Project IMPACT

INNOVATIONS MOVING PEOPLE TO ACHIEVE CERTIFIED TRAINING

Final Evaluation Report

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External Evaluators

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PROJECT IMPACT FINAL EVALUATION REPORT

This is the final external evaluation report for Project IMPACT (Innovations Moving People to Achieve Certified Training). It includes both qualitative and quantitative analyses for this point in the project, which is cumulative to the efforts and progress to date. It was created by the external evaluation team of Dr. Michael Shain and Dr. Neal Grandgenett with the periodic assistance of the Project Director, Mr. Dan Davidchik and the various site coordinators and community college administrators.

1.0 Title and Abstract

1.1 Title

The full title of the Project IMPACT evaluation is "Diversified Manufacturing Technology (DMT) Training in Five Nebraska Community Colleges Over Four Years and Evaluating the Impact on Student Growth and System Change." This document represents cumulative information within the context of the original evaluation plan and project proposal as approved by the U.S. Department of Labor (DOL).

1.2 Abstract and Report Overview

Project IMPACT, as a DOL-funded initiative, sought to increase the achievement of certifications, credentials, diplomas, and degrees through blended learning combined with experienced instructors, advanced labs, and modern technology in the context of a new Diversified Manufacturing Technology (DMT) Certificate.

Project IMPACT Partners

Five Nebraska Community Colleges participated as partners in Project IMPACT. Central Community College (CCC) is leading the partnership of the five community colleges, which, in addition to CCC, includes Metropolitan Community College (MCC), Southeast Community College (SCC), Northeast Community College (NECC), and Western Nebraska Community College (WNCC). Together these partners sought to expand and to improve education and career training programs for workers eligible for U.S. Trade Adjustment Assistance (TAA), veterans, unemployed and underemployed workers, and traditional students.

The Purpose of this External Evaluation

The purpose of this external evaluation was to assess the effectiveness of Project IMPACT's Diversified Manufacturing Technology curriculum and support services in training a diverse set of participants to pass community college certifications, earn diplomas and meet Associate of Applied Science (AAS) requirements and industry certifications to qualify and acquire high skill, high wage and high need employment in manufacturing. The participating five (5) community colleges in the state of Nebraska were two-year colleges operating in the 2012 – 2016 academic years as both independent institutions, but also partnering closely on IMPACT. Adults eighteen (18) and older who participated in offerings at each of the community colleges (workshops, courses, continuing education, etc.) were considered as part of the student-related data and the IMPACT Intervention data.

Evaluators

A team of two highly qualified Project IMPACT external evaluators helped to facilitate the IMPACT evaluation process. Evaluation planning was facilitated by a duo of research professionals who have demonstrated expertise for numerous project evaluations: Dr. Michael Shain, President of Shain Evaluation & Consulting, LLC, and Dr. Neal Grandgenett, STEM Professor and Haddix Community Chair of STEM Education with the University of Nebraska at Omaha. Both have successful experience

providing evaluation studies for a wide range of federally funded grant projects, including the US Department of Labor, National Science Foundation, and the US Department of Education. Dr. Shain has extensive evaluation experience with federal workforce training projects, through private practice and a decade of service as the Director of Evaluation Services at the AIM Institute. Dr. Grandgenett shares strong federal grant evaluation experience, with an emphasis on STEM instruction, problem-based learning, and technology-enabled workforce training, having more than 130 publications related to STEM learning and program evaluation. They have several years' experience working collaboratively on project evaluation, with Shain's focus on qualitative analyses and Grandgenett's focus on quantitative analyses. Shain and Grandgenett had no financial interest in the outcome of the evaluation; they were not involved with the development of the project, and did not have any affiliation with the management of the grant, consistent with DOL guidelines.

Sample

For the sample, eligible adults that participated in one/all of the following: DMT courses, coaching, career/employment workshops, continuing education offerings, and physical/behavioral assessments, represented the sample.

Evaluation Design

The evaluation design was a longitudinal Quasi-Experimental, mixed method study from a statistical approach, with some limited comparison strategies for students who completed a complete program of study with those who completed only sections of the DMT certification or had initially considered it with an entry survey. In addition, a case study format was utilized to ascertain innovative approaches to curriculum, instruction and support services; and potential impact on department and overall community colleges systems, and community college and business interactions. Students were allowed to participate at any level they chose and to which they were qualified; data were retrieved before, during and after the IMPACT interventions.

