Integrated Report
End of Year One

Colorado Online Energy Training Consortium

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RUTGERS
Education and Employment Research Center

Integrated Report
End of Year One

Education and Employment Research Center
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ABOUT RUTGERS SCHOOL OF MANAGEMENT AND LABOR RELATIONS

Rutgers' School of Management and Labor Relations (SMLR) is the leading source of expertise on the world of work, building effective and sustainable organizations, and the changing employment relationship. The school is comprised of two departments—one focused on all aspects of strategic human resource management and the other dedicated to the social science specialties related to labor studies and employment relations. In addition, SMLR provides many continuing education and certificate programs taught by world-class researchers and expert practitioners.

SMLR was originally established by an act of the New Jersey legislature in 1947 as the Institute of Management and Labor Relations (IMLR). Like its counterparts that were created in the other large industrial states at the same time, the Institute was chartered to promote new forms of labor-management cooperation following the industrial unrest at the end of World War II. It officially became a school at the flagship campus of the State University of New Jersey in New Brunswick/Piscataway in 1994. For more information, visit smlr.rutgers.edu.

ABOUT THE EDUCATION AND EMPLOYMENT RESEARCH CENTER
Rutgers' Education and Employment Research Center (EERC) is housed within the School of Management and Labor Relations. EERC conducts research and evaluations on education and workforce development programs and policies. EERC research expertise include community colleges, state and federal workforce developmental systems, skills development, college completion, and innovative and technology-based programs.

INTRODUCTION

Colorado received a $17.3 million Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant in 2011 from the U.S. Department of Labor. The grant-funded project, the Colorado Online Energy Training Consortium (COETC), has two goals. The first is to enhance energy-related programming in the state through the transformation of curricula into more accessible formats using technology and mobile learning labs. The second is a complete redesign of the developmental education pathway in the state.

The colleges in Colorado involved in the grant project include all the community colleges in the Colorado Community College System (CCCS): Arapahoe Community College (ACC), Colorado Northwestern Community College (CNCC), Community College of Aurora (CCA), Community College of Denver (CCD), Front Range Community College (FRCC), Lamar Community College (LCC), Morgan Community College (MCC), Northeastern Junior College (NJC), Otero Junior College (OJC), Pikes Peak Community College (PPCC), Pueblo Community College (PCC), Red Rocks Community College (RRCC), and Trinidad State Junior College (TSJC). Two local district colleges, Aims Community College (Aims CC) and Colorado Mountain College (CMC) are also participating.

Over the past 16 months, as COETC's third party evaluator, the Rutgers School of Management and Labor Relations (SMLR) has been collecting and analyzing qualitative and quantitative data on the project. Rutgers has prepared four documents about the data collected and analyzed to date.
- TAACCCT-COETC Preliminary Findings, Observations, and Next Steps
- Master Course List
- Redesigned Course Outcomes
- Career Coach Caseload Assessment

The current report provides information about data collection activities undertaken to date, shares some initial findings, and identifies some promising practices.

In addition, college-specific case reports will be distributed before the end of the summer, and several briefing papers on specific topics (e.g., career coaches) will be produced over the next year of the project.

As we reviewed both quantitative and qualitative data, and put together our end of the year reports, a number of questions and new areas of interest emerged; Rutgers will be

following up on these in the months ahead. In the last section of this document we have therefore outlined some of the forthcoming efforts of the Rutgers research team.

Some of the most important findings to date include:

Energy Course Redesigns

- RRCC's certificate program in Water Quality Management is now fully established in an online/hybrid format.

- Both FRCC and Aims CC are completing the approval process for two new certificates and one new AAS degree program.

- Twelve online and 14 hybrid energy courses have been developed and launched, some with multiple sections. Additional reformatted courses – online or hybrid – are scheduled for Fall 2013.

- Colleges have been delayed in launching redesigned courses, due to approval processes and issues with equipment procurement, among other factors. However, even with these delays, a total of 283 unique[1] students have enrolled in one or more redesigned energy courses (close to 14% of total target for the consortium).

- CMC, RRCC and PCC have completed the construction of three mobile learning labs (MLLs); two are already in use in hybrid courses, and as a lab environment for traditional classroom courses. Two more MLLs will be ready by Fall 2013.

- Given the need for hands-on experience, including climbing poles/towers and manipulating heavy equipment, colleges are concerned about their ability to transform all their certificate and/or degree programs into online or hybrid formats.

Developmental Education Course Redesigns

- Colleges have rapidly moved forward with the redesign of their developmental courses employing strategies (acceleration/compression, mainstreaming, modularization, contextualization) recommended by the State Task Force on Developmental Education.

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[1] We use "unique" for each individual student. "Students served" includes all the classes in which a student is enrolled. Thus, one unique student can be counted more than once if enrolled in multiple courses.

A total of 8,176 unique students enrolled in a redesigned course as compared to 2,395 students projected under the goals of the grant, or 314% of the target for the grant.

Career Coaches

- The role/functions of the career coaches vary from college to college depending on existent student support resources, faculty advisement activities, and the experience and background of the coach. The title "career coach" often does not accurately reflect their functions within a college community.

- Career coaches are engaged in a variety of activities that include: teaching courses on academic skills (i.e. study skills, time management); academic counseling; assessing students' learning styles; career advising; job preparation (i.e. interviews skills, resume writing); referrals to WFC and other community resources; and general supportive counseling (i.e. dealing with homesickness).

- Overall, the career coaches have served approximately 52 percent (n=2076) of those students projected to be served under the TAACCCT grant goals (n=4000). A more conservative estimate projects that the career coaches have served 32 percent (n=1262) of the grant targets, if those students for whom eligibility[2] cannot be determined at this time are not counted.

Data Collection

- DOL's use of calendar quarters is not congruent with the academic semester structure. Data are thus incomplete or redundant when a quarter splits an academic semester, e.g., the first calendar quarter ends in the middle of the spring semester.

- The format and content of the quarterly report have changed over time to make it more user- friendly while providing the data necessary for analysis and reporting. However, regardless of format and questions asked, quarterly reports continue to include incomplete and at times even contradictory responses.

- In order to better capture process and experiential data and understand contextual challenges faced by the colleges, data collection needs to become more qualitative, including non-probability surveys as well as more regular phone interviews with members of consortium project teams.

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[2] "Eligibility" under the TAA grant refers to a student being one or more of the following: TAA eligible, TAA like, unemployed, displaced homemaker, enrolled in a redesigned developmental education or energy course.

END OF YEAR QUALITATIVE ANALYSIS

QUALITATIVE METHODS

The Rutgers team's qualitative evaluation has focused on process issues and the experiences of project team members and participating students at the 15 colleges in the COETC consortium. Methods have included document reviews and content analysis of text answers on the quarterly reports; the Electronic Student Case File (ESCF); surveys, e.g. Precourse Survey; and materials and websites developed by the Colorado DE Task Force, CCCS and/or individual colleges. Phone interviews have been conducted with all the colleges. Onsite interviews were conducted with project leads, faculty involved in the redesign and/or teaching of developmental education and energy courses, instructional designers, data coordinators, senior college administrators, as well as students whenever possible. All interviews have been recorded (with the explicit agreement of the individuals present), and then transcribed. Interviews were then manually reviewed for specific data and common themes. Further content analysis of these interviews will be done using Nvivo or other qualitative software, as will all future interviews.

Rutgers team members have also been engaged as participant observers on conference calls of project leads and coaches, webinars, and while attending forums sponsored by CCCS on the project, such as developmental education redesigns.

Some data have not been consistently provided by colleges, even when they have been requested to complete text explanations on quarterly reports. New questions and issues have also emerged which we want to explore. We will therefore intensify our schedule of interviews with project leads and coaches, as well as faculty and students. We will do this in the form of in-person focus groups at CCCS forums, as well as on more regular conference and individual calls. Whenever possible, these interviews will be recorded and transcribed, and then analyzed using Nvivo. We will also pursue further data collection related to specific topics critical to our understanding of college activities, experience, and impact, such as students' satisfaction with coach interactions/services and the use of early alert systems.

In addition, as the TAACCCT grant moves to its conclusion, we will explore efforts to sustain the momentum begun under the grant as well as the colleges' plans for institutionalizing the career coach position. Rutgers will use focus groups, phone interviews, and other data collection tools to gather this critical information.

ENERGY REDESIGN

One of COETC's principal goals is the development of certificate and degree programs which prepare students for positions with family-sustaining wages and career advancement opportunities in Colorado's growing energy sector: clean energy, wind energy, electrical line procedures, oil and gas, process technology and instrumentation, water quality management, and mining/extractive technologies. With industry input, the seven "energy colleges"[3] have been transforming and expanding their programs/curricula into technology-based formats. The new online and hybrid courses, along with newly constructed mobile learning labs (MLLs) will increase access to training and completion of credentials of TAA-eligible workers throughout Colorado, particularly in the state's most remote areas. Several colleges are offering a series of stackable courses so students who are pursuing a degree can also earn certificates along the way, and certificate students can add additional certificates as their exposure and interest changes. This has already been observed at Aims, where a number of certificate program students have transferred into Aims' degree programs.

Before discussing the activities of the energy colleges, we need to make a separate mention of the program at PCC, which is unique within the COETC consortium of colleges. PCC's energy courses are located in the southwestern region of the state near Durango, over five hours away (by car) from the main PCC campus in Pueblo. The courses are all non-credit and are designed for incumbent and unemployed workers who need to upgrade skills and competencies to meet oil and gas industry needs. Many of the courses are developed on contract with a regional company, and thus are tailored to a client's specific request. These courses are constantly revised to meet changing needs. In addition, PCC offers some more standard courses on mine safety and a course that results in a commercial driver license (CDL). PCC courses use online, hybrid (including the use of a MLL), and classroom formats. While all courses fall under PCC's Division of Economic and Workforce Development, staffing problems, and the semi-autonomous nature of the energy program from the academic side of PCC, have inhibited data collection about the courses and enrolled students. In the months ahead, these data will be collected on a more consistent basis.

At the six other energy colleges, curriculum development has been a joint venture involving teaching faculty, instructional designers, and industry partners. Industry partners have identified critical competencies, new technologies, and changing industry needs. Advisory boards have played an active role in curriculum development and

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[3] Aims Community College (Aims CC), Colorado Mountain College (CMC), Front Range Community College (FRCC), Northeastern Junior College (NJC), Red Rocks Community College (RRCC), Trinidad State Junior College (TSJC), and Pueblo Community College (PCC).

redesigns (see also Advisory Board section). In general, certificate and degree programs prepare students for entry level positions, but some more advanced courses prepare students and incumbent workers to expand their job capacities (RRCC) and/or prepare for more senior, including supervisory positions (Aims).

New Certificate and Degree Programs

Under the TAACCCT grant project, two colleges have developed new certificate and degree programs that respond to industry needs as well as accelerate progress to industry recognized credentials. FRCC is launching both a certificate and an AAS degree in Clean Energy Technologies. Aims is working on a number of new certificates, including one in oil and gas technology.

Transformation of Courses to Online and Hybrid Formats

Each of the seven energy colleges (including PCC) has spent considerable time reviewing its existing curriculum to determine what courses could be transformed to online or hybrid formats, and then has worked hard to transform some or all their courses into these new formats. Instructional designers have played a critical role in this process. Active online learning has been the goal. In the words of CMC's instructional designer, the goal is to establish *communities of inquiry* containing: a teaching presence, a cognitive presence (i.e. students asking questions); and a social presence (i.e. students engage with one another).

As a result of these efforts, across the energy programs, colleges have transformed introductory, theory, and math courses to online formats. Examples of the range of courses transformed at Aims, FRCC, and RRCC include OSHA safety certification, Intro to Energy Technologies, Petroleum Fundamentals, Introduction to Water Quality, Fundamentals of AC/DC, and Statistical Process Control. In addition, TSJC has launched Electrical Principles & Applied Calculations, an online course which prepares Rocky Mountain Line Tech certificate students to sit for National Joint Apprenticeship and Training Committee (NJATC) certification. Since Fall 2012, the colleges have launched a total of 12 different online courses, some with multiple sections.

The physical manipulation of equipment and strenuous physical activity remain fundamental to most energy sector jobs. As a result, many colleges are finding hybrid formats – which integrate online technology and in-class pedagogy at a brick and mortar lab on campus or a mobile learning lab – to work better than a purely online format. Since Spring 2013, the colleges have launched a total of 14 different hybrid courses, including some with multiple sections. Some colleges have used the "flipped classroom

model" for their redesigned hybrid courses, meaning students learn course content outside of the classroom and use in-class time to apply what they have learned and do the "*hands-on meaty stuff*" training. However, there does not seem to be a standard for the frequency and the amount of time a student must be in class, e.g. weekly class meetings or several intensive several sessions over the course of the semester. Rutgers will be collecting data on the ratio of class to online time for hybrid courses, as well as the effects of different ratios on student learning and retention.

While many faculty are excited about newly designed online and hybrid formats, faculty and project leads have also raised significant concerns about these courses and the push to convert more courses and programs into online or hybrid formats. Students have also expressed their desire for hands-on training.

Faculty from TSJC and NJC both expressed concern about the critical experiential aspects of their programs. For example, they have had students in their classes ready to do the work, until they discover they are afraid of heights and cannot climb an electrical pole or a mock water tower considerably shorter than the actual 300-ft towers. Faculty do not want students to waste their time or money beginning a program of study online only to realize they are not able to climb and/or lug equipment. As a result, they are pondering how to embed assessment opportunities for the very students they seek to serve: those who are off-site, and often at a great distance. Is it even possible?

RRCC has been successful in converting its WQM certificate program to a combination of online and hybrid courses, including the use of the mobile learning lab (see below). However, during site visits to other colleges, energy faculty shared with the Rutgers team some of the limitations they see with respect to converting their courses and/or programs to 100% online and/or hybrid formats.

> *And talking to students, who many (sic) of them are going to these industries, because they're don't see themselves as academicians and college and they really like the hands on. That's really thing, I'm not so sure that I would do it and some of them –…were even talking about some of the math courses that seem to be the ones that the colleges are pushing into the online format….*

Faculty spoke about the need for students to have hands-on experience to achieve the competencies and skills required by their respective energy fields. In addition, they say students need real opportunities to develop teamwork skills. Most energy jobs depend on working with, and trusting, one's partner. This critical aspect of training was witnessed at the training yard for the Rocky Mountain Line Teach program, as members

of the Rutgers team watched pairs of students helping one another complete a task on poles 50 or 60 feet above the ground.

RRCC faculty also raised concerns about maintaining the currency of online curricula. They asked, what is the commitment to continue funding an instructional designer and course revisions?

The Rutgers team also conducted interviews with students in energy courses. They revealed excitement about the programs, but also real concerns about online and hybrid formats.

A number of students reported good experiences with online courses. Many of these students liked the self-pacing possible with online courses as well as the ability to do work at any time – a real benefit when balancing school, work, and family. However, some students shared their dislike for online courses. They preferred having an instructor who could answer their questions in real time, which is not possible when an online course is asynchronous. Listening to one of his peers talk about an online math course that this student dropped because it was just too hard without a responsive instructor, a TSJC student simply stated: *"I don't think anybody could get through this program strictly online."* This leads to further questions about online pedagogy, including synchronous (real time) versus asynchronous models and instructor responsiveness, which Rutgers will seek to explore over the next year of the project.

When the Rutgers team asked about hybrid courses, students expressed mixed reactions. Some students liked the blend – citing the possibility of working on their own and also having an instructor who could review the material in class. But other students said they found the hybrid format difficult.

In fact, many students we spoke to emphasized how essential hands-on experience was for them. For some, even the classroom environment was not totally satisfactory in providing the means to learn what they believed they needed to know. One student stated: *"We're all hands on learners so; sitting in the classroom is boring."* Another student sitting in a traditional course classroom commented:

> *More hands-on stuff. Definitely more hands-on stuff. I want – I mean I get like when we look at the books, I get like what the wrench looks like or, you know, I want to put things together. I want to like physically see how, you know, something works, or like the pressure gauges go up, stuff like that. I know that we have stuff in one room that I don't think works, but it would be cool to see some of that stuff actually in action and work. So I'd say more hands-on…*

In the months ahead, the Rutgers team will do more interviews with faculty and students to learn about their experiences. We will study the effects of online, hybrid and/or classroom formats on teaching and learning, as well as on the development of competencies and retention.

Mobile Learning Labs

Mobile Learning Labs (MLLs) are trailers that are specifically designed and constructed to create a training lab environment that can be easily deployed to remote rural locations. MLLs can be self-contained or can be trailers that require a secondary cab to pull them.

Labs can vary in length and in their space capacity for training. Most MLLs contain a variety of instructional equipment such as a LCD projector, DVD/VCR, personal computers, audio systems, and cameras, in addition to subject area equipment. Subject area equipment can be permanently mounted, or can be modular units that can be installed depending on the nature of the training. The MLLs provide students and incumbent workers with hands-on experience manipulating equipment and using a variety of gauges and meters. Students can gain experience diagnosing and responding to simulations of real work site problems. MLLs can be used for hybrid courses to complement online learning or can serve as the labs for a more traditional lab classroom course. Under this grant, faculty, instructional designers, and industry representatives have helped to design and construct the MLLs.

Among the energy colleges, PCC has the most experience using MLLs. Over the past few years PCC has constructed and deployed MLLs for incumbent worker trainings, including those under the Colorado Sector grant. PCC proposed the construction of three additional MLLs under TAA-COETC: mechanical systems, electrical systems, and welding systems. To date, PCC has completed construction of the MLL for welding systems. The other two MLLs will be completed by Summer 2013. The photos below show one of the PCC mobile learning vans.

(Photos by Suzanne Michael for Rutgers SMLR, 2012)

Initially CMC had many problems with the selection and purchase of a suitable trailer, and with the procurement process for equipment. However, CMC's MLL was completed and is being used for one of the college's hybrid courses in process technology. CMC's MLL has modular units for the various integrated technology programs CMC offers (e.g. solar, instrumentation). The flexibility and versatility provided by modular units expands the number and type of hybrid courses (both certificate and degree) offered by the college. CMC's MLL will be used at sites across the college's 12,000-square-mile service area and beyond, as requested.

RRCC constructed a MLL for use in their WQM program. Spring 2013, RRCC piloted the MLL as the lab for several traditional classroom courses, as well as for new hybrid courses given at the campus. These pilots enabled the college to test out the equipment and to orient faculty to the MLL environment. The MLL is being used during the summer of 2013 for four new hybrid courses, and will travel to other COETC colleges.

While excited about the MLL, RRCC is also concerned about the cost-effectiveness of using an MLL, particularly costs for insurance, equipment, and gas. Therefore, RRCC will be tracking the return on investment over the next 12 months. As indicated below, MLL costs are a real concern for other energy colleges. RRCC's cost-benefit analysis will be watched closely. Rutgers will also track RRCC's, PCC's and CMC's experiences with MLLs, including follow up interviews with instructors and students about teaching and training in a MLL.

Aims included an MLL in its original grant proposal program. However, as they began to design the MLL and procure equipment, they decided it was not a cost effective strategy for them, at least in the short term. Currently, Aims is focused on building lab capacity

through the construction or expansion of brick-and-mortar lab facilities. However, Aims continues to be interested in the concept of a MLL. They are in touch with RRCC, and are tracking the fiscal and logistical success of RRCC's mobile vans. Aims will revisit MLLs at a later date.

FRCC had also proposed a MLL for their Clean Energy Technology (CET) program, but like Aims felt it was not realistic or feasible and would not result in significant benefits to individuals around the state. They submitted and received state and federal approval for changes in their SOW and budget. FRCC is now focused on transforming its CET program to online, hybrid, and/or compressed formats.

Student Enrollment

As of the Spring 2013 semester, a total of 283 unique students (count excludes PCC) have been enrolled in one or more redesigned energy courses, as displayed in Figure 1. This is 14% of the total target for the energy colleges (n= 2106). In part this modest number reflects the challenges and delays of redesigning and implementing online and hybrid courses. It is important to note, however, that while there were only 283 unique students, many of these students took one or more courses, for a total enrollment number of 450.
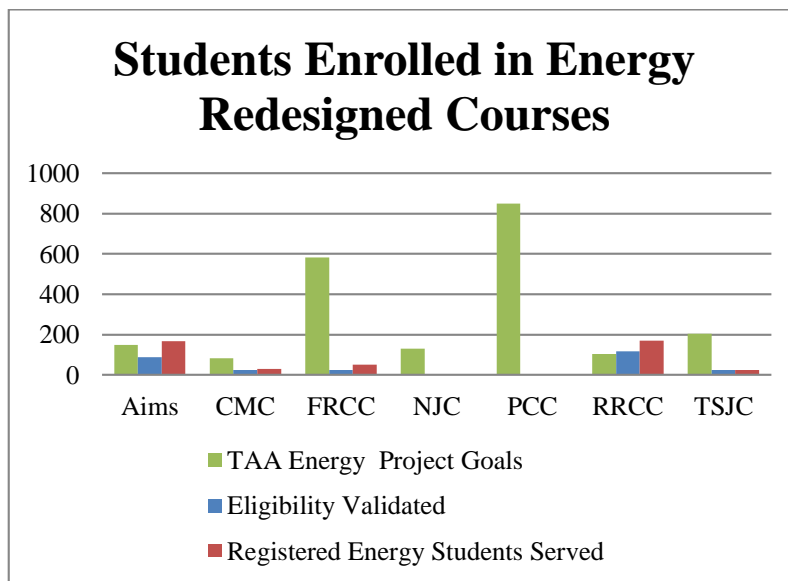

Figure 1. Student enrollment in Energy redesigned courses through Spring 2013. Note: The original table is included as Figure 2 in the Redesigned Course Analysis Report.

A further note about the percent served to date is that the 14% used the total numbers, including 850 students to be served by PCC. If PCC's target is subtracted, the percent of students served to date by the remaining six energy colleges is 22%.

See the "Redesigned Course Outcomes" section for more details about energy courses and an analysis of student enrollments and grades.

Marketing and Recruitment

On site visits, the Rutgers team asked students how they had learned about the program in which they were enrolled. Frequently, students said a family member or friend had told them about the field and/or the program. Many of the TSJC Rocky Mountain Line Tech program students shared that being a line tech was a common job in their families; often, they or a family member/friend had membership in the International Brotherhood of Electrical Workers (IBEW). Some students reported that they were just following the path of their father, uncle, or brother. Other students had heard that the field was growing and/or paid well. A few programs, such as the NJC Wind program and TSJC's AAS Line Tech program, enjoyed national reputations. Students had travelled from Pennsylvania, Washington, and Oregon to participate in these programs. In fact, faculty at NJC said they did not have to do much recruiting because there usually is a waiting list of applicants for their AAS degree program.

In addition to word of mouth, common marketing and recruitment strategies by the colleges include: career coach advising, campus career days, as well as a presence at regional job fairs and energy expos. Colleges also work with local WFCs and industry partners to advertise their programs and recruit new students. Several of the colleges have used industry media to get the word out. For example, TSJC has used *Powerline Magazine* and the web site *Lineman.com* to advertise both its Rocky Mountain certificate program in Colorado Springs, and its AAS degree program based in Trinidad. FRCC and CMC have both done outreach in high schools; CMC is exploring possibilities for concurrent enrollment, in which high school students take college courses to earn certificates or begin an associate's degree.

Although we can identify the types of activities the colleges are using, we do not have data to date on the distribution, efficacy, and cost efficiency of any single strategy or combination of strategies.

Redesigning Energy Courses

A number of energy colleges have worked closely with instructional designers either hired under the grant or already employed by their college. Given the new formats and technologies, faculty have had to re-think how they teach. Energy faculty from CMC and TSJC specifically commented on the assistance and support they have received from their respective instructional designers.

As more energy colleges complete their redesigns and launch their courses, we will track the mechanisms for faculty development and identify best practices.

Advisory Boards

All energy colleges have established an advisory committee or board to provide guidance in the development of their certificates and degree program(s), and to provide regular updates on industry trends and needs. Board meetings include the review of the curriculum, the identification of industry competencies, and decisions about metrics and standards for assessment. Members explain changing job prospects in their respective fields. For example, both power and water utilities are now facing a large pool of retirements, opening up many new job opportunities. Board members also market the certificate or degree programs and help recruit students, at times from their own companies.

The advisory boards are composed of members of the industry, WFCs, public utilities (i.e. power authority), as well as college faculty and administrators and TAA project staff. Most boards appear to be advisory in nature, but some have established the power to set policy and approve change to the curriculum. For example, Aims' advisory board also functions as the review board for their program in oil and gas technologies.

> *We wanted to make some changes to some classes we were offering, and we had to get approval from the advisory committee. So it's not so much that they provide input, but they really sort of drive the program. We make recommendations to the committee, and then they approve or not.*

Companies represented by advisory board members, as well as other industry partners, have also created an informational network that facilitates the creation of internships and keeps the colleges informed about employment opportunities.

In interviews with researchers from Rutgers, colleges were positive about the assistance and support they have received from their industry partners. To learn more about these

industry partnerships, over the next year of the project, Rutgers researchers will request the schedules and agendas of the industry partner meeting at each energy college, and will begin to interview industry representatives. This data collection will focus on gathering promising practices in industry-college collaborations. We will also seek out representatives from the different industries to pull together their perspectives about, and reactions to, the transformation of energy programs to online and hybrid formats. Additionally, we will try to track the number of energy program graduates hired by the college's energy partners, as well as various industries' satisfaction with the performance of recent graduates.

Meeting the Challenge of Changing Technology

Faculty members raised a number of issues that relate to long term sustainability of redesigned online and hybrid courses as well as training students for fields with constantly changing technology. Some of the colleges' faculties have begun to think about the need to continually update online content to reflect changing technology and practices. They wonder what ongoing resources, such as grant or institutional funds, will support this. Without specifically earmarked funding for content updates, how will this be accomplished?

NJC instructors raised concerns about their access to changing wind technology. They observed that wind turbine manufacturers tend to be very secretive about the technology/mechanics/
software programs for their turbines. Without access to the latest equipment or software, faculty find it difficult to purchase and/or to build models and programs to simulate the new equipment. They have tried to remain in touch with many of their graduates, and have been able to share some information, but they worry that students may graduate into a field without sufficient training for the newest turbines.

Access to new technology may also be an issue for other colleges training students in rapidly changing high tech fields. It will be important over the next few months of the project to collect this information from faculty and to facilitate the colleges' sharing of strategies to respond to these challenges.

Promising Practices and Innovations

Some promising practices identified to date:

- Online application processes reduce the chance of lost paper work. Completion of the application requires some degree of computer literacy, and thus also serves as an initial screen for students (TSJC).

- Use of rodeos for graduates of the TSJC line tech programs celebrate students' achievements while giving prospective employers the chance to observe student performance and to immediately follow up with on-site interviews.

- The use of modular units in the design and construction of MLLs increases the utility of a single MLL across different courses and fields (CMC).

- The piloting of MLLs at a campus site helps to orient faculty to its use before they move to a distant location (RRCC). It also allows students to experience a new learning environment and give feedback so that revisions can be made in pedagogy and/or course content.

- The use of stackable courses enables students to accumulate certificates on their way to a degree, or to expand their skill sets and credentials over time (Aims).

DEVELOPMENTAL EDUCATION

The Colorado Community College system is currently working to redesign English, Reading, and Math curricula and their pathways. The redesigns have been developed under the guidance of the Colorado Developmental Education Task Force (DETF), which was charged to review existing developmental education at system colleges and make recommendations for change. The goals of the redesigns include the reduction in the number of courses and credits required within the developmental sequence, and a reduction in the time it takes for students to progress from developmental education into college level courses. The timetable for the completion of redesigns has been set for Fall 2014. Across the consortium, most colleges have made good progress in moving from recommendations to implementation of redesigned courses, including compression/acceleration, modularization, and contextualization. Many of the redesigned courses have been offered with multiple sections. See the "Master List of Redesigned Courses" for data on the developmental courses launched at each of the 15 colleges in the consortium and the modality used.

While there is considerable variation by college, as a group, the colleges have served 314% of the COETC target for students to be served through redesigned developmental education (n= 8,176 unique students). The graph below reflects the numbers of students served inclusive of the Spring 2013 semester. The modalities used (as well as course completion rates and student grades) can be found in the "Master Redesigned Course" document. Over the next year, Rutgers will continue to track college-specific data and will add the comparative cohort analysis.
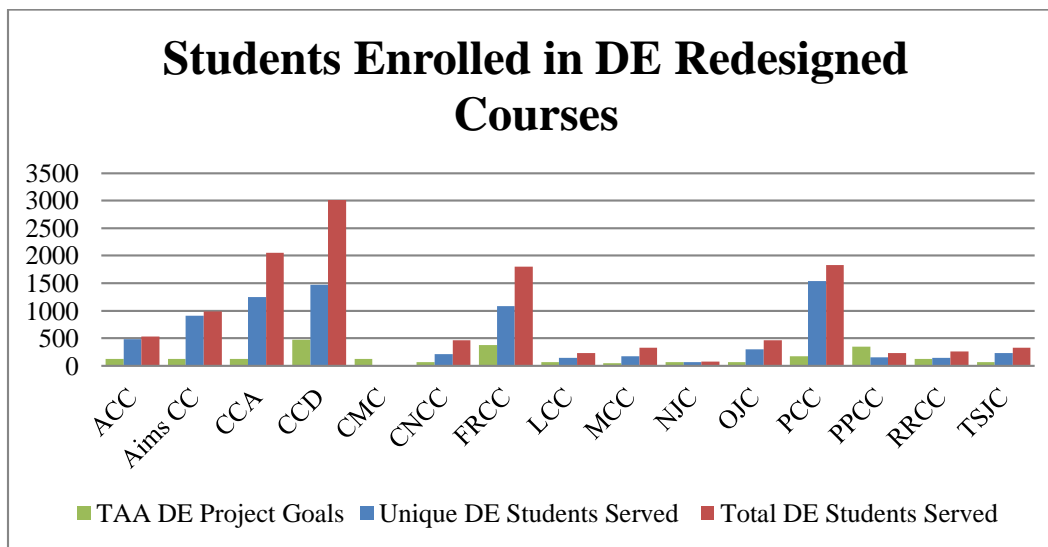

Figure 2. (Abstracted from SMLR's Redesigned Course Outcomes, 7/13)

Over the course of the grant, colleges have had the opportunity to test out various redesign strategies and tactics, teaching pedagogies, and delivery methods, all of which have helped to inform the state's overall goal – the redesign of developmental education to improve student success rates. Colleges have transformed developmental coursework using mainstreaming, acceleration, contextualization, modularization, and technology options. The rest of this section provides information on faculty and student observations about the piloting of various redesign strategies and tools at their respective schools.

Developmental Redesign and Faculty

Faculty participation in the redesign of developmental education occurred in three ways: 1) Faculty could participate on the State Developmental Education Taskforce and/or attend meetings; 2) faculty could get and give information to the developmental education taskforce through the faculty representatives from their college; and 3) faculty could attend information and training sessions on the developmental education redesign led by CCCS. These training sessions were held at colleges throughout the state.

Faculty and administrators who attended one or more meetings of the State Task Force sessions were generally positive about their experiences, especially regarding information sharing about teaching and acceleration strategies (e.g., compression, modularization and contextualization). These faculty were also positive about the process of redesigning the developmental education pathway as well as the final result.

Among the benefits faculty identified when describing their participation in DETF meetings was the forum it provided to discuss difficult topics such as what to call pre-college level courses (e.g. remedial or developmental) and whether or not the students served played a role in this. As one participant from PPCC stated:

> *The difference between remediation and developmental – that's a conversation that I don't think has been happening for a long time, but really started happening because of the efforts of the Task Force, which I think is a good conversation.*

In addition to the opportunity to share and start conversations about important issues, faculty members commented on the value of the taskforce as an opportunity to learn new methods of teaching developmental education, to discuss learning theory, and to see models and examples in action. A faculty member at CNCC spoke about how the educational aspects of the taskforce meetings provided help towards the transition.

> *[We] got a lot of help at the task force meetings because they showed examples of how to do it and what to do….[like we] could in fact teach reading and teach writing in the same class.*

Many of the faculty members with whom the Rutgers team spoke were involved at some level of the redesign process, whether it was within the grant or on the taskforce. A few did share that others within their college were more uncomfortable with the redesign than they were. As one representative from CCD stated:

> *You know everybody kind of – Casey presented yesterday and everybody was like, you know, on guard again. And I said, no, it's going to be better. It's going to be easier. But I also am in a unique position. When I look at impact, I don't just look at instructional impact. I look at college-wide impact and student impact and what an impact it is to have two different systems that a student's trying to navigate. It's easier if it's just packaged together as one.*

In its conversations with faculty who were not active participants in the State Developmental Education Taskforce, the Rutgers team heard a good deal of excitement, as well as questions and reservations about the recommendations.

Some faculty remarked that they were pleased that the recommendations allowed flexibility and that each college could make adaptations. Others discussed how there was a need for change and were excited about making new pathways work for their students. Similar comments were heard by the Rutgers team at a recent CCCS forum to discuss the redesigns (see Faculty Development below).

Despite the many positive comments about the redesign, there were also faculty members who expressed questions and concerns about the process and what it would mean for them and their students. A few talked about the difficulties involved in getting the large number of adjuncts at some schools up to date and trained. Job security was also brought up as a concern, especially among reading faculty concerned about the redesign that combined Reading and English courses. At one of the training workshops, in a Reading/English breakout session, one faculty member worried that the English faculty would take over all of the integrated courses. He/she asked, in the new scenario, will reading teachers just become "tutor(s)?"

Despite support for the ideas behind the redesigns, a common concern expressed to the Rutgers team was that there was not sufficient time to prepare for the launch of these redesigned courses. A number of faculty members also expressed their concerns about how the new structure, including soft landings and accelerated courses, would affect students.

> *We're not worried about the ones that were engaged. We're not really worried about the ones that never were engaged. We can figure out a way to pick them up and get them engaged. It's the middle ground people that are – you can tell there's something there, they're trying, but under the new model, they're just probably gonna (sic) end up with an F and we're gonna (sic) have to figure out a way to encourage them to stick with it even though they got a failure.*

Another concern that emerged was about student choices, especially in the Math pathway. Faculty discussed the difficulty students might have in deciding whether or not to take the STEM pathway in Math right away, and what to do if a student did not take the STEM pathway and decided later that he/she would like to pursue a degree in a STEM field. These conversations affirmed the importance of good advising and the need to support and continue beyond the resources of the TAACCCT grant, when advising developmental education students.

Finally, a common concern raised by faculty had to deal with the removal of the lowest level courses – the 030 classes. Faculty members were concerned about the large numbers of students testing at this level. A faculty member from CNCC remarked that "60 percent" of incoming students are testing in at this level and worried about the lack of financial aid, and *"what to do"* with these students. This problem was later resolved by the DETF through the creation of "soft landings". In the months ahead, all the colleges will be establishing, within the parameters set by DETF, their own soft landing approach. Beginning Fall 2013, Rutgers will look at the colleges' soft landing models and experiences, as well as pricing.

Faculty Development

In order to prepare faculty for the state redesign, both CCCS and the colleges are holding training and information sessions for faculty. Throughout the year, system representatives visited colleges to talk about the redesign process. Additionally, numerous information sessions on the redesign were held by CCCS at different colleges throughout the state, as well as at the annual system meeting. For example, CCCS held a very well attended session on the redesign in mid-April 2013. This event provided faculty from all colleges involved in the redesign with an opportunity to learn about what the redesign would mean in terms of curriculum development, and to work together to think about lessons and activities.

In addition to these conferences, CCCS has used webinars with project teams (and also their website www.cccs.edu) to share information about the redesign with the colleges and the general public. In interviews and discussions, faculty have commented on both the breadth of information coming from the system and the availability and willingness of system staff to help them understand and deal with these changes.

In addition to these system strategies, individual colleges report that they have already held, or plan to hold, training workshops for full time and part time faculty. These workshops focus on new course formats, with attention to both teaching and assessment strategies (ACC). Many of these workshops will occur over the summer and throughout the fall semester. We will examine these development activities in terms of "*the what and the how*" and will collect faculty feedback. We will also look at the time and the resources CCCS has put towards training faculty. We have, however, already been able to identify some interesting and promising practices around faculty development from our interviews.

CNCC has used a mentorship model for full time and part time faculty teaching redesigned courses. This model mirrors the paradigm of classroom instruction in which faculty are available to mentor students as they progress through course modules. At CNCC, two senior DE faculty members meet with novice (in terms of the redesigns) faculty and review the goals, content, and assessment mechanisms for the new course. While faculty members retain instructional freedom over the course of the semester, there are meetings to discuss concerns and celebrate successes. All students keep portfolios to insure course consistency and facilitate cross-sectional assessments. TAACCCT has provided the funding for summer faculty salaries, facilitating the development of new curricula and course materials.

At a COETC project team meeting which a member of the Rutgers team attended, OJC's Math faculty discussed the distribution of courses between full and part time faculty. Historically, part time faculty teach developmental and lower level math courses, while full time faculty teach higher level math (e.g., trigonometry, etc.). Yet, lower level courses are the foundation for all others, and development education students often require more access to and mentoring from faculty. Would it therefore make more sense to have full time (often more experienced) faculty teach developmental education courses? While this discussion was not about "faculty development" per se, it does relate to the use of faculty – an important conversation to have as the colleges make significant changes in both what and how they teach developmental education.

In the months ahead, we will track the division between full and part time faculty and identify specific challenges for both. We will also track the ways colleges integrate new part time faculty into the teaching of DE courses.

PPCC's faculty development goals are course-specific as well as contextual – to strengthen the college's culture of engagement and success, especially in regards to adult learners. Using institutional resources and the stimulus of the State Task Force and the TAA grant, PPCC is optimizing the moment: "*taking opportunities to make a cultural shift throughout our entire institution and not just from the faculty perspective*." For example, in Fall 2012, PPCC invited a team from University of Texas's Center for Community College Student Engagement (CCCSE) to campus. CCCSE presented a forum, "Students Speak Are We Listening." And in Fall 2013, PPCC has scheduled the educational psychologists Dr. Raymond Wlodkowski and Margery Ginsberg to present on adult learning theories, and how to implement accelerated courses while educating the whole student. While the PPCC administration mandates that specific staff/faculty attend these forums, all PPCC staff/faculty are invited to attend.

PPCC's VP for Instruction noted that after last fall's lectures/workshops, faculty began to have informal discussions about the content, including lunch table conversations. She believes that these conversations are important as PPCC attempts to change "*our thinking about adult learning and the culture of teaching DE.*" We will continue to collect data on faculty development activities across the TAA grant consortium and track best practices.

Faculty Observations on TAACCCT DE Redesign Strategies

In addition to the above comments and observations by faculty members, the Rutgers team heard much positive feedback from faculty about the TAACCCT grant and the redesigns. The grant has provided a significant opportunity to try out different methods and teaching pedagogies in developmental education classes; faculty are pleased about the resources the grant has provided to them. For example, one faculty member from FRCC talked to the Rutgers' team about having the opportunity to try out a new model of teaching that she had been interested in. This was a common theme in our interviews.

> *I believe in the emporium model and the benefits for students so much that a student can just take and pay for the content that they need; that they're not required to sit through and pay for a 15-week class that's going at a predetermined pace, that they're able to just pay for and take the content that they need. I've really been onboard with this model for probably three years now, three and a half years. So just having the TAA grant funds available, so that we can get over that hurdle of not being able to afford to try something like that has been huge for us.*

Others talked about the grant providing critical relief in terms of time and money, in some cases essential to make the vast changes needed in developmental education. As one faculty member from CNCC stated:

> *[The] TAA grant has allowed time for redesigns and this makes a big difference at small campus – paying for summer you can't underestimate at a tiny college like ours, what it means to actually be given the money to pay my faculty to be here for a portion of the summer to get work done without having to tag it on to the normal…*

For the consortium colleges in Colorado, the dovetailing of the TAACCCT grant with the work of the DETF has been a helpful integration of resources and commitments.

Faculty Views on Students and DE Redesign

In discussing the redesign, it was not surprising that faculty members spoke a lot about the benefits for their students. Faculty discussed savings in time and money as well as

improving students' ability to reach their goals by getting them to college level course work. In our interviews, we clearly heard that improving the experience of the students and their mastery of the material were the most important aspects of the redesign.

As has been mentioned, over the course of the grant colleges have tried out different models of improving developmental education, and are already seeing important changes at their schools. Faculty and other project members told us about the visible difference between redesigned developmental education classes and non-redesigned courses. As one career coach told us,

> *It was very interesting observing some of the classes that were re-designed vs. non-re-designed. The kids in the re-design were excited to be there. [They] seemed to have more confidence. [They] knew the other students in the class. [They] seemed more excited to learn, and were excited about the subject. The non-re-designed class was very traditional. The kids were not saying much, they just came in, sat down; the teacher was just teaching and no happy faces.*

A number of colleges have been working on redesign for some time through other grants or through earlier projects. These colleges talked about their positive experiences with redesign curriculum, and what their data showed. PPCC faculty commented on the redesigns created under the TAACCCT grant. They observed that students going through their TAA redesigned developmental education classes were far better prepared for college level courses than those from other DE classes.

> *It's because they've had to do so much on their own to struggle and read through those things, instead of, oh, here's your assignment….They have to read the directions. They actually have to sit in there and learn it. …You're giving them tools that they wouldn't necessarily get if they were sitting in [a non-redesigned] class. …It is active learning.*

Better preparedness for college-level material was also discussed by faculty at FRCC, CCD, and CCA, among other colleges.

Faculty also discussed the difficulty their students had in navigating college and the developmental education landscape. They were pleased that the changes being made by the DETF and in the colleges would be easier for students to navigate.

> *What I really appreciate is that this is a system initiative and that changes at the system level can be made to make this more automatic, to make a system that students can navigate, not necessarily independently, since we spend so much time with them, but a little bit easier.*

The redesign experiments conducted for the grant are now over, and colleges are beginning to move forward with implementing the state redesign. We will continue to collect information as this work continues.

Challenges

- Training faculty, especially the large number of adjuncts, will be a challenge that many schools will face over the next couple of months.

- Some faculty have expressed concerns about the fast pace of the coursework in DE due to the redesign. Schools will have to manage their soft landings and placement in ways so that the students they place in DE will be ready.

Promising Practices and Innovations

- The Development Education Taskforce provided a good forum for faculty engagement and buy-in around developmental education redesign. It also provided an opportunity for important discussions and learning.

- CCCS has done a good job to date engaging and informing faculty through presentations, workshops, and the web site.

THE CAREER COACH

Functions and Roles of the Coach

The career coach position was developed to facilitate students' access to careers in the energy sector and to assist students with any non-academic issue that inhibits their progress or ability to successfully complete a course of study. The coach was conceived as a counselor who would engage in career counseling and referrals, academic advising as it related to career choices, and counseling and referrals for a wide range of social and financial support services. The decision to use the term "career coaches" suggests the emphasis is on career counseling – supporting students already in energy programs, advising students about energy programs and other fields, and helping students obtain the needed academic foundation to pursue a chosen career. While many coaches have provided some career related counseling, including referring students to workforce centers, there appears to be some disconnect between the naming of the position and the actual work the coaches are doing. In the sections below we discuss the range of coach activities and some of their challenges.

Energy programs functions. One of the main activities of the career coach is to advise students about the new online and hybrid energy programs funded by the TAACCCT grant, and to facilitate student enrollment in these programs. The development and implementation of hybrid and online formats, however, has been much slower than anticipated. Energy programs have transformed into online and hybrid formats for some courses, but not whole programs, with the exception this spring of RRCC's Water Quality Management certificate program. In addition, several of the planned mobile learning labs designed to increase training opportunities in more remote areas, are only now – Summer 2013 – ready for use. As a result, career coaches have been unable to promote remote learning opportunities for students attending their home colleges. Further, coaches have observed that most students are unable to relocate to participate in even a hybrid program, and so there have been few inter-college referrals and no enrollments to date. One example is a student from OJC who was interested in solar energy. He was connected to CMC's career coach and the solar energy instructor. The instructor stated his willingness to reduce the in-class/lab time required for the hybrid course and to help the student find housing. The student, however, was unable to fit the course into his OJC schedule and never registered for it.

Two coaches, one at LCC and one at OJC, raised the issue that some students are interested in pursuing a degree or certificate in an energy field, but in their home region there are no energy jobs. For example, a number of wind towers have been built in southeast Colorado. However, the infrastructure to transfer the energy to the main electric trunk lines for the Front Range does not exist. As a result, few wind tech jobs currently exist.

Separate from the coaches' recruitment efforts for energy programs at other colleges is their engagement with students in the seven TAACCCT funded energy programs. For the moment at least, these students have decided on their career paths. Coaches therefore do very limited career or academic advising. In fact, at most colleges, energy students are assigned to program faculty for any needed advising. A few coaches even reported some "push back" from members of their colleges' energy faculty. For example, at RRCC a faculty adviser told the coach: *if you're not in the industry and you've never done water quality, you can't advise students on classes,"* or provide career guidance, or help with internships. At this college, as well as at other energy colleges, coaches provide assistance with resumes, interview skills, and non-academic issues. CMC's and TSJC's career coaches are the exception to the above. They have been actively engaged with energy students, providing a range of career related and support services.

PCC has been an outlier among the energy colleges. PCC's energy training is located in Durango and southwestern Colorado. The target population is incumbent workers, as well as unemployed individuals interested in gas and oil mining. The trainings are time-limited and do not result in a degree or program certificate. The two half time career coaches are located at the main campus in Pueblo, and only work with students enrolled at that campus.

Developmental Education – Academic Functions. Community colleges provide a variety of student support services to help students build their academic skills and increase their use of informational and online technology. These services include computer labs, peer mentors and tutors, and academic advisors. Historically, faculty have provided academic advice; the student's assignment was based on his/her choice of a major. Other non-faculty advisors are also available to assist students in the selection of required courses. These advisors often see the student in the thick of registration; they spend little time with the student, focusing on his/her schedule and little else[4,5]

Research has identified that academic goals, motivation, "time management skills, study skills, and study habits (taking notes, meeting deadlines, using information resources)" are factors that contribute to student retention and achievement.[6] These factors have been addressed at some colleges through the Triple A and Student Success Programs. A number of career coaches are teaching these courses (PCC, ACC, LCC, and OJC). The coach at CCA teaches DE English courses. Teaching coaches state that the teacher/student relationship has fostered the development of their caseloads. They have observed that their work with current and former students is far more intensive than their work with most referred students. CCA's coach calls her work with referred students "*light touch advising*."

Coaches at OJC and CMC have both engaged students by assessing the student's learning and social styles, and suggesting strategies that best fit the student's identified style. Students and their instructors report that these assessments and interventions have made a positive difference.

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[4] Cuseo, J. (2005). Decided, Undecided and In Transition: Implications for Academic Advisements, Career Counseling and Student Retention. In Robert S. Feldman (ed). *Improving the First Year of College: Research and Practice.* Lawrence Erlbaum Associates: Mahwah, N.J.

[5] Cuseo, J. (2003) Academic Advisement and Student Retention: Empirical Connections and Systemic Interventions." Posting to the website of The National Academic Advising Association. http://www.nacada.ksu.edu/Clearinghouse

[6] Lotkowski, V. A., Robbins, S. B., & Noeth, R. J. (2004). The role of academic and non-academic factors in improving college retention: ACT Policy Report. Iowa City, IA: ACT

All coaches have done some career advisements and job preparation, but the extent has varied considerably, given their caseloads, other services at the college, and the background of the individual coach.

As noted above, RRCC's coach and several other coaches have worked with students on resume writing and interviewing skills. A number of coaches have referred students to workforce centers for assistance with jobs and/or finances (see below). But as the coach from RRCC commented, energy students and most developmental education students are at a very *"different part(s) of their life."* Developmental education students,

> *…are not really ready to make a resume. They're at a different phase. They need (sic) different needs. And it's – expressing (sic) to them what we can help with has been more challenging, having everyone get their brain wrapped around.*

Coaches have also provided counseling and referrals to help students deal with non-academic issues such as finances, balancing home, work and school demands, medical issues, and domestic violence, as well as with transportation, housing, and childcare. The coach at FRCC reflected that much of her coaching is on an emergency basis.

> *Somebody comes in and says this happened. I had a student pop in yesterday and say my friend died, I'm not able to go to class and what do I do? I've had students who have had illnesses and need to do an appeal, so those kinds of things.*

At the colleges with resident students (LCC, OJC, CNCC, NJC), coaches have worked with students who are experiencing homesickness.

Many coaches see students only once. Fostering a relationship takes time, but even in a single visit it is possible to connect with a student. Yet, this requires both training and experience. Some coaches worry that they are giving too much advice. "*I tell them what to do and I don't want to do that.*" This coach recognized what she was doing, but was having difficulty stepping back. She could articulate what she wanted to do: give students information and support, and facilitate their problem solving and decision making.

The Electronic Student Case File (ESCF), created by Rutgers as a standard instrument to capture and track information about coach-student interactions, has not been actively maintained by most of the coaches across the consortium (See Data Collection below). As a result, Rutgers does not have accurate data on the focus of coach-student interactions, student goals, referrals, or outcomes. These data are critical to understand the nature of

student challenges and the impact of coach services. As discussed below, we will pursue additional strategies to capture this information.

Recruitment

Under the TAACCCT grant, coaches were to work with specific groups of students including students who are TAA eligible/like, students in redesigned energy courses, and students in redesigned developmental education courses. Coaches, however, have also worked with students who do not fit under any of the eligibility criteria. Using registration numbers from the Electronic Student Case Files (as of May 23, 2013), a total of 2,076 unique students were seen by the coaches across the consortium. Thus, while at first glance it appears that coaches have met 52% of the grant target of 4,000, in fact, to date we can only confirm that the coaches have served 32% of the target for the consortium. There is, however, great variation in the size of caseload and percent eligible at each of the colleges, as seen in Figure 3 below. Details of coach caseloads at each of the colleges can be found in SMLR's "Career Coach Caseload Analysis."

STUDENTS REGISTERED BY A CAREER COACH				
	Energy Colleges Registered Students	DE Only Colleges Registered Students	Total Registered	% of Registered Students
TAA eligible/like (May include students also in redesigned courses)	206	262	468	23%
DE Course	108	607	715	34%
Energy Course	79		79	4%
Unknown eligibility	158	656	814	39%
Total	551	1525	2076	100%
Grant Targets N & %			4000	52%

Table 1. Students served by career coaches as documented through May 23, 2013.
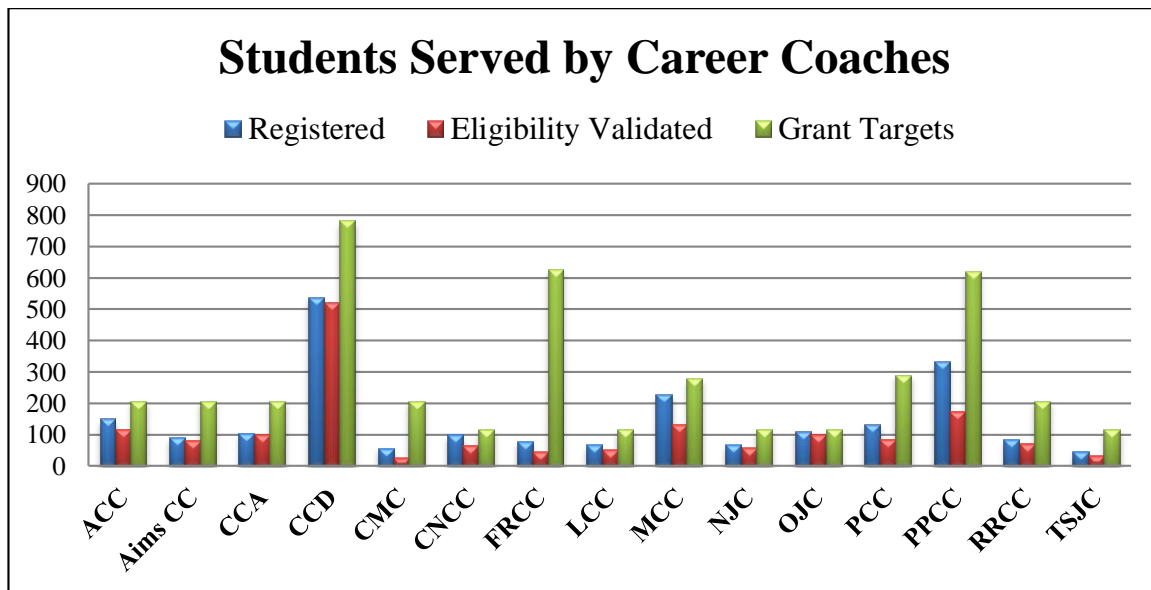
Students Served by Career Coaches

Fig. 3 Students served by career coaches as documented through May 23, 2013
(Abstracted from SMLR's, Career Coach Caseload Analysis. 7/13)

CCA appears to be the only college mandating a student/career coach meeting. Coaches at the other colleges do outreach and recruitment through presentations at orientation activities and/or in DE and energy courses. At some colleges, the Early Alert system identifies the coach as a resource or the advisor of choice. FRCC's coach introduces herself to the college's energy students by reviewing the files of the incoming class and sending students emails inviting them to meet with her.

Coaches have also "recruited" students by sitting in their college's testing center (ACC); "hanging out" in student labs (TSJC, ACC), attending DE classes (MCC), and/or, as described above, from the courses they are teaching. NJC's career coach works part time as a volleyball coach. In this position she frequently interacts with students and has become known as both accessible and helpful. At several colleges, an assignment for the Triple A or DE English classes requires students to interview the coach and write it up (RRCC, OJC). This assignment connects the student to their college's career coach, and acts as a "backdoor" mandate for contact.

Across the consortium, faculty and staff from other student support services also refer students to coaches. At this time, however, there are insufficient data to compare and contrast the efficacy of any of the current recruitment strategies.

Sustainability

Although the end of the grant period is more than 15 months away, issues of sustainability have been raised by the colleges and by the coaches themselves. In general, consortium colleges have accepted, if not welcomed, the arrival of the grant-funded career coach to help address student needs. From the beginning, Aims structured the coach position so that the coach would "meet her clientele and her case management goals, and continue to provide services to the broader audience within the campus."

LCC and OJC have stated their intention to employ their coaches post-grant and expand their responsibilities as counselors. PPCC, which recently restructured student services into "Student Success and Retention Services" and enrollment services, wants to separate the functions of career planning from advising services. They are not certain about the role the current coach will play in this new configuration, but they want to keep her at PPCC.

CCA very much wants to keep their coach, and requested the evaluation team develop a cost-benefit analysis on the coach's impact to support efforts to secure on-going funding for the position.

At other colleges, the functional role ambiguity, existing faculty advisements of students, and/or concerns about funding have raised questions about the need for and feasibility of the coach position. For example, PCC does not expect to continue the coach position.

Over the next few months, we will gather information about plans to continue, expand, or eliminate the coach position based on student needs, existing services, and available funding.

General Observations

Well into the second year of the grant, there remains a fair amount of confusion as to the role and function of the coaches on the part of the coaches, faculty, and college administration. In part, this is a reflection of the students to be served – energy and/or students in redesigned courses – as well as the other pre-existing student support resources at the college. The confusion also reflects the coaches' inability to refer to energy programs due to delays in their inauguration.

One coach expressed what has been echoed in various ways by at least 40% of the other coaches.

The biggest challenge is just figuring out what I'm supposed to do. Honestly, where I really fit, how I fit into (my) college and the grant at the same time.

At this juncture, lacking good data from the ESCF makes it difficult to contrast the coaches' perceptions with what they actually have accomplished over the course of the grant. Changes in data collection will help answer the question "*What have I done*?" and will allow the identification of patterns of role and service integration across the consortium. Planned student evaluations of their experiences with a coach will also help answer this question.

DATA COLLECTION ISSUES

In its reporting documents, the US Department of Labor (DOL) asks a series of questions about the impact of interventions instituted under the TAACCCT-COETC project. In addition to DOL's questions, there are project outcome questions which reflect the specific interests of CCCS, and those of interest to individual colleges. To respond to these overlapping constituencies, the evaluation designed by Rutgers focuses on both outcome and process, and includes quantitative and qualitative data collection and analysis. In constructing and implementing the design, the Rutgers team has sought as much as possible to anticipate the challenges of collecting data for a large multi-site, multi-year project. Rutgers developed standard ways for data to be collected, provided structures for timely updates, and tried to facilitate the coordination of data collection among a wide range of individuals. Finally, it has tried to be transparent as to what, when, and why data is being collected. While there have been successes with data collection, this section discusses some of the challenges experienced by both the COETC consortium colleges as well as by the Rutgers evaluation team. It also identifies responses to these cited challenges, what has been implemented to date, and what is still planned.

The raison d'être for evaluation provides the foundation for response. However, while project teams may understand the overall goals of a project, the how, what, and why of evaluation are not always linked in the minds of the people on the ground. We believe this has taken place to some degree over the last 18 months of the COETC. Evaluation goals and instruments were explained at various points via documents, forums, and emails. Yet there still seemed to be some confusion about what is needed and why it is important to collect on a timely basis.

The two main instruments to collect data from the projects are the quarterly report and the Electronic Student Case File (ESCF).

Quarterly Reports

The academic calendar based on fall, spring, and summer semesters is not congruent with a DOL calendar division of the year into quarters. This has presented reporting problems on what to include when a quarter divides up a semester, for example, when the timeframe for the first quarter report includes only half of the spring term.

Strategy: CCCS and the Rutgers team have told colleges to include data to date. If there is repetition the next quarter, that is okay.

The quarterly report initially only contained questions asked by the DOL, but over time additional questions have been added and the format has changed from a Word document, to an Excel document, and then to its current form as a Qualtrics document. Most technical issues related to the Qualtrics format have now been resolved.

Last fall, colleges expressed concern about the quarterly reports character limitations for text responses (50 characters max.). In response to feedback from the colleges, a space allowing 150 further characters was added to some questions, and unlimited space was provided for other questions. Independent of options for narrative, there has been great variation in the colleges' responses, from comprehensive to minimal. There also have been problems with the colleges' interpretation of what is being asked. For example, the word "program" has been used instead of "sections" for redesigned courses. This confused some project leads. There has also been confusion about "this quarter" versus cumulative numbers. Despite some attempts to clarify through online explanatory notes and the beginning of a glossary, quarterly reports continue to include incomplete and at times even contradictory responses.

Strategy: The evaluation team will be working with CCCS to develop a glossary of terms and explanations for each question to facilitate more comprehensive responses and better levels and rates of response.

Questions that ask for text responses are often not completed, diminishing access to important information about what the colleges have accomplished, but also about the challenges the projects have experienced.

Strategy: Recognizing the difficulties of condensing the range of activities, achievements, and challenges experienced by a college into brief paragraphs, the Rutgers team will schedule semi-annual telephone interviews with key actors to gather additional process data as well as more contextual and experiential data.

Colleges have been asked about new certificate and degree programs they have launched. Many of these programs take months to develop and then move through the college and state process of approval. The quarterly report asks only if a new program has been developed, but does not clarify if it has been instituted, nor what the new program is. Some colleges have been explicit and noted the title of the new program, but many have not.

Strategy: Put a follow-up into place or amend the quarterly report to provide further information on the status of new certificate and degree programs, and the title of all new certificate and degree programs.

We also note that there are questions in the quarterly report that ask for a "yes" or "no" answer, but then there are no follow up questions to elaborate on the activity or outcome. For example, there is a question (#101) that asks if notices about available internships have been posted at a college. A few colleges have answered "yes", but there is no subsequent question as to the number of students who actually participated in an internship, or what their experiences was (including subsequent job offers). There is also no place for colleges to note problems with internships, so problems such as those faced by NJC were only learned about through other qualitative data collection methods like the college site visit.[7]

Strategy: We will survey the colleges about their experiences with internships and follow up with phone interviews of both students and faculty.

Electronic Student Case File (ESCF)

This instrument was developed to capture the work of the career coaches: who they serve, the issues presented by students, the interventions used (including referrals within and without the college community), and the impact of their work with students. The goal was to create an inclusive and standardized document, and to eliminate duplicative record keeping. The plan was to pre-populate the ESCF by crosswalking academic and demographic data from Banner (the system colleges and Aims), and from CMC.

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[7] NJC faculty shared that there are now very few internship slots and the ones that exist are extremely competitive. As a result, few students have access to an internship between their first and second years at NJC. The wind program has therefore just recently eliminated internships as a requirement for their AAS degree program. Internships – both paid and unpaid – have been an entry to employment, so the absence can make a difference in respect to services for graduates. Identification of cross-sector experiences, such as the increasing reluctance of companies to accept interns because of concerns about liability, can be the first step towards addressing these issues within advisory meetings and/or through legislative processes.

However, the needed data was never crosswalked. A number of factors contributed to this failure. There were technical issues with Banner and the other data system, as well as insufficient staff resources. There were also problems of coordination/communication between the evaluation team, CCCS's IT staff, and the individual colleges. The absence of data created confusion among the career coaches. Some coaches thought they had to enter the data and thus take time in their meetings with students to ask multiple questions. These coaches worried their interviews would be transformed into a form completion exercise. Some decided they would wait until the ESCF was pre-populated before entering their own data into it.

Strategy: To clarify expectations, emails were sent to the coaches explaining they were not responsible to complete data that could be secured from Banner or CMC's data system.

Even with expectations being clarified, and the availability of a help desk and a FAQ sheet, some coaches, including those who entered other data, did not always enter information about a student's employment status and his/her "eligibility" under the TAA grant (e.g. TAA eligible, TAA like, unemployed, displaced homemaker, enrolled in a redesigned course, etc.). The absence of these data made it difficult to analyze who the coaches actually served and how many met eligibility criteria. Coding ESCF data thus resulted in numerous "unknowns" regarding eligibility, and the nature of the eligibility (e.g. displaced homemaker vs. TAA eligible). This has delayed the Rutgers team from creating the matches necessary for the comparative cohorts, an essential part of the evaluation. It will be provided in future reports.

Strategy: At the coach forum on July 29, 2013, the reasons behind the eligibility questions will be reviewed and the project consequences of absent data will be discussed. The streamlining of the ESCF (see below) may facilitate more timely completion of the ESCF. Coaches will also be asked to go back to any Fall 2012 and Spring 2013 case notes they have kept, and enter available eligibility data. In the revised ESCF to be deployed in time for the Fall 2013 semester, eligibility will be a requirement in establishing the initial file for a student.

Many coaches merely registered students in the ESCF and never went back to complete one or more sections. There are therefore very little data on student goals, referrals, and other coach interventions. This has inhibited analysis of the issues with which students are dealing, common interventions, the identification of gaps in services, or best practices. Further, and of critical importance in respect to sustainability, the absence of data on what coaches have done over the life of the grant limits our ability to discuss the impact of the coaches on student retention and/or to assess the "added value" of coaches to their respective colleges.

When asked during site visits about the ESCF, coaches complained there were too many questions, and that the Qualtrics format was cumbersome to use. There were also technical problems which made some coaches reluctant to use the ESCF, such as limited allowable views. Instead of using the ESCF, or along with it, many coaches created alternative case files (spreadsheets, paper records) in which they recorded the nature of the student's concerns and what was done. These records are not standardized and thus are difficult to access, codify, and assess. This also makes it difficult to identify and analyze the range of services that the coaches actually provided.

Strategy: Technical problems were addressed by Rutgers with the Qualtrics vendor enabling the coaches to have unlimited views. A table of contents was also added. In addition, in response to the feedback and recommendations of both the coaches and CCCS, the Banner system data has been removed from the ESCF and the number of questions reduced. The remaining questions focus on eligibility, student goals, coach interventions, and outcomes. The new iteration is being piloted Summer 2013 by a select group of coaches, and a further refined version will be launched Fall 2013.

Strategy: The initial iterations of the ESCF did not have "forced responses"(where one cannot move onto the next question without completing a prior question). To increase the response rate the newest iteration of the ESCF to be launched Fall 2013 will include some "forced response" items.

Strategy: The Rutgers team will begin regular quarterly phone calls with the coaches to collect data about the issues students face, as well as the challenges they have experienced responding to student needs. In addition, the team will explore the contextual integration of the coach position at the colleges, a step towards understanding potential post-grant sustainability of their positions.

General Data Collection Issues

Project teams state that they feel "bombarded" by requests to complete instruments and provide data. When the Rutgers team reviewed requests for data over the last 15 months, we identified the following requests, separate from the ESCF:

- Quarterly reports
- DE and energy program course information including modalities prior to Fall 2012
- DE and energy redesigned courses including modalities
- Precourse surveys (Fall 2012)
- Ad hoc requests from the federal government

The Rutgers team cannot deny the experience of the project teams, however, we believe that it has not been requests for multiple *types* of data that has caused the sense of "bombardment" but rather repeated requests for the *same* data when it has not been forthcoming, is incomplete, and/or contradictory. For example, we assumed it was possible to flag all redesigned courses in Banner. It is unclear why this was not possible, but as a result, we had to query the colleges each semester to get information about the redesigned courses (and all sections) they offered. Complete information was not forthcoming from many colleges, so we had to make repeated queries for this information. Then, at times when asked to "certify" the accuracy of data submitted, a college did so but we subsequently found the information was inaccurate or incomplete. This was recently the experience with Google documents requested as part of the second quarterly report (once again, information about course offerings). It took repeated requests to collect all needed data. These data are critical to track progress with redesigns, to analyze retention and completion rates, and assess the selection of students for the comparative cohorts.

Some possible factors that have contributed to data collection and reporting problems are the ambiguity about the role of the data coordinator assigned to the project, the time he/she has been allocated to fulfill this role, and lack of clarity as to what is being asked for and why. There also has been confusion as to the role of the project leads in responding to data requests versus the role of the data coordinator. Furthermore, colleges keep data in formats that work for them, but requests often require data to be transformed into another format, with elements added or subtracted. When the Rutgers team receives data not formatted as requested, we do not want to make assumptions and misinterpret the data. We therefore go back and re-request the data asking that it be formatted as requested.

Strategy: The project lead is ultimately responsible to respond to all requests for data. But data coordinators often have the data. It must be decided to whom all future requests for data should go.

Strategy: Rutgers will be meeting with the project leads July 22, 2013 to review the evaluation and to explain how the collected data are being used, and to answer any questions. We will also clarify that while Rutgers has helped develop the quarterly reports, quarterlies fall under CCCS's data requirements, and thus those questions should be directed to the TAA Program Director.

Strategy: Going forward, Rutgers will also use Basecamp to explain data requests and answer questions.

Strategy: When submitted data do not match the request (in substance or form), the subsequent requests will be made by email and clearly state what is missing. A cc of this email will be sent to the TAA Program Director, Dr. Casey Sacks.

Strategy: To avoid numerous unmet requests, colleges need to communicate within the time frame requested by CCCS and/or the Rutgers team if they do not understand a data request and/or if they lack the data requested.

As identified above, the ESCF and the quarterly report ask for a good deal of information. Much of these data can be quantified. However, there is important process and contextual information also needed for the evaluation. The above instruments have not been effective in providing this information. Site visits, project forums, and phone calls have been more helpful but infrequent. Site visits have also occurred over the course of many months and thus at very different stages of a college's project implementation. Given the nature of project activities and institutional integration, we need more timely updates and the chance to explore in-depth project achievements as well as the challenges the colleges face.

Strategy: In order to gather more timely and in-depth qualitative data, the Rutgers team will begin to schedule more frequent phone calls with project leads, coaches, and other members of a project team.

Strategy: Transcribed interviews will be analyzed through the use of Nvivo software.

Finally, the Rutgers team is interested in building the capacity of CCCS and the colleges to assess outcomes and impacts after project funding ends for the external evaluator.

Strategy: The SMLR team will work with CCCS and the colleges to identify best practices regarding data collection and analysis, and help the colleges to set up mechanisms for the on-going evaluation of career coach services and the redesigned DE and energy programs.

SUMMARY OF ONGOING RESEARCH/EVALUATION

Rutgers will continue to collect data from Banner, and will analyze the quarterly reports submitted to CCCS for data about course redesigns, and other TAA activities. Data about redesigned course offerings will be collected via the quarterly report and other methods. This will facilitate the analysis of student enrollment, progress, retention, and completion to build our analysis of the comparative cohorts. In addition, as indicated above, Rutgers will intensify its schedule of interviews with key stakeholders, and will develop and administer a number of brief, focused surveys to provide further data and insights on a

range of topics not yet captured. The section below summarizes the major content areas and qualitative methods to be employed in the months ahead.

Career Coaches

- A revised ESCF will be launched Fall 2013. We will monitor coach input and will begin semi-annual phone interviews with each coach to gather additional information about students' goals and challenges, coach interventions and referrals, and promising practices.

- A standard activity log focused on referrals will be developed and employed to capture coach referrals and the outcomes.

- Interviews with coaches and project leads will explore plans for further integration and potential sustainability of the coaches' position, and/or challenges faced in respect to institutionalization of this position.

Faculty Development

- We will continue to collect data on faculty development activities across the TAA grant consortium, including a post-meeting survey to capture faculty experiences.

- In conjunction with CCCS, we will survey all DE and energy faculty, asking about their ideas and recommendations for further staff development.

Energy Courses and Mobile Learning Labs

- We will interview members of the DE and energy faculties about their experiences teaching redesigned courses, and the effects of online, hybrid, and/or classroom teaching and learning on the development of student competencies and retention.

- We will engage in a series of phone interviews with students to learn about their experiences in redesigned courses.

- Interviews will be conducted with faculty and students using mobile learning labs in order to learn more about their experiences, and to identify promising practices as well as challenges that need to be addressed.

- We will work with CMC, RRCC, and PCC to do a cost-benefit analysis of the use of MLLs to allow for future budgetary planning.

Internships and Practicum

- We will analyze data on existing internships programs and students' participation in them, to identify the challenges the colleges face in developing and maintaining internships for their certificate and degree students.

Student Employment

- Using DOL and college data sets, we will collect and analyze employment outcomes for students who complete one or more certificates and/or an AAS degree at one of the energy colleges.

Advisory Boards

- We will collect the schedules and agendas of the industry partner meetings to better understand the role of industry and community partners in the development and sustainment of energy certificate and degree programs.

- When possible, we will also interview industry partners to gain their perspectives and reactions to redesigned and newly mounted programs.

Developmental Education

- We will engage in a series of phone interviews with students to learn about their experiences in redesigned courses.

Early Alert Systems (EAS)

- We will collect information on existing and TAA funded early alert systems.

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