkwood partnered with ACT, Inc., to develop the Iowa National Career Readiness Certificate program. More than 180 local employers of all sizes

recognize this credentialing system that puts tangible value on core skills needed in an evolving workplace. By early 2012, more than 5,000 individuals had taken the National Career Readiness assessments.

- The need for in-depth skill training in the health sciences led Kirkwood to develop the Healthcare Simulation Center. Opened in late 2008, the 10,000 square-foot, state-of-the-art center allows students in nursing, EMT, and allied health programs to gain a higher level of work-ready skills in a realistic yet controlled environment. Kirkwood saved \$2.2 million in Iowa ACE funding over a three-year period to build the center with fiscal responsibility.
- Kirkwood met specific identified workforce shortages with rapid expansion or development of training in customer contact management, welding, and other on-time courses. Some of the training was focused in specific counties to meet targeted needs of local industry partners.
- A need for students to realize career opportunities and build basic skills at younger grade levels led Kirkwood and local partners to launch the Workplace Learning Connection. This regional intermediary service for job shadows, internships, and workplace visits now reaches approximately 20,000 kindergarten through 12th grade students per year, in partnership with 34 public and private school districts and nearly 1,000 employers throughout the Corridor.
- To meet a quickly developing demand for job skills in traditional and new energy production, Kirkwood launched its Renewable Energy program in the fall of 2011. A centerpiece of this new credit program is the region's first full-scale, on-site wind turbine, built in partnership with Clipper Windpower. Standing more

than 415 feet above the campus grounds, this working turbine will act as a real-time laboratory for the students, as well as reduce the college's electric bills by more than \$350,000 each year. The program also benefits from a second, non-generating turbine module for classroom use, a donation from Clipper to further boost the program.

- The Skills 2014 study targeted research and program development for several new certificate programs. Among them are transportation and logistics, manufacturing sales and marketing, and advanced manufacturing industrial automation.

Survey Challenges

No program or partnership is perfect or without some difficulties. Kirkwood acknowledges that despite its best efforts, there were several underrepresented industry clusters in each of the surveys. The college could extrapolate real and useful statistics from the samples gathered, but realize the greater benefits had there been even wider-ranging information and deeper employer participation. Kirkwood also recognized that some data areas were not those commonly kept and tracked in average company human resources offices. This led to a lower response rate than desired in several industry categories.

Another obvious challenge is the sheer amount of time and resources needed to successfully complete such a study. These surveys could not be achieved if not for the strong partnerships and collaboration the college benefits from in the region. Kirkwood and Eastern Iowa are fortunate to have long-term commitment and a spirit of community investment to continue and deepen these studies for the long term. The greater value of this data is in its revelations over time, the proofs built from years of evidence.

Skills Surveys: The Next Steps

The Skills 2014 study continues to give Kirkwood and the widening network of regional partners plenty of needs to address and workforce training to complete. The next series of discussions and strategic analyses will lead the college more completely into areas of identified workforce needs around specific industry clusters, monitoring current and anticipating future workforce supply and demand. The verified gaps in worker preparedness and occupational demands will lead Kirkwood to sharpen, focus, or launch other new short-term training and broader career credit programs in the next few years.

Kirkwood is also carefully studying the college's role in regional leadership as part of a comprehensive Learner Success Agenda. This overall program aims to increase students' attainment of degrees, certificates, and other focused credentials by hundreds of students per year. This will be achieved through a series of initiatives to support student learning, improve internal

college operations, and make Kirkwood's programs more relevant and focused to the needs of east central Iowa.

As the college examines the realization of the Skills 2014 report, it is highly likely that Kirkwood and a growing network of business and industry partners will one day soon commission a study, gather data, compile and release the results, and enter another session of the ongoing conversation that is the lifeblood of the college's mission. Kirkwood strives to ensure that it is connected to the regional labor and economic base, reaching out daily to meet those needs. As the seven-county service area approaches a half-million strong population, Kirkwood's work is still measured one higher level of success, one improved life at a time.

Mick Starcevich is President of Kirkwood Community College in Iowa. Kim W. Johnson is Vice President of Kirkwood's Continuing Education and Training Services division.

Innovative Career Pathway Model Reaches Out to Arizona's Underserved Populations

By Jo Jorgenson, Randy Kimmens, Karen Poole, Mary Briden, Michael Pattarozzi, and Mike Lesiecki

The Maricopa Community Colleges provide flexible course delivery, including online, traditional classroom, hybrid, mail, accelerated, evening, weekend, and open-entry/open-exit choices. In addition, transfer agreements with public and private colleges and universities enable seamless transitions to four-year institutions. As the "college within everyone's reach," Rio Salado College (RSC) is the largest of the Maricopa Community Colleges in credit headcount and one of the fastest growing community colleges in the nation. RSC provides innovative approaches to education through choice, access, and flexibility; customized, high-quality learning design; and personalized service and organizational responsiveness.

One such approach, designed to reach those who need education the most, is the creation of empowerment zones, or educational centers that are uniquely tailored to the community each serves. This is a collaborative effort between the communities, RSC, and the Maricopa County Community College District (MCCCD) that focuses on offering localized services for students while finding creative new ways to extend education to families with first-generation college students, high school dropouts, and multigenerational residents

who have not pursued higher education at a traditional institution. By providing educational hubs within these neighborhoods, students have convenient access to programs and services such as advising, testing, and computer labs that

are designed to ease their transition into postsecondary education and workforce training. RSC, the largest online public community college in the United States, is also the largest provider of in-person Adult Basic Education, Adult Secondary Education, and English Language Acquisition for Adults in the state of Arizona. RSC offers classes for almost 10,000 students at many of these educational centers, thus giving students the opportunity to feel and experience the synergy of newly created pathway models that

could transform their educational experience and their future in the workforce.

STAR-PATH

A well-educated workforce is critical to the economy. However, 825,000 Arizonans age 16 or older do not have a high school diploma or GED and are not enrolled in school. These individuals need a viable and affordable option to pursue and complete

Rio Salado College, one of the Maricopa Community Colleges, offers programs at locations throughout the Greater Phoenix area and serves approximately 70,000 students annually, including over 43,000 online students. The Maricopa Community Colleges comprise ten colleges, two skill centers, and numerous education centers dedicated to educational excellence and meeting the needs of businesses and the citizens of Maricopa County. More than 260,000 credit and special interest students attend the colleges annually. The Maricopa Community Colleges offer a wide range of opportunities, including approximately 1,000 occupational degrees and certificates, 37 academic associate's degrees, and over 10,000 courses.

an educational pathway that leads to a livable-wage job.

By drawing on external grant funding and local partnerships, RSC is piloting innovative, replicable, and scalable academic and career pathway models for nontraditional students that are designed to enhance student success. One model, STAR-PATH (Successful, Talented Adults at Rio - Practice, Analytics, Technology, Help) is designed as a bridge program to postsecondary education and training leading to attainment of employer-identified skills, which are documented through a nationally recognized assessment.

STAR-PATH students also learn soft skills, computer technology basics, and study skills; academic foundation competencies including math, reading, and writing are developed with an assessment component for placement and wraparound support services to better ensure completion, employment, and success. STAR-PATH certificates are stackable and can be applicable to occupational associate's degrees or training pursuits, such as information technology and health-related fields.

STAR-PATH is a tiered student support model that offers a bridge for career path training. Knowledge, skills, and abilities required for the workforce are the drivers of its design and learning competencies. STAR-PATH competencies are broad and applicable to all occupations. For example, competencies that cross all occupations include English language, reading comprehension, mathematics, oral comprehension and writing skills, customer and personal service, service orientation, active listening, social perceptiveness, critical thinking and problem sensitivity, problem solving, time management, and knowledge of computer technology. The competencies build from basic to advanced

proficiencies, and competencies specific to each occupational pathway are aligned with industry standards as well as workplace requirements.

The Need for Career Pathway Programs

RSC's STAR-PATH model is critical for unemployed and low-level incumbent workers and for those pursuing basic skill improvements or a GED. An essential component of STAR-PATH is its direct and unique response to the academic, personal development, and employment needs of these populations. STAR-PATH incorporates critical best practices identified by national models, including the Secretary's Commission on Achieving Necessary Skills (SCANS) Five Competencies, the Seven Focus Areas of Quality Elements, Washington I-Best, the Ohio Stackable Certificates, and Building Blocks for Competency Models.