Data Collection and Analysis

The Data Collection and Analysis related to a focused analysis of the demographic, academic and participation data that were collected from the records of each of the community colleges, through the individual site coordinators and participant coaches; all quantitative data were entered into an SPSS spreadsheet for analysis. Regarding employment, wage and retention data, aggregates of social security numbers of participants were sent to the Nebraska Department of Labor through each colleges' institutional research department to obtain these data. For qualitative data, individual case studies were collected through a series of semi-annual interviews of each community colleges' DMT staff and related support staff. The qualitative data were analyzed using pattern analysis techniques. In addition, the staff and affiliated community college personnel completed semi-annual services reports related to the progress of Project IMPACT.

Project Findings

The findings represented later in the report were associated with each community college addressing the introduction, development, and potential sustainability of the DMT curriculum according to their individual cultures. The potential for a sustained program varied with each college; however, the majority of the colleges have a high potential to integrate the DMT curriculum into their colleges' technical programs. The program was able to meet the number of participants as required by the TAACCCT Department of Labor. The external evaluation study also generated a set of lessons learned for future community college consortiums undertaking such highly collaborative projects.

Conclusions

Later in the report, the document describes that the underlying premises of the Diversified Manufacturing Technology Certification program as described in the accepted proposal and implemented by five of Nebraska's community colleges were met. Curricula were developed and implemented, and the majority of colleges have a high potential of being sustained and increasingly operationalized. Innovative instructional resources and student services were implemented and proved successful.

2.0 Background and Purpose

2.1 Unique Settings of the Five Partner Colleges

Central Community College (CCC)

Central Community College is a multi-campus community college serving a 25-county area in central Nebraska—approximately 14,000 square miles with a population of more than 300,000. CCC offers 33 career and technical education programs with a focus on degree, diploma, and certificate programs requiring two or fewer years to complete. The college also offers an academic transfer program for students who want to complete the first two years of a bachelor's degree before transferring to a 4-year college or university. In addition, the college offers classes in communities throughout its 25-county service area, online learning, and training and development for businesses, industries and other organizations. Central administration is located in Grand Island. Three main campuses are located in Columbus, Grand Island and Hastings. Educational centers are located in Holdrege, Kearney and Lexington. Additionally, CCC uses a variety of distance learning techniques to provide educational services in some 90 communities in its service area.

Metropolitan Community College (MCC)

Metropolitan Community College serves residents of Dodge, Douglas, Sarpy and Washington counties in Nebraska. Accredited by the Higher Learning Commission, MCC is the largest post-secondary institution in Nebraska. MCC offers more than 100 one- and two-year career programs in business administration, computer and office technologies, culinary arts, industrial and construction technologies, nursing and allied health, social sciences and services, and visual and electronic technologies, as well as academic transfer programs. General support courses, classes for business and industry and continuing education courses also are important parts of the college´s service to the community.

MCC has campuses in North Omaha at Fort Omaha, in South Omaha, and in Elkhorn, as well as satellite centers in Bellevue and Fremont such as the Applied Technology Center and classes at Offutt Air Force Base, and multiple area high schools and offsite locations. The mission of MCC is to deliver relevant, student-centered education to a diverse community of learners.

Northeast Community College (NECC)

Established by the State Legislature in 1973 as a comprehensive community college offering vocation/technical, liberal arts, college transfer, and continuing education, Northeast Community College is a two-year college located at the northeast edge of Norfolk, NE. It serves residents of a 20-county area in northeast Nebraska. NECC is the only community college in the state with one and two year vocational, liberal arts, and adult education programs all on one main campus. NECC is dedicated to the success of students and the region it serves. NECC stays true to its mission through the integration of a strategic plan that helps to set priorities, focuses energy and resources, strengthens operations, ensures all stakeholders are working towards the college's strategic goals, maintains focus on intended outcomes, and provides a means to assess and adjust to a continually changing educational and economic environment. NECC strategic goals include increasing student success, increasing student access, providing a globally competitive workforce, and developing and maximizing resources.

