**NWCCD Strategy 3.2: Accelerated Industrial Electricity Program Delivery Model Assessment, July 2015**

This report is a summary review of the Industrial Electricity Associate of Applied Science (AAS) program, focusing on the effectiveness of accelerated delivery models and how such a model integrates into the broader academics of the District. Based on two years of production under the Trade Adjustment Assistance for Community College Career Training (TAACCCT) project, this report is designed to evaluate the Accelerated Industrial Electricity program and it’s traditional, four semester counterpart, and be compared with similar assessments for Mining Technology and Diesel Technology to determine common, successful design strategies for accelerated delivery.

The report is broken into nine sections. The first three sections provide an overview of the accelerated program, a brief summary of the program’s development history, and a discussion of the targeted demographic that would benefit from enrollment in the program, either in its traditional two-year model or in the accelerated format. The fourth and fifth sections discuss the key design differences in scheduling between the accelerated one-year model and the traditional two-year model, with the sixth section presenting data analysis of general performance of students in both the cohort and comparison groups. The sixth section of the report discusses faculty perceptions of various topics related to accelerated programs as outlined under the criteria of the TAACCCT grant. Recommendations for programmatic revision and better integration into the District are discussed in the seventh and eighth sections of the report, based on input from faculty and various administrative levels within the district. The final section is a general conclusion based on current findings.

**Program Overview:**

The Industrial Electricity program at the Northern Wyoming Community College District (NWCCD) is a 60 or 60.5 college credit program leading to an Associate of Applied Science degree. Two delivery models currently exist within the district – the traditional 16-week delivery model for classes, and the one year accelerated delivery model developed to address the training needs of Peabody Powder River Services, LLC. Eight instructors, including those for General Education, teach courses within the program’s curriculum. The accelerated format of the program was developed under the Powder River Industrial Electrician Pre-Hire Grant-Wyoming Workforce Development Training Fund grant, but is eligible for review by the TAACCCT grant staff due to its accelerated component.

The program is designed to introduce, or reintroduce, highly motivated workers into the industry with a completed Associate of Applied Sciences degree in the shortest time possible – months, rather than the more traditional years required to complete a degree. To do this, several strategies have been developed to limit difficulties students might experience when pursuing a degree.

The accelerated delivery model employs blocks of instruction with longer classroom hours per course taken, spread across contiguous semesters (such as Spring, Summer, Fall) rather than the standard Fall and Spring schedules employed by most degree programs. To accommodate working professionals whose schedules may not support traditional academic achievement to do employer required on-site hours, the accelerated program has been designed with flexible scheduling to accommodate students’ needs. For example, should a student’s work schedule change and eliminate the possibility of attending the class times in which he or she originally enrolled, the student is capable of attending classes during the off hours of their schedule.

The Associate of Applied Science degree path was developed with input from industry partners and designed to return workers to the market with the key skills and competencies required for successfully finding and acquiring employment. Students may take the established AAS path in either its accelerated or traditional length, and can meet with an academic advisor to plan an educational pathway that best suits his or her needs.

The average time to complete the Accelerated Associate of Applied Science in the Industrial Electricity degree program was projected to be one year. The original cohort began Fall 2010 and completed Summer 2011 with a second cohort group enrolling in Fall 2011 and completing in Summer 2012, based on the requirements of Peabody Energy backing their employees’ enrollment in the program.

As a Department of Labor, Education and Training Administration (DOL-ETA) funded grant, the TAACCCT grant is the ideal method to evaluate the differences in accelerated and traditional delivery models. By track cohorts of students from program enrollment to completion, as well as a participant group of students for comparison.

**Development History:**

The Associate of Applied Science in Industrial Electricity program at NWCCD was developed to address a need in the Campbell County, Wyoming, area for skilled electricians, primarily at the mines. Working with Peabody Energy, LLC, the program was developed to offer degree options to train employees at the mines in an accelerated format; tuition and fees were covered by Peabody Energy while the students continued to earn a wage, with the expectation that participants in the program complete the program to retain eligibility for promotion.

Peabody Energy was involved with the project for two cohorts of twelve trainees for the one year accelerated program. The first cohort began the program in August of 2010 and completed the course of study in June 2011, with the second cohort starting in August 2011 and completing in August of 2012 due to minor alterations in the curriculum. All students in the accelerated cohorts completed the program, graduating with higher grade point averages than the non-industry backed students in the traditional length version of the degree program.

With the completion of the two accelerated program iterations, Peabody Energy withdrew active support from the Industrial Electrician program. The accelerated models were discontinued in favor of a traditional sixteen-week, two-year program.

Under the first round of the Trade Adjustment Act, Community College Career Training Act (TAACCCT), the accelerated model employed by this program was evaluated as a comparison model to determine if accelerated programs, particularly those supported by local industry partners, have a higher success rate through high-intensity scheduling.

**Demographic Served:**

The Industrial Electric Technology program focuses on serving several distinctive types of students. The first, and most common, student type consists of currently employed technicians who need to acquire or update skills needed for promotion to higher levels of responsibility, such as supervisory positions, for which they may not otherwise be eligible. The second type of student the program is designed to serve has lost their position due to downsizing or restructuring, and needs to acquire new skill sets in order to be more marketable compared to other applicants for limited positions in new companies. The third focus of the program is to serve highly motivated students in the process of transitioning to a new industry, either due to relocation from one region to another or transitioning from an unrelated or closely related field. Chart 1 provides a graphic rendering of the experiential learning curve and targeted career levels served by the program.

**Chart 1:** Targeted Student Experience Curve



**Foreman/Lead/Planner Position**

As illustrated above, the process of obtaining a supervisory or managerial position is dependent on two key, interrelated factors – the acquisition of experience over time. The chart shows a line (blue) representing the experience gained by an employee as the years of work increases. Initially, an employee has no knowledge of the work environment or process, and therefore has zero experience. As an employee begins work he or she gains a tremendous amount of knowledge over a short time span, as shown in the steep part of the experience curve. The longer an employee remains with a position the acquisition of new knowledge plateaus; in other words, the day-to-day activities and processes become familiar and relatively routine. It is typically at this point that an employee might be considered for a supervisory or managerial position (green box), as they have the experience and knowledge to make decisions that benefit the company.

Students who enroll in the traditional delivery format of the Industrial Electrician program are either new to the industry or have some experience; those who enrolled in the accelerated format of the program typically have 7-15 years’ experience (red box), and are unwilling to wait the extra 10 or more years to be considered for a responsible position. The accelerated Industrial Electricity degree program was therefore designed to help these highly motivated students attain the skills and knowledge that will help them fast-track their career goals by gaining a level of knowledge employers value and reward. Evidence of the success of this program exists, as several students who have completed the degree have reported increased wages and promotions to supervisory and managerial positions within their companies or within the industry.

Two cohorts, totaling twelve students per cohort, enrolled in and completed the accelerated delivery format of the program; this was, in part, due to Peabody requiring that their employees complete the program as part of mandatory training. As such, the first two cohorts had a retention, persistence, and graduation rate of 100%. Table 1 illustrates the base demographics for students enrolled in the August 2010-August 2011 cohort; Table 2 illustrates the base demographics for students enrolled in the August 2011-August 2012 cohort.

