

Colorado Helps Advanced Manufacturing Program

Community College of Denver Case Study

**Maria Malyk
Heather McKay**

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RUTGERS

Education and Employment
Research Center

School of Management and Labor Relations
Janice H. Levin Building
94 Rockefeller Road
Piscataway, New Jersey 08854
smlr.rutgers.edu/eerc

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INTRODUCTION

The Colorado Helps Advanced Manufacturing Program (CHAMP) is a United States Department of Labor (USDOL) Trade Adjustment Assistance Community College and Career Training (TAACCCT)-funded grant project intended to develop new or redesigned online and hybrid courses leading to credentials in advanced manufacturing in high demand fields across the state of Colorado. The Colorado schools involved in CHAMP are a consortium of eight of the state's community colleges and one four-year institution: Front Range Community College (FRCC), Pueblo Community College (PCC), Red Rocks Community College (RRCC), Lamar Community College (LCC), Pikes Peak Community College (PPCC), Aims Community College (Aims), Community College of Denver (CCD), Emily Griffith Technical College (EGTC), and the Metropolitan State University of Denver (MSU Denver).

Prior to the development of CHAMP, the Colorado Advanced Manufacturing Alliance identified two gaps in the state's existing academic training programs that had been previously designed to meet the needs of the industry: 1) the lack of a consistent voice representing the needs of industry to the academic community and 2) the absence of a strong network to facilitate business-to-business activity partnerships with educational institutions. The CHAMP project was conceived to address these issues with the larger goal of making Denver and the state of Colorado a leading advanced manufacturing hub.

CHAMP is in place to increase the attainment of degrees and certifications in manufacturing in order to best serve employers' needs. In service of the market-oriented end of this goal, its programs are designed to produce 21st-century workers whose skills align to local market trends—community colleges work with local employers to align their programs with industry-recognized skills and competencies. With regard to increasing the number of graduates entering the market, CHAMP is focused on creating innovative and flexible learning opportunities for students. The grant calls for schools' existing courses to be adapted for hybrid delivery, for example, such that a portion of the traditional face-to-face instruction is replaced by web-based, online learning.

In addition to designing or redesigning advanced manufacturing programs to fit a hybrid model, each college is required to integrate open education resources (OER) into its CHAMP curriculum. OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and repurposing by others. OER may take the form of full courses, course materials, modules, textbooks, streaming videos, tests, software, or any other tools, materials, or techniques used to support access to knowledge. Under the CHAMP grant, consortium colleges are encouraged to use OER in the creation or redesign of online or hybrid courses and are also required to create or redesign their courses and programs such that they can be packaged and licensed as OER for use by other educators and institutions. Thus, staff at CHAMP colleges will package, license, and post their course materials during the course of the grant.

Each college in the consortium is also required to employ at least one CHAMP navigator to collaborate with employer–partners, local workforce centers, community and nonprofit organizations, and students to ensure students’ access to CHAMP resources and facilitate their success. Within each of these areas of collaboration, navigators work according to their institution’s needs to build CHAMP programs, recruit and retain students for CHAMP programs, and assist those students as necessary. Navigators track their interactions with CHAMP students to report outcomes based on a model of *intensive advising*, which involves multiple interactions and points of intervention with each student throughout his or her education to ensure each student’s success and, ultimately, employment.

Aside from these institution-specific innovations, consortium-level outputs are also to be integrated within each college. These include massive open education courses (MOOCs) and a new credit-for-prior-learning process. Three MOOCs were created at the consortium level: a math MOOC, a student success/employability MOOC, and a credit-for-prior-learning MOOC. Each college is encouraged to include one or more of the MOOCs in its program or institutional curriculum. The process at each college for awarding students credit for prior learning will also be redesigned at each college according to policies developed by the consortium.

This report is one of nine created to highlight each individual college’s contributions to the CHAMP project at year two of the grant. The purpose of this case study is to identify the implementation processes utilized by CCD and to provide a summary of the CCD CHAMP team’s activities, successes, and challenges to date. This case study begins with an overview of its methodology and data sources and then moves on to the contextual frame—demographic and socioeconomic background information about CCD, its student population, and its service region. These sections are followed by a summary of the goals of CCD’s CHAMP program; a discussion of the implementation of the program, including the design process and its incorporation of OER; a look at student and faculty perceptions of the program; an examination of employer and workforce center collaborations; a discussion of the CHAMP navigator position as it has developed at CCD; an examination of the college’s approach to redesigning its credit-for-prior-learning options and processes; and a summary of successes, challenges to date, and recommendations for next steps.

METHODOLOGY/DATA SOURCES

This report examines the development and implementation of the first two years of the CHAMP grant at CCD, including experiences of the project team members and participating staff, faculty, and students. As such, this report uses qualitative data and analysis. Subsequent EERC evaluation reports will include outcome measures and report on quantitative data collection and analysis.

The qualitative methodology for this report includes content analysis of consortium goals and activities to date, relevant proposals, and project- and college-specific statements of work, quarterly reports, and websites developed by individual colleges. EERC team members also

conducted phone and in-person interviews with college project leads, staff, faculty, navigators, and students.

Most interviews were taped and transcribed; non-taped interviews involved extensive note taking. These transcriptions and notes as well as the documents cited above have been coded through the use of NVivo qualitative data management software and analyzed by EERC team members to represent each college's individual story relative to the CHAMP project.

As noted above, while quantitative analysis will be presented in subsequent reports, this summary is meant for contextual purposes only and will only utilize data from qualitative analysis. For this reason, grant targets relative to each college, student counts, course counts, industry- and workforce-related targets, and other quantitative objectives will not be discussed as part of this report.

COLLEGE DESCRIPTION AND OVERVIEW OF STUDENT POPULATION

CCD serves the Northern Denver area, with its principal Auraria Campus situated in central Denver. CCD has two additional satellite campuses: Lowry Campus in East Denver and the Advanced Manufacturing Center, built in the past year, under CHAMP provisions, housing the classrooms and equipment for CCD's machining, welding and engineering programs. CCD offers more than 100 degrees and certificates in 45 different programs of study.

In the Fall 2014 semester, CCD had a total enrollment of 10,294 students, with 24 percent attending full-time and 76 percent part-time. CCD is federally recognized as a Hispanic-Serving Institution, with Hispanic students comprising 25.3 percent of the total student body. In addition: 35.2 percent of CCD students are white, 13.4 percent are African-American, 1.1 percent American Indian/Alaskan Native, 0.2 percent Hawaiian or Pacific Islander – with 5.7 percent international student presence. Forty-four percent men and 56 percent women attend CCD, with an average age of 25.7.

CCD'S CHAMP GOALS

In the two years, since the implementation of the CHAMP grant, CCD has experienced a number of setbacks, slowing down the process of development and challenging the fulfillment of goals specified under the grant. Of the four goals – 1) to establish/advance college-industry partnerships; 2) to ensure technologically advanced education; 3) to redesign the prior learning assessment (PLA)/credit for prior learning (CPL) policies and 4) to introduce structures and mechanisms for stackable/latticed certificates and articulation – CCD focused primarily on developing goal 2, with minor adjustments to goals 1 and 4.

In regards to establishing technologically advanced education, CCD built a new, off-campus shop/classroom instructional facility – the Advanced Technology Center (ATC) – and stocked it with newly purchased state-of-the art machinery, along with some donations from local

businesses. This modern, spacious shop and laboratory facility offers CCD students the opportunity to acquire a wide range of industrial and design manufacturing skills, learned on the latest technology, preparing them for the job market ahead. As the director of advanced manufacturing put it:

These technologies pay better than the older technologies, so students could either increase their current skills or they could come in and get a new career. I think our biggest market in manufacturing isn't right out of high school, but it's nontraditional head-of-household students. Whether it be dads, single dads, single moms, moms that say, hey, I need a career that has benefits, days off, and all this stuff that a lot of places don't have any more but manufacturing still offers.

Unfortunately, the building of the center experienced major construction delays, which, according to the project lead, set off a chain reaction of postponements in equipment purchasing and curriculum development. PLA/CPL have not been developed yet, and the courses are not all yet redeveloped into OER shells shared by the Colorado Community College System (CCCS). All of this is expected to move along exponentially faster now that the ATC is fully operational.

Career Pathways

Under the umbrella "Industry, Manufacturing & Construction" pathway, CCD redeveloped three programs under CHAMP, each offering at least one Associate of Applied Science (AAS) degree, with several certificates that can stand alone or be stacked into the AAS.

Under the fabrication welding program, CCD students can earn a fabrication welding AAS, with stackable certificates available in arc welding, basic welding and intermediate welding. Fabrication welding careers are applicable in a variety of trades, from construction to energy, with hourly salaries ranging from \$13 to \$40, depending on experience and expertise.¹

The machine technologies program offers two specializations that lead to an AAS: CNC manufacturing and CNC management. Students can also opt to gain stackable certificates in basic machining, industrial maintenance technologies, intermediate machining and CNC machine operation. This program provides hands-on training with manual lathes, milling machines and computer numeric control (CNC) machines as well as mastery of 3D CAM programming with MasterCAM and GibbsCAM software packages. Certificates and degrees in machine technologies prepare students for careers in a wide variety of fields spanning aerospace, medical, oil and gas production, defense and automotive industries.² An AAS degree

¹ Community College of Denver. Retrieved on Apr. 5, 2016. <https://www.ccd.edu/program/fabrication-welding>

² Community College of Denver. Retrieved on Apr. 5, 2016. <https://www.ccd.edu/program/machine-technologies>

in CNC management prepares students for a corporate career in the manufacturing / construction industries.

The engineering graphics and mechanical design program at CCD offers an AAS in mechanical drafting as well as stackable certificates in Basic Mechanical, Intermediate Mechanical, Inventor and Solidworks. This program is for students who like to work with their hands and be creative. In the engineering graphics sub-program, students master 2D and 3D parametric software to succeed in the growing design and engineering fields. The mechanical drafting subprogram is about learning to assemble a wide variety of machinery and devices: this career path leads to working on drafting teams in industrial plants, engineering or manufacturing firms and government agencies. 3D mechanical designers/drafters earn hourly wages between \$14 and \$21.³

When asked about articulation agreements, the project lead at CCD pointed out that express articulation agreements between consortium colleges were not necessary because they already use a shared course number system and the articulation provisions already exist on the state level:

[T]he state requires that if a student completes a certificate at any of the technical colleges, that we will accept that certificate and add to that certificate those General Ed courses and other courses that are necessary to complete an Associate of Applied Science and Applied Technology. So, without any articulation agreement, that is already in place and has been since before I came here.

The project lead did say that an articulation agreement is in the works with EGTC, with the intent to let students complete all their welding courses at EGTC and then enroll in CCD, to finish the general education courses and earn an AAS degree in their chosen trade. The dean of the Center for Career and Technical Education added that students from other consortium member colleges already transfer to CCD, usually when their community colleges do not offer AAS degrees in their chosen field – and that this is done easily and without individual articulation agreements.

IMPLEMENTATION

Process of design / redesign

As mentioned above, major delays with the construction of the ATC have delayed the achievement of subsequent CHAMP requirements, particularly, curriculum development. All interviewed staff brought up being unable to move ahead due to the "ongoing nightmare" of a "lack of responsiveness" between creative, corporate and municipal factions involved in the

³ Community College of Denver. Retrieved on Apr. 5, 2016. <https://www.ccd.edu/program/engineering-graphics-mechanical-design>

massive undertaking of building the new facility. The equipment had been delivered but could not be set up for months. As the dean put it: "the bottom line was: we couldn't develop the courses – and, without those, we can't teach."

With the ATC and the new equipment finally intact, as of October 2015, CCD has been turning attention to new courses. According to the project lead, a total of nine courses have been developed under CHAMP, in light of the newly acquired technology: a 3D scanning / printing class, a programming class and a machine operating course – a set of three tailored to each of the three manufacturing programs.

Existing courses have not yet been revised under CHAMP other than the welding courses having been made available in Desire2Learn (D2L) format – a learning management system that gives faculty and students access to course-related materials, online quizzes, grades and online drop-boxes to enhance the classroom experience. A "safety" course from the welding curriculum has been officially transformed into a hybrid course, in which students complete part of the curriculum through the D2L platform. In addition to reducing the commute for students and space limitations for CCD facilities, the hybrid format allowed CCD to offer the course more than once per semester, drawing in more students. The project lead believed the D2L to be useful to students and mentioned plans to institute the same system for the other two programs. The Welding Chair suggested that hybrid courses give the students a break from academic environments:

Overall, most of the students do like [hybrid format] because they do not want a sit-down class. They chose these hands-on professions because they do not like school. They understand education will improve their lives... but we don't sit them down and lecture at them. So the students do like [that] they have access to the information but they don't have to sit in class to get it.

As an effort to boost training quality and future employability of its students, CCD intends to introduce National Institute of Metalworking Skills (NIMS) accreditation to its machining courses in the near future. Thanks to CHAMP, CCD has the equipment required for NIMS; next, the faculty must earn NIMS credentials and the curriculum must be redesigned in accordance with specified standards. Earning NIMS accreditation sends a message to the employers that the holder is trained to perform at the level of the national industry standard.⁴ In addition, the welding chair has been using the code standards set by the American Welding Society as the foundation for developing all his courses, making them easily standardized.

Losing students, sometimes before they complete any certificates, is a challenge CCD has been working to alleviate by designing certificate curricula that can be completed very quickly. One such certificate in basic machining has already been implemented: all the necessary courses are delivered in five-week increments (plus some week-end classes), all scheduled into the same

⁴ NIMS. Retrieved on Apr. 8, 2016. <https://www.nims-skills.org/web/nims/5>

semester, in the correct sequence. Thus, the students complete all training and coursework, earn the certificate and become, in effect, employable – in only one semester. Other certificates in the three programs are being evaluated and considered for the same expedited approach. That, according to the director of advanced manufacturing, is the importance of offering certificates: "Not everybody can go to two years of college, even if you paid for the college. They say, hey, I need to generate income – so, they can maybe give you six months of their lives, but not two years."

Attracting women to welding is a priority for CCD: they already have a number of female welding and machining students enrolled and have received some local press⁵ on women in welding at CCD, as well as putting out CHAMP-funded marketing videos "to get the word out". The director of advanced manufacturing expressed his personal dedication to the cause:

Minorities and women [are] an unrepresented group. And my personal motto is: America belongs to everybody. And, if there's good paying jobs out there, why aren't these groups showing up for those jobs? The reason is: they either don't know about them or they think they can't do them for some reason.

The welding program currently serves several female welding students and employs a female welding instructor. The instructor was very enthusiastic about the program but, other than garnering a lot of praise from the CHAMP leadership for setting a great example for women welders, she did not seem to have been engaged –to specifically draw female students to manufacturing careers.

Both the welding chair and the advanced manufacturing director shared a vision of the CCD programs and facilities becoming a major site for companies to send their workers for training. They intend to draw local as well as national companies' attention by offering as much curricula as possible online – so that it can be completed from afar – and grouping the necessary on-site/hands-on training into a compact amount of time, so that workers could fly in for several days to complete their training. The curriculum will be designed around specific machines and software, rather than for specific companies. Curriculum development was projected to be finalized the end of Spring 2016 semester.

Equipment purchases

At CCD, the main focus under CHAMP has been the building of the ATC and the purchase of new manufacturing equipment and software. The ATC was purposefully built at a new location, four miles north from the main CCD Auraria campus – to allow for more space in the new shop. The old manufacturing programs' shop had no space for adding more equipment and, hence, no chance at expanding the curricula. The machining program had, in fact, been

⁵ NBC 9NEWS, Colorado's News Leader. Retrieved on Apr. 9, 2016.
<http://legacy.9news.com/story/news/local/2015/04/08/trade-program-seeks-women-welders/25488477/>

shut down altogether by the dean, who, then, in 2012, hired the current director of advanced manufacturing, to re-build and re-open the program anew.

Soon afterwards, the CHAMP grant was introduced, affording CCD the freedom to finally identify a new site for the ATC and begin ordering equipment. Under the leadership of the new director of advanced manufacturing, an industry veteran himself, and in accordance with the advisory board members' suggestions, CCD focused on automation, non-conventional machining and robotics, with long-term sustainability in mind. "We bought machines that are capable of running unattended – and that's how manufacturers make money in the US," explained the director of advanced manufacturing, "They can diagnose themselves if there's a problem, if a tool is going bad."

From the start, development was stifled by what the director of grant development described as "one of those construction projects from hell". Originally, all three programs were intended to be housed by the new ATC; however, in the end, only the machine technology and fabrication welding programs made it into the building, while the third program under CHAMP, Engineering Graphics and Mechanical Design, stayed behind on the Auraria Campus.

The ATC finally began its operation in October of 2015. With 10,000 square feet dedicated to hosting the machining program, and another 11,000 square feet given to the welding program, the new facilities have wowed staff, faculty and students alike. According to the dean, welding equipment was bought primarily with Perkins funding, whereas most of the machining technology as well as the filtration systems were purchased with CHAMP resources. By all accounts, the spaciousness of the new ATC facility and the variety and high quality of the new machinery were the determining factors in revamping the manufacturing programs at CCD.

Students served / student perception of program

Students had very positive things to say about the ATC facilities, the expert instruction and training on latest machinery and the support received from staff and faculty. One student came to CCD to expand his CNC machining skills and to obtain an AAS degree in machining management, which he hoped would open doors into advancement from his current job. He elected to come to CCD after speaking with the advanced manufacturing director, who walked him through the course requirements and employment options in his field of interest. The student was very satisfied with his time at CCD:

This stuff is allowing you to learn some of the highest level skills out there. This is stuff that's coveted by manufacturers, and this is something that they see that you are familiar with running, on your resume, and you immediately become the top target.

Another student came to CCD on the navigator's recommendation:

I heard good things about CCD. And then, I talked to [the navigator] and he told me that they had just hired [the director of advanced manufacturing] and that he was really a great administrator, had a lot of experience in machining and stuff. It sounded like this was the best option. It sounded like CCD had the best program... And yeah, I'm really glad to be in this nice new place with all these amazing machines right over there.

Another student, despite coming from male-dominated military background, could not help but appreciate having a female-friendly welding program at CCD: "I love it here. It's welcoming. Being a woman in welding, at first I was a little intimidated but everybody's so nice. It's pretty cool."

Faculty / staff perception of program

Staff members praised each other's dedication and success. For instance, the welding chair mentioned the great job done by the CHAMP navigator – and how his advising has been more targeted and personalized than the campus student services:

The more somebody knows about our programs, the better job they can do. Welding and machining are very specialized knowledge bases, and most people in an academic environment don't understand some of the complexities of a vocational and academic combined program. So somebody who's here and can see it is just a much better position to advise than somebody who has no idea what really goes on inside the building... [The navigator] could actually walk out and see a student and say, hey, I need you to sign this paper. Whereas, before, student services would send an email. Maybe it got to the person, maybe it didn't.

The navigator, in turn, spoke highly of the broad range of professional experience and industry connections offered by the CCD faculty – and was particularly impressed with the advanced manufacturing director's extensive contributions to the program, since he joined CCD three years ago.

Faculty members differed on the importance of obtaining an AAS degree, as opposed to earning certificates. Some pointed out that academic accreditation is not necessary for welding and machining careers. One of the welding instructors, for instance, recalled that, in her many years as a professional welder, she was never asked to show academic credentials. The project lead, on the other hand, believed that an associate's degree ensures a higher skill level. All agreed that an associate's degree is necessary for those entering careers in management or wanting to stay flexible for potential corporate promotions in the future. For this reason, the navigator has been stressing the value of AAS to the students he advises and encouraging them to stack their certificates into an academic degree.

Like everyone else, faculty had only the best to say about the new high-end ATC facility: the range of technology, the spaciousness of the shop, the top-notch instruction on state-of-the-art

machinery. One welding instructor said that CHAMP made a 100 percent positive difference in the programs:

This lab has everything a lab should have. I would say the money is well-spent here, in terms of the equipment that the students are using. The last campus I was on – the proprietary company – did not have [essential equipment], it was cramped, it was all about taking as much money as they could and sending students through. That's not the case here.

Most staff and faculty interviewed spoke respectfully about the advanced manufacturing director, praising his resurrection of the defunct machine technologies program, his leadership and his considerable experience and connections in the industry. The welding faculty gave accolades to the welding chair for his excellent service as well.

EMPLOYER COLLABORATION

Previous employer relationships / how they changed

Each of the three manufacturing programs at CCD has an employer-based advisory committee that meets at least twice a year to discuss curriculum development and relevant equipment purchases.

CCD has primarily been working to establish training exchanges with local businesses. For instance, CCD has secured a five-year contract with Burlington Northern Railroad, who will be sending at least a dozen incumbent workers for each two-week welding course that runs 20 times per academic year. According to the project lead, this deal was made possible thanks to the new laboratory facilities with a new filtration system purchased with CHAMP funds. There had been incumbent workers at CCD in the past (most night students, according to the Project Lead, are incumbent workers training after work), but this is the first time CCD was able to enter a long-term contract with a business. There are talks of setting up a similar arrangement with the Union Pacific Railroad company as well.

The director of advanced manufacturing reported that creating training exchanges can be challenging due to clashing priorities, as businesses are motivated by profit rather than academic interests:

We have talked about trying to do noncredit classes and trying to set it up where, with a noncredit class, we can tailor or build a class for an employer – because, most employers, they only want two or three weeks. They have a very specific goal and they don't want to send their employees here for any more than what it takes to reach that goal.

Furthermore, according to the welding chair, many companies think nothing of poaching CCD students before they complete their education:

That's one of the issues that we have with the welding industry is [that] they don't value education the same way that we do. They need somebody who can put material out the door. So they are more than happy to steal our students away and – most of the people I've talked to in the industry – they're not concerned about whether or not the students finish. They need somebody who can produce.

Feedback on course changes, equipment purposes, etc.

The advising committee has repeatedly emphasized the importance of math and blueprint reading skills for future employees, so CCD has included these requirements in the basic certificate in welding and continues to reinforce them through subsequent certificates. The employer advisors also stressed the value of teaching quality control, which is now being incorporated into the curriculum. As mentioned earlier, employer partners provided active counsel in deciding on which equipment to purchase for the new ATC.

Future plans for these / other employer partnerships

CCD has worked to develop mutually beneficial partnerships with local business, but it has been difficult to solicit advisement and training, as most businesses are reluctant to put in the time without the promise of a major pay-off. The dean of the Center for Career and Technical Education considers this to be the biggest challenge to the program: getting local companies to send their experienced operators to train CCD faculty to master the new machinery. CCD would be glad to offer them faculty positions but the experts are too busy working full-time, according to the dean: "If we could get them to... even work with us half a day on Saturday, one Saturday a month, that would be great. But they can't even do that."

The director of advanced manufacturing admitted that employee partnerships are still strained for the manufacturing programs, especially considering the successes of other consortium memberships. He attributes this problem to having the CCD and CHAMP resources stretched too thinly, implying that each staff or faculty member juggles too many disparate responsibilities to make a targeted effort towards soliciting industry collaboration full-time.

NAVIGATOR

Background/role at college

The current navigator joined CHAMP at CCD in June 2014, having previously worked as a high school guidance counselor for 15 years. He was looking to enter post-secondary, college-level education and saw the navigator position as a good opportunity to combine his existing skills with the new environment.

Work to date

Since coming on board to CCD, the CHAMP navigator has been serving as a program advisor to students in machining, welding and engineering graphics & mechanical design. In the past year, his activities have primarily consisted of making himself available to existing CCD students, who pop in with sporadic questions and concerns about the program. The navigator's office is located at ATC, right by the classrooms and labs. The navigator described the nature of his duties as having to do mostly with "academic advisory problem solving" and helping students "navigate through the system." For prospective students, the navigator usually explains what the programs are, the career expectations and the job markets relevant to each program, as well as offering information on Colorado Works/Temporary Aid to Needy Families (TANF) program some students with children may qualify for.

In talking about his advising style, the navigator spoke of encouraging the students to aspire to an AAS degree – as a higher-paid career alternative to earning just the certificates:

Right up front, I'll usually tell them that we have students that can get hired right when they get their basic certificate. But if they want to stick on, or if they do stick on, typically, then you will get higher-paying positions in that, so I really try to sell them on that. And most of the students, I think, make the decision to actually stick with the degrees to move on and continue.

The navigator has faced a number of challenges in his position. The location of his office is excellent vis-à-vis being available to the existing students at ATC, but the majority of CCD foot traffic takes place on the main Auraria campus, and this presents a logistical obstacle in reaching the majority of students. Hence, the navigator's student recruitment efforts have been limited. The navigator plans to have a flyer with his contact information and a map printed and distributed on the main campus, to boost the visibility of his services and help students find their way to his office.

The distance from the main office presents another issue, when it comes to reaching the engineering graphics & mechanical design students: that program is still situated on the Auraria campus. In this instance, the navigator makes it a point to sit in an engineering classroom once a week, on the same day, to make himself more accessible to those students. Unfortunately, this approach does not give students a lot of privacy in talking about personal matters and the navigator hopes to appropriate an on-site office for advising purposes.

The navigator reports experiencing difficulties and frustrations with his advising duties as the local workforce centers have not been collaborative in sending TAA and TAA-like students his way and he feels limited in his capacity to help, considering the wide range of issues students bring to him. For example, given the urban environment of Denver, some of CCD's students are homeless and the navigator finds himself providing assistance with non-strictly-academic tasks, from getting library access to seeking treatment at the campus medical services. He tries to

maintain contact with the students he gets to know but, because of high mobility and transience in the area, the navigator says, when he reaches out to students to check up on their progress, some may already be gone. The navigator is also concerned about reaching under-represented populations: he is trying to tap organizations such as the Denver Housing Authority to see if they can forward him some of the people they come across.

Navigators from all consortium colleges hold a quarterly meeting, where they exchange strategies and materials – and the CCD navigator has been taking advantage of this resource. For example, he solicited the FRCC navigator's help with sharing her templates and forms for establishing non-credit courses. He, likewise, consults with faculty and requests that they send him students that need help or information. The navigator expressed interest in bringing more career-building curricula to the program: "I've tried reaching out with our WIN (Workforce Initiative Now program), to see if they could come out and talk to our students and do some workshops on resumes and then on interviewing."

The navigator was most proud of his contribution to rising graduation rates at CCD. He accomplishes this by keeping track of the students who come to him for advisement, getting in touch with them to make sure they fulfill their credit requirements and submit the graduation application on time.

Future plans

Beyond plans to establish a more visible presence among students, the navigator seemed unsure about what else can be added or improved in his role as the navigator. The staff and faculty had all spoken highly of his work, and so, the problem lies not in his performance but the lack of understanding of the parameters and focal points of the navigator position with CHAMP. His considerable previous experience as a high school guidance counselor works for and against him in this position. On the one hand, he has the knowledge and the sensitivity to make students comfortable, to offer them support and understanding in their troubles and to redirect them to appropriate channels for further help. On the other hand, the "counseling" orientation tends to eclipse the CHAMP-outlined advising goals of the navigator, which is to engage in active recruitment of new students and to provide career pathway support to the existing ones.

The other duty of the navigator is to proactively solicit industry partnerships with local employers, in terms of creating internships/apprenticeships and "memorandums of understanding" for future employment opportunities. As with several other consortium members, the dual role expectation of the navigator proved too demanding for one person and the "employer outreach" portion of the role had been *de facto* transferred to the project lead.

PRIOR LEARNING ASSESSMENT / CREDIT FOR PRIOR LEARNING

CCD faculty and staff were involved in the consortium level work to rethink PLA in state. Additionally, staff and faculty under CHAMP report undergoing PLA training in Spring 2015. Specifically in manufacturing, the advanced manufacturing director and welding chair spoke of long-term plans to develop PLA in the program in addition to non-credit courses they are looking into. They anticipated that it would take some time for all pieces to fall into place:

What I see over here is additional hires, professional development, course development, and again working on the NIMS and the credit for prior learning. I don't think it will happen in a year and a half. A year and a half goes awfully quick in the life of a school.

CONCLUSION

Challenges to date

As detailed above, major delays in the unveiling of the new ATC have created postponements in developing updated course curricula for CCD manufacturing students. As the project lead put it, "Without machines, there are no courses." Furthermore, CCD failed to meet the CHAMP requirement that all newly designed as well as redeveloped courses under the grant are to be uploaded into the OER, a CCCS consortium-wide online access platform. The project lead expressed regret about other CCCS members having to pick up CCD's OER slack to meet the January 2015 deadline, which, no doubt, put a strain on their own workloads.

With ATC completed, the biggest challenge reported by several CHAMP officers is finding trained personnel to teach the courses and train the existing faculty on the new machines. CCD cannot compete with welding and machining salaries and, therefore, cannot easily find qualifying candidates to become adjunct professors: a skilled welder, for instance, earns between 20 and 50 percent more working in the field, than teaching. Experts who combine industry experience and academic competencies are hard to find and cost money to retain.

Though, on the individual level, each staff member has been invested into the success of CHAMP, there appears to be a lack of shared strategic vision for the long term. The navigator had gone a great job relating to students but has not made strides in creating new opportunities for them or raising the visibility of the industrial/manufacturing programs at CCD. The "employer outreach" role had been carried out by the project lead who has, at the writing of this report, accepted a corporate position and left CCD.

Successes / achievements to date

Faculty, students and staff all mentioned the marvelous, state-of-the-art technology, funded mostly by CHAMP, which made the manufacturing programs highly competitive. The staff

were particularly proud of the time Vice President Joe Biden toured the nearly-finished ATC at CCD in the summer of 2015 and was visibly impressed with the facility and its promise.

Growing graduation rates are another success at CCD. One staff member recalled the previous year – when the Secretary of Education visited their commencement – and feeling proud for having the most graduates from the three CHAMP programs than ever before. The increasing graduations have been, by and large, attributed to the navigator's efforts to maintain contact with students nearing graduation and making sure they stay on track and file all the appropriate paperwork on time.

NEXT STEPS

The CHAMP team at CCD expressed a shared pride in and satisfaction with the tremendous new ATC facilities. Their future vision focuses on maximally capitalizing on the utility of the recently acquired state-of-the-art technology – in terms of providing excellent education and training for CCD students – as well as encouraging local companies to send their workers to train on the CCD equipment. The director of advanced manufacturing saw the technology as a huge boon to CCD's role in shaping manufacturing careers:

Now, employers could increase their capacities by buying these machines, bringing people here, getting them trained in these technologies. These technologies pay better than the older technologies, so students could either increase their current skills or they could come in and get a new career. I think our biggest market in manufacturing isn't right out of high school, but it's nontraditional head-of-household students. Whether it be dads, single dads, single moms, moms that say, hey, I need a career that has benefits, days off and all this stuff that a lot of places don't have any more – but manufacturing still offers [it].

Curriculum development and transforming the new and redesigned curriculum into the OER platform will be CCD's immediate goals. As mentioned above, the project lead expected to finish everything by the draw of Spring 2016 semester (although, he has, since, left his post at CCD). The director of advanced manufacturing suggested that everything will go much smoothly, now that the ATC is operational:

[N]ow, that we're in here for our first semester and we have the machines available, now, we're able to hire people to start with the curriculum development... I have three people that are going through the hiring process right now for adjunct/curriculum development. Subject matter experts, as we call them – SMEs – and those people will work on this.

With two years of CHAMP remaining, a reevaluation of strategies and leadership is recommended, in order to proceed with the goals outlined by the grant. Part of the trouble may

be attributed to the fact that the CHAMP goals were eclipsed by the dean's earlier vision for what he referred to as the "three-phase plan":

I had created, back in 2012, a three-phase plan where we wanted to go with manufacturing. It included both welding and machining primarily, but, of course, engineering graphics is included in the grant. And it included 5-axis machines, wire EDM, some other things that we didn't ask for in the grant. And so, we knew ahead of time that, to be able to meet the needs of the community, we needed these pieces of equipment. So, when the grant came about, it allowed us to move through those three phases. And I did it in phases because I knew, if we did it on an annual basis, there's no way we're going to get all this stuff through our regular budget. So I just did it in phases where in one phase, we hired [the director of advanced manufacturing] to run the activity. And then we are going to do some equipment purchases like welding simulators and new welding equipment and things like that. So that's really how this all came about with the three-phase plan that I developed way back when.

Because CHAMP coincided with the dean's prior plans, and was combined with other external funding (Perkins) and general reserve monies in the building of ATC, it is evident that the three programs under CHAMP have not been developed in accordance with CHAMP goals, but to accommodate other directives.

Most recently, it became known that the project lead had left CCD to join a lucrative position in the manufacturing industry. This presents CCD with an opportunity to bring in new leadership to re-focus the team effort on CHAMP goals: extensive employer outreach and targeted career "navigating", tailor-made for machining, welding and engineering graphics & mechanical design students at CCD.