Southeast Community College (SCC)

Southeast Community College is a two-year public institution of higher education serving a primary area of 15 counties in southeast Nebraska. SCC offers multiple locations and continues to expand its online opportunities. With career/technical and academic programs, SCC provides students with opportunities to create their futures through the obtainment of new knowledge, skills and awareness. The blend of career/technical programs will provide students with the skills necessary to be successful in the workforce. SCC's programs provide students with opportunities to work with the latest equipment and technologies. Students enrolled in career/technical programs also receive high-quality instruction in academic areas to ensure they have both the technical and academic skills necessary to succeed at different organizational levels and in a variety of dynamic work environments. The first two years of a four-year degree represent the essential academic foundation. SCC's Academic Transfer program provides students with an outstanding opportunity to obtain a high-quality academic foundation at very affordable rates.

Western Nebraska Community College (WNCC)

Western Nebraska Community College's mission statement is to assure learning opportunities for all – enriching lives, invigorating communities, creating futures. This mission applies to the 12 ½ counties in the panhandle of Nebraska that comprise WNCC's assigned service area. In accordance with this mission, WNCC offers transfer education programs, applied technology education, developmental education and adult continuing education at our main campus in Scottsbluff and at satellite campuses in Sidney and Alliance. In total, WNCC offers 80 programs of study and 117 degrees, diplomas and certificates.

2.2 Timeline

The timeline of the IMPACT funding – Project IMPACT received funding beginning October 1st, 2012. The first step was to hire a project manager, who in turn hired the necessary staff: a curriculum coordinator, technical support personnel, and a participant coach. He then worked with each community college to ensure that they hired/designated a site coordinator, who in turn would determine how the coaching duties would be handled at his/her respective community college. As the various staff were hired, the project manager and curriculum coordinator began work to develop a four course sequence (Safety, Production, Maintenance, and Quality), the framework for a coaching model ("proactive coaching"), resources closely correlated to the Manufacturing Skill Standard Council, known as MSSC outcomes (including the online resource Tooling U, contextual remediation inserts, virtual reality simulations, and other digital and print resources). In addition, various outreach "tools" (a website; brochures and flyers; presentations PSAs; lunch'n'learns, etc.) were also undertaken. Partnerships were quite varied and included a range of partners in the manufacturing education pipeline (University of Nebraska-Lincoln; Nebraska Departments of Labor; Economic Development, Education, and Advanced Manufacturing Coalition; and businesses and industries in each college's catchment areas). An evaluation team utilized a developmental evaluation approach (both qualitative: case study, site visits, curriculum reviews and surveys; and quantitative: the nine TAACCCT required data points, a quarterly updated SPSS spreadsheet of all data; and quarterly feedback to the program manager and site coordinators).

2.3 Background Information on the IMPACT Intervention

Central Community College led a partnership of five Nebraska community colleges (CCC, MCC, SCC, NECC, and WNCC) and the University of Nebraska–Lincoln (UNL) in a four-year $5,629,194 project to expand and improve the ability of the Institutional Consortium to deliver education and career training programs to workers eligible for U.S. Trade Adjustment Assistance (TAA), veterans, unemployed and underemployed workers, and traditional students. The project sought to increase attainment of industry-recognized certifications, credentials, diplomas, and degrees through the use of innovative and effective

methods of curriculum development and delivery through a new *Diversified Manufacturing Technology* program.

The vast majority of TAA-eligible workers are from occupations associated with manufacturing. TAA-eligible workers are generally older individuals (avg. 48 years of age) who were long-tenured in their previous job (avg. 13 years) and have basic skills (82% with high school or GED). However, most possess 'on-the-job' skills that are not well documented or transferable. In addition, TAA-eligible workers have unique barriers to training and re-employment programs which are typically designed for younger workers with higher levels of adult basic education.

There is also a significant opportunity for resources developed and delivered to be introduced to younger student populations. Young adults and traditional college students will have the opportunity to see and learn about manufacturing, gain college credit and earn nationally-recognized industry certifications.

2.4 Project Work Plan

The following work plan fundamentals or "priorities" were related to the project proposal and followed carefully with the project's general work efforts.