**Table 1:** Basic Demographics for the Accelerated Cohort Starting August 2010.

|  |  |  |
| --- | --- | --- |
| **Gender** | **Participants** | **Average Age** |
| Male | 11 | 32 |
| Female | 1 | 24 |

Average hourly wage of the first cohort of 12 participants when enrolling in the one year accelerated program was $26.90. Once the program had been completed the average hourly wage rose to $29.03, a difference of $2.13 per hour. While no wage data is available for non-accelerated students, GPAs can be used to compare the success of the accelerated program against a traditional two-year delivery. For the first accelerated cohort the average GPA was 3.888; the average GPA for students completing the traditional two-year model in 2011 was 3.635, a difference of 0.253 points or 6% lower.

**Table 2:** Basic Demographics for the Accelerated Cohort Starting August 2011.

|  |  |  |
| --- | --- | --- |
| **Gender** | **Participants** | **Average Age** |
| Male | 11 | 25 |
| Female | 1 | 33 |

Average hourly wage of the second cohort of 12 participants when enrolling in the one year accelerated program was $26.02. Once the program had been completed the average hourly wage rose to $29.32, a difference of $3.30 per hour. While no wage data is available for non-accelerated students, GPAs can be used to compare the success of the accelerated program against a traditional two-year delivery. For the second accelerated cohort the average GPA was 3.871; the average GPA for students completing the traditional two-year model in 2012 was 3.325, a difference of 0.546 points or 15% lower.

Students enrolling in the first cohort had a lower average wage due to a wider range of starting salaries than students in the second cohort. While the difference between average completion wages between both cohorts is $.29, the difference in the average percent of wage increase is 1%.

Similarly, the difference between ending GPAs for both cohorts is 0.017 points; the average GPA for both cohorts is 3.889. Compared to the average GPA of 3.488 for students graduating from the traditional model in Spring 2011 and Spring 2012, the difference between accelerated and non-accelerated success is 10%.

Based on this comparison, data suggests that students in the accelerated program are more successful in a one-year accelerated program than those enrolled in traditional delivery schedules.

*Recruiting*

The success of any program relies heavily on the recruiting process for new students. In the case of the Mining Technology program, low turn outs at Career Awareness Events hosted by the Trade Adjustment Act - Community College Career Training (TAACCCT) grant appear to be ineffective at first glance; however, despite the low turnout the percentage of attendees who enroll for the program has been high. Additionally, word of mouth from attendees has proven to be one of the most effective recruiting tools available to the program. Future accelerated versions of the Industrial Electrician program should consider the lessons learned from the Mining Technology program when designing its recruitment strategies.

Additional focus on recruiting should look at means to increase the enrollment of the female demographic. Data analysis shows enrollment of students in the accelerated program with a male bias of 2:1, while students in the traditional delivery model indicate a male bias of 8:1.

*Retention*

Initial discussions regarding student retention in the Accelerated Industrial Electrician program indicate a higher level of program completion than the comparison group; however, it should be noted that in the case of the accelerated delivery model there was direct support from Peabody Energy in that completion of the program was part of the employees’ work assignment. After the first two cohorts completed training, Peabody Energy rescinded its support and the accelerated program was discontinued. Students enrolling in the current program are not backed by an employer, and must enroll in the traditional 16-week program schedule for the certificate and degree programs.

Students who do not complete the program of study have often indicated that outside scheduling conflicts or events (such as health issues or family deaths) have interrupted or discontinued the pursuit of the degree; however, rather than a complete discontinuation students have indicated a desire to return and complete their attainment of the degree at a later time. Programmatic design does not appear to be an influencing factor in the discontinuation of educational pursuits.

**Accelerated Program Review:**

The Accelerated industrial Electricity program was delivered in one full year, or six instructional blocks. While some instructional blocks have very high unit requirements, the average enrollment per trimester (e.g., Fall, Spring, and Summer) is 11 units. Tables 5 breaks down the organization of courses developed with input from Peabody Powder River Services, LLC, as addressing the immediate industry needs while conforming to AAS degree requirements.

Averaged, each instructional block for the first cohort was comprised of 11 units; however, in practice some instructional blocks were heavier in course load (18 units) or had a low course load (4 units). The heavier course loads were reserved for the longer, nine-week instructional blocks, as it was theorized that the concepts presented in these courses needed more time for students to assimilate; it was also theorized that there were concepts in the courses that would cross, further aiding integration of course materials. Shorter blocks of instruction, varying between one day to four weeks, were often scheduled during intersession periods outside the traditional Spring/Fall binary. Courses in these shorter instructional blocks have less intensive requirements in terms of instruction and student information retention. Instructional blocks were designed to alternate between a block of school followed by a block of work at the mine. The lengths of the instructional blocks were designed to make them compatible with the “regular” semester schedules. Table 3 outlines the scheduling of courses while the accelerated program was supported by the industry partner.

**Table 3:** First Cohort: Fall 2010, Spring 2011, Summer 2011

|  |
| --- |
|  **WDWS Pre-Hire Powder River Coal-Industrial Electricians-Cohort #1** |
| **Course Title** | **Duration** | **Units** |
| **Fall 2010 Block 1** |
| ELTR 1515-31 Electrical Skills & Practices | 9 weeks | 3 |
| ELTR 1600-31 National Electric Code I | 9 weeks | 3 |
| ELTR 2550-32 AC/DC Electric Circuit Theory | 9 weeks | 6 |
| ENGL 1010-40 English I | 9 weeks | 3 or Audit |
| MATH 1500-31 | 9 weeks | 3 |
| **Units** |  | **18** |
| **Fall 2010 Block 2** |
| ELTR 1800-30 National Electrical Code II/CFR 30 | 9 weeks | 3 |
| ELTR 2560-30 Power Electronics Theory | 9 weeks | 3 |
| ELTR 2580-30 Motors, Generators & Trans | 9 weeks | 4 |
| ELTR 2815-30 Programmable Logic Controllers | 9 weeks | 3 |
| ELTR 2840-30 Industrial Controls I | 9 weeks | 4 |
| **Units** |  | **17** |
| **Fall 2010 Block 3** |
| TECH 2980-31 Technical Co-Op | 3 weeks | 2 |
| TECH 2980-32 Technical Co-Op | 3 weeks | 2 |
| **Units** |  | **4** |
| **Spring 2011 Block 1** |
| ELTR 2880-31 Solid State Motor Control | 9 weeks | 3 |
| ELTR 2935-31 High Voltage Procedures | 9 weeks | 3 |
| ENGL 2010-33 Technical Writing | 9 weeks | 3 |
| PEAC 1001-36 Physical Activity & Your Health | 9 weeks | 2 |
| POLS 1000-34 American & Wyoming Government | 9 weeks | 3 |
| TECH 2980-30 Technical Co-Op | 3 weeks | 1.5 |
| **Units** |  | **15.5** |
| **Summer 2011 Block 1** |
| DESL 1669-30 Air Conditioning Essentials | 1 day | .50 |
| ELTR 2864-30 Elect Mach Cntrls | 1 week | 1 or Audit |
| ELTR 2940-30 Advanced PLC Programming | 2 weeks | 3 |
| TECH 2980-32 Technical Co-Op | 4 weeks | 2 |
| **Units** |  | **6.5** |
| **Summer 2011 Block 2** |
| DESL 1758-30 Mobile Hydraulic Essentials | 1 week | .50 |
| DESL 1759-30 Mobile Hydraulic Maintenance | 1 week | .50 |
| ELTR 2865-30 Intermediate Drive Systems | 1 week | 1 or Audit |
| ENTK 1500-30 Engineering Graphics | 4 weeks | 3 |
| **Units** |  | **5** |
|  |  |  |
| **Total Units For Certificate & Degree** | **66** |

The second cohort, starting in Fall of 2011 and also backed by the industry partner, was virtually identical in design as the first run of the accelerated program; there were minor adjustments to the duration of several courses, but the outcome of the accelerated scheduling maintained a required course load of 66 total units of instruction. Table 4 illustrates the organization and duration of the courses the second cohort attended.

**Table 4:** Second Cohort: Fall 2011, Spring 2012, Summer 2012

|  |
| --- |
| **WDWS Pre-Hire Powder River Coal-Industrial Electricians-Cohort #2** |
| **Course Title** | **Duration** | **Units** |
| **Fall 2011 Block 1** |
| ELTR 1515-31 Electrical Skills & Practices | 9 weeks | 3 |
| ELTR 1600-31 National Electric Code I | 9 weeks | 3 |
| ELTR 2550-31 AC/DC Electric Circuit Theory | 9 weeks | 6 |
| ENGL 1010-43 English I | 9 weeks | 3 or Audit |
| MATH 1500-31 | 9 weeks | 3 |
| **Units** |  | **18** |
| **Fall 2011 Block 2** |
| ELTR 1800-30 National Electrical Code II/CFR 30 | 9 weeks | 3 |
| ELTR 2560-30 Power Electronics Theory | 9 weeks | 3 |
| ELTR 2580-30 Motors, Generators & Trans | 9 weeks | 4 |
| ELTR 2815-30 Programmable Logic Controllers | 9 weeks | 3 |
| ELTR 2840-30 Industrial Controls I | 9 weeks | 4 |
| **Units** |  | **17** |
| **Fall 2011 Block 3** |
| TECH 2980-31 Technical Co-Op | 9 months (10/2011-07/2012) | 8 |
| **Units** |  | **8** |

|  |
| --- |
| **Spring 2012 Block 1** |
| ELTR 2880-30 Solid State Motor Control | 9 weeks | 3 |
| ELTR 2935-30 High Voltage Procedures | 9 weeks | 3 |
| ENGL 2010-35 Technical Writing | 9 weeks | 3 |
| MINE 1840 New Miner Training | 2 days | Credit by Exam Pass/Fail |
| PEAC 1001-34 Physical Activity & Your Health | 9 weeks | 2 |
| POLS 1000-35 American & Wyoming Government | 9 weeks | 3 |
| **Units** |  | **15.5** |
| **Summer 2012 Block 1** |
| ELTR\*2751\*30 Prog Logic Controller Network | 1 day | 1 |
| ELTR\*2857\*30 Adv. Prog Logic Controller Ess | 1 day | 1 |
| ELTR\*2858\*30 Adv. Prog Logic Control Troubleshooting | 1 week | 1 |
| ELTR\*2864\*30 Elect Mach Controls | 1 week | 1 |
| **Units** |  | **4** |
| **Summer 2012 Block 2** |
| DESL 1758-30 Mobile Hydraulic Essentials | 1 day | .50 |
| DESL 1759-30 Mobile Hydraulic Maintenance | 1 day | .50 |
| ELTR 2865-30 Intermediate Drive Systems | 1 week | 1 or Audit |
| ENTK 1500-30 Engineering Graphics | 1 week | 3 |
| **Units** |  | **5** |
|  |  |  |
| **Total Units For Certificate & Degree** | **66** |

Once Peabody Energy pulled out of the agreement to support the accelerated version of the program, the scheduling and course load reverted to a more traditional 16-week model. Students enrolling in this pathway to the degree had a comparable total course credit requirement (67 units, compared to the 66 units required by the accelerated program), with a for-credit summer internship/cooperative course raising the total course load to 73 units. Table 7 illustrates the organization of the courses into a more balanced semester load across a traditional schedule.

**Traditional Schedule Program Review:**

The Industrial Electric program was initially launched in 2005, with the first students in the program graduating in Spring 2007. With only a few minor modifications to scheduling, the program has remained relatively unchanged since its launch. Tables 5, 6, and 7 illustrate how the program has evolved since its inception:

**Table 5:** Industrial Electric Program Launch, Fall 2005 to Spring 2007 Schedule

|  |
| --- |
| **Enrolled Fall 2005, Graduated Spring 2007** |
| **Course Title** | **Duration** | **Units** |
| **Fall 2005** |
| ELTR 1510-30 Electrical Skills | 16 weeks | 1 |
| ELTR 1515-30 Electrical Concepts | 16 weeks | 4 |
| ELTR 1990-30 Topics: Nat’l Electric Code | 16 weeks | 3 |
| ELTR 1990-31 Topics: AC/DC Electrical Theory | 16 weeks | 4 |
| ELTR 2990-30 Topics: Industrial Controls I | 16 weeks | 3 |
| **Units** |  | **15** |
| **Spring 2006** |
| ELTR 1990-30 Topics: Nat’l Electric Code | 16 weeks | 3 |
| ELTR 2990-30 Topics: Motors & Generators | 16 weeks | 3 |
| ELTR 2990-31 Topics: Prog Logic Controllers | 16 weeks | 4 |
| ELTR 2990-32 Topics: Solid State Theory | 16 weeks | 4 |
| MATH 1550-31 Applied Math | 16 weeks | 3 |
| **Units** |  | **17** |
| **Summer 2006** |
| TECH 2980-30 Technical Co-Op | 10 weeks | 6 |
| **Units** |  | **6** |
| **Fall 2006** |
| ELTR 2965-30 Technical Research | 16 weeks | 2 |
| ENGL 1010-30 English I | 16 weeks | 3 |
| PEAC 1001-33 Physical Activity & Your Health | 16 weeks | 2 |
| POLS 1000-32 American & Wyoming Government | 16 weeks | 3 |
| TECH 2980-30 Technical Co-Op | 16 weeks | 8 |
| **Units** |  | **18** |
| **Spring 2007** |
| ELTR 2990-30 Topics: High Voltage Procedure | 16 weeks | 3 |
| ELTR 2990-31 Topics: Solid State Motor | 16 weeks | 3 |
| ELTR 2990-32 Topics: Research/Tech Project | 16 weeks | 5 |
| ELTR 2990-33 Topics: Advanced Plc Programming | 16 weeks | 3 |
| ENGL 2010-31 Technical Writing | 16 weeks | 3 |
| **Units** |  | **17** |
|  |  |  |
| **Total Units For Certificate & Degree** | **73** |

**Table 6:** Industrial Electric Program Schedule, Fall 2010 to Fall 2012

|  |
| --- |
| **Enrolled Fall 2010, Graduated Fall 2012** |
| **Course Title** | **Duration** | **Units** |
| **Fall 2010** |
| ELTR 1515-31 Electrical Skills & Practices | 16 weeks | 3 |
| ELTR 1600-30 National Electrical Code I | 14 weeks | 3 |
| ELTR 2550-31 AC/DC Electric Circuit Theory | 16 weeks | 6 |
| MATH 1500-30 Applied Math | 14 weeks | 3 |
| **Units** |  | **15** |
| **Spring 2011** |
| ELTR 1800-30 National Electrical Code II/CFR 30 | 16 weeks | 3 |
| ELTR 2560-31 Power Electronics Theory | 15 weeks | 3 |
| ELTR 2580-31 Motors, Generators & Trans | 16 weeks | 4 |
| ELTR 2815-31 Programmable Logic Controllers | 15 weeks | 3 |
| ELTR 2840-31 Industrial Controls I | 16 weeks | 4 |
| **Units** |  | **17** |
| **Fall 2011** |
| ELTR 2880-30 Solid State Motor Control | 16 weeks | 3 |
| ELTR 2935-30 High Voltage Procedures | 16 weeks | 3 |
| ENGL 1010-32 English I | 16 weeks | 3 |
| MATH 1400-31 Pre-Calculus Algebra | 16 weeks | 4 |
| POLS 1000-33 American & Wyoming Government | 16 weeks | 3 |
| TECH 2980-30 Technical Co-Op | 16 weeks | 4 |
| **Units** |  | **20** |
| **Spring 2012** |
| CMAP 1610-30 Windows | 16 weeks | 2 |
| CMAP 1680-30 Microcomputer Applications | 16 weeks | 3 |
| ENGL 2010-30 Technical Writing | 16 weeks | 3 |
| PEAC 1001-31 Physical Activity & Your Health | 16 weeks | 2 |
| TECH 2980-30 Technical Co-Op | 16 weeks | 4 |
| **Units** |  | **14** |
| **Fall 2012** |
| MINE 2550-30 Coal Mine Elec Qual Test Prep | 1 week | 1.5 |
| **Units** |  | **1.5** |
|  |  |  |
| **Total Units For Certificate & Degree** | **67.5** |

**Table 7:** Industrial Electric Program Schedule, Fall 2012 to Spring 2014

|  |
| --- |
| **Enrolled Fall 2012, Graduated Spring 2014** |
| **Course Title** | **Duration** | **Units** |
| **Fall 2012** |
| ELTR 1515-30 Electrical Skills & Practices | 16 weeks | 3 |
| ELTR 1600-30 National Electrical Code I | 16 weeks | 3 |
| ELTR 1990-30 Topics: Spear-O Electrical Exp. | 8 weeks | 2 |
| ELTR 2550-30 AC/DC Electric Circuit Theory | 16 weeks | 6 |
| MATH 1500-30 Applied Math | 16 weeks | 3 |
| **Units** |  | **17** |
| **Spring 2013** |
| ELTR 1800-30 National Electrical Code | 16 weeks | 3 |
| ELTR 2560-31 Power Electronics Theory | 16 weeks | 3 |
| ELTR 2580-31 Motors, Generators & Trans | 16 weeks | 4 |
| ELTR 2815-31 Programmable Logic Controllers | 15 weeks | 3 |
| ELTR 2840-32 Industrial Controls | 15 weeks | 4 |
| ENGL 0600-33 Basic Writing | 16 weeks | 3 |
| **Units** |  | **20** |
| **Summer 2013** |
| MINE 1840-32 New Miner Training | 2 days | 1.5 |
| **Units** |  | **1.5** |
| **Fall 2013** |
| ELTR 2880-32 Solid State Motor Cont | 16 weeks | 3 |
| ELTR 2935-32 High Voltage Systems | 16 weeks | 3 |
| ENGL 1010-39 English I | 16 weeks | 3 |
| TECH 2980-30 Technical Co-Op | 16 weeks | 4 |
| WELD 1700-30 General Welding | 16 weeks | 4 |
| **Units** |  | **17** |
| **Spring 2014** |
| ELTR 1655-30 Solar Electric Systems | 16 weeks | 3 |
| ENGL 2010-31 Technical Writing | 16 weeks | 3 |
| PEAC 1001-32 Physical Activity & Your Health | 16 weeks | 2 |
| POLS 1000-32 American & Wyoming Government | 16 weeks | 3 |
| TECH 2980-30 Technical Co-Op | 16 weeks | 4 |
| **Units** |  | **15** |
| **Summer 2014** |
| MINE 2550-30 Coal mine Elec Qual Test Prep | 2 days | 1.5 |
| **Units** |  | **1.5** |
|  |  |  |
| **Total Units For Certificate & Degree** | **72** |

**Comparison Between the Accelerated and Traditional Program Schedules**

Unlike the accelerated cohorts, the comparison groups are students enrolled in the traditional delivery model of the program, ordered by Spring graduation dates since program inception. Analyzing the demographic makeup of these groups, as well as their GPAs, allows for an examination of gender bias in general program enrollment, age differences between traditional and accelerated students, and an examination of average GPAs as a measure of success or performance in the program compared to the accelerated delivery model.

Table 8 presents the basic demographics of the first comparison group:

**Table 8:** Comparison Group, Traditional Model Graduating Spring 2011.

|  |  |  |
| --- | --- | --- |
| **Gender** | **Participants** | **Average Age** |
| Male | 8 | 28 |

The average hourly wage of the first cohort of 12 participants when enrolling in the one year accelerated program was $26.90. Once the program had been completed the average hourly wage rose to $29.03, a difference of $2.42 per hour. While no wage data is available for non-accelerated students, GPAs can be used to compare the success of the accelerated program against a traditional two-year delivery. For the second accelerated cohort the average GPA was 3.888; the average GPA for students completing the traditional two-year model in 2011 was 3.635, a difference of 0.065 points or 6% lower.

Table 9 illustrates the second comparison group’s basic demographics:

**Table 9:** Comparison Group, Traditional Model Graduating 2012.

|  |  |  |
| --- | --- | --- |
| **Gender** | **Participants** | **Average Age** |
| Male | 8 | 25 |
| Female | 1 | 25 |

The average hourly wage of the second cohort of 12 participants when enrolling in the one year accelerated program was $26.02. Once the program had been completed the average hourly wage rose to $29.32, a difference of $2.13 per hour. While no wage data is available for non-accelerated students, GPAs can be used to compare the success of the accelerated program against a traditional two-year delivery. For the second accelerated cohort the average GPA was 3.871; the average GPA for students completing the traditional two-year model in 2012 was 3.325, a difference of 0.141 points or 14% lower.

**Table 10: Industrial Electrician Completions: 2007-2014**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Graduation Year** | **Males**  | **Females**  | **AAS Only** | **CCD Only** | **CCD and AAS** | **Total Awards** | **Average Age At Program Completion** | **Graduating Average GPA** |
| 2007 | 8 | 0 | 8 | 0 | 0 | 8 | 29 | 3.669 |
| 2008 | 6 | 0 | 6 | 0 | 0 | 6 | 33 | 3.879 |
| 2009 | 14 | 0 | 14 | 0 | 0 | 14 | 32 | 3.673 |
| 2010 | 16 | 0 | 9 | 5 | 2 | 16 | 31 | 3.734 |
| 2011 (Accelerated) | 11 | 1 | 0 | 0 | 12 | 12 | 33 | 3.888 |
| 2011 | 18 | 0 | 12 | 5 | 1 | 18 | 25 | 3.635 |
| 2012 (Accelerated) | 11 | 1 | 0 | 0 | 12 | 12 | 28 | 3.871 |
| 2012 | 11 | 1 | 3 | 4 | 5 | 12 | 25 | 3.325 |
| 2013 | 20 | 3 | 2 | 7 | 14 | 23 | 21 | 3.569 |
| 2014 | 14 | 1 | 4 | 6 | 5 | 15 | 26 | 3.471 |
|  |  |  |  |
| **Total 2007-2014** | 136 |  |  |

**NWCCD Technical Education Faculty Survey Results Analysis**

One major objective required of the TAACCCT Round 1 grant was to gain faculty feedback on programmatic design challenges, as well as instructor perceptions on the receptiveness and performance of traditional and non-traditional students to accelerated delivery models for developed programs. Initially required for only two of the six strategies the Wyoming Community College Coalition agreed to when applying for grant funding from the Department of Labor, Employment and Training Administration (DOL-ETA), the grant management team expanded the survey to explore faculty opinions on elements of each strategy and how they affect traditional and non-traditional students alike.