STAR-PATH foundation (Tiers 1 and 2) is the precollege bridge and requires students' acquisition of personal development/effectiveness competencies and academic foundation competencies. The personal development/effectiveness competencies include soft skills, basic computer technology, and study skills. Academic foundation competencies include math, reading, and writing, and are developed with an assessment component for academic placement and wraparound support services. The support services help ensure students' success since these competencies are often a barrier when STAR-PATH target populations attempt formal education programs. More advanced skills in technology, critical thinking, and information literacy are also included in these competencies. Research and RSC experience strongly support the need for students to fully achieve Tier 1 and 2

competencies before they enter occupational pathways.

An equally important and compelling reason for establishing STAR-PATH is to enhance current RSC occupational career pathway offerings. With the link between this newly designed essential precollege bridge (Tiers 1 and 2) and a more contextualized, expanded, and highly integrated occupational pathway at the postsecondary level (Tiers 3 and 4), STAR-PATH becomes a complete, coherent, and articulated sequence of academic and career/technical courses. STAR-PATH offers both lateral and vertical avenues so students can opt to enter other pathways, in addition to industry-recognized credentials and licensure that can lead to employment and advancement opportunities for the identified target populations. Throughout the competencies there are threaded curricula. For example, in Tier 1 students are introduced to computer basics, in Tier 2 information literacy, and in Tier 4 applied technology. Another example is STAR-PATH's threaded curricula in sustainability, which includes eco-ethics and values, environmental design and ecology, and strategies for sustainable behavior.

STAR-PATH also offers exit points to the workplace and entry points for incumbent workers. For example, upon completion of Tier 2, students have the option to exit to the workplace. These same students, now incumbent workers, re-enter the pathway and move to Tier 3 to continue their educational pathway.

STAR-PATH underscores the importance of the Precollege Bridge (Tiers 1 and 2), the Occupational/Postsecondary (Tiers 3 and 4), and articulation with universities (Tier 5). A Career Promotion Continuum provides the framework and progresses through Career Tasks reflected in STAR-PATH Tiers 1 through 5 and their accompanying

competencies. Courses are designated as career achieving (precollege bridge) and career specialized education/training (occupational postsecondary).

The STAR-PATH model supports the relationship between economic development, workforce development, and education by connecting individuals and employers in developing careers, in keeping with the Workforce Investment Act (WIA) of 1998, enacted to provide workforce activities through statewide and local workforce one-stop systems; to increase employment, retention, and earnings; and to increase occupational skill attainment by participants.

Arizona's Workforce Connection, the state WIA system, is comprised of 14 Local Workforce Investment Areas. Youth and adults receive educational and workforce services, including workers who have lost jobs through layoffs and plant closures. Its goal is to improve the quality of Arizona's workforce, reduce welfare dependency, and enhance the state's business and industry's productivity and competitiveness.

The One-Stop Career Centers of the local Workforce Investment Boards, which include Phoenix Workforce Connection (PWC) and Maricopa Workforce Connections (MWC), provide multiple opportunities, described in the following paragraphs, for companies to link employee development directly to business strategy (see <https://www.azjobconnection.gov/ders/ea/wcmrs/>). MCCCCD is a mandated partner in the WIA One-Stop Career Centers, and both PWC and MWC are identified as partners in the STAR-PATH initiative.

Costs of Development. The initial cost for STAR-PATH pertains to three categories: curriculum development, software procurement, and instruction. Curriculum development concentrates on Tier 1,

personal development/effectiveness or soft skills competencies needed for learning and in the workplace environment, and Tier 2, the academic foundation competencies and contextualized learning experiences that establish instructional relevance for the student. Expenses include procurement of appropriate licensure of KeyTrain, an online, interactive training system for career readiness skills that directly correlates to American College Testing WorkKeys' assessment system, a national readiness certification, and contributes to STAR-PATH's stackable certificate process. Because the pilot for this model is funded with grant monies, Tier 1 and 2 are currently offered at no additional charge to the student and instructional costs are borne by RSC. In order to be sustainable for the long term, students may be required to pay a nominal fee in the future for STAR-PATH noncredit instruction.

Process for Evaluating Model.

Evaluation data will be used to determine replicable components of the model for long-term sustainability and areas where added effort or change must occur for continued viability.

Examples of successful project components that will be evaluated to ensure the sustainability of STAR-PATH during the grant and post-grant periods include consideration that the:

- RSC system resources provided immediate and complete support for all aspects of the project (e.g., technology, student services, curriculum design and production, marketing);
- performance tracking system provided the data needed to determine the achievement of the 12 project strategies, their milestones, and deliverables; and
- career pathway and its foundation (Tiers 1 and 2), occupational pathways (Tiers

3 and 4), and advancement (Tier 5) proved to be robust and valid.

Examples of sample progress measures include the:

- number and percentage of students who placed into a remedial education module and enrolled in a remedial math, English, writing, or any combination of the three modules;
- number and percentage of students who completed a remedial education module in math, English or both, and completed a college-level course in the same subject;
- number and percentage of students who completed entry college-level math, English, and writing courses within the first two consecutive academic years;
- number and percentage of entering students who enrolled consecutively from fall-to-spring and fall-to-fall;
- percentage of credit hours completed of those attempted during an academic year; and
- annual ratio of certificates and degrees awarded per 100 full-time equivalent (FTE) students.

Examples of sample implementation measures include the:

- expansion and improvement in the capacity of support programs such as coaching, career counseling, tutoring, and job placement services;
- establishment of credit for prior learning assessments;
- creation of new articulation agreements;
- number of employers who reviewed and validated new curriculum; and
- establishment of cooperative education or internship agreements.

The STAR-PATH model, coupled with the concept of empowerment zones, or neighborhood learning centers, is another way that MCCC and Rio Salado College are striving to meet the needs of both residents

and employers. Educational programs and services that are readily available within a community setting and provide affordable pathways present an alternative means of effecting wide-reaching changes in the way we teach underprepared learners. STAR-PATH, a precollege bridge program that is both replicable and sustainable, offers students opportunities for accelerated learning by integrating college and career information into all levels of education.

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Miami Dade College's Bachelor of Science in Biological Sciences: Evolution of a Workforce Partnership

By Eduardo J. Padrón

In 1997, Miami Dade College (MDC) realigned its professional and workforce-oriented programs with Miami-Dade County's official blueprint for economic development, referred to as One Community One Goal (OCOG). The college established partnerships and advisory teams populated by industry leaders from OCOG's target industries. As the economy of the region has evolved, so, too, have the college's programs and workforce partnerships. Of special interest are the programs of MDC's School of Science that are preparing a new generation of biological scientists and lending support to the college's industry partners.

An Emerging Life Science Corridor for Miami

MDC's interest in exploring workforce-oriented certification and degree programs in the biological sciences was first sparked in spring 2010 through conversations with South Florida bioscience and biopharmaceutical employers. They expressed the need for a baccalaureate biological sciences program, graduates of which would be prepared for direct entry to the life science workforce without additional training. These employers had experienced difficulty recruiting baccalaureate graduates from the more conventional biology programs, and also reported that the graduates interested in direct employment required extensive and expensive training by the industry.

Later that year, Miami-Dade County's Beacon Council, the county's economic development agency, joined with industry and higher education leaders to discuss strengthening the presence of the life science industries in the lower part of the state. The group agreed that attracting increased investment in the life sciences would require a collaborative effort, and the result of the meeting was the formation of a higher education and life science industrial partnership.

In early 2011, the Beacon Council unveiled a renewed OCOG proposal, a Targeted Industry Strategic Plan for Miami-Dade County. The OCOG Steering Committee, comprised of leaders from the private and public sectors, K-12, and higher education, agreed "to create a plan of action for

growing jobs and investment in Miami-Dade County" in a range of industry sectors, including the life sciences.

At the time, MDC was well stocked with associate in arts and associate in science degree programs in the life sciences. But what was clearly needed was workforce-oriented baccalaureate-level preparation, and the college set out to document the need with industry leaders in preparation for a presentation to Florida's State Board of Education.

Miami Dade College (MDC) serves as the focal point of higher education opportunity for the South Florida community. The college enrolls more than 174,000 students at eight campuses and several outreach locations across Miami-Dade County. MDC offers 300 distinct academic and professional programs that lead to occupational and professional certification and associate and bachelor's degrees.

Identifying South Florida's Industry Needs

MDC's Office of Institutional Research identified 100 companies in the life science industry. An extensive series of telephone interview surveys with industry professionals identified strong growth trends in the industry. More than two-thirds expressed a need to have more individuals with a bachelor of science degree in the biological sciences. Seventy-six percent noted their difficulty in finding local qualified candidates with appropriate science backgrounds and degrees. They were consistently forced to hire outside the local area. Many of those interviewed emphasized the need for a biology curriculum in South Florida with plentiful lab work and internships that would provide relevant experience.