- **Priority 1**—Provide effective grant management and administration to achieve grant deliverables.
- **Priority 2**—Develop Manufacturing Generalist A.A.S. degree program with certifications, certificates, diploma and degree options which are stackable and latticed and align with industry association standards.
- **Priority 3**—Incorporate innovative online learning opportunities through the use of a Second Life virtual manufacturing environment, delivering online real-time and asynchronous learning and collaborations.
- **Priority 4**—Improve retention and completion by 5% in the control group by providing Knowledge, Skills, Abilities, and Other characteristics (KSAO) assessments and enhanced coaching services.
- **Priority 5**—Increase Skilled and Technical Sciences (STS) course articulation by 25% among Nebraska community college's STS courses and develop pathways to baccalaureate programs with at least two four-year institutions.

2.5 Key IMPACT Curriculum Deliverables

The key curriculum-related deliverables associated with the project were established to help the project to consistently refine the project IMPACT related instruction. The first was a *Diversified Manufacturing Technology* certificate, diploma, and degree program, with courses aligned with ten (10) industry-recognized credentials. Next was the development of a variety of digital resources (ten 3D/4D simulations and/or game designs to enhance program courses; a virtual manufacturing campus; twelve Second Life workshops/seminars; four virtual manufacturing facilities in Second Life). Third was an enhanced participant coaching model to reduce attrition and accelerate progress toward achieving each student's success. Fourth was to facilitate the articulation of at least twenty-five percent (25%) of STS courses among the five (5) consortium community colleges and to coordinate two (2) articulated pathways to four-year baccalaureate programs. Fifth was a coordinated effort with the University of Nebraska-Lincoln College of Engineering to deploy both a KSAO mobile lab to measure physical abilities related to the world of manufacturing and a second KSAO assessment to measure "employability" attributes. Project IMPACT was seeking a five percent (5%) increase in participant retention and completion rates compared to other programs in the community college system.

2.6 Targeted Outcomes

The project worked toward a series of specific outcomes as detailed out by the U.S. Department of Labor. These outcomes included the following.

Cumulative Participant Outcomes

1. Unique Participants Served/Enrollees
2. Total Number Who Have Completed a Grant-Funded Program of Study
    2a. Total Number of Grant-Funded Program of Study Completers as Incumbent Workers
3. Total Number Still Retained in Their Programs of Study (or Other Grant-Funded Programs)
4. Total Number Retained in Other Education Program(s)
5. Total Number of Credit Hours Completed (aggregate across all enrollees)
    5a. Total Number of Students Completing Credit Hours
6. Total Number of Earned Credentials (aggregate across all enrollees)
    6a: Total Number of Students Earning Certificates - Less Than One Year (aggregate)
    6b: Total Number of Students Earning Certificates - More Than One Year (aggregate)
    6c: Total Number of Students Earning Degrees (aggregate)
7. Total Number Pursuing Further Education After Program of Study Completion
8. Total Number Employed After Program of Study Completion
9. Total Number Employed After Retained in Employment After Program of Study Completion
10. Total Number of Those Employed at Enrollment Who Receive a Wage Increase Post-Enrollment

3.0 Research Questions of the Evaluation Study

The Nebraska IMPACT Consortium is designed to increase attainment of industry-recognized certifications, credentials, diplomas and degrees through the use of innovative and effective methods of curriculum development and delivery. The evidence-based method will demonstrate improved employment outcomes as a result of the training activities and interventions. IMPACT will employ innovative assessment, training, and re-employment strategies that will reduce training program attrition and provide higher-skilled, higher-earnings employment outcomes. Specifically, IMPACT will develop several manufacturing-related credentials that individually will improve near-term reemployment, and collectively be stacked toward a 2-year or 4-year technical or professional degree.

3.1 Key Outcome Evaluation Questions

1. To what extent does the project increase attainment of certifications, certificates, diplomas, and other industry-recognized credentials to better prepare TAA-eligible workers and other adults for high-wage, high-skill employment or re-employment in growth industry sectors?
2. To what extent does the project introduce innovative and effective methods for curriculum development and delivery that address specific industry needs and leads to improved learning outcomes and retention rates for eligible participants?
3. To what extent does the project demonstrate, for TAA-eligible workers in particular, improved employment outcomes as a result of the funded program?

3.2 TAACCCT Research Questions

1. What service delivery and/or system reform innovations resulted in improved impacts for participants?
2. Under what conditions can these innovations most effectively be replicated?