This survey applies to the primary program identified under the TAACCCT Round 1 grant delivery model assessment for the Accelerated Mining Technology Associate of Applied Science program, and is used in the delivery model assessments of the Accelerated Industrial Electrician and Diesel Technology programs as survey participants were drawn from faculty teaching courses in all three programs.

Surveys were issued near the close of the Spring 2015 semester to faculty and staff directly involved with the three accelerated programs hosted by NWCCD (Mining Technology, Diesel Technology, and Industrial Electricity); individuals surveyed were either technical education faculty or general education faculty with classes in the accelerated programs. Of the surveys issued, only seven have been returned as of June 2015.

Survey responses were analyzed on a simple metric of positive, neutral, or negative feedback, with a category of Not Applicable (N/A) provided for faculty who did not feel adequately involved with a topic or felt like the question did not apply to their class or specific academic discipline. Grant staff issuing the survey acknowledged that the questions in the survey were technical education oriented, but advising faculty respondents to interpret the spirit of the question in order to provide the best answer possible. The quantitative analysis is provided in a table following each question; qualitative analyses are presented after the table and supported by quotes from the surveys as appropriate.

*Strategy 2.1: Accelerated Course and Program Models*

1. Evidence from the TAACCCT Round 1 grant and researched publications suggest that non-traditional students (e.g., incumbent workers, military veterans, employees seeking advancement, etc.) have higher retention and completion rates for enrolled programs, and often have higher GPA’s. In your opinion, would your program benefit from a redesign of the accelerated delivery model and, if so, what changes would you recommend?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 7 | 0 | 0 | 0 |

* All respondents to this question (100%, *n*=7) view accelerated programs or courses as being, or having the potential to be, beneficial to non-traditional students, and that various programs may benefit from adapting and adopting accelerated scheduling and instructional methodologies.
* Non-traditional English programs would be good, online and face-to-face. Non-traditional students do better in online environments; traditional students cannot keep pace.
* Accelerated programming needs to be andragogical in delivery rather than pedagogical; the key to successfully accelerating technical education is to link the programs to the jobs students have or have had, and market the programs to students currently working in the program field.
1. Students surveyed under the TAACCCT Round 1 grant have indicated that they would like more classes offered at night. In your opinion, why should or (should not) the District include nighttime offerings as part of a redesigned, accelerated program?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 7 | 0 | 0 | 0 |

* All (100%, *n*=7) respondents to the question of whether students and programs would benefit from the expansion of night courses feel that there is a demand for evening programs, either face-to-face or through hybrid/online delivery. Resource availability, however, was a concern for successful implementation of night courses.
* “The current course fit well within the time constraints of students in this program (accelerated Diesel), but I could see this as an attractive option for many non-traditionals if it was offered in the evenings to fit work schedules.”
* “The district definitely need[s] to consider offering as many classes on an evening schedule [as possible]. The fact is that most of our non-traditional students can’t attend day classes because they are working. That means they can’t afford to miss work to take classes. So how do we be proactive and assist them with being successful? More evening and online courses.”
1. According to your experience with an accelerated program, what are the major benefits to delivering your program in an accelerated format? What are the major challenges you experience(d) in delivering courses in accelerated formats?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 3 | 2 | 1 | 0 |

* The identification of benefits in accelerated delivery courses or programs was viewed favorably (43%, *n*=7), with an almost equal number (29%, *n*=7) neutral on the benefits relative to the challenges of adapting new scheduling and accelerated instructional methods; an additional factor in faculty neutrality may involve an unfamiliarity with acceleration. Only one respondent (14%, *n*=7) was negatively disposed toward course or programmatic acceleration.
* Sequencing is a challenge over an eight week delivery schedule in terms of assignments. Independent work becomes in-class assignments. Work schedules can affect the completion of homework, which may preclude skills mastery but still produce competency. Faculty availability must be high during this format of instruction.
* Pros: “Less downtime between delivery of material seems to aid retention.” Cons: “Quick pace can often feel overwhelming to students and if they fall behind it is more difficult to catch up.”
* “...accelerated courses such as summer courses can be very beneficial to students as long as they are not attempting more than 1 or 2 courses at a time at the same accelerated pace. I’ve seen students complete 9 or more credit hours in the summer by grinding out assignments and completing assessments/exams but the retention of learning suffers. In the end, the goal of the student in these circumstances is oftentimes to earn a grade more than it is [to] learn the material.”
1. According to research and input from student surveys, evidence suggests that redeveloping accelerated programs to run close to full year schedule (e.g., Fall, Spring, and Summer semesters) would further increase retention and completion for non-traditional students and return them to the workforce faster. If this were pursued for NWCCD’s technical programs, what challenges do you foresee in redesigning your program’s schedule to adapt to the new delivery model?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 3 | 3 | 1 | 0 |

* Respondents to this question were evenly distributed between positive responses and neutral receptiveness (43%, *n*=7), with one respondent (14%, *n*=7) negatively disposed toward the efficacy of redesigning a course/program to an accelerated format.
* “As with many of the programs, hiring qualified people to teach the classes is a difficult challenge. The majority of...students are very much interested in pursuing classes in the summer and are committed to finishing their degree in the shortest amount of time. These students would very much welcome a summer session. We simply don’t have the resources.”
* “I don’t believe we have the support structure to assist student[s] during a full year rotation. We are following a more ‘traditional student’ model (Fall and Spring Semester) with all of our student services and this means that we don’t emphasize using the summer semester to help students graduate faster. We also don’t have the best offerings in the summer semester as faculty seem reluctant to work.”

*Strategy 2.2: Credit for Prior Learning (CPL)*

1. Evidence suggests that many non-traditional students enrolling in technical education programs have some level of on-the-job training and experience that would, if credit were awarded, further accelerate a their progress through the program. Based on your knowledge of your industry, which courses in your program have the greatest potential for development as challenge exams to test student competencies and award credit?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 5 | 0 | 0 | 2 |

* The awarding of credit to non-traditional students with provable work experience was positive (71%, *n*=7), and a number of courses were recommended for evaluation for different CPL evaluation strategies. Two of the respondents (29%, *n*=7) indicated either an unfamiliarity with either the means by which credit could be awarded or whether such a focus was viable for their course/discipline.
* “Credit for prior learning, in my opinion , is a welcomed piece in higher ed[ucation] that has long been ignored. My ex-wife lived in France for 5 years, spoke the language fluently, but was hassled by our university that she would still have to take the undergraduate language courses. It is experiences like this that turn people against education.”
* “Resistance [to CPL] is based on ‘Who is going to read it?’ which equals ‘I don’t want to do it.’”
1. Many technical fields have industry-standard certificates that, if presented, currently do not translate to college credit awards; for example, Microsoft Certified Office Professional does not currently equate to college credit for the Office suite. What industry certifications, if any, would be acceptable as portfolio evidence of competence in your program, and for what courses?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 4 | 1 | 1 | 1 |

* Four (57%, *n*=7) respondents consider the possibility of reviewing industry-recognized certificates as a viable means of rewarding work and prior education to further accelerate non-traditional students toward the completion of certificates and/or degrees. One respondent (14%, *n*=7) indicated that there was no direct correlation between work experience and college credit for their discipline, rendering the question inapplicable. The remaining two respondents were neutral or did not favor the portfolio evaluation option as being time consuming or cumbersome.
* “One option could be to allow students to present a portfolio of all of their professional writing – we could require things such as a resume, an interoffice memo, a proposal, a report (many of the things that are required in ENGL 2010). The English faculty could evaluate the portfolio and determine whether students are writing at a college level and a level that will allow them to be successful in their career.”
1. Nearly all branches of the military have equivalent occupations within the technical programs offered by NWCCD. If the Department of Defense authorized training manuals were acquired and made available for an equivalency evaluation, would you be willing to review the manuals for competencies compatible in your program and make credit recommendations? Why or why not?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 2 | 3 | 2 | 0 |

* Responses to the concept of evaluating military training manuals to increase the military-to-civilian credit award beyond the American Council on Education (ACE) recommendations was relatively equal in distribution, with neutral positions dominating (43%, *n*=7). Neutral to negative responses were divided between concerns over the time investment required by faculty to review and recommend college credit to veterans based on their Military Occupational Specialty (MOS) or the applicability of skills to college programs.
* “Not being familiar with the curriculum development process of the branches of the military, I’d need to see both the content of the course(s) as well as all learning and assessment activities that measure the stated course competencies. I assume there are entities out there who specialize in assessing military courses as college equivalents. I’d like to see their recommendations as well, assuming they exist.”
* “Probably not, since I see few parallels to my field.”
* “I would be willing to evaluate transcripts as the training that our armed services receive is some of the best in the world.”

*Strategy 2.3: Articulated Path to the Next Degree or Transfer*

1. Based on your knowledge of the industry, do you feel that a student graduating with an A.A.S. in your program is sufficient for promotion and/or hiring? Is there any demand for increasing the degree to an A.S. degree?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 3 | 2 | 0 | 2 |

* As the majority of respondents were technical education faculty, responses to this question were in favor of the terminal degree as sufficient to employment needs. Neutral responses (29%, *n*=7) were focused more on academic transferability, while two respondents (29%, *n*=7) felt unable to sufficiently address the question.
* Most students would benefit from real world writing in their technical programs; the English department does not have the experienced staff to implement.
* “It is purely my personal opinion that most degrees that offer AAS options aren’t going to be that valuable...most students are going to want to continue their education depending on what their interest is in.”
* “Most definitely yes, many students...receive promotions even before receiving the degree. All attribute the advancement to their enrollment in the program. Many students have received promotion and/or advancement in other areas such as professional organizations because of their completion of the program. I do not believe most employers draw a clear line between A.S. and an A.A.S degree.”
1. Research suggests that non-traditional students returning to community colleges are underprepared in the areas of math and English; NWCCD currently has “boot camps” that address this issue. In your opinion, are these boot camps effective and, if not, how could they be adjusted to become so?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 5 | 1 | 1 | 0 |

* Most respondents (71%, *n*=7) indicated that the idea of a remedial boot camp for core competencies such as Math and English have had success. The two remaining respondents were neutral or negative, indicating that:
* Some responses indicate that employers, particularly related to the Technical Education programs, want employees with passable Math and English competencies; however, boot camps are not available to students through the current advising practices or not built into the programs.
* “I cannot comment on the effectiveness of boot camps at NWCCD, however, there has been some efforts by colleges and universities to utilize the MOOC model as a primer to attract students to a specific course and provide some level of introductory instruction. From a remedial standpoint, I think a structured and adaptive learning environment that quickly prepares (and refreshes for those who’ve been out of school for some time) students to enter a college-level math and/or English class should be fostered and replicated to other disciplines as appropriate.”
1. Currently, NWCCD’s A.A.S. degrees transfer to the University of Wyoming. If your program were to be evaluated by an external four-year institution for the development of an articulation agreement, which four-year college other than UW would you recommend?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 2 | 1 | 0 | 4 |

* Of those who responded to this question, two (67%, *n*=3) indicated that there is a need for expanded transfer opportunities for students completing technical education degrees at NWCCD; faculty cited that the distance between NWCCD and the University of Wyoming was significant and that online learning opportunities were limited, or that technical education programs at the University level were either less than ideal for transfer or not available for advanced skillset training in some fields. The four respondents who chose not to answer this question (57%, *n*=7) indicated that they were not familiar enough with University of Wyoming programs, or those of other universities, to sufficiently answer the question.
1. The University of Wyoming currently has limited offerings for baccalaureate degrees in online/hybrid format, particularly for students with A.A.S. degrees. To your knowledge, if given the chance to promote increased outreach programs, does UW have a program that aligns with the degree offered by NWCCD?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 2 | 1 | 1 | 3 |

* Respondents to this question were more positive (50%, *n*=4) than neutral or negative (25%, *n*=4 respectively). Faculty declining to respond (43%, *n*=7)indicated that they were insufficiently familiar with University of Wyoming program offerings to effectively answer the question.

*Strategy 3.1: Stackable Certificate Models*

1. The Mining Technology degree currently employs a stackable certificate model whereby courses are organized in certificate programs that increase hireability and promotability while students complete the program. In your opinion and based on your knowledge of your industry, would your program and students benefit from having a similar model applied? If so, how many certificates would you see developed based on the curriculum currently available?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 3 | 1 | 0 | 3 |

* Three respondents (43%, *n*=7) declined to answer this question, either because they did not feel the question applied to their academic discipline or because they were unsure how viable certificates would be. Seventy-five percent (3, *n*=4) of the remaining respondents favored developing stackable degree models, with one respondent remaining neutral about the efficacy of the model.
* “The students who have been in my class use those certificates as a touchstone to mark their progress and use the certificates as goals that do not seem so out of reach as the full degree, so I think it would be beneficial.”
* “From a previous life as an Information Systems faculty, our certifications stacked nicely as “concentrations” within the Computer Information Systems AAS program. Students could complete a certification and then easily pursue an AAS in CIS with a concentration in: a) Programming; b) Web Design; c) Networking and Data Comm.; or d) Business Applications.”

*Strategy 4.1: Use Technology in Delivery*

1. Based on your knowledge of your program, are there any courses that can be redeveloped for an online or hybrid delivery model to increase access to non-traditional students who may or may not be able to attend a physical classroom due to their schedules? If so, which courses and what formats would best be suited for that class?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 3 | 1 | 0 | 3 |

* More survey respondents (57%, *n*=7) answered this question than not, with only one (25%, *n*=4) neutral on the value or applicability of designing online or hybrid courses.
* Students, particularly in technical education programs, seem to prefer a face-to-face aspect of the courses, indicating for a preference for developing a hybrid course/program delivery strategy. Wholly online courses seem to be preferred by non-tech students or on topics that do not have a hands-on component.
1. Integrating technology into traditional courses is becoming more the norm in higher education. If offered training in SoftChalk or other software packages to add supplemental content to your courses, would you be interested in additional training? Why or why not?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 4 | 1 | 1 | 1 |

* Four respondents (57%, *n*=7) indicated that they would be interested in additional training in online, hybrid, or web-enhanced delivery tools as a way to keep current with educational technologies. One respondent felt that the topic was inapplicable to them, and declined to comment. The remaining two respondents (29%, *n*=7) were neutral or negative in their view of additional training.
* Point-of-need training with instructional designers was indicated as a better solution for some faculty.
1. Considering the weather, work schedules, and distances travelled by working students, modifying NWCCD’s technical offering to accommodate those challenges may be beneficial to enrollment, retention, and completion. For online delivery there are companies that offer software simulation packages that are, theoretically, comparable to in-lab experiences? In your opinion, are these simulators a viable option for incorporation into your program? Why or why not?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 1 | 1 | 0 | 5 |

* Five respondents (71%, *n*=7) declined to answer this question on the basis of inapplicability to the subject(s) they teach. One respondent (50%, *n*=2) answered positively, indicating that simulators and simulation software are continually growing in quality and diversity, and can effectively assist students with the practice of hands-on concepts in online environments in conjunction with practical lab time. One respondent (50%, *n*=2) was more neutral about the use of simulators, specifically in technical education; while acknowledging that simulators are improving, the faculty member indicated that hands-on lab time would be more effective to the student, and that even lab time does not fully prepare students for on-the-job situations and equipment.

*Additional Questions*

1. Higher education struggles to remain competitive as tuition costs and the price of books increase. In your opinion, how critical are textbooks in the delivery of your courses and programs? Do you currently refer your students to online texts, or recommend books that can be purchased at prices cheaper than textbooks?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 1 | 3 | 3 | 0 |

* Only one (14%, *n*=7)respondent indicated being in favor of moving fully or mostly away from textbooks to OER materials or other source materials for instruction. Neutral and negative respondents were equally represented (86%, *n*=7), indicating inconsistencies in material quality and/or the time required to research, modify, and integrate OER and other source materials into lectures may be prohibitive to fully leaving textbook-based instruction at this time; additionally, some responses indicated a continued value to textbooks in some disciplines.
* Most respondents indicated at least some willingness to consider developing courses around OER materials, but the negative tone of all comments – including the positive response – centered around the time required to research and adapt materials, in addition to concerns about the quality of OER materials currently available.
* “I would welcome the opportunity to use OER material. Why reinvent the wheel? If the subject matter meets the competencies for my classes then I would use it. This gives me more time for other endeavors.”
1. Open Educational Resources (OER) are materials developed by instructors across the country and the world on specific topics; these materials can be downloaded free of charge by faculty and incorporated into existing programs or modified to create new courses. How comfortable would you feel utilizing such resources in your own classes (or not), and why?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 4 | 3 | 0 | 0 |

* Responses on the use of OER materials in the development of courses was roughly split, with more positive responses (57%, *n*=7) than neutral reception to the idea (43%, *n*=7); no respondents responded negatively or declined to answer. The common concerns of both positive and neutral respondents were the availability of quality materials, the ease of finding the materials, and the time investment required to conduct research on available materials and adapting those materials to individual needs.
* “I have no qualms about sharing class content and materials. I am not sure if I have the time.”
* “I would be comfortable with using OER if I had time to vet out the resources and determine whether they were suitable for the needs of NWCCD students. Currently, the reason I am using textbooks that must be purchased is because the reference manual I assign has all the necessary information in one location instead of dozens of links to free and open resources.”
1. NWCCD is considering developing OER materials for distribution through several repositories. If asked to develop materials for courses within your programs, how comfortable are you with creating and sharing your teaching materials? Why?

|  |  |  |  |
| --- | --- | --- | --- |
| **Positive** | **Neutral** | **Negative** | **N/A** |
| 7 | 0 | 0 | 0 |

* All respondents to this question (100%, *n*=7) indicate that they would be opening to developing OER materials for distribution to further the availability of educational materials that would be free or cost-effective for students. However, a cautionary note was included on several surveys suggesting that the time required to develop such materials may be prohibitive based on course load and other demands on faculty time.
* “I would welcome the opportunity provided it was a 2 way street with multiple contributors.”
* “I have no issue with sharing content I’ve developed as long as I were adequately compensated to do so. Further justification would be that I find materials others have created which, ultimately, save me time from having to develop content myself.”

*Summary*

The sample size for this faculty survey is too small for an accurate overview of the opinions of technical education faculty, much less the broader district, on the objectives outlined under the TAACCCT Round 1 grant. However, even with the small return from participants there is sufficient feedback to extrapolate one potential receptiveness scenario for a broader implementation of TAACCCT 1 methods and strategies.

Using the number of questions (eighteen) and the four categories of response (positive, neutral, negative, and Not Applicable), the evaluative denominator for percentile analysis is set at 72 (e.g., 18 x 4 = 72). Total responses to all eighteen questions results in 125 total responses, from which the numerator for analytical calculations is derived by categorical response (e.g., 66 positive answers/75 = 91% positive answers). It should be noted that, while all faculty responding on the survey are directly involved with one of the three accelerated programs offered by the District (Accelerated Mining Technology, Accelerated Diesel Technology, and Accelerated Industrial Electric), only two are instructors drawn from the industry they teach; the remaining five faculty teach General Education or elective course supplementary to the three degrees being assessed under TAACCCT Round 1.

General receptiveness within the accelerated programs being assessed, based on the questions and answers analyzed in the previous section, is overwhelming positive at 91% (66, *n*=72). The strongest areas of support are in the continued development of accelerated courses for non-traditional students, as well as the development of broader nighttime course offerings that would accommodate students whose daytime work schedules preclude enrollment in current offerings. Additionally, there was overwhelming support for the development and releasing of course materials as Open Educational Resources (OER), with two caveats – the first, and most referenced, being concerns over the time available to develop those materials, and second (and less cited) was a concern over fair compensation for the development of those materials.

Neutral responses from surveyed faculty rated at 33% (24, *n*=72), with the largest items in the survey being the development of Military Credit for Prior Learning recommendations based on available training materials and the researching and implementation of OER materials in their courses (both as an effort to move away from the expense of textbooks as well as integration of additional materials). For both topics, the main concern expressed by faculty was the time requirement to research and adapt the materials against their current workloads.

Twenty-four responses (33%, *n*=72) fell under the negative reception category. Of these, the highest resistance expressed by faculty was on the topic of eliminating the use of textbooks in favor of reliance on OER materials and/or the development of their own materials as a replacement. One common theme was the time requirement necessary to research, adapt, and implement the OER material or to develop their own materials; the second common theme was that, expensive as textbooks can be, quite often these resources have all the required information in one location with a consistent thematic progression of topics. Feedback, however, suggests that faculty may be open to (or already actively pursuing) the selection of books available online or through traditional bookstores such as Barnes & Nobel as alternatives to the growing expense of textbooks.

Thirty-three percent of responses (24, *n*=72) fell under the “Not Applicable” category, with the largest concentration of this response on the topic of developing online courses. Responses largely fell under the response of inapplicability to the subject matter being taught. The second largest group of questions that drew a “Not Applicable” response centered on the transferability of degrees to the University of Wyoming or other four-year institutions, with the common theme justifying the response as unfamiliarity with transfer requirements or program opportunities at the university level.

*Conclusions*

While overwhelming indicative of a positive reception to the goals and objectives of the TAACCCT Round 1 grant, the sample size of this survey is too small to make an accurate assessment of receptivity among NWCCD faculty to new methodologies in non-traditional student education. The TAACCCT Round 1 team recommends that one, possibly two, AQIP (Academic Quality Improvement Program) projects be developed, using this survey design and the TAACCCT Round 1 objectives as the basis of the design. The primary research should focus on surveying all technical education faculty on key topics as identified in the previous sections of this assessment, and will require redrafting of topical questions for the greatest breadth. Based on the success of the technical education portion, the feasibility of redeveloping the survey for non-technical programs can be determined.

**Recommendations for the Institution:**

*University of Wyoming Outreach*

The Industrial Electrician program transfers to the University of Wyoming’s Bachelors of Applied Science in Organizational Leadership through the four-year institution’s Outreach program. This program is the only four-year degree currently available to NWCCD’s AAS transfer students without physically relocating, and can only be attained through distance education in online and video-teleconferencing formats.

The majority of courses under the BAS in Organizational Leadership are available online, and are therefore compatible with mine shift schedules; those courses that are not offered in an online format can be substituted with other courses under the same degree requirements section. Two courses under the Communicating in Writing and Speaking requirement – COJO 3010 Business and Professional Communication and COJO 3190 Cross-Cultural Communication – are only available in a video-teleconferencing format. Only one of these courses is a requirement for the BAS section, with ENGL 4010 Technical Writing in the Professions being offered completely online rounding out the communication component of the BAS degree.

Discussions with University of Wyoming representatives at the Gillette College outreach office indicate that the BAS requirements will be modified in 2014, with additional courses offered in various degree components. COJO 3010 and COJO 3190, however, will continue to be offered in video-teleconferencing format only, as UW professors feel that the competencies required to pass these courses cannot be achieved by students through online formats. Scheduling of these courses is based on overall enrollment, and depend on professor availability; therefore, these courses could be delivered Monday through Thursday at different times, either from 4:00-7:00 PM or 7:00-10:00 PM.

The scheduling of these two communication courses could be problematic for students who have been “heated up” while working on their AAS degree, as they could be scheduled outside the shift changes at the mines. Such scheduling could negatively impact the students who are employed, resulting in a discontinuation of education through non-transfer by students who are either unable or unwilling to take the needed time off from their jobs. Discussions should be held with the University of Wyoming in an effort to better define a schedule of delivery more compatible with area mine shift work schedules.

 Academic literature and the results of this program analysis indicate that students in accelerated AAS programs may possess a higher degree of motivation to transfer to four-year institutions and attain higher degrees. It is recommended that advising documentation and student educational pathways under NWCCD’s Technical Education department be updated to address difficulties in transfer by identifying UW BAS in Organizational Leadership courses available in online-only formats, thereby eliminating any guesswork on the part of the students.

It should be noted, however, that the majority of students who enroll in the Industrial Electrician program at the Northern Wyoming Community College District have little or no need for advanced degrees. Most individuals pursuing AAS degrees or certificates at the community college are career-focused individuals who need specific skillsets to maintain employment or to qualify for advancement to supervisory positions; the time and financial investment required for a higher degree are inapplicable to the career paths within the District’s service area. While there are some students who may be interested in pursuing higher education, the distance learning options available with Wyoming’s sole four-year university make it infeasible to pursue a baccalaureate without relocating.

*Flexible Scheduling*

A key component to the success of any accelerated delivery model for the Industrial Electricity program will be to develop and maintain schedules that accommodate faculty, staff, and student schedules. Significant relationship building with other departments is required to determine the most efficacious arrangement of courses within a delivery cycle, and must be conducted prior to the development of successive offerings. Additionally, equipment requirements must be taken into consideration if both accelerated and traditional scheduling of the program are concurrent, as the needs of both may result in scheduling conflicts through equipment availability.

A second complication to effectively scheduling accelerated courses in addition to the currently scheduled traditional length program relates to the availability of adjunct staff to teach required courses. Significant time must be devoted on the part of program faculty to coordinating course availability with program needs.

Should NWCCD decide to reactivate an accelerated model for the Associate of Applied Science in Industrial Electricity, or apply the model to other technical education programs, addressing equipment, adjunct faculty, and facility space will be critical components to successful delivery.

*Possible New Accelerated Delivery Models*

 NWCCD currently employs two different styles of accelerated delivery in addition to the model that was developed and tested with the Industrial Electric program. Elements of the additional models could be adapted to this program should the District decide to reintroduce the accelerated format. While the current non-accelerated model in use may be best for students with limited personal or professional obligations, it does not adequately address the needs of Campbell County’s primary employment Supersector – the mines. Additional research is needed to determine if there is a high demand for electrical technicians within these employers. If research does indicate that there is a demand, modification and adaptation of the Mining Technology and Diesel Technology accelerated delivery model elements should be considered when redesigning the accelerated format of the Industrial Electrician program.

The one year accelerated delivery model currently employed by the Diesel Technology program is ideal for non-traditional, motivated adult learners who are seeking to change industries or require additional education to return to the workforce; the model, however, is more appropriate for students who are currently unemployed due to the time commitment required. Research into increasing the retention and completion numbers of within the community college mission has indicated that high-engagement, high-intensity delivery models that accommodate the scheduling needs of the lower socioeconomic populations community colleges are designed to serve are one tool essential to success.

 Integration of the Accelerated Mining Technology program model into other programs, however, may make sense for working students. The courses themselves are condensed into intensive instructional blocks as the means of acceleration, though the program requires students take more semesters to complete the program. Though it sounds counter-intuitive to refer to this model as accelerated, it is precisely the compressed instructional periods and fewer days in the classroom over a two and a half year period that has contributed to the success of working non-traditional students.

Additionally, development of online or hybrid delivery models may not be ideal for the Industrial Electrician program, due to the high degree of hands-on instruction that skillset acquisition requires. However, research into simulators may make such development feasible. Evaluation of competencies across all program courses may be the most effective method of determining what, if any, courses can be adapted to online or hybrid delivery and which course require classroom environments.

**Conclusions:**

The accelerated model applied to the Industrial Electricity program was successful. Examination of the data related to student completion and success within the program indicates that industry-backed programs utilizing a high-intensity accelerated delivery format are effective at training non-traditional working students in a college environment for certificates and degrees. There is, however, less evidence that students with no professional background in the field are equally successful in the accelerated format of the class, as they lack the real world experience and knowledge to make the connections between varying concepts critical in an andragogical rather than pedagogical learning environment.

Based on examined data points, there are several possibilities that may provide solutions.

1. Invested industry partner or partners should be researched and partnerships built, whereby new equipment may be acquired and potential adjunct faculty recruited. Based on the first iteration of the accelerated delivery model (which was, essentially, an industry-backed training program), such a partnership is essential to effective delivery.
2. Adaptation of the Accelerated Mining Technology schedule may be an effective means of acquiring mine support for additional programs that meet both industry and employee needs and availability.
3. Research should be conducted to determine if there are any equipment and/or staff oriented grants available that could ease some of the availability issues through acquisition and adjunct staffing.
4. Existing curricula requirements across current accelerated models should be examined to determine areas of commonality; identifying common courses between accelerated programs and scheduling to fit accordingly could ease staffing requirements, investment of time in interdepartmental negotiation, and facility availability conflicts. Concatenation of requirements, particularly in general education, across programs into one scheduled block of instruction may result in larger classes but could potentially reduce scheduling issues across the various accelerated programs.