Additional information was gathered through a focus group composed of leaders in the local life science industry and representatives from Florida Agricultural and Mechanical University and the University of Miami (UM). Life science industry leaders expressed a critical need for employees who had earned a baccalaureate degree and were workforce-ready. When asked for "one point about the need for a Bachelor's of Science degree in Biological Sciences (BS-BS) at MDC," the summary response emphasized the "B.S. degree as a critical stepping stone for employment in the industry. What the college needs to do is to ensure that it will fill the gap between student desire and employer need."

Additional evidence of employer support for the new B.S. came via forty-two letters of support from life science and related institutions, documentation required by the Florida Department of Education. Endorsements came from corporate leadership at Merck and Noven, two major

national biopharmaceutical companies located in Miami, and from Beckman Coulter, a major biomedical testing, marketing, and manufacturing company with two locations in Miami-Dade County. UM's Vice Provost for Research also stressed that MDC BS-BS graduates would be prepared "to continue their formal education by applying to one of our [UM's] many graduate degree programs in the natural sciences or one of our professional degree programs in medicine and/or public health."

South Florida's strategic planning documented the substantial investment in stimulating the growth of biotechnology and the biopharmaceutical industry, noting that the current number of biological science baccalaureate graduates in South Florida would need to increase. Several data points made a strong case for MDC's BS-BS. The Florida State Agency for Workforce Innovation reported an average of 944 employment openings requiring a baccalaureate degree or higher in the biological sciences in the state's Region 23 spanning South Florida. Florida International University (FIU), South Florida's public university, produced 217 biology-related undergraduate degrees in 2010. When the area's private institutions, including UM, Barry University, Florida Memorial University, and St. Thomas University, added their baccalaureate degree production to FIU's, the total came to 621, far short of the 944 job openings and inadequate to sustain economic growth in the sector.

Additional factors suggested that the need was on the rise. The area's graduate schools had increased their capacity for advanced biology-related study, expanding by 26 percent over the 2009 data. That increase clearly spoke to the need for more students completing baccalaureate degrees. Additional data indicated that national

employment of biological scientists was projected to grow by 21 percent during the 2008-2018 decade, much faster than the average for all occupations.

The good news was and continues to be that student interest in the field is strong. MDC's Institutional Research office also surveyed students enrolled in STEM programs of study prior to the submission to the Florida Board of Education. The vast majority (94 percent) of the 645 respondents indicated they were planning to pursue a bachelor's degree after completing their associate or certificate level of study. Fifty percent were interested in pursuing a B.S. with a major in biological sciences at MDC.

MDC has successfully implemented baccalaureate programs since launching bachelor of science programs in education in 2002. MDC now serves over 1,400 baccalaureate-seeking students annually and has awarded over 700 baccalaureate degrees in 12 programs. All provide increased access to baccalaureate degrees for the low-income, diverse, adult student population that MDC serves. The programs have also been articulated successfully with area graduate programs, thus enabling interested MDC graduates to pursue advanced degrees.

Fulfilling Miami Dade College's Strategic Plan

For more than 50 years, MDC has focused on achieving its fundamental mission to serve the needs of not only South Florida's diverse student body but also its community and workforce partners. Affordable high-quality learning opportunity is the core element of that mission, aimed at supplying an emerging regional economy with ready human capital. The proposed program is a direct outgrowth of the MDC strategic plan. The plan emphasizes the review and

transformation of curriculum and its delivery, and specifically aims at the development of new STEM and baccalaureate programs.

Also central to MDC's Strategic Plan and the economic development of the South Florida region, the BS-BS provides increased access to direct professional employment for the diverse adult and low-income student population MDC serves. Currently, MDC graduates more minority students than any other institution of higher education in the nation and enrolls a far greater number of older adults in its associate and baccalaureate degree programs than do the other area institutions of higher education. Over 75 percent of Miami-Dade County's population (78.9 percent) is comprised of Hispanics and African Americans. Sixty percent of MDC baccalaureate students are Hispanic and 28 percent are Black, non-Hispanic. Since 67 percent of MDC students are low income and 46 percent are below the federal poverty level, affordability is critical. Program tuition for the Florida College System (FCS) and its community colleges is considerably lower than the State University System (SUS) and substantially lower than the Independent Colleges and Universities of Florida (ICUF).

Meeting the needs of working adults is also a critical aspect of the college's mission and one that is addressed effectively by the new BS-BS. Nearly 75 percent of the FCS upper-division enrollees are over the age of 24, as compared to 81.4 percent of upper-division SUS enrollees who are 24 years old or younger. At MDC, the average age of currently enrolled baccalaureate students is 33; 69 percent are over 25 and 23 percent are over 40 years old. Access to upper-division coursework, especially coursework associated with laboratories, is often difficult for part-time baccalaureate students. Much of the

SUS and ICUF upper-division coursework is aligned to enrollment patterns of full-time students; in contrast, 66 percent of current MDC baccalaureate students are enrolled part-time.

Curriculum and Career Ladder

MDC's Bachelor of Science degree in Biological Sciences was approved by the Florida State Board of Education on June 21, 2011. The program is targeted for AA and AS degree graduates who have completed the requisite science sequences and who wish to obtain the skills needed to advance in life science careers. The BS-BS was designed by MDC faculty and academic leaders in collaboration with representatives from the growing fields of biologics, bioinformatics, pharmaceuticals or chemical technology, and medical devices. The educational/career ladder demonstrates the possibilities at every level of learning:

- College Credit Certificate
 - Biotechnology
- Associate's Degree
 - Associate in Arts
 - Associate in Science
 - Biotechnology
 - Bioinformatics
 - Chemical Technology
- Bachelor of Science
 - Biotechnology
 - Biopharmaceutical Sciences
 - Science Education

MDC college credit certificate (CCC) students receive introductory level immersion in the field of biotechnology designed to allow them to seek entry level positions. The certificate articulates to the associate degrees at MDC.

The existing AS degree in Biotechnology has been designed to build upon the introductory skill set created during the CCC

and prepares students through practical application and training that specifically focuses on industry needs. All students must complete an internship prior to graduation. The AS degree articulates to MDC's BS-BS.

Under this initiative, the college has produced sixteen curricula, negotiated articulation agreements between the college and biotechnology baccalaureate-degree-awarding institutions to facilitate student transfers, and purchased the equipment necessary to fully equip four state-of-the-art laboratories for training in the biosciences in MDC's new Science Complex at the college's North Campus. The program includes extensive student outreach services to support student enrollment, retention, internships, and job placement. It also offers professional development opportunities for faculty that include hands-on training workshops and seminars. Faculty use the skills gained from workshops to continually update and address the rapidly evolving skills needed to successfully navigate a career in the biosciences. To address current workforce development needs for incumbent workers, the MDC team works collaboratively with the Biosciences High Growth Job Training Initiative team to provide corporate training and outreach to bioscience organizations. This training assists in the establishment of career ladders and lattices for incumbent workers.

Enrollment in the BS-BS is expected to grow to 175 students by 2014. The program ensures an ongoing collaboration and mutually beneficial partnership for years ahead between MDC, our students, local universities, and the bioscience workforce community in the region.

Eduardo J. Padrón is President of Miami Dade College in Florida.

Changing to Meet the Needs of Regional Economic Development

By Anne M. Kress

In the past few years, as the difficulties facing the economy deepened, community colleges have been at the center of the national and regional dialogue about moving displaced workers back into the workforce. Even more recently, as the number of recent college graduates unable to find employment increased and the skills gap between those seeking employment and those seeking employees seems to be widening, community colleges have become the gateway to meaningful jobs and high tech careers. Our colleges have met the challenges inherent in both roles because—long after others have changed their focus—we continued to invest in an essential part of our mission: training the local workforce. We knew that even in the midst of high unemployment, employers continued to have difficulty filling highly technical positions and were gearing up in new industries, with new technologies, that would bring even greater demand for skilled workers. Community colleges have consistently focused on middle-skill positions, those that require an associate degree, postsecondary certificate, or vocational credential, and Monroe Community College (MCC), in Rochester, NY, has redoubled its efforts to meet the need of its industry partners for a strong and effective pipeline into the region's middle-skilled workforce. In addition, the college played a central role in New York Governor Andrew Cuomo's new model for economic development. As it has retooled its own focus on workforce education and moved forward the governor's regional

Monroe Community College in Rochester, New York, serves more than 34,000 credit and noncredit students at its Brighton and Damon City campuses, Applied Technologies Center, Economic & Workforce Development Center, Public Safety Training Center, and at extension sites.

approach, MCC has become the regional hub for putting the community back to work.