3. What are the types of emerging ideas for service delivery change and/or system reform that seem the most promising for further research? Under what conditions are these ideas most effective?
4. What directions for future research on the country's public workforce system, and workforce development in general, were learned?

3.3 Implementation Analysis Research Questions

1. How was the curriculum selected, used, and/or created to undertake the project intervention and how does it appear to be developing?
2. How were related courses, programs and program designs improved or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support services and other services were offered?
3. What contributions did each of the partners (employers, workforce system, other training providers and educators, philanthropic organizations, and others as applicable) make in terms of program design, curriculum development, recruitment, training, placement, program management, leveraging of resources, and commitment to program sustainability? What factors contributed to partner involvement or lack of involvement in the program? What contributions from partners were most critical to the success of the grant program? Which contributions from partners had less of an impact?
4. Was an in-depth assessment of participants' abilities, skills and interests conducted to select participants into the grant program and to facilitate a project comparison group? What assessment tools and processes were used? Who conducted the assessment? How were the assessment results used? Were the assessment results useful in determining the appropriate program and course sequence for participants? Was career guidance provided, and if so, through what methods?
5. Contextually, how are the program implementation components generally aligned with the nine required TAACCCT program indicators?
6. How will the evaluation team discover, and the team respond to, unanticipated outcomes of the Project IMPACT program, both positive and negative?
7. How efficacious are the program interventions being undertaken (defined as "the power to produce a desired result or effect")?

4.0 Methods—Mixed Methods Data Analysis Approach

The methods of the evaluation process are now described from both a qualitative and quantitative context.

4.1 Qualitative Methodologies

Developmental Evaluation

According to Michael Quinn Patton, "Developmental Evaluation supports innovation development to guide adaptation to emergent and dynamic realities in complex environments. Innovations can take the form of new projects, programs, products, organizational changes, policy reforms, and system interventions. A complex system is characterized by a large number of interacting and interdependent elements in which there is no central control. Patterns of change emerge from rapid, real time interactions that generate learning, evolution, and development – if one is paying attention and knows how to observe and capture the important and emergent patterns. Complex environments for social interventions and innovations are those in which what to do to solve problems is uncertain and key stakeholders are in conflict about how to proceed." Patton (2006) explains the differences between traditional and developmental evaluation. A summary version of these differences is presented below:

Traditional evaluation	Developmental evaluation
Purpose: Supports improvement, summative tests and accountability	**Purpose:** Supports development of innovation and adaptation in dynamic environments
Roles & relationships: Positioned as an outsider to assure independence and objectivity	**Roles & relationships:** Positioned as an internal team function integrated into the process of gathering and interpreting data, framing issues, surfacing and testing model developments
Accountability: Focused on external authorities and funders based on explicit and pre-ordinate criteria	**Accountability:** Centered on the innovators' values and commitment to make a difference
Options: Rigorously options-focused, traditional research and disciplinary standards of quality dominate	**Options:** Utilization focused: options are chosen in service to developmental use
Measurement: Measure performance and success against pre-determined goals and SMART outcomes	**Measurement:** Develops measures and tracking mechanisms quickly as outcomes emerge; measures can change during the evaluation as the process unfolds
Evaluation results: Detailed formal reports; validated best practices, generalizable across time and space. Can engender fear of failure	**Evaluation results:** Rapid, real time feedback; diverse, user-friendly forms of feedback. Evaluation aims to nurture learning
Complexity & uncertainty: Evaluator tries to control design implementation and the evaluation process	**Complexity & uncertainty:** Learning to respond to lack of control; staying in touch with what's unfolding and responding accordingly
Standards: Methodological competence and commitment to rigor, independence; credibility with external authorities and funders; analytical and critical thinking	**Standards:** Methodological flexibility eclecticism, and adaptability; systems thinking; creative and critical thinking balanced; high tolerance for ambiguity; open and agile; teamwork and people skills; able to facilitate rigorous evidence-based perspectives

Figure 1. Differences Between Traditional and Developmental Evaluations

Because of the fluid nature of Project IMPACT, a developmental evaluation approach was selected, with qualitative data being gathered from a variety of sources: quarterly interviews with site coordinators and their staffs (see appendix for full write-ups), annual full staff meetings with all Project IMPACT personnel, two curriculum review sessions (see appendix, review of quarterly and annual TAACCCT reports) semi-annual surveys of all personnel (see appendix for survey and results) and reviews from the Evaluation Advisory Group. Feedback was given to the project director and all site coordinators, with the opportunity to add additional detail or revise the case study for accuracy's sake.

Case Study

A case study focuses on a particular unit—a person, a site, or a project. It often uses a combination of quantitative and qualitative data. Case studies can be particularly useful for understanding how different elements fit together and how different elements (implementation, context and other factors) have produced the observed impacts. There are different types of case studies, which can be used for different purposes in evaluation. The GAO (Government Accountability Office) has described six different types of case studies:

1. **Illustrative:** This is descriptive in character and intended to add realism and in-depth examples to other information about a program or policy. (These are often used to complement quantitative data by providing examples of the overall findings).

2. **Exploratory:** This is also descriptive but is aimed at generating hypotheses for later investigation rather than simply providing illustration.
3. **Critical instance:** This examines a single instance of unique interest, or serves as a critical test of an assertion about a program, problem or strategy.
4. **Program implementation:** This investigates operations, often at several sites, and often with reference to a set of norms or standards about implementation processes.
5. **Program effects:** This examines the causal links between the program and observed effects (outputs, outcomes or impacts, depending on the timing of the evaluation) and usually involves multisite, multi-method evaluations.
6. **Cumulative:** This brings together findings from many case studies to answer evaluative questions.

The qualitative evaluation of Project IMPACT blends program implementation, program effects and cumulative aspects of case study, looking at all three elements: implementation, effects and cumulative data from the five (5) individual community colleges' approaches. The individual case studies not only gathered data on the development and implementation of the activities, services and resources of the project, but also how they emerge into the individual cultures (defined as "how we do business") of each of the institutions. The process of "**Pattern Analysis**" was utilized to glean out the consistencies that were shown to improve student learning, as well as those activities, services and resources that showed little impact on student success (Stufflebeam, 2007 & Fitzpatrick, 2004). These qualitative data were triangulated with semi-annual surveys of Project IMPACT staff in each of the five community colleges (see appendix).

4.2 Quantitative Methodologies

Description of the Study Sample

The participants in the study were adults eighteen and over that enrolled in any of the five community colleges and were seeking courses, certificates, or diplomas related to manufacturing. The primary study sample must have at least one of the Diversified Manufacturing Technology courses (Introduction to Safety, Introduction to Maintenance, Introduction to Production and/or Introduction to Quality), while priority analysis was given to 3 or more courses completed.

Description of Comparison Group

The participants in the study who were designated as part of the comparison group were adults eighteen and over that enrolled in any of the five community colleges and were also seeking courses, certificates or diplomas related to manufacturing. However, they did not complete one of the IMPACT courses.

Specific Characteristics of the Intervention(s)

Project IMPACT Diversified Manufacturing Technology certificate program utilized a variety of interventions to insure effective instruction, timely services and targeted resources. The core of the program was the four (4) courses in the Diversified Manufacturing Technology certification, with variations among the five (5) community colleges. One college expanded the content to seven courses, including a math class. The classes were offered in a variety of ways, from the traditional classroom and lab format, to a "hybrid" of online and classroom/lab, to a "boot camp" approach held in the evenings at an off-site location. The courses' main resource was the online series of modules of Tooling U; they were reinforced with a series of contextual remediation material. To support the curriculum, "intrusive" coaching was introduced to great effect, assisting students in navigating their way through the college system and assisting with personal/social, financial, academic and job-related issues. The DMT program staff also designed and implemented an "island" on Second Life, a digital representation of manufacturing

sites, with information, activities and assessments to assist students. The University of Nebraska-Lincoln (UNL) College of Engineering developed a series of virtual reality (VR) simulations and a process for measuring the physical capabilities of students: ERGOS. UNL also formulated a bank of behavioral assessments to measure such concepts of stress, goal setting and locus of control. The Project IMPACT staff used a myriad of approaches to recruit students into the DMT certification program. From a personal standpoint, they presented at career fairs, local/regional workshops and conferences, and through PSAs and radio talk shows; the instructors talked with current students about adding the DMT certification and solicited students to talk to their friends and relatives and neighbors about the opportunities in the DMT program. They developed and maintained an interactive website and kept a strong presence on social media, such as FaceBook, Twitter and SnapChat. They designed and disseminated brochures, flyers and posters.

Description of Staff Sample

Project IMPACT had an overall project manager housed at Central Community College. The project also had several technology-related personnel to develop and manage the website, the Second Life site and other tech-related activities and resources. Each community college had either a full-time or part-time site coordinator, in addition to a full- or part- time coach. Two colleges had both a full-time site coordinator and a full-time coach. The three other colleges had a site coordinator who functioned as the coach. One of the difficulties with program continuity was the level of turnover among three of the community colleges; one of the colleges managed a seamless transition; another kept their site coordinator but transitioned through several coaches. The third college encountered a great deal of disruption, with the use of part-time site coordinators and part-time coaches.

5.0 Data Analysis Basic Results Summary

5.1 Indicators of IMPACT and Study Fidelity

"Fidelity, also referred to as adherence, integrity and quality of implementation, is the extent to which the delivery of an intervention adheres to the protocol or program model as intended by the developers of the intervention." (Dane and Schneider, 1998) There are five dimensions of fidelity: adherence, exposure, quality of delivery, participant responsiveness and program differentiation. As the data and descriptions throughout this report delineate, Project IMPACT has met the five criteria:

- Adherence (extent to which the program components are delivered): a comparison of the work plan and priorities to the actual work accomplished by Project IMPACT staff and partners matches closely (See Section 5.3 Qualitative Data Summary)
- Exposure (amount of program delivered in relation to the amount prescribed in the program model): Project IMPACT met the designated number of participants (See Section 5.2 Quantitative Data Summary)
- Quality of delivery (manner in which the program is delivered): Project IMPACT delivered a number of high quality components, such as the curriculum, the intrusive coaching, the use of functional resources (i.e. Tooling U and the contextual remediation support), innovative instructional practices, etc.) (See Section 6.0 Evaluation Results Discussion)
- Participant responsiveness (manner in which the participants . . . engage in the program): Project IMPACT offered a number of innovative options for student engagement, from informational opportunities to fully completing the Diversified Manufacturing Technology certificate. (See Sections 5.2 Quantitate Data Summary and 5.3 Qualitative Data Summary)
- Program differentiation (degree to which the critical components are distinguishable . . . from other programs): Project IMPACT designed and implemented a diversified manufacturing technology certificate program featuring four distinct courses: Safety, Production, Maintenance and Quality. Each of the five community colleges implemented the program to integrate with

their culture, creating five approaches to the DMT certification. It utilized a variety of functional interventions: use of Tooling U as the main resource, supported by contextual remediation components; intrusive coaching; "boot camp" model at one college; virtual reality simulations; use of a digital "island" (Second Life) for informational, instructional and assessment options; and integrated coordination among five community colleges, functioning a collaborative effort.

5.2 Quantitative Data Summary

Within the context of an extensive quantitative analysis, the project evaluation team initially analyzed the demographic-related variables for the project. These variables consisted of the following results.

Basic Demographics of Study Sample at End of Project

The following are the demographic variables summary at the current time (end of the project) related to Project IMPACT, and represents the data that was shared by the project with the external evaluation team.

- Total of Student records in SPSS file: N = **1,020**
- Individual Community College Totals in SPSS file:
  - Central Community College: N = **187**
  - Metropolitan Community College: N = **342**
  - Northeast Community College: N = **194**
  - Southeast Community College: N = **222**
  - Western Nebraska Community College: N = **75**
- Gender Totals: Male **944**; Female: **76**
- Racial Totals: White **813**; Black **45**; Hispanic **100**; Other **62**
- Veteran Totals: Veterans **100;** Non-Veterans **920**
- Age Mean: **25.8** years

Student Participation by Program Concentration

The following table summarizes student participation by program concentration. Program concentrations were listed across the Project IMPACT program and the five participating community colleges. Categories were collapsed for minor name differences.

Table 1. Student Participation in Project IMPACT by Program Concentration

Listed Program Concentration	N	Percent
Automotive Technology	15	1.5%
Bootcamp	9	0.9%
Business	15	1.5%
Drafting	11	1.1%
Electromechanical/Electrical	142	13.9%
General Studies	16	1.6%
Heating, Ventilation, Air Conditioