BEYOND THE METRICS

The Broader Impact of the NISGTC DOL TAACCCT Grant

NISGTC
The National Information, Security & Geospatial Technologies Consortium

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COVER PHOTO
Collin College students
Chelsea Hall-Fitzgerald
and Joshua Dalton

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(Left to Right) Collin
College students in
IT class; Fast-Track
IT Bridge Course,
programming robots, Del
Mar College; GIS mapping,
Del Mar College

LEFT
Consortium Meeting
Collin College
April 2015

In early 2011, the National Information, Security, and Geospatial Technologies Consortium (NISGTC) was a dream. The proposal's focus was on four information technology (IT) specialty areas: networking and data communications, cybersecurity, programming, and geospatial technologies. At the end of four years, consortium colleges have achieved far more than thought possible, far more than standard Department of Labor Trade Adjustment Assistance Community College and Career Training (DOL TAACCCT) reports capture. This report highlights these positive achievements.

When asked to consider leading the National Science Foundation IT-related ATE Centers in applying for a DOL TAACCCT grant, the first person contacted was Erich Spengler, the principal investigator for the Center for Systems Security and Information Assurance (CSSIA) based at Moraine Valley Community College. (See page 8 for more on his work.)

Moraine Valley was the first college to join the group. Three other NSF IT Centers accepted the challenge: The National Convergence Technology Center based at Collin College; Bunker Hill Community College representing the Broadening Advanced Technology Education Connections (BATEC) Center; and Del Mar College that was then the lead for the GeoTech National NSF Center. Three other colleges that had previously received NSF Advanced Technological Education grants also became NISGTC partner colleges.

The partners collaborated to determine how best to address DOL TAACCCT priorities and also fund initiatives that would make long-lasting improvements at each college to support students well into the future. Each college led efforts based on its strengths, and all colleges depended on the leadership of others in the consortium.

Several consortium-wide initiatives stand out as pivotal:

- National Business and Industry Leadership Teams (BILTs) co-led all our work, ensuring that our completers would be workforce ready.
- Major equipment was purchased for our Virtual Laboratories—equipment that could not have been funded from our colleges' budgets. This allowed students 24/7 access to virtual laboratory exercises.
- Online curriculum and e-books were created.
- IT-specific tutors and career coaches supported participants in their studies and helped place them in jobs.

Each college also had its own successes that are highlighted in this report.

Please enjoy reading about the improvements made through this DOL investment. The grant ends September 30, 2015; final metrics and other updates will be found for the next several years at www.nisgtc.org.

Ann Beheler

Dr. Ann Beheler
NISGTC PRINCIPAL INVESTIGATOR

COLLIN COLLEGE · BELLEVUE COLLEGE · Bunker Hill Community College · DEL MAR COLLEGE · Moraine Valley Community College · Rio Salado College · Salt Lake Community College

MEMBERS OF 4 BILTS CO-LEAD NISGTC

Four National Business and Industry Leadership Teams (BILTs)—one for each career field covered by the NISGTC—co-led the work over the four years of the Department of Labor grant. The leadership role of the BILTs in the NISGTC far exceeded that of typical business advisory councils.

BILT members closely worked with faculty to shape curricula in four IT academic areas, enthusiastically contributed their time for career events and other grant-related activities, and readily hired program completers.

This encompassing co-leadership role grew directly from the effective BILT process developed by the National Science Foundation-

> The willingness of BILT members to advise curriculum development, participate in campus career events, and hire program completers distinguished them as co-leaders of the NISGTC.

funded National Center for Convergence Technology, which is also based at Collin College.

The employers on the NISGTC BILTs began their work in 2012 by identifying the knowledge, skills, and abilities (KSAs) they expected graduates to possess to be "workforce ready" in the short term and in the future.

Faculty then cross-referenced existing curricula to these KSAs. Gaps became the basis for new content. BILTs reviewed and approved certificate and degree programs that faculty created or modified to ensure that KSAs were covered. These programs then went through college and state approval processes.

Overall the members of the BILTs provided up-to-date information and critical support for the NISGTC. At separate, quarterly meetings BILT members involved in programming, networking, cybersecurity, and geospatial technologies offered guidance about the curricula and student services that the NISGTC partner colleges developed to educate technicians. They also offered direction on the other deliverables of the grant.

NISGTC BILT Chairman Matt Glover (left) and Principal Investigator Ann Beheler thank Glenn Wintrich in 2014 for his leadership.

SUSIE DAVISSON, JOB DEVELOPER WITH GUSTO

Susie Davisson was officially an NISGTC career coach. As the task of finding jobs for students took shape, it was clear that her previous work experience helping refugees find employment would come in handy. And she became NISGTC's job developer at Collin College.

> Since she began in 2013, Davisson has visited more than **250 EMPLOYERS**.

Most of her visits in the Dallas metropolitan area began with her researching companies online and, then, showing up at the company and asking to speak with the highest ranking human resources person or the IT leader.

"I'm a big believer in cold calling, which is sales, but, it's a little easier in the sense that I'm 'selling' our students. It doesn't cost the employer anything. So the reception is a lot better from the employer end.

"Also, I firmly believe that it is a lot harder to tell someone 'No' in person," she said.

Just showing up at IT employers has led to serendipitous encounters. For instance, while Davisson chatted with recruiters at a telecommunications company, the head of its network operations center happened to walk by. Davisson was introduced and told him about Collin's IT programs. He followed up by interviewing several students and hiring five.

Her in-person conversations with employers have also piqued their interest in participating in NISGTC employer panels, mock interview sessions, and job fairs. Sometimes these events led directly to interviews and job offers for students. Often they helped nurture the relationship between the college and employer. After more interaction employers often emailed job openings or called Davisson to see if she or the other career coaches had students to recommend.

One large company that Davisson visited multiple times without much response finally agreed in spring 2015 to participate in a job fair on campus. The company's representative took resumes from 33 students at the fair and then called 20 for job interviews. In mid-September 2015 the hiring process was ongoing

"I just think my purpose on this earth is to serve others. I used to be in the classroom... by what we're doing here, with this grant, we're helping the next generation and their families. We're helping the students and the community," Davisson said.

MORE AND BETTER EMPLOYER RELATIONSHIPS

When they were hired by Salt Lake Community College (SLCC) to do NISGTC outreach and recruitment, Dustin Fratto and Jeremy Borrowman used "old-fashioned footwork" to build connections with prospective employers for SLCC students who complete the geoscience certificate and degree programs. The employer list now numbers 250 employers.

"Basically we started from the ground up. We started online, looking for employers and got in contact with them. We then met them in person and talked about building internships and anything else they might be willing to contribute to the program," Fratto explained. In addition to recruiting, Fratto is an adjunct geosciences instructor. In 2015 he was interim NISGTC program manager.

From these face-to-face meetings Fratto and Borrowman sustained relationships with 150 engaged professionals who will continue to serve as resources for the geosciences program. Many of these professionals now serve as classroom speakers and adjunct instructors.

LEFT: Akram Amen, an NISGTC tutor at Collin College, assists a student with a problem.

Career Coaches and Tutors flow

SIGN UP → **MEET OUR TEAM** → **FREE TUTORING** → **GET CERTIFIED** → **PREPARE RESUME** → **MOCK INTERVIEW** → **ATTEND JOB FAIR** → **START CAREER**

NISGTC **TUTORS**' assistance to students in beginning and advanced information technology (IT) courses was an extraordinary service not previously offered at the consortium colleges. IT-specific tutoring is, in fact, rarely offered at two- or four-year colleges.

The location of NISGTC's free tutoring in open labs or visible study rooms made it easy for students to ask questions and seek help before they fell behind in their networking, programming, geographic information systems, or cybersecurity courses.

This preemptive intervention helped NISGTC participants stay on track and complete certificates and degrees.

The information technology (IT) focus of **CAREER COACHES** and their capacity to provide individual attention to students was a unique aspect of the NISGTC.

Soon after students were recruited as participants in the NISGTC program, they were contacted by a coach. During this initial conversation the coach learned about the students' goals, then provided program and scheduling advice to help accelerate their completion of credentials.

Steven Lizotte was an SLCC NISGTC tutor for three years.

Coaches used a mix of constant face-to-face meetings with students and follow-up phone calls and emails to offer tutoring, especially when a faculty member contacted them with academic concerns about particular students.

Coaches utilized an "intrusive advising" approach that had them contacting students periodically during each semester to see how they were doing in their courses and personal lives and to ask if they needed any assistance.

Throughout the consortium, coaches employed emails, social media, and posters to encourage all NISGTC participants to attend career events. Coaches organized IT job fairs, speed interviewing and mock interviews with IT employers, employer panel discussions, and hall visits for students to meet with employers between classes.

Less visible but just as important, coaches constantly funneled the resumes of qualified completers to employers who had expressed interest in hiring NISGTC participants.

When students neared completion of their programs, coaches offered job-search, resume-writing and cover-letter-writing assistance; they also continued follow-up to verify employment.

TUTOR BUILDS INTEREST IN GIS

During his three years as a part-time geosciences tutor at Salt Lake Community College (SLCC), Steven Lizotte used his retail sales background to build interest in geographic information systems (GIS).

To faculty he suggested ways to incorporate GIS technologies in their courses. He pointed out that the multidisciplinary skill sets these technologies use are now listed simply as GIS in job advertisements. And he explained how the GIS tutors, funded with the NISGTC grant, could guide students on the GIS aspects of their assignments.

Then when students taking environmental studies, geology, and biology stopped by the open lab for help on those GIS-infused assignments, Lizotte would encourage them to enroll in the introductory GIS course.

An average of 14 students per day accessed the GIS lab staffed by NISGTC-funded tutors. Usage grew from 103 student visits in fall 2013 to 362 in spring 2015. Lizotte said many students, particularly the older adults enrolled in geomatics and geospatial certificate programs, came multiple times during a semester.

SLCC has hired Lizotte to continue offering geosciences tutoring after the grant ends. At SLCC he earned associate degrees in GIS and geography, and is now pursuing a bachelor's degree.

His favorite part of tutoring occurs when students work through a frustrating lesson to find an "emotional connection" between the geospatial concepts and their personal geography. "Then it just clicks with them, and it's fun to see them become engaged with their work," he said.

275 COLLEGES AND UNIVERSITIES ACCESSING VIRTUAL LAB

DOL GRANT STUDENT USES 45,970 (GOAL WAS 2,000)
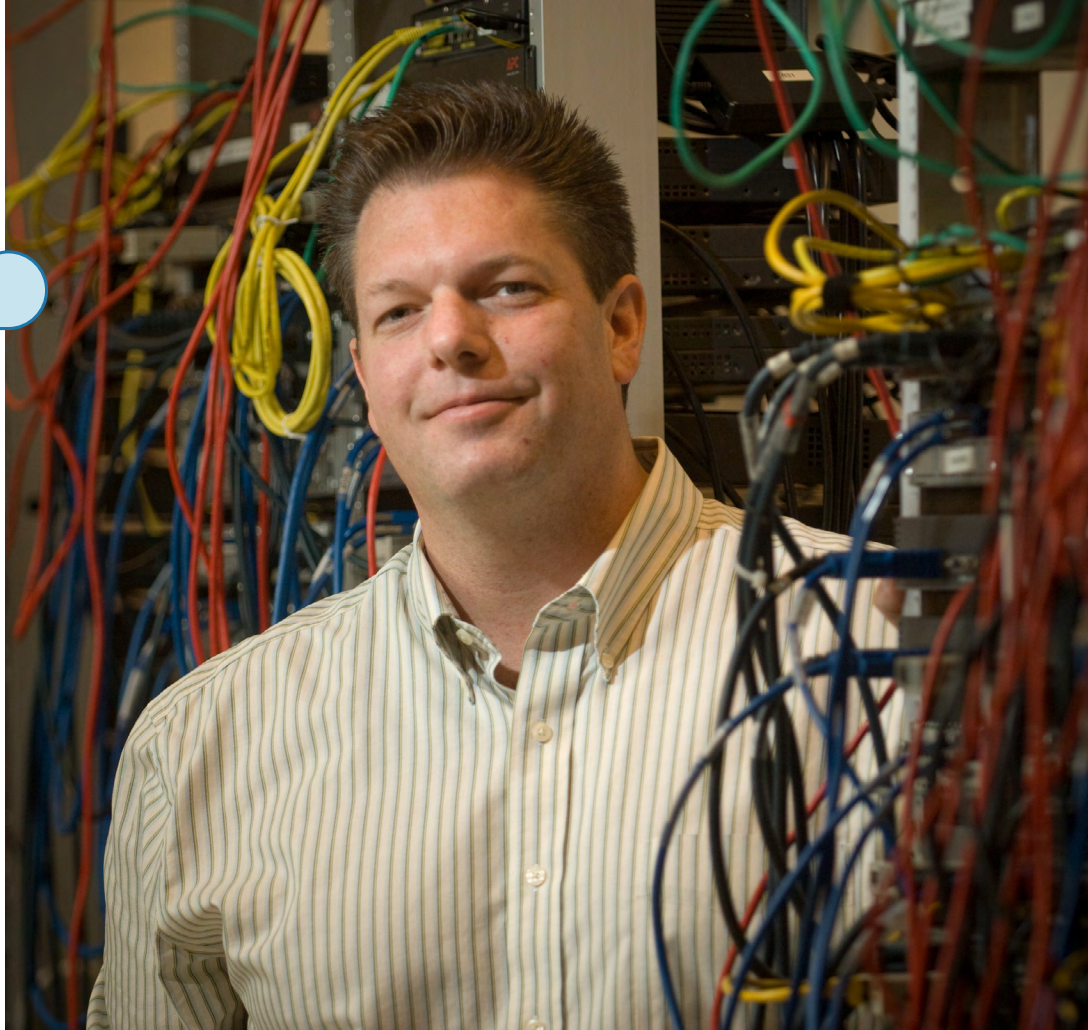
NISGTC REMEMBERS ERICH SPENGLER

Erich Spengler was an innovative, big dreamer, and charismatic national leader in IT and cybersecurity. As he implemented cutting-edge innovations or mentored colleagues he did not give up when challenges occurred. Always willing to help colleagues across the nation, he was happiest when helping students succeed.

> Always willing to help colleagues across the nation, he was happiest when helping students succeed.

Erich was the force behind the NISGTC Virtual Lab. He led the planning to implement virtual lab equipment at all the partner colleges and to develop custom virtual lab exercises to support NISGTC online curriculum. He would be proud of the consortium's accomplishments.

Erich was a full-time professor of computer integrated technology at Moraine Valley Community College.

In 2003 Erich was named director and principal investigator of the National Science Foundation Advanced Technology Education Center for Systems Security and Information Assurance (CSSIA).

Erich was diagnosed with cancer in late 2012. For almost two years he fought to live and remained active in the work of the NISGTC despite deteriorating health. His optimism led many to believe that he might beat the disease, but he did not. He passed away on November 11, 2014, but his legacy lives on in the lives of those he touched.

Erich Spengler

NISGTC VIRTUAL LAB CREATES AMAZING SPACE FOR LEARNING

NISGTC's Virtual Lab (VLab) is a technical and pedagogical feat that is serving thousands of students.

In September 2015, 275 two-year colleges, four-year colleges, and universities had registered for access to the 250 virtual lab exercises created by NISGTC partners.

The work of the NISGTC and the infrastructure of the VLab would not have been possible without funding from the Department of Labor TAACCCT grant. This investment will continue to make the VLab available to students well into the future.

The VLab's safe "sandbox" environment makes it possible for students to practice networking, programming, geospatial technology, and cybersecurity skills separate from their colleges' networks.

Being able to access the VLab 24 hours a day from anywhere with an internet connection extends students' learning, practice time and success.

The VLab's flexible deployment and workplace-relevant exercises serve faculty too.

> Being able to access the VLab **24 HOURS A DAY** from anywhere with an internet connection extends students' learning, practice time and success.

With the VLab, instructors are able to automate their lab management and cleanup tasks, manage configuration files to demonstrate concepts, and share selected exercises with students.

The VLab facilitates differentiation of instruction so students who have mastered certain content can advance while others repeat exercises. Consequently, students are more engaged and faculty are less burdened with classroom management tasks.

Moraine Valley Community College serves as the distribution point for supporting the VLab content that was installed during the grant at each of the partner colleges.

Collin College, Moraine Valley Community College, Del Mar College, and Bunker Hill Community College created lab exercises in their areas of expertise.

Rio Salado College included the PDF versions of the virtual labs for NISGTC's online courses.

All colleges will be sustaining their VLabs.

NETWORKING INSTRUCTOR PRAISES VIRTUAL LAB

Tom Lee, an IT faculty member at Bellevue College, is a huge fan of NISGTC's Virtual Lab (VLab).

With Bellevue students commuting across Puget Sound on ferries or up to 50 miles on land, the accessibility of the VLab was an "amazing" asset for students in the four-course CISCO networking sequence he teaches. "That was a huge [advantage] to it because they could casually practice the exercises in their slippers at home," he said.

From his experience teaching the same courses before and during the NISGTC, Lee observed improvements in students' grades, industry certification exam passage rates, and job placements.

"Their degree of readiness was just vastly higher," Lee said. When he surveyed students informally about the reason, he said, "They indicated that the VLab resource actually gave them a [vehicle by] which to hone their craft toward the certification."

BETSY FELDMAN, Bellevue
After I was laid off from a grant-funded academic research position, I went back to school to learn some business skills. My DOL grant advisor helped me rewrite my academic CV into an effective resume and turn my boring cover letter into a succinct and effective introduction. She helped me prepare for interviews in the business world, and she informed me about open positions that suited my particular interests and skills, including my current internship position at Costco Wholesale. All this was immensely helpful, but possibly the most important assistance offered was support and encouragement, convincing me that I would be successful in making the transition from academia to business.

IAN MULQUEEN, Rio Salado
I was a full-time student and active member of the NISGTC grant and am now employed full time as a contractor with American Express in the IT Security Realm. I absolutely credit the people, resources, and grant provisions for this amazing opportunity.

RICARDO RODRIGUEZ, Moraine Valley
Thanks to the grant, I am able to attend workshops, certification review sessions and a professional development cohort. This grant helps me because I am given access to resources that I normally would not have and I am able to receive help from the student success team.

I HAVE LEARNED HOW THIS INDUSTRY WORKS AND WHAT IS WANTED IN AN EMPLOYEE. I HAVE A GAME PLAN NOW AND I KNOW THE STEPS I NEED TO TAKE FOR MY CAREER THANKS TO THE WORK OF THE DOL STAFF.

— DANNY CUEVAS, Moraine Valley

CHERYL THOMAS, Collin
Being in today's job market is vastly different from what the job market was when I last looked for employment some twenty years ago. I felt increasing my knowledge in IT, a dynamic ever-changing field, would improve my job marketability and increase my ability to earn a higher income. Both have come true for me.

KEVIN PRATT, Del Mar
Networking is a key factor in the success of the GIS community. There is a lot of work that goes with this program, but in this particular field it is just the tip of the iceberg. The program also has been there for me the whole way with support and encouragement. The staff has gone out of [its] way to help with anything that I needed. I feel confident that when I graduate I will have exceptional workplace skills because of this program. Using the most up-to-date methods will be a real plus when it comes time to start working. I think that this is perhaps the coolest field in the world.

CHINTAN PATEL, Moraine Valley
Prior to attending Moraine Valley, I was a student at Oak Forest High School and worked part-time. I really liked what [Moraine Valley] had to say about the opportunities available. I am currently working on computer and local area network technician, voice and data specialist, and IT security specialist associate degrees. I graduated with all three IT degrees in May 2015. I joined the NISGTC grant program and was excited to learn about the additional opportunities. Through a cohort I have met top industry professionals, joined two nonprofit organizations and have a professional mentor.

THERESA KAINER, Del Mar
After being a stay-at-home mother for 22 years, it was time for me to re-enter the workforce. When I earned my bachelor's degree in finance back in 1983, we used FORTRAN in my computer class. Needless to say, my skills needed updating! I read about the free fast-track technology courses in our local newspaper. I enrolled in the second cohort. The education level in my group varied, but the patience of our instructors and tutors never wavered. I was moved by their desire to see each of us succeed. They didn't just give us the answers; they made sure we understood the material. With renewed confidence in my abilities, I began working and am now the business coordinator for the grant.

MICHAEL ALVA, Del Mar
I had been a landsman for about nine years and have been involved in many aspects of the profession. I had always been interested in the mapping aspect of my profession, and as a result I have recently taken a renewed interest in completing coursework toward a GIS degree plan. I already had the good fortune of acquiring a GIS job within my industry. The coursework that we covered had the concepts and tools that I use daily. These classes provided me the foundation for being able to communicate with the current GIS staff and incorporate the logic of my prior experience into my day-to-day workload. Additionally I am able to communicate some exploration and production land concepts to the GIS staff that are difficult to understand without a background in both fields.

SAM DIAB, Moraine Valley
Before I knew anything about the IT program or the department in general, I had no idea what classes to take for my general IT major. Now, I am focusing on my summer LAN classes, currently studying to get my A+ certification. Experience and education are the most powerful combination you can have on your side to being successful in IT, but passion is the fuel that drives you there and that's the most important thing I learned from the DOL Student Success Team.

MARGARITA WILLHELM, Del Mar
When I started in the program, I was an unemployed disaster contractor. I stumbled into the GIS program seeing what looked like interesting classes, without a clue of what I had in store. This program allowed me to make a positive change in my life and has showed me that I can personally affect others around me. I was able to tutor GIS and computer science. I love the constant challenge and the relationship I have developed with the other students. I now have several marketable skills awards, a certificate in computer programming, and I am very close to getting my associate degree in GIS.

ONCE YOU TAKE THE COURSE HERE, PREPARING YOURSELF FOR THE IT WORLD—IT'S A GOOD START.

— WILBUR TONY, Veteran, Bunker Hill

DAN FOSTER, Moraine Valley
I am now a member of SecureWorks' Security Services team, which combines the customer service skills I developed over the long course of my restaurant work with the baseline of knowledge I've gained in the security classes at Moraine Valley. I know that without the help and support of everyone at the college, I might not have found myself presented with such a great opportunity. From here, I plan to complete my degrees [IT security and voice & data specialist], acquire more certifications and continue learning as much as possible on the job and on my own so I can continue growing and moving forward.

JEFFREY GRINDLE, Veteran, Moraine Valley
Going back to school at age 50 was a big decision, but it is turning out to be a great one. I spent 16 years in the United States Navy serving as an electronics technician. Due to the difficult economy, I began working on a resume and soon realized that all the electronics that I had learned and taught in the Navy were mostly obsolete. One of my daughters was already attending Moraine Valley so I applied. I have really enjoyed the classes so far and have even been able to use a few of our A+ class projects at the church at which I am the associate pastor.

NISGTC HELPS TAA COUPLE OBTAIN BETTER JOBS

Married couple Brandon Tinsley and Genia Jacobs-Tinsley liked working for the same telecommunications company until they were both laid off along with 4,000 other people whose jobs were sent off-shore.

Genia Jacobs-Tinsley and Brandon Tinsley

They decided to use their TAA (Trade Adjustment Assistance) benefits to learn new IT skills at Collin College. After they enrolled, Texas Workforce Commission employees suggested they participate in the NISGTC.

Both of the Tinsleys are glad they did and credit NISGTC's career services with helping them quickly obtain new jobs.

"Life has just gotten better and better since 2013."

"Working with Diane Ganze [an NISGTC career coach] provided me [with] a fresh perspective on how to create an exemplary resume to find my ideal job," Genia said. Hyundai Capital has hired her as a senior recovery analyst. She has earned MCITP enterprise and service administrator certificates, and continues to work toward an associate degree in computer networking. In June 2015 right about the time he was awarded associate degrees in cybersecurity and computer networking technology, Brandon started work at HP as a level one senior security analyst.

A 2014 NISGTC job fair was key to Brandon initially obtaining a temporary position with another IT company. At the job fair he met a recruiter who contacted him afterward about a level one help desk position.

During the interview, the company offered him a senior help desk analyst position. A few weeks later he was promoted to shift lead. Brandon thinks his college credentials helped him obtain the full-time position with HP. In addition to his associate degrees, Brandon has CompTIA Security+ certification.

"Life has just gotten better and better since 2013. It was rough financially. Of course we took tremendous pay cuts by doing TAA and going to school, but in the end I think we felt and prayed it would work, and it did. Now I've got a much better job. I've got a real solid career," Brandon said.

64% EMPLOYED*
36% UNEMPLOYED*

*BEFORE PARTICIPATING IN THE GRANT
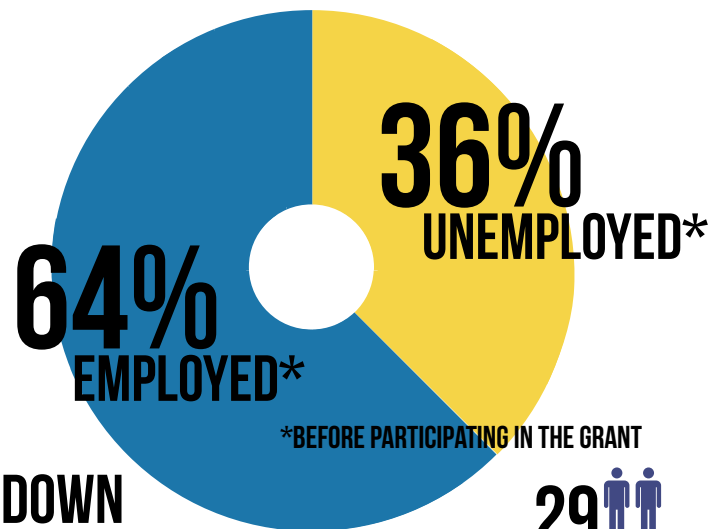
BREAKDOWN OF THE 1,400 GRANT PARTICIPANTS AT COLLIN COLLEGE

29 TAA ELIGIBLE

148 VETERANS

STUDENT JOINS FREE VETERAN TRAINING PROGRAM, GETS JOB WITH GRANT

The daily availability of IT tutoring and the upbeat attention of career coaches were the NISGTC services most valued by the 102 military veterans that signed up for Collin College's Veterans and Industry Partnership (VIP) Program who also registered for the NISGTC program.

"There's someone out there who cares about them progressing in their work."

"It's that tightness or that feeling that there's someone out there who cares about them progressing in their work," said John Nguyen of what he saw as effective with veterans. A retired U.S. Navy officer with a master's degree from the Naval Postgraduate School, Nguyen wanted his new career to be "something worthwhile." Uncertain what that would be but seeking a challenge, he enrolled at Collin through the VIP program to build on the IT background he had from the Navy. The VIP program is funded by the Texas Workforce Commission. When career coaches explained NISGTC services during a presentation in his first IT course at the college, he signed up.

John Nguyen

"Sometimes it can be scary to make that jump from what we've known for many, many years to a different environment," he said.

NISGTC also provided a way for him to explore whether higher education will be the way for him "to make a difference" in his new career. When a career coach told him that the college was looking for an NISGTC project manager, he applied for the job and was hired.

NISGTC NUGGET

1,154 participants utilized the career coach services. Coaches also offered 65 workshops on 14 topics that had 470 attendees. Tutors were busy too. Just since January 2014, 220 students accessed tutoring services, including 9 group tutoring sessions and 1,561 one-on-one appointments.

To share the advice of NISGTC career coaches with a wider audience, Collin College created a series of **SHORT VIDEOS WITH "TOP 10 TIPS"** for resume writing, interviewing, and using LinkedIn.

The videos feature Collin College's NISGTC career coaches, each sharing a tip and the explanation for its use. The videos provide a snappy distillation of the information provided in greater detail in the 10-to-30-minute YouTube presentations on the same topics.

See **WWW.YOUTUBE.COM/NISGTC** for all the videos produced during the project.

MENTORING took several forms at Collin College. In addition to the attentive advising provided by career coaches, members of the NISGTC team implemented one-on-one mentoring and two types of group mentoring.

One-on-one mentoring involved faculty and staff members providing ongoing career guidance to individual students. The group mentoring occurred in a capstone course where senior IT professionals mentored small groups of students and through the Mentoring Partnership (photo on page 29).

Career Coach Tracy Clinton proposed the Mentoring Partnership to bridge the gap students sometimes experience in the transition from college to employment. The program began in 2015 by matching five IT employers with one to two students each for structured career conversations over a 10-week period. Clinton provided outlines of career-related topics for the mentors to discuss at each meeting. One student obtained a full-time job through a Mentoring Partnership connection and another was offered an internship that led to a full-time job.

> "I had a great mentor growing up. I wanted to give back."
>
> JEFF VANDRIMMELEN, Osky Blue

MENTORS PROVIDE NO-NONSENSE ADVICE

Chelsea Hall-Fitzgerald was an art major, sported rainbow-colored hair, and had a part-time job in a big box appliance store when she began her computer networking certificate at Collin College. Computer Information Systems Professor Michael Harsh brought her to meet Ann Beheler as a potential mentor early in her studies. He thought she had promise, but was concerned she might get lost in the nearly all-male classes.

Hall-Fitzgerald and Beheler, who is the NISGTC principal investigator, met regularly to discuss technical and professional issues over a year's time. When Hall-Fitzgerald had nearly completed her certificate course work, Beheler gave her the opportunity to talk about her studies in front of a business panel. As a result, she was encouraged by one business representative to apply for a junior IT project coordinator position with AMX by Harman despite the listed requirement of a bachelor's degree.

The NISGTC career coaches and Beheler jumped into action.

They offered advice on updating her resume, peppered her with interview questions, suggested ways to improve her posture, and advised her to make eye contact. Hall-Fitzgerald humorously recalls Beheler telling her to dye her

hair a single, more natural color, and not to wear the rings she twists when nervous.

Hall-Fitzgerald followed the educators' advice. She won over the interview panel with her tenacity, excitement for IT, and professional comportment, said Matt Glover, senior director of Global IT at AMX by Harman.

Her starting salary was mid five-figures. About the time she finished her associate degree in June 2015, she was promoted to network engineer and received a $10,000 raise.

As she works full time, Hall-Fitzgerald continues to take classes toward her bachelor's degree in engineering with a specialty in IT and a minor in management with partial support from AMX.

Chelsea Hall-Fitzgerald
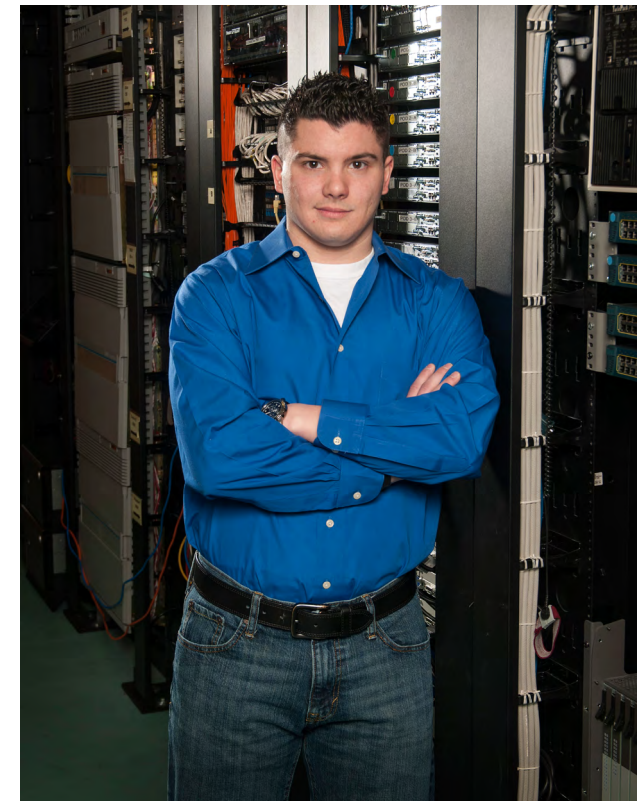
Taylor Knoblock

VIRTUAL INTERNSHIPS AN OPTION FOR TIME-PRESSED STUDENTS

Collin College created virtual internships to provide the learning experiences that occur with real employer interactions for students whose schedules or budgets do not allow for traditional internships.

"Most of our students have to work to put food on the table," explained Ann Beheler, NISGTC principal investigator. For these employed adults the challenges involved in scheduling a low-pay or unpaid temporary internship around job or family responsibilities can be an insurmountable hurdle.

For the virtual internships, instructor Cope Crisson organized the students in his Advanced CCNA Case Study course into teams. "They were given the requirements of a pro forma company's network needs—basically a request for proposals. Working in teams, they had to design a network that would meet the requirements, build a prototype using lab

equipment and simulator software, document their design, and present the design," Crisson said.

Periodically during the 16-week semester the students interacted with an actual IT employer via a webinar tool. During these virtual meetings with their mentor, Tu Huynh, vice president of IT at Comerica Bank, the students reported on their progress, discussed difficulties and received guidance. In addition to these formal interactions, the students corresponded with the mentor via email and phone calls.

At the end of the semester the students presented their project in-person to the mentor, members of the NISGTC Business and Industry Leadership Team, and faculty.

"The virtual internship helped quite a bit with my current job, as it was a good model for the types of environments I'd be working on at my current job," said Taylor Knoblock. When he graduated in 2013 with an associate degree, he was hired as a network engineer by a healthcare IT firm. His salary was immediately $15,000 higher than the $40,000 per year he had been making, and he reported in 2015 that he had received additional raises more recently.

Reflecting on the virtual internship experience, Knoblock said the interactions with the mentor expanded his thinking and the end-of-the-semester presentation helped him learn the appropriate terminology to use when making sales pitches.

Crisson has found that the virtual internships have been similarly valuable for other students, and he plans to continue incorporating them in the advanced course in the future.

NISGTC NUGGET
Collin received Recognition of Excellence for NISGTC work at the Texas Higher Education Coordinating Board quarterly meeting, January 2015.

BELLEVUE FACILITATES IT JOB CONNECTIONS

NISGTC's focus on IT employment and expanded relationships with employers has been a boon for employers as well as students.

"Employers were thrilled with the attention they got," said Judith Morel, NISGTC grant director at Bellevue College.

After being contacted by the program's career navigators, IT employers joined the LinkedIn group created to facilitate the workforce entry of IT students in the NISGTC program at Bellevue College and affiliate Everett Community College. Employers posted jobs, participated in conversations on the social media website, and even offered advice to students.

Employers also contacted the career coaches when they had openings, knowing that the coaches would send them candidates with the IT skills they were seeking.

Jill Thornton, the career coach assigned to work at Everett Community College, was particularly effective at connecting with the Workforce Investment Board of Snohomish County, Washington; many of the 24 (as of June 30,

NISGTC NUGGET

All 735 students who signed up for the NISGTC program at Bellevue College and its affiliate, Everett Community College, had a one-on-one, in-person intake session with a career navigator who explained the tutoring and career services available to them through the grant.

2015) TAA-qualified individuals who enrolled in NISGTC services came from this county where the unemployment rate was 4.3% in June 2015.

EVERETT COMMUNITY COLLEGE OVERHAULS IT PROGRAM

Everett Community College made the most of its role as an affiliate of Bellevue College's NISGTC initiative.

"It absolutely helped us to really revitalize the program," said Ryan Davis, dean of Business and Applied Technology at the two-year public college in Everett, Washington, which is about 32 miles north of Bellevue.

With NISGTC support, Everett for the first time in its history was able to provide students with IT-specific career services and tutoring. Staffing the computer lab with tutors allowed it to become an open lab with extended hours of operation. The college also revamped its IT curriculum based on other NISGTC partners' programs.

Davis said the college leveraged all these activities to obtain federal funds and other grants for new computer equipment. It also used internal funds to hire a full-time, tenure-track IT instructor.

Davis credits Navigator-Career Coach Jill Thornton as critical to IT enrollment increasing from 50 to 80 full-time-equivalent (FTE) students.

From its NISGTC grant, Bellevue College paid Thornton and three tutors to work at Everett. They were incredibly productive, convening nine job fairs and 25 other career events between December 2013 and May 2015.

"Knowing that she [Thornton] was there to help them [students] get internships and job

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opportunities was very key, plus her doing some of the outreach efforts was very powerful," Davis said.

"Not having that extra person to help students understand and navigate through, as well as to have the outreach, we would not have been as successful. Could we have done the curriculum changes? Yes. Would we have filled up our classrooms as a result of those curriculum changes? No, that would have taken longer," Davis said. Therefore, Everett will be retaining Thorton when NISGTC ends.

Washington's new funding formula rewards community colleges with a 30% bonus for each FTE in high-cost and high-demand programs like IT. "Being able to grow the program, we've been able to put the college in a very positive position for future funding as well," Davis said.

NISGTC EASES MID-CAREER CHANGE

After working for 18 years in retail and eight years in banking, Heather Rane switched to information technology. It was the field she had always wanted to work in.

"I am excited for the possibilities that exist for me now and value my education," she said.

At Bellevue Community College, Rane earned three certificates— Cisco support technician, Microsoft network support, and Microsoft technology—on her way to earning an associate degree in network administration in 2014.

> "I am excited for the possibilities that exist for me now and value my education."

"I was 100% supported by the grant services offered and particularly by the Career Advisors

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Heather Rane is shown shaking hands with Bellevue College President David Rule when she received her associate degree in network administration in 2014.

T.J. Bajwa and Amber Hisatake," she said, adding that Bellevue faculty members also encouraged her.

"For me experiential learning is so much more effective than simply word, text, audio, and visual learning. Though I value a full range of learning tools, being able to apply what I have learned was invaluable," she said.

Despite her initial uneasiness about beginning college at middle age, Rane progressed so well that Bellevue College hired her in 2013 as a computer lab assistant and a technology services support help desk staff member. In 2014 she was hired as a tutor and an assistant to the faculty chair.

As she prepared her resume for a full-time job search while working on her bachelor's degree in system administration, Rane said, "I definitely have realized that I have learned a lot and been doing a lot since I started."

FAST-TRACK PROGRAMS TAILORED FOR DIVERSE STUDENT POPULATIONS

Bunker Hill Community College's NISGTC program revolved around fast-track certificate programs tailored to meet the needs of different student populations. These programs typically were longer certificates compressed into approximately a semester, and additional support was provided by faculty, career coaches, and tutors to aid student success.

"This model is being watched by other departments," said Bogusia Wojciechowska, Dean of Professional Studies at BHCC.

Most fast-track programs used the virtual lab and were part of the stackable certificate model whereby students can stack smaller certificates representing increasing skill levels until they complete their associate degree. All the new certificates were offered on campus. Two community-based organizations—St. Mary's Center for Women and Children and the New England Center for Homeless Veterans—each offered one certificate program that fit their clients' career goals.

The on-campus, single-semester Cisco Certified Network Associate (CCNA) certificate attracted

Bunker Hill Community College offered multiple fast-track programs with NISGTC support, including a Fast-Track PC Hardware Support Specialist certificate program in 2013.

the most enrollments. Students moved in cohorts through five three-credit courses and had the option of either a one-credit keyboarding or career exploration course.

To help students handle the fast pace, NISGTC tutors and career coaches provided attentive, wrap-around services.

FACULTY TEACH HARDWARE CERTIFICATE COURSES TO HOMELESS VETERANS

Fourteen veterans earned a 16-credit PC Hardware Support Specialist certificate through the NISGTC-supported program that BHCC faculty taught at the New England Center for Homeless Veterans.

The certificate qualifies the veterans for entry-level jobs in technical support and on help desks. In the summer of 2015, four of those who earned certificates were enrolled in other courses at BHCC, one had recently completed a

paid internship, and four others were preparing to take the CompTIA A+ certification exam. All 37 veterans who participated in the college credit NISGTC program at the downtown Boston center were homeless at the point they enrolled.

The modular format of the NISGTC program means that even those who did not complete all six courses earned college credits and will be able to finish the certificate requirements on campus or online in the future.

"This grant did help," said Antonio Padilla, training manager of the Veterans Training School that the nonprofit center operates with transitional and emergency housing. The approximately 350 veterans who reside at the center receive meals, as well as employment and clinical services. Padilla found that the NISGTC program was especially beneficial for older veterans whose education benefits had expired years ago.

Only one other college has offered a program with credit courses at the center in recent years. Padilla said, "Bunker Hill's was more comprehensive and more detailed."

IT SKILLS TAUGHT AT WOMEN'S CENTER

Impressive results from the NISGTC program at St. Mary's Center for Women and Children prompted the non-profit agency's leaders to start a health care IT program based on the curriculum model that BHCC used.

"I think it has been really quite amazing," Wyvonne Stevens-Carter said of the 87% completion rate for the college credit courses. Stevens-Carter is director of education and employment at the center, which provides job and housing services for women who face "significant barriers" due to homelessness, domestic violence, substance abuse, or other difficulties.

Of the 66 women who completed the NISGTC-supported Microsoft certificate courses, 67% have jobs with employers such as John Hancock, State Street Corporation, and the University of Massachusetts.

From 2012 through 2014, BHCC IT instructors traveled twice a week to St. Mary's Center in the Dorchester neighborhood of Boston to teach one 15-week course per semester. It prepared the women for entry-level help desk jobs.

In January 2015, BHCC and St. Mary's revised the program for faculty to deliver all five IT courses for the Microsoft certificate program as an intense six-month 16-credit sequence.

Before the classes began, Stevens-Carter and the instructors were concerned that the fast pace would be too challenging. However, instead of discouraging the women, it seemed to motivate them to study together and use the technology to learn.

She said, "They developed this really great cohort. It was just a transformation in their abilities, in their understanding, in their confidence. It was amazing."

Student Vivian Showel said the program "was complicated, but it was worth it." She had been out of work for a year before taking the NISGTC program. Shortly after finishing it, she was hired as a receptionist at St. Mary's Center.

She, too, thinks the camaraderie among the women made a huge difference. "It wasn't like everyone was out for themselves. If someone needed help, we would try to help them out. We would try to work as a team—to get things completed because it was tough—and just stick it out to finish."

NISGTC NUGGET

Bunker Hill Community College implemented Career Connect, a career management database system, to inform all of its NISGTC participants about IT employment opportunities.

LAREDO BRINGS DIVERSE POPULATIONS TO GIS

Through the NISGTC, Laredo Community College, Del Mar College affiliate, offered geographic information systems (GIS) courses in various formats to serve traditional students and working professionals.

"Our intent is to focus on what the workforce is looking for," said Sergio Lujan, an instructor in the Computer Aided Drafting and Design (CAD) program at the college in Laredo, Texas. The college's formal affiliation with Del Mar College for the NISGTC occurred as a result of Lujan attending a GIS professional development workshop at Del Mar in 2013.

At that time he was preparing to teach Introduction to GIS, the first GIS credit course the college offered to CAD students in fall 2013. An intermediate GIS course was added for credit in spring 2014.

"Our intention was to get the students up to two levels of GIS so when they went to apply for jobs, they would have at least an understanding of what GIS is," Lujan explained.

On the advice of Phil Davis, then Del Mar's NISGTC lead, Laredo began a one-year, five-course GIS certificate program in January 2014. So far, eighteen students have completed Laredo programs.

Then in response to requests for shorter, non-credit courses, Laredo offered an intermediate GIS course that four working professionals and two traditional students took in summer 2014. Afterward several of those students joined the certificate program. In fall 2015, nine students were enrolled in the credit GIS course.

DEL MAR STUDENTS FIND INTERNSHIPS TRANSFORMATIVE

Internships are key points on the career maps of Leonel Deleon (pictured right) and Alby Cartwright (photo on page 29), Del Mar College geoscience students who participated in the NISGTC.

In the spring of 2015 Deleon completed an internship with a Texas A&M AgriLife Research team that used GIS technologies to calculate the presence of crop-damaging insects in cotton, sorghum and corn fields. His internship was funded by the U.S. Department of Agriculture.

The data Deleon collected in the fields and the maps he made to show the concentration of

The implications of GIS impressed Leonel Deleon, Del Mar College student, while he recorded insect data for a research study.

three different types of insects were shared with farmers to inform their pesticide use. "After Del Mar I plan to apply for a job with AgriLife just to see what it's like to do GIS on a full-time basis. This has changed my direction in life," Deleon said.

Cartwright, who had four GIS internships while completing her associate degree at Del Mar, likes the combination of working outdoors and in an office, and on teams and alone that GIS careers involve. For her final internship she compiled South Texas precipitation data for the National Oceanic and Atmospheric Administration.

"This has changed my direction in life."

She plans to pursue a GIS career after earning a bachelor's degree. "Before the internships, I wouldn't have been able to tell you what I wanted to do in my life," Cartwright said. "They defined what I'm looking for."

GRANDMOTHER PURSUES GIS CAREER

Annette Crossno is one determined grandmother. At the age of 45 she enrolled in school with what she describes as a strong desire "to make a difference for me and be a good example for my family."

During weekday mornings she took classes for her general education development (GED) high school equivalency certificate, and in the afternoon she took classes in Del Mar

"It took tenacity, perseverance, and a commitment to reach her goal to finish the program on a very high note."
CHRISTINA ALVARADO

Annette Crossno

College's IT-GIS Essentials Program. The continuing education program uses a fast-track format to teach cybersecurity, geospatial technology, programming and networking, and data communications.

"She's a non-traditional student who had a grueling schedule, and her transportation was her bicycle," said Christina Alvarado, NISGTC career coach. "It took tenacity, perseverance, and a commitment to reach her goal to finish the program on a very high note," she said.

When Crossno's bicycle was stolen on the day she had an Intro to Database test, Crossno did not miss class—she got a ride to school with a classmate. Afterward her classmates put their money together to buy her a replacement bike for $50.

"I cried! It was the first time I had experienced that much generosity. It touched my heart and inspired me," Crossno wrote in a testimonial about the IT-GIS Essentials Program.

By completing the five accelerated courses that count toward the IT-GIS Essentials certificate, she earned 32 continuing education units. She plans to pursue her career goal of becoming a GIS technician.

IT LEARNING EMPOWERS BRIDGET NEE

While living in a domestic violence shelter, Bridget Nee became a full-time student at Moraine Valley Community College (MVCC). It was 2014. She was 50 years old, recently divorced, and ready to make big changes in her life.

She started taking courses in paralegal studies but was so impressed by what she learned during a Women in Technology boot camp and a cybersecurity seminar that she switched majors to cybersecurity.

As an NISGTC participant Nee connected frequently with tutors and student success specialists. "If I ever have a question and don't know where to go, I just ask them and they steer me in the right direction," she said.

They also helped her work through her fears that she would not be able to find a job due to her age and many years out of the workforce by encouraging her to sign up for the IT Professional Development Cohort. The cohort program focused on soft skills and provided opportunities for small groups of students to interact with IT employers.

"After the fall cohort, I have been given the chance to network with industry professionals and am no longer worried about that at all," she said of her job prospects.

In 2015 Nee had an unpaid internship and was continuing to take courses toward her associate degree. Her short-term plans include preparing for industry certification exams; her long-term goal is to earn a bachelor's degree.

"If I had realized how empowering school was I would have fought tooth and nail to do this years ago. I see school as my ticket out of poverty, and I have discovered that I love learning," Nee said.

Bridget Nee

"If I had realized how empowering school was I would have fought tooth and nail to do this years ago."

PROFESSIONAL DEVELOPMENT COHORT

With the competition for IT jobs intensifying, MVCC created the IT Professional Development Cohort to improve students' soft skills for interviews and other workplace interactions.

Two groups of networking students—24 in fall 2013 and 25 in fall 2014—met for six-hour sessions on multiple Fridays for detailed instructions on writing resumes, interviewing for jobs in person and on the phone, networking with IT professionals, communicating effectively, and dressing for success. About half of the students were close to graduating; others had taken just two networking courses.

NISGTC success coaches worked in collaboration with the Illinois Technology Foundation to provide speakers from Dell, CompTIA, Cisco, and VMware. The foundation also donated fee vouchers for the students to take industry certification exams.

During panel discussions and individual presentations IT professionals shared insights from their careers. They also explained employers' expectations for job candidates and the technicians they hire.

Students interacted with employers during mock interviews and informal lunches.

The fall 2013 cohort visited the Microsoft Technology Center in Chicago, Illinois; the fall 2014 cohort toured Cisco's Experience Center in Rosemont, Illinois.

According to information the students shared with the NISGTC success specialists, 14 of the 2013 cohort were employed in the semester after the program and four had obtained internships. Ten of the 2014 cohort were employed and one had an internship in 2015.

NISGTC NUGGET

Moraine Valley Community College dropped certificate and graduation application fees after an NISGTC pilot test. The test found that fees affected students' decisions to claim the credentials they had earned. Without the fee, hundreds more students received IT certificates in enhanced and new programs.

"The cohort has given me the opportunity to meet and learn from talented industry leaders with decades of knowledge and experience. The Student Success Center offers resources that few four-year institutions offer to any of their students."
- ANTHONY RAMIREZ

TEST FEST BOOSTS INDUSTRY CERTIFICATION EXAM PREPARATION

MVCC's five day Test Fest encouraged students to prepare for and take industry certification exams.

Historically, the traditional college-age students, who are the majority of MVCC's students, have not taken the networking and other IT, cybersecurity, or geoscience-related certification exams.

Angela O'Donnell, NISGTC administrative director, said exam fees and students' incomplete understanding about the value employers place on industry certifications have been factors in the low participation rate.

To change this trend, NISGTC success coaches promoted the Test Fest for several weeks in advance of the June 1 to 5, 2015, meeting dates using flyers, postcards, emails, and videos. The video announcements were broadcast on televisions in front of and in the hallways of the college's Technology Center.

The success coaches were pleased when 141 people attended one or more of the multi-hour sessions that MVCC faculty led for eight different certification exams.

As an additional incentive for the Test Fest participants to follow through and take the exams at the PearsonVue testing center on campus, the college's bookstore provided 15% discounts on the vouchers it sells for the various exams.

Sixty-six people purchased vouchers at the bookstore to take the exam.

LEADER INSTIGATES QUICK CURRICULUM APPROVAL PROCESS

As part of its NISGTC work, Rio Salado College cut the course and program approval process within the Maricopa County Community College District (Maricopa) from one year to 10 days.

The fast-track curriculum approval process for grant-funded programs was the brainchild of Mary Briden, NISGTC grant director at Rio Salado College. She suggested it after realizing it would be nearly impossible to complete Maricopa's multi-step, year-long approval process for new curriculum and meet the Department of Labor's expectation to create programs and enroll students in order for them to quickly return to the workforce.

When Maricopa's leaders readily agreed to Briden's idea, she drafted the expedited process in consultation with faculty. It allows for new curriculum—courses, certificates, and degrees—developed specifically for grant-funded programs to go directly to the district's Center for Curriculum and Transfer Articulation (CCTA) for immediate analysis.

When CCTA verifies that the proposed curriculum follows current Maricopa standards, it passes

NISGTC NUGGET

The retention rates for NISGTC students at Rio Salado College and its affiliates ranged from 87% to 94% depending on the program.

the curriculum on to the governing board for approval. Courses created for grants are identified in the course catalogue as closed courses with specific end dates.

In order to make sure the 10 certificates and 3 degree programs Rio Salado developed for the NISGTC would be available to students in the future, they also went through and gained approval through the usual process that involves review by multiple committees known as instructional councils.

Course and program approval process cut from **ONE YEAR TO TEN DAYS**.

"We have found out that it [the fast-track] has not been an issue because all the instructional councils know that it's tied to the grant, it has met the standards, and they will have input when the program goes through the regular curricular process," Briden said.

LEVERAGING NISGTC MULTIPLIES BENEFITS

By sharing information and collaborating with colleagues working on other grant-funded initiatives, NISGTC leaders at the Maricopa County Community College District expanded the reach of each initiative to benefit unemployed and underemployed students more fully.

By reaching out to colleagues who were working on the Walmart Brighter Futures 2.0 Project, Briden learned that this grant could help with tuition and fees for industry certification exams for low-income students. Nineteen NISGTC students qualified for this assistance.

NISGTC also collaborated with Estrella Mountain Community College, a Maricopa college, and four other Arizona colleges to advance the work of the Arizona Sun Corridor Get Into Energy Consortium, a Round II TAACCCT grant initiative.

By working together on curriculum the two Department of Labor grant initiatives created a core certificate that responds to the needs of both IT and energy employers.

NISGTC CUTS RED TAPE FOR CREDENTIALS

Rio Salado's NISGTC program initiated a pilot study for auto awarding certificates and associate degrees in the Maricopa County Community College District.

"Auto award means that students do not have to apply for it to be awarded," Briden said.

> "Auto award means that students do not have to apply for it to be awarded."

With the new process college personnel review students' records upon program completion. If all requirements for the certificate of completion and/or the associate in applied science degree have been met then they are automatically awarded.

Briden explained that historically IT students have focused on industry certifications, rather than college certificates and degrees.

They enrolled in colleges to learn the knowledge necessary to pass industry certification exams and often skipped filling out the paperwork that colleges require to have certificates and degrees noted on their transcripts.

Associate degrees awarded through the Rio Salado NISGTC program articulate to three universities.

STUDENT EXCELS IN CISCO COMPETITIONS

While taking networking courses at South Mountain Community College, NISGTC participant Henry Mai excelled in two Cisco competitions.

He received the second highest U.S. score in the 2013 Cisco Networking Academy NetRiders Competition, an international contest with more than 10,000 competitors.

His prize was a study trip to the headquarters of Cisco Systems Inc. in San Jose, California. There he and 18 other finalists, whom Cisco calls "Future Architects of the Internet of Everything," learned from company engineers and executives.

On the Cisco video about the NetRiders competition Mai said, "My networking instructor made me realize that by understanding people and helping them achieve what they want, you are able to achieve what you want."

Henry Mai, a student and paid lab manager, worked in the Cisco Lab at South Mountain Community College with NISGTC Tutor Ken Goodman.

Mai was also on a two-person team that won the CISCO Networking Expert Battle category against 76 teams. That competition at the University of Advancing Technology tested students' technical skills and innovative approaches on various tasks.

NISGTC PARTICIPANT BUYS FIRM, EMPLOYS STUDENTS

Martina Nelson

Before moving to Utah, Martina Nelson took drafting classes at an Ohio community college and some general education courses at a university. Knowing first-hand the skills-based education that community colleges provide, she enrolled in the surveying and geomatics program at Salt Lake Community College (SLCC). She also signed up for the NISGTC program.

With the help of Walt Cunningham, associate professor of surveying and geomatics, and other mentors, Nelson earned an associate in applied science degree in land surveying with honors in 2013. After obtaining her Utah Professional Surveyor License, she purchased Park City Surveying. It was the firm where she worked while enrolled at SLCC.

In 2015 she hired two SLCC surveying students whom she considers "a perfect fit" for her firm. "The curriculum and equipment SLCC provided was the most up-to-date and the teaching and mentoring provided was first-rate. SLCC made sure that students were knowledgeable and proficient in the use of the latest hardware and software available, and this is critical for the success of a land surveying company," she said.

> "SLCC made sure that students were knowledgeable and proficient in the use of the latest hardware and software available."

NISGTC NUGGET

- **3 NEW CERTIFICATES**
  Geomatics Certificate of Proficiency
  Geospatial Technology Certificate of Proficiency
  Certificate in Geospatial Technology (ArcGIS Desktop)

- **1 NEW DEGREE**
  Geospatial Technology Associate in Applied Science

- **UTAH'S FIRST ENTIRELY ONLINE GIS CERTIFICATE PROGRAM**

OPEN LAB AND TUTORING CENTER FOSTER INTEREST IN GIS

The Geosciences Tutoring Center that Salt Lake Community College created for the NISGTC was such a powerful innovation for students and faculty that the college plans to continue offering geo-specific tutoring.

The NISGTC team at SLCC learned so much from starting a geographic information systems (GIS) open lab and the specialized geosciences tutoring center that they have developed a handbook for other educators to follow.

The center offered in-person, one-on-one tutoring and a text-based, online service to students enrolled in five geoscience courses and in other science and technology courses that have started incorporating GIS. Each semester the usage of the 25-station computer lab and classroom grew from 103 student visits in fall 2013 to 362 in spring 2015.

The center's location in the geosciences department and near the college's Science Resource Center, where other STEM tutoring is available, made it visible and convenient for students to drop in with questions and personalized tutoring. The GIS lab is also used as an instructional space by faculty for a variety of courses and programs within the department.

During the course of the NISGTC grant, the availability of the open lab and the competency of the staff attracted the interest of students from other majors who visited the center to learn informally about GIS technologies.
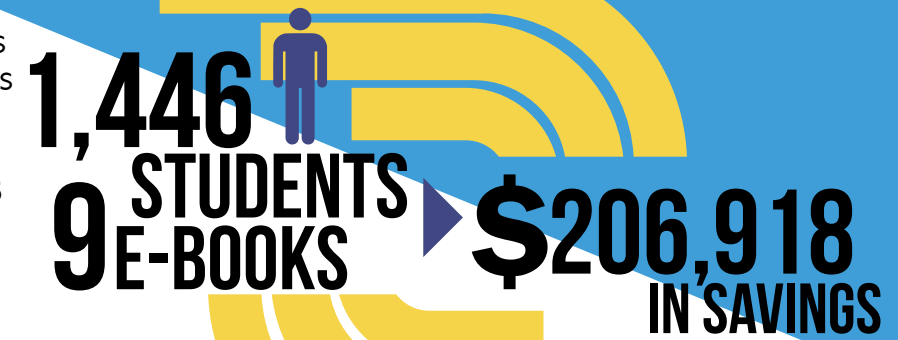
Christopher Johnson, an assistant professor in the Geosciences Department, reports that the center and its tutors provided a "mechanism for career advancement for students." He cited geology majors as one example. Most of them now have a basic understanding of GIS thanks to the services provided by the NISGTC.

E-BOOKS SAVE STUDENTS MONEY

The NISGTC program was the impetus for Adam Dastrup, NISGTC co-lead at SLCC, to write free e-books for the nine geography, geospatial science, geology, and surveying courses impacted by NISGTC.

His efforts have saved students more than $206,918 since August 2013.

By design, the TAACCCT-funded NISGTC supported tutoring, career services, educational equipment, and curriculum development; it did not cover students' tuition or books. With the program's focus on unemployed and underemployed adults, Dastrup began to create alternatives to expensive textbooks and other educational resources. He believes that the cost of traditional textbooks are becoming an economic impediment for many students.

1,446 STUDENTS
9 E-BOOKS
$206,918 IN SAVINGS

Access E-Books through the Open Geography Education website at **WWW.OPENGEOGRAPHY.ORG/ETEXTBOOKS.HTML**

Dastrup says the free e-books that he put together are more dynamic than typical textbooks because of the embedded interactive technologies and up-to-date content he included. They are compatible with mobile devices, and are used in face-to-face, flipped, blended hybrid, and online instructional settings.

With SLCC moving toward using free e-books campus-wide, the college plans to maintain the Open Geography Education website after the NISGTC grant ends.

The e-books along with the other curriculum materials developed by NISGTC are available on the free open source National Training and Education Resource website (www.nter.collin.edu) and Skills Commons (www.skillscommons.org), which has been designated by the Department of Labor as the repository for the TAACCCT program.
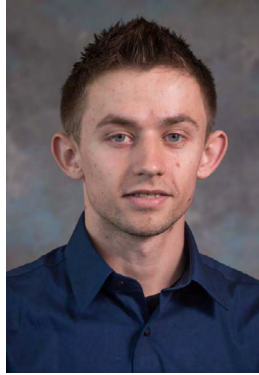
ANDY NOSAL, Moraine Valley
Moraine helped me get my certs, A+, Net+, and prepared me for my career. The Cohort program was such a great experience as I learned what I can expect in the interview and what to expect at the job. I was always told to work on my certificates and they will land me an interview. And they sure did!

MICHAEL GARCIA, Del Mar
As a result of my time spent in the program I've earned an associate degree in GIS, which is one of the degree paths that is more designed for one to be able to seek out employment opportunities and have the skills necessary to achieve. I also greatly appreciate how even though I have finished my chosen program they continue to assist me in terms of continued career development and in my job search.

TOMAS KOSLAB, Moraine Valley
Being at MVCC brings great experience working at a data center both physically and mentally. I do not see another college being able to guide a student step by step when transitioning to the real world. With MVCC giving me great virtualization experience, it has helped me land a job at Network Development Group (NDG) where I am able to work remotely. I couldn't have asked for a better career move.

KRIS KUZMA, Moraine Valley
As I was getting closer to graduation, I knew I needed experience to get a job. I went to talk to the staff at Moraine and was told that if I get my A+, Net+, and Security+, I'd be able to get an entry level position. I knocked out the three stackable certificates. Moraine Valley helped me gain an internship. Every day there is something new to learn. Most importantly this internship gives me experience I can put down on my resume.

MICHAEL BEZENER, Moraine Valley
The IT Professional Development Cohort helped me prepare for the challenges of applying for a job for the first time. This included writing a resume, interview preparation and fine-tuning your people skills. I was able to get a great part time job, while still attending school.

I'M LOOKING FORWARD TO THE HANDS-ON OPPORTUNITIES THAT WILL HELP CATAPULT MY CAREER TO THE TECHNICAL ENGINEERING WORLD AS A NETWORKING ENGINEER. - RHASAAN KIMBROUGH, Rio Salado

PAVEL YAREMA, Bellevue College
The grant was a necessity for my college success. When joining the Fast Track to IT club, I began to have a vision of my future and clear next steps. With the aid of this grant, I had an understanding of why I am taking certain classes and how they contribute to my degree. Also, I began to understand the job opportunities that are available once I acquired the necessary knowledge. With that, the practice interview and networking event also played a crucial role. They gave me the opportunity to practice real interviews but with honest unbiased feedback from the interviewer. I was really privileged to be part of such a grant.

CLOCKWISE FROM TOP LEFT:
Alby Cartwright, Del Mar College (story on page 20); GISC GIS/GPS Lab Fieldwork, Del Mar College; Mentoring Partnership, Collin College (story on page 14); Adam Dastrup, SLCC Project Lead, TAACCCT-On Conference (story on page 27); Cybersecurity Competition, Moraine Valley Community College; TAACCCT-NISGTC Graduate Sarah Santiago, Maricopa Skill Center.

NISGTC CONSORTIUM BY THE NUMBERS

These are accomplishments for several key deliverables through 6/30/15. Data through the end of the grant will be available on www.nisgtc.org for several years after the grant concludes on 9/30/15.

Number of Participants
6,166 (Goal of 5,861)

Increase in Number of Underrepresented
5% (Goal of 4%)

Credit Hours Completed of those Attempted During 1st Academic Year
92% (Goal of 75%)

Students Who Enrolled Consecutively from their Initial Term
77% (Goal of 60%)

Virtual Labs Exercises in 4 IT Specialty Areas
250 (Goal of 200)

Students Transferring to Western Governors University or Other Traditional University
504 (Goal of 100)

Students Receiving Advice from a Career Coach
3,800+ (Goal of 2,500)

Virtual Internship/Externship Capstone Courses Created*
4 (Goal of 4)

45,970 STUDENT-COURSE USES OF THE VIRTUAL LABS GOAL OF 2,000

*See postcard detailing Virtual Internships/Externships at WWW.NISGTC.ORG/BILT.HTML.

New/Enhanced Online Courses Integrated into College Portals
202 (Goal of 100)

NISGTC RECEIVED A STANDOUT AWARD FOR EXCELLENCE IN IT
PROFILES.OPEN4US.ORG/TAACCCT

Students Completing New IT Fast-Track Training
1,218 (Goal of 850)

IT-Specific Entrepreneurship Courses Posted on Repository
3 (Goal of 2)

Boot Camps Delivered
17 (Goal of 15)

108 COURSES CREATED GOAL OF 100

29 PROGRAMMING COURSES

18 CYBERSECURITY COURSES

16 NETWORKING COURSES

25 GEOSPATIAL COURSES

20 CROSS-SPECIALTY COURSES

"In early 2011, the National Information, Security, and Geospatial Technologies Consortium (NISGTC) was a dream. At the end of four years, consortium colleges have achieved far more than thought possible."

DR. ANN BEHELER
COLLIN COLLEGE