A Changed Context

According to the Center on Education and the Workforce at Georgetown University, in its landmark 2010 report, *Help Wanted: Projections of Jobs and Education Requirements Through 2018*, New York industries will create 756,000 job openings by 2018 that will require either an associate degree or some college.

According to MCC's analysis of annual openings, the ten-county region served by the college will produce over 13,500 openings in the middle-skilled sector. The positions span the entire array of local significant industry clusters, including advanced

manufacturing, energy innovation, agriculture and food processing, health care and life sciences, and tourism and the arts.

As these figures suggest, opportunities for a skilled workforce are strong, suggesting a state and a region poised for economic recovery. However, the pipeline preparing students to take on these positions had thinned over the years as a result of multiple factors, but none as critical as a narrowing of high school focus. William Symonds, in *Pathways to Prosperity* (2011), argues that a "narrowly defined 'college for all' goal" (p. 7) has shortchanged both the American economy by weakening the workforce pipeline and American youth by denying them access to a more career-

oriented educational path. He points to disinvestment nationwide in career and technical education that would lead high school students into advanced training and education directly related to workforce needs. The underlying narrative is a common one: The world has changed, but we have not kept pace.

Locally, over the years, MCC saw the same pattern play out. Across its service county (Monroe), from the most successful school district to the least, counselors and parents downplayed career and technical education as unnecessary and outmoded in a college-going model. MCC's industry partners have pointed consistently to a fundamental and distinct change in school districts over the years. In past practice, students were provided with a full array of alternatives—some of which led to four-year colleges and universities, others of which led to career and technical education and training offered by apprenticeship programs or community colleges. MCC's own institutional history, as reflected in its programs and graduates, told the same story. For example, many of MCC's most successful and distinguished alumni in fields from engineering to optics to manufacturing had passed through a single Rochester high school: Edison Tech. By 2009, the once vaunted institution was on the verge of a closure triggered by low enrollment and even lower success rates. Other school districts had cut or reduced career and technical programs, assigning them low-level vocational status that did not align with their current missions: to send students to four-year colleges. Somehow, the very real fact that today's career and technical workforce—middle-skills workers—needed knowledge and training that only college could provide had gotten lost in the mix. Students were offered one college-ready diploma option, the Regents Diploma, which largely prevented them from taking career pathway courses. By the spring of 2012, the lack of career pathways for high

school students had become such an issue for New York that the State Board Regents convened a special commission to study the need to restore this track for graduates. It had finally recognized the need to change.

A Changed Approach at MCC

That MCC hosted the Regents' discussion on career pathways said much about how far the college itself had come on workforce education over the previous few years. Two of the directions given to MCC President Anne M. Kress when she took office in 2009 were to renew the college's commitment to serving the workforce needs of its region and to reinvigorate its engagement with local business and industry. President Kress restructured the college administrative structure, splitting the large Academic Services into two manageable divisions, one of which would be central in MCC's redefinition and reimagining of workforce development: the newly named Economic Development and Innovative Workforce Services division. The new organizational unit combined credit career and technical education, noncredit continuing workforce education, and grants, with a goal of finding synergies across these offices and programs to better serve the needs of the college and the community. For leadership, she hired a vice president with a proven track record and an entrepreneurial background, Todd Oldham.

Over the past two years, the new division—which goes by the odd but memorable acronym EDWIS—has achieved extraordinary success because of its keen focus exclusively on workforce development. It blurs the standard academic silos of credit and noncredit; its aim is to help community members build skills and knowledge that lead directly to employment, a journey that may require credit instruction, noncredit training, or—most likely—some of both. A review of

some of the most recent successes for the college and the division reveal a telling point; each has resulted from collaboration between MCC and the community, whether in the form of another public agency or private industry:

- MCC launched the Career Coach product at MCC, providing access to this dynamic, interactive tool for free to the community. Since its launch, MCC's Career Coach has been adopted locally by Junior Achievement, which has built a curriculum around it; by BOCES (the vocational arm of New York high schools), which uses it as a student research tool; and by local guidance counselors, who use it in career counseling. MCC has also begun a no-cost one credit hour career exploration course for dislocated workers that makes extensive use of Career Coach; it is delivered in partnership with local community-based organizations at their sites.
- MCC secured a grant of \$500,000 from the Corning Incorporated Foundation, and a matching grant of \$250,000 from alumnus Jim Sydor of Sydor Optics, to expand MCC's Optics Program. As part of this expansion, the college began a high school dual enrollment Optics program with two local schools, both serving underrepresented and at-risk populations.
- EDWIS partnered with the County of Monroe Industrial Development Agency to fund summer training programs for dislocated workers and unemployed youth in careers associated with advanced manufacturing. The success of these efforts led to a more permanent funding relationship between MCC and the agency, which is now directing workforce training dollars to the college to help local companies expand.
- MCC received a \$250,000 grant from the New York State Energy and Research

Development Authority to fund the Solar Thermal Auxiliary Resource Center (STAR), which gives students experience with the multiple technologies that support alternative energy careers. This grant was supplemented by an in-kind donation from Siemens. MCC is now the only community college in the state that offers students the opportunity to become certified solar technicians and installers.

- MCC was the lead institution on a 30-college SUNY-wide consortium that successfully competed for a Department of Labor TAA-CCCT grant, which will bring \$14.6M to the state to build the workforce in all aspects of Advanced Manufacturing. The grant leveraged dozens of industry partnerships in support of the project, which drew Secretary of Labor Hilda Solis to MCC and will train thousands across New York.

MCC's scan of the economic development landscape revealed a simple truth: It had changed, and so had the needs of the immediate community. Thus, to serve the needs of business and industry and the needs of so many seeking employment, the college itself had to change how it did business. Soon, MCC was to learn that it was not alone in coming to the conclusion that, when it came to economic development, change was good.

A Changed Approach for New York

In 2011, New York Governor Andrew Cuomo announced he was taking a new approach to the state's economic development efforts. No longer would they be centralized through a top-down, one-size-fits-all model that ignored the unique assets and challenges of each region across the state. Rather, he would convene 10 regional councils that represented the geographic, demographic, and economic

diversity of New York. Each council would bring together community leaders from higher education, business, labor, agriculture, nonprofits, government, and community-based organizations to craft regional plans that would compete for a share of state economic development dollars. In the Finger Lakes region, the governor launched the Regional Economic Development Council (REDC) approach at Monroe Community College, and appointed President Anne M. Kress as a council member—recognition of the college’s own reinvented role in workforce development. He also asked the college to host all FLREDC meetings, which were to be overseen by Lt. Governor Robert Duffy (an MCC alumnus).

Each council would be led by co-chairs from the business and academic communities, with the composition of membership mirroring exactly the type of public-private collaboration that the governor encouraged councils to incorporate into their regional strategies. This collaboration is not just a principle; in practice, it means that, to be considered, all proposed projects must bring significant leverage capital to the table.

Leading the Finger Lakes effort are the heads of the region’s two largest employers, University of Rochester and Wegmans Food Markets. President Kress was asked to co-chair two workgroups that inform the 32-member council. These workgroups represent stakeholders from key industry sectors, including advanced manufacturing, energy innovation, agriculture and food processing, health care and life sciences, and tourism and the arts. The goal is to combine the voices of New York citizens with the evidence and data to develop locally responsive economic development plans that will help put New York back to work and reimagine the state’s business climate. The new, community-based model empowers each region to set plans and

priorities based on its unique issues and opportunities. The state’s role then is to help regions carry out their customized and collaborative plans for development by aligning state resources and policies, eliminating unnecessary barriers to growth, and streamlining the delivery of government services and programs.

By working together as a region, the nine counties in the Finger Lakes (Genesee, Livingston, Monroe, Ontario, Orleans, Seneca, Wayne, Wyoming, and Yates) were able to gain a deeper understanding of the area’s strengths, potential growth opportunities, and barriers to progress. Both the issues impacting economic growth and the points of pride that should drive a regional strategic plan came more clearly into focus.

For example, many members came to the REDC table unaware of the notion of a middle-skill workforce, its importance to the region’s economy, and the central role community colleges play in responding to workforce needs. In discussions about the magnitude of the skills mismatch in the region’s labor supply, every workgroup reporting out cited a growing gap between supply and demand for middle-skill workers. With 18 colleges and universities, the Finger Lakes region had long prided itself on the quality of its workforce, but the regional discussions revealed that the mere production of college graduates did not mean that these graduates were in fields aligned to local workforce needs. Nationwide, the phrase skills gap has been coined to describe what we were seeing locally, and its implications for the Finger Lakes region were striking.

The FLREDC found that by 2016, more than 13,500 middle-skill jobs would be created across the region’s industry sectors, according to data from Economic Modeling Specialists, Inc. After reviewing the data

around middle-skills concerns, the council reported to the governor two key findings:

- Middle-skill jobs make up the largest percentage of the state's workforce, and regional demand for these employees is particularly acute in the advanced manufacturing, optics, and health care fields.
- The rapid pace of technological change, increasing global competitiveness, and growing industry demands for career-ready employees make a robust workforce training infrastructure an essential component of economic growth.

The region then set forth three strategies to address these opportunities and challenges:

- Expand opportunities for the region's employees and spur the creation of high-skill, high-wage jobs.
- Strengthen and develop education and training programs needed to provide employees with the skill sets for key growth industries.
- Address regional workforce shortages in health care, agriculture, information technology, manufacturing, and other key fields.

In response, in year two of the Regional Councils, Kress co-chaired a workgroup specifically dedicated to addressing the workforce needs across the nine-county area. It included representatives from all levels of education, workforce investment boards, unions, and business and industry. The addition of this workgroup led to a new approach for the council. In its 2012 report, the Finger Lakes Regional Economic

Development Council recommended funding for a new project to addressing the skills gaps in three fields: advanced manufacturing, health care, and skilled trades. This project, Multiple Pathways to Middle Skills Jobs, brought together a broad regional coalition reflective of the workgroup stakeholders. The group decided to target the pipeline issue head on by taking these careers to the public via three mobile learning labs, one per sector. The labs will be outfitted with equipment and technology to serve a dual purpose: (1) recruitment and public education; and (2) training for high school students and displaced workers. In the most recent round of New York State grant awards, this project was funded.

Equally significant, in year two, The Finger Lakes REDC made an emphasis on workforce development the cornerstone of its plan, *Accelerating Our Transformation*, and of its presentation to New York Governor Andrew Cuomo, Lt. Governor Duffy, and a panel of state commissioners, who were tasked with judging all 10 state plans and making awards. The Finger Lakes region was awarded the largest pot of economic development funds in 2012, over \$96M.

References

Symonds, W. (2011). *Pathways to Prosperity*, Harvard Graduate School of Education
<http://www.ascd.org/publications/educational-leadership/apr12/vol69/num07/Pathways-to-Prosperity.aspx>

Anne M. Kress is President of Monroe Community College in New York.

Building Economic Prosperity in San Diego

By Constance M. Carroll

San Diego, California, is America's 8th largest city, with a vibrant economy that emphasizes such industries as health care, biotechnology, higher education, high tech information systems, tourism, and recreation. Situated at the Mexican border, San Diego has a rich, multicultural heritage, as well as a strong presence of military institutions. With a double-digit unemployment rate, the city has a workforce-training focus and relies upon planning and services from a variety of agencies: the San Diego Workforce Partnership, the San Diego Association of Governments (SANDAG), BIOCUM, the San Diego Economic Development Corporation, and special projects such as the Regional Visioning Initiative, recently launched by the San Diego Foundation. The San Diego Community College District (SDCCD), as the region's 17th largest employer, is directly involved and interacts frequently with these and other organizations in the review of workforce and economic development needs. Jobs, social mobility, and economic well-being are all derivative benefits of an effective community college organization in a receptive region. SDCCD takes its responsibility seriously in these regards as the largest workforce trainer in San Diego County, as a full-service purveyor of opportunities spanning a broad range from basic skills and high school diplomas to

SDCCD is the second largest community college district in California and one of the largest in the nation. Approximately 130,000 students enroll each semester at City College, Mesa College, Miramar College, and six Continuing Education campuses. Another 145,000 service personnel are enrolled in SDCCD's programs at military bases in 24 states. With its boundaries roughly coterminous with the footprint of the city it serves, the SDCCD makes a concerted effort to expand its regional and national reach through partnerships with other colleges, universities, and organizations.

honors programs and associate degrees, and as a vital provider of jobs itself through direct employment of faculty and staff, as well as commercial and job opportunities through its \$1.555 billion construction bond program.

Working Through Partnerships

Community colleges have unique opportunities to provide direct services to their communities by joining forces with professional organizations. In the case of training first responders throughout San Diego County, San Diego Miramar College is well known for its large and successful Public Safety Training Institute that provides associate degree preparation for firefighters, police personnel, and emergency personnel. Funded through various combinations of the district's general fund; contracts with local fire, sheriff, and police departments; student tuition; and grants, most recently American Recovery and Reinvestment Act grants, a shared investment has promoted and sustained a successful model of collaborative operation. This win-win approach was demonstrated several years ago when the partners and district split the cost of a \$400,000 driving simulator at the Miramar campus, which all participants use. The San Diego region benefits directly from the hundreds of personnel who join the first-responder ranks each year, as well as

from countless others who are upgrading their skills.

The San Diego region has a long history of military, primarily navy, presence, and SDCCD frequently engages in programs that support the military locally. San Diego City College has a partnership with San Diego State University's College of Engineering, titled Transitioning Troops to Engineers: From Military Experience to a Civilian Engineering Career. The primary task of the partnership is to examine both the university engineering curriculum and the engineering experience of recent military veterans, with the goal of determining ways to shorten the time to degree of veterans entering engineering majors. Of special importance is providing military veterans the lower-level mathematics and physics courses they will need as quickly and easily as possible, perhaps while they are still on active duty. City College has begun this process by offering a pre-calculus class to 25 students at the 32nd Street Naval Station in San Diego. This process is being extended to other courses and students.

In order to evaluate the correlation of military experience and training to the academic engineering curriculum, a thorough review of San Diego State University's engineering requirements and of the training programs provided by military bases in San Diego County, as well as the programs of several other universities, is being undertaken. Once the comparisons have been completed, the data will be discussed with an eye to realigning the curriculum. The steps in the process will include data collection, data analysis, and a comprehensive report outlining the proposed curriculum revisions, including additional documentation for the proposed changes and recommendations for community colleges regarding support for military veterans as they work toward transfer. The project is being completed

within nine calendar months with a budget of \$91,247 through grant funding.

San Diego Mesa College focuses on a wide range of allied health programs in line with the needs of San Diego's large and complex health care industry. One of the college's most popular and effective programs is the Radiologic Technology program, which prepares students for a richly rewarding, high-demand career as entry-level radiographers. According to the Bureau of Labor Statistics, these graduates can expect to earn between \$43,510 and \$64,070 in jobs that use x-rays, radioactive substances, and other forms of radiant energy to save lives and improve quality of life.

Mesa College's two-year program, the only public program offered in the San Diego region, features an integrated instructional experience of classroom work and closely supervised clinical practicum at a partnering health care facility. Upon completion, students receive an associate degree or certificate and qualify to take the American Registry of Radiologic Technologists National Registry Exam. Approximately 30 students graduate from the program each year, with 98 percent of graduates receiving offers for positions with their practicum hospitals.

These industry partners include Rady Children's Hospital San Diego, Sharp Grossmont Hospital, Kaiser Permanente Medical Center, Scripps Mercy Hospital, Scripps Mercy Hospital Chula Vista, Sharp Chula Vista Medical Center, Sharp Memorial Hospital, Tri-City Medical Center, VA San Diego Medical Center, UCSD Medical Center, UCSD Thornton Hospital, UCSD Women's Center, and Palomar Medical Center.

The Joint High School Diploma Program (HSDP) is one of the most unique partnerships in the nation, between the San Diego Unified School District and SDCCD's Continuing Education Division for Adult

Education. It stems from a formal Delineation of Function agreement between the two institutions. The HSDP provides adult students who were not able to complete their high school diploma a pathway to get back on track as productive citizens. Since its inception a few decades ago, over 3,000 students have been awarded diplomas, making a serious dent in the impact of high school dropouts and setting these graduates on the path of earning fully \$500,000 more in a lifetime than those who did not complete high school. In addition, many of these students go on to San Diego City, Mesa, or Miramar Colleges to earn an associate degree or transfer to a four-year institution.

The HSDP curriculum is designed to meet the needs of an Adult Education student, defined as being 19 years of age and older. The program not only serves to meet all of the high school requirements, but it does so by also requiring students to take college classes, giving them related credit. In this way, when students complete their diploma, they also have a head start on their associate degree. Students completing the HSDP program have been shown to do better than traditional students, exhibiting improved retention, course completion, and goal attainment when attending City, Mesa, or Miramar Colleges. For these reasons, they are given priority registration at the colleges, which is a significant advantage to students when courses are limited.

Quantifying Economic Impact

SDCCD emphasizes accountability and considers it important to share information about accountability and economic benefit with the broader community in the region. In addition to reports on audits, bond ratings, and similar topics, the SDCCD issues a comprehensive Economic Impact Report to the community that outlines the financial and social impacts of the

community colleges on the San Diego region.

The report, which is professionally prepared by an external company, analyzes a number of variables and enables SDCCD to present in a persuasive manner and quantify its impact in two significant categories.

- **District Operations Effect (annual).** This category addresses the manner in which income is created through the earnings of the district's more than 5,000 faculty and staff, as well as its purchasing and overall operating expenditures. With appropriate adjustments for taxes and other withholding funds, it can be shown that the regional economy benefits annually in the estimated amount of \$203,583,000 from SDCCD.
- **Student Productivity Effect (cumulative).** Because SDCCD students are in a continuous improvement mode in earning advanced degrees and certificates and enter or increase their standing in the regional workforce, the longitudinal profile of students over a 30-year period shows an accumulated value to the region of \$2,798,043,000.

The grand total of SDCCD's regional economic impact is \$3,001,626,000.

Capitalizing on Construction Bonds

A politician recently toured some of the active SDCCD construction sites, looked at the cranes, the machinery, and the hundreds of construction workers and said, "You guys are your own economic stimulus package in San Diego." In a region where the housing and construction industries have been depressed in recent years, the opportunities afforded by SDCCD are considerable. The San Diego voters passed the district's two significant bond measures: Proposition S, for \$685 million in 2002, and

Proposition N, for \$870 million in 2006, for a total of \$1.555 billion in construction funds, including equipment funding. These bond measures have transformed not only the district's nine campuses, but also the regional economy.

Thus far, the district has actually spent \$742,521,309 and current commitments amount to \$1,169,972,732. With 32 construction projects already completed, 20 under construction, and 14 in the design phase, this massive building program has had a salutary impact on the San Diego economy. In business terms, this is impressive. Through December 31, 2011, SDCCD awarded 603 individual contracts to contractors, at a value of \$713,209,695, and another 618 contracts to professional services providers (e.g., architects, engineers), for a value of \$152,349,261.

In addition, it is estimated that 8,500 unduplicated construction jobs have been created through the bond program to date. Since August 2008, more than 1.5 million hours have been worked on SDCCD building projects. Assuming an average prevailing-wage rate of \$37 per hour, this equates to \$55.5 million in wages during this time paid to construction workers; benefits are also accrued, but disbursement varies among

union and merit-shop contractors. Furthermore, it is estimated that at least 600 professional services jobs have been created to support the design, inspection, and other consulting needs of the bond program.

Finally, from August 2008 through December 2011, San Diego County residents have averaged 79 percent of the craft labor workforce representation in the SDCCD bond program with another 10 percent coming from neighboring Riverside County. Thus, from the amount of dollars to the regional nature of their impact, SDCCD's bond program is playing a major economic role in the San Diego region.

Like most community colleges in the nation, SDCCD is inextricably and beneficially linked to the economic health and destiny of the region. Beginning with a clear understanding of the economic needs and directions of the region, SDCCD makes a concerted effort to form partnerships, align programs and resources, provide unique opportunities, and articulate the value of its community college mission to the overall welfare of San Diego.

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Internationalism With a Local Flair: Santa Fe College, the International Initiative, and Innovation Gainesville

By Jackson Sasser

The concept of community colleges as local higher education institutions assumed a distinctive global perspective with the merging of two initiatives at Santa Fe College in Gainesville, Florida. Ten years ago, in the aftermath of 9/11, Santa Fe implemented an International Initiative, primarily in the belief that international understanding would reduce the likelihood of tragedies such as 9/11 if community colleges, which teach the majority of higher education students in the United States, added global perspectives in their courses and activities.

The International Initiative just three years later earned the college the Andrew Heiskell Award for internationalizing the campus. Through this initiative, Santa Fe added many new study abroad, foreign language, and multicultural programs and activities. Perhaps more important, the college internationalized its curriculum with new courses on global subjects and began weaving international perspectives into all courses, including mathematics, sciences, and the arts. Internationalism is now a natural consequence of every program and activity at Santa Fe College.

Innovation Gainesville Partnership. The International Initiative was, in 2010, partnered with a new economic and employment initiative named Innovation Gainesville (IG). IG is a public-private partnership that applies research findings

from the University of Florida (UF) to the development of new products that earn global market share. The partners of IG are UF, entrepreneurs with the know-how to build a business or industry, venture capitalists to provide the necessary funding, and Santa Fe College to educate the knowledge workers necessary for the new companies to succeed. Santa Fe merged IG with the International Initiative because so-called local jobs are today often dependent

on markets abroad and on the ability of employees to understand, adapt to, and thrive in other nations and cultures.

Santa Fe's associate of arts, generally liberal arts-transfer, students are exposed to internationalism throughout their

education. Associate of science, generally employment-directed, students are also steeped in internationalism because they are required to take a liberal arts core curriculum and many international perspectives are woven into classes once considered strictly vocational.

Perry Center for Emerging Technologies. The pragmatic model for internationalism is Santa Fe's Perry Center for Emerging Technologies, which serves life science companies in the Progress Corporate Park across the street, near the city of Alachua. The center's laboratories and classrooms educate students for jobs in the biomedical sector, the strongest growing industry in the Gainesville region

Santa Fe College in Gainesville, Florida, serves more than 27,000 students each year on seven campus sites and online. It recently began offering baccalaureate degrees. Santa Fe has an incubator to serve startup companies and belongs to Innovation Gainesville, a public-private partnership to make the community a technology hub.

that includes biotechnology, medical diagnostics, pharmaceuticals, and nanotechnology.

Jessica Coleman studied laboratory biotechnology at Santa Fe, receiving her AS and AA degrees in 2007. Since 2010, she has worked for Applied Food Technologies (AFT), a firm in UF'S Sid Martin Biotechnology Incubator that identifies species of fish flagged for possibly arriving in the country under false pretenses and conducts tests for the Food and Drug Administration. Coleman verifies that fish imported into the United States from Southeast Asia, for example, is actually catfish and not one of its cousins. Vast differences in fish prices and the potential for economic fraud make exact identification important. With tilapia worth about \$2 a pound compared with about \$15 a pound for grouper, one fraudulent shipment of fish made up of thousands of containers could cheat restaurants, distributors, and the public out of millions of dollars. Food allergies are another concern. Rainbow trout is commonly substituted for salmon, and some people are allergic to trout. Imitation crab meat is made with pollock, another food allergen. To confirm the species of fish, Coleman breaks down DNA, replicates it, and sequences it so it can be compared with those in AFT data bases, the result of the company's decade-long efforts to map genes of fish collected from all over the globe.

Coleman credits Santa Fe with giving her the comprehensive laboratory, critical thinking, and troubleshooting skills to succeed from the first day out of college. "I could say 'I know how to do this, you don't have to spend a second to train me, just hand me my lab coat and I will go to work,'" she recalled. "The biotechnology program is amazing and has opened a lot of doors for me. There are so many types of work you can do."

Another biotechnology graduate conducts forensic crime scene investigations. Another works at Pasteuria Bioscience, Inc., an incubator firm in Progress Corporate Park, developing cultures of microorganisms to attack naturally occurring pathogens in the soil called nematodes that cause unsightly brown spots in golf courses and other places. Others have taken jobs at Banyan Biomarkers nearby, identifying proteins that aid in detecting traumatic brain injury. To meet growing demand from industry, Santa Fe's Perry Center expanded its associate of science degrees in biotechnology laboratory technology and biomedical engineering technology to include a bachelor's of science degree in clinical laboratory science, often referred to as medical technology. The first students to earn bachelor's degrees graduated in December 2011.

Center for Innovation and Economic Development. Santa Fe has its own incubator, the Center for Innovation and Economic Development (CIED), in downtown Gainesville, to serve startups, several of which have global reach. CIED houses the Cade Museum Foundation, which plans to build a 55,000 square foot, \$40 million museum for creativity and invention in Gainesville by 2015, and which last year awarded its annual \$50,000 innovation prize to a local company. Other CIED tenants include start-up companies Altavian, Inc., which manufactures and provides small unmanned aircraft for civilian scientific and engineering purposes, and Children Beyond Our Borders, which raises money to send groups to Colombia, where it develops education programs for children who are victims of poverty or armed conflict.

The Innovation Hub. A few blocks away from CIED is the Innovation Hub, a 45,000 square foot facility that is an integral part of IG, which recently received a \$8.2 million

federal Economic Development Administration grant. Santa Fe is a part of the Innovation Hub, which provides technology start-up companies with office space, laboratories, conference rooms, and other facilities.

With manufacturing declines, small locally grown businesses are hailed as America's economic engine, creating as many as 65 percent of net new jobs. With Gainesville poised, as a result of IG, to become an international hub in the development of selected cutting-edge products and technologies, Santa Fe students are acquiring the technical skills to become the new knowledge workers essential for these firms to succeed. On another level, Santa Fe is planning a Bachelor of Applied Science in Supervision and Organizational Management to prepare graduates to manage these emerging businesses. A course in the principles of e-commerce that incorporates models, marketing, and strategies for electronic commerce systems would be part of the degree and would give these management-trained graduates the know-how to do business anywhere in the world.

Santa Fe's internationalism does not conflict with its workforce obligations to employers and businesses in its local Alachua and Bradford county district. Rather, the college naturally serves both missions. With globalization of the economy, many new companies in the community are now international in scope. By preparing students for the world marketplace and providing them with the most up-to-date skills, Santa Fe fulfills its International Initiative and meets the demands of local employers as graduates take jobs in emerging fields and technologies that require worldwide awareness.

Global Competence Across the Curriculum. Eleven years ago Santa Fe

had one foreign language, a lone study abroad trip, and an international student center. Funding to establish an international initiative came from a U.S. Department of Education Title VI grant, the college, and the president's office to initiate "global competence across the curriculum." Today, internationalism pervades Santa Fe's associate of arts programs. Besides Spanish, the college now offers French, Italian, and Chinese. Study abroad opportunities are available in Africa, Asia, Europe, and Central and South America. Last summer, Santa Fe students studied sociology in Ghana, art in Italy and France, and politics in Germany. World maps were displayed in all classrooms, and foreign language print and video holdings added to the library. The college hosted a Fulbright scholar from Indonesia, who led class discussions in topics related to Islam, including Muslim perceptions of the United States. Cultural seminars and conferences were offered to faculty and staff. The goal was for every course taught, credit or noncredit, to help students understand an international principle. A marriage and family class was broadened to include perspectives from around the world. There are now courses in global health, world dance, and African humanities.

In Santa Fe business professor Jake Searcy's international economics course, students' cross-cultural perspectives enlighten class discussions. Because Santa Fe attracts students from other countries, a total of 689 students representing 103 countries in fall 2011, and a growing number of students participate in campus study abroad trips, the international dimensions of a subject generate interest. "When I have students go on these trips to China or the Czech Republic, they come back and start asking me all these questions about the economies in those countries," Searcy said.

The recognition that the American workforce must understand China to compete led the college to increase its Chinese connections. After hosting Fulbright Scholar, Eric Wu, on campus in fall 2007, Santa Fe strengthened its relationship with Beijing Union University by approving a memorandum of understanding that provides for a study abroad program for Santa Fe students there, a faculty exchange, and an agreement to publicize opportunities for students at each institution to enroll in the other. Discussions are underway to include Skype contact between each others' classes. Skype sessions between students in a social problems class at Santa Fe and those from a Swedish college led to Santa Fe hosting the Swedish students for an entire week on its campus last fall.

The International Initiative has broadened student understanding of the world and their relationship to it, said Vilma Fuentes, a political science professor and adviser to Santa Fe's Model United Nations (UN) team. Business students, for example, develop greater awareness of how bilateral trade agreements and other global financial issues affect the domestic marketplace, she said.

Students in Model UN , who have won awards competing against four-year institutions, say the experience has given them diplomatic and negotiation skills they can apply to any field, Fuentes said. Former members have gone on to work for the Clinton Global Initiative and as interns with the State Department and the European Union.

Global awareness and the skills Anthony Philips acquired in earning a certificate in heating, ventilation, and air conditioning at

Santa Fe in 2010 landed him a job with Honeywell at Camp Dwyer, Afghanistan. In 2011-2012, much of his work has been on the front lines, diagnosing and repairing air conditioning units and large refrigerators for the troops.

"My main job is to mentor Marines while they work on refrigeration," he said. "These soldiers really don't have a lot to work with here and have very little training in the refrigeration field, so it is asked of me to help them make it through the day." Besides giving technical advice, Philips helps soldiers cope with the stress of combat in a foreign country. "Some of these fellows have hardships, and with their families back at home, I'm there as someone they can talk to," he said.

Many Santa Fe graduates work abroad without leaving the country. This is true of graduates in information technology, who work in networking, Web design, and computer programming for software companies with worldwide distribution. O&P Technologies, specializing in medical records and billing software for prosthetics, is one such firm. Located in Gainesville, it markets products in Canada and Australia. Santa Fe Graduate Galen Hale, who builds and maintains websites for clients, said the solid foundation Santa Fe provided was invaluable in preparing him for his job.

By giving students the technological skills and the broad understanding to compete in the world, Santa Fe is making it possible for the next generation of workers to fill the latest jobs and be in the position to create new ones here and abroad.

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The Pathways to Careers Initiative

By Jill Wakefield

The Pathways to Careers initiative is a partnership which emerged out of Seattle Mayor Mike McGinn's October 2010 Education Summit, convened to address the economic and social justice reality of the sobering statistics showing low college completion rates and correspondingly low access to family wage careers for many low-income residents in the Seattle metropolitan area. Dr. Jill Wakefield, Chancellor of the Seattle College District and Education Summit member, took an early leadership role in embracing the Pathways to Careers initiative and its alignment with the district's mission.

Seattle businesses consistently report that access to a skilled workforce is the most important determinant of long-term competitiveness (WTECB, 2010; Peters, 2012).

Sixty-seven percent of all jobs in Washington (2.3 million) will require some postsecondary training in 2018, with a majority at the associates level (Carnevale, Smith & Stohl, 2010). Only 17 percent of 9th graders in Washington go on to complete high school, directly enter college, and complete college on time (HECB, 2007).

While Seattle heralds a well-educated populace, with one of the highest number of residents with bachelor's degrees per capita, a disappointingly few of these residents were educated within Seattle or Washington. Indeed, Washington has the second highest out-of-state recruitment rate for workers in the nation (Spaulding, 2012).

Summit participants found this practice both economically unsustainable and unacceptable.

The goal of Pathways to Careers is to double student completion in four education/training pathways with labor market value. These goals are also aligned with those of the Seattle Colleges to achieve transformative systems change that results in significant improvements in completion rates. Pathways to Careers creates

intentional and unprecedented linkages between funders, community partners, and the Seattle Colleges. This initiative creates a common vision for economic development through higher education attainment and implements a robust coalition focused on clear student outcomes. The initiative initially targets

four high-demand occupational sectors: business technology, international transportation and logistics, manufacturing and industrial maintenance, and healthcare.

Pathways to Careers Initiative Development

Under the joint leadership of the Seattle Colleges and the City of Seattle's Office of Economic Development, the current working partnership coalesced in January 2011, and includes the Seattle Foundation, the Bill & Melinda Gates Foundation, the Seattle-King County Workforce Development Council, SkillUp Washington, and the Seattle Jobs Initiative. As planning for the project

The Seattle Colleges comprise the largest district in Washington, with over 50,000 students attending three comprehensive colleges (Seattle Central, North Seattle, and South Seattle Colleges), a technical institute (Seattle Vocational Institute), and four training centers. The district is nationally recognized for innovations in instruction, international education, and student services.

progressed, the partnership expanded to include labor and business representatives, including SEIU 775 and 1199, PortJobs, and the Manufacturing and Industrial Council.

On July 22, 2011, the partnership approved the strategic plan to achieve the common goal of doubling postsecondary completion, leading to employment, for adults participating in professional and technical programs within the Seattle Colleges.

As a collaborative, completion-driven initiative, Pathways to Careers seeks to create systemwide reform at all levels that will result in both scale and sustainability. To reach significant improvement in program completion for targeted sector jobs, each stage along the student pathway will undergo redesign. By initially focusing on four high-demand sectors, Pathways to Careers provides a basis for future scale with its process improvement of the total student experience. Common elements for all four sector pathways include cohort recruitment and 'batched' entry processes, stackable credentials, credit for prior learning experience, contextualized developmental education, coordinated non-academic services, and scheduling and articulation across the district.

Pathways to Careers also provides a mechanism for the Seattle Colleges to build on their collective work in completion reform, particularly the Pathway to Completion Initiative, and to achieve Washington's [Student Achievement Initiative's](#) (SAI) success metrics. Pathway to Completion is supported by a grant from the Bill & Melinda Gates Foundation, an active community partner in Pathways to Careers. These mutually supportive reform efforts are a generative connection between the Pathways to Careers initiative and the Seattle Colleges' vision for dramatically increasing student completion.

Pathways to Careers Initiative Description

Building on best practice and national research, each sector pathway provides an entry point amenable to the fastest growing demographic—those with less than high school level math and English—and provides for continuation of the pathway to build toward the tipping point for sustained student success of 45 credits. Students can step off the path upon completion of each quarter-long module for employment, or continue the three quarter path (Prince & Jenkins, 2005; Foster, Strong & Duke-Benefield, 2011).

Throughout a student's pathway from applying for admission to the college experience to completion of a degree or certificate, there are many transition points that research shows build toward student success. These transition points are the basis for the Washington SAI which closely tracks student progress toward these key milestones. These transition points are the impetus for the planned interventions helping students progress from one step to the next through to completion (Prince & Jenkins, 2005).

Concurrently, Seattle is seeing an ongoing evolution of community-based organizations (CBOs) enhancing their services related to job placement with skills development outcomes. Seattle Jobs Initiative (SJI) has developed cost-reimbursable contracts with performance measures for their CBO contractors that include SAI milestones. This is significant for the colleges; for every SAI milestone reached, the CBO receives revenue from SJI, and the college receives revenue from the State.

The design of Pathways to Careers is focused on three transition points, described in the following paragraphs.

Transition 1: Pre-Entry to College Entry

Transitioning from recruitment or interest through the admissions process to enrollment is itself the first opportunity for intervention. Many students, especially first generation students and/or English language learners, are daunted by the many and complicated steps needed to apply for admission, undergo assessment, and enroll in, and pay for, classes (Karp, 2011; Conley, 2007). Understanding what is expected of a student and how to choose a career pathway are critical transition elements. The Seattle Colleges are addressing this issue by institutionalizing Start Next Quarter, which provides eight hours of information about how to succeed in college.

Better integration of CBOs can support students with this first transition and will augment the array of resources provided to ensure that students are retained to completion. Through Pathways to Completion, the Seattle College District has implemented an advisor dashboard to track each student and flag possible loss points in an Early Alert System. Appraising early warning elements—student tardiness, absence, low GPA—facilitates intrusive advising to support retention and progression. While intrusive advising is a proven component of student success, the college is challenged to provide sufficient staff in an environment of severely reduced public resources. Pathways to Careers provides a mechanism to augment college staff through the effective and well-integrated assistance of CBO case managers or navigators (Foster, Strong & Duke-Benefield, 2011; Karp, 2011).

Transition 2: Progression to Completion

More students are lost during the first quarter of college than at any other time in an academic career. Failure to progress directly from developmental to college-level

coursework contributes significantly to student attrition (Bailey, Jeong & Cho, 2010). Current research indicates that helping a student quickly remediate academic deficits and making developmental work relevant significantly increases success (Perin, 2011). All four pathways will include embedded remedial math and English in the core program content. Programs will also be streamlined to provide stackable credentials related to employment.

CBO case managers or navigators mentioned above will also provide important support for student progression. Of critical importance are City of Seattle funds provided through Seattle Jobs Initiative and CBO partners for coordinated wraparound services including housing, child care, emergency aid, and other gaps in student tuition and non-academic support.

Transition 3: Connection to Careers

The last transition point includes ensuring students leave programs with marketable skills. Assuring currency and relevancy in programs skills will assist the community in preventing unfilled jobs, outsourcing of jobs, and lost opportunity for business growth (WTECB, 2010).

The labor market relevance would be at risk without coordinated and effective employer engagement. Employer investment in workforce education dwarfs any other funding source, and any strategy of scale will fail without adding this component to the career development framework. Pathways to Careers was founded on strong employer engagement and will result in strengthened systems for placing and tracking students into employment.

Pathways to Careers Initiative Development Cost

Community partners have worked together to assemble a joint three-year financial plan

for the initiative. The City's initial \$621,000 investment will leverage a minimum of \$9.0 million for this work, including a projected \$2.1 million in City funding for student support and navigation services through SJI. Other aligned funding includes:

- \$1.64 million in instructional costs by Seattle Colleges
- \$875,000 in program design and student navigation by SkillUp Washington
- A minimum of \$700,000 in federal match funds leveraged annually by SJI for students in the federal food stamp program
- \$240,000 for student services and employer engagement by the Seattle-King County Workforce Development Council
- \$67,000 through Port Jobs at the Port of Seattle
- A \$2,900,000 grant from the Bill & Melinda Gates Foundation to Seattle Colleges for Pathway to Completion

Pathways to Careers Initiative Development Benefits

Pathways to Careers is designed to impact career pathway success and increase employment in specific sectors important to the Seattle economy. The overall goal is to double the number of certificate or degree completions in these areas with a target of 1,500 students impacted. It is intended that the data collected for this initiative will also provide powerful tools for the college district and its career programs to determine and enhance student success rates.

Baseline data from 2006-2007 and 2007-2008, including program completion, the number of exiters, students with substantial progress, and early leavers, will provide the

basis for tracking project impact. The current tracking plan includes student data on declared majors, program enrollments, demographics, and key characteristics such as financial aid status, income status, family college experience, and college preparation, as well as retention, progression, completion, and job placement/retention. Additionally the SAI's momentum points will be tracked. These include progressive milestones such as passing college-level math and English, and attaining 15, 30, and 45 college credits. Analyses of the data will provide a multivariate understanding of the relative and combined impact of the array of interventions leveraged by Pathways to Careers.

Impact of Pathways to Careers on the Regional Economy

Sectors were targeted through labor market analysis where data suggest significant labor demand and training gaps within King County between now and 2020. Additional criterion considered current related training, entry level occupations that could be built along a skills sequence, and wages. The four occupational areas include business technology, manufacturing and industrial maintenance, international trade transportation and logistics, and healthcare. Openings in these four sectors combined will top 50,000 between now and 2020, and our 1,500 students are pre-qualified to meet the demand.

The partners in Pathways to Careers have dual customer responsibility: to the student and to the businesses in which the student gains employment. Pathways to Careers is specifically designed to address the needs of both.

Final Word

Pathways to Careers provides a model for uniting community economic development efforts and resources around a focused goal

of improved student completion. With this common vision, Seattle Colleges will enhance the capacity for producing graduates in critical sectors and will significantly enliven economic development in the Seattle metropolitan area. The Partnership envisions the work as an incubator for what works for students and the creation of effective partnerships to scale systemic change across workforce sectors, the individual colleges in the district, and community based organizations.

References

- Bailey, T., Jeong, D. W., & Cho, S.W. (2010). *Student progression through developmental sequences in community colleges*. New York, NY: Community College Research Center[CCRC].
- Carnevale, A. P., Smith, N., & Stohl J. (2010). *HELP WANTED: Projections of jobs and education requirements through 2018*. Washington, DC: Georgetown Center on Education and the Workforce.
- Conley, D. T. (2007). *Redefining college readiness*. Eugene, OR: Education Policy Improvement Center.
- Foster, M., Strawn, J., & Duke-Benfield, A. (2011). *Beyond basic skills: State strategies to connect low-skilled students to an employer-valued postsecondary education*. Washington, DC: Center for Law and Social Policy.
- Karp, M. M. (2011). *Toward a new understanding of non-academic student support: Four mechanisms encouraging positive student outcomes in the community college*. New York, NY: CCRC.
- Klein-Collins, R. (2011). *Underserved students who earn credit through prior learning assessment (pla) have higher degree completion rates and shorter time-to-degree*. Chicago, IL: CAEL.
- Perin, D. (2011). *Facilitating student learning through contextualization*. New York, NY: CCRC.
- Peters, A. (2012). *2011 job sector survey*. Seattle, WA: Seattle Chamber of Commerce.
- Prince, D., & Jenkins, D. (2005). *Building pathways to success for low-skill adult students: Lessons for community college policy and practice from a statewide longitudinal tracking study*. New York, NY: CCRC.
- Spaulding, R. (2012). *The impact of interstate migration on human capital development in Washington*. Olympia, WA: Washington Higher Education Coordinating Board.
- Washington Higher Education Coordinating Board. (2007). *2008 strategic master plan for higher education in Washington*. Olympia, WA: author.
- Washington State Workforce Training and Education Coordinating Board. (2010). *Employer surveys*. Retrieved from <http://www.wtb.wa.gov/EmployerSurvey.asp>
- Woodman, T. (2012). *Student retention study*. Seattle, WA: Seattle Community College District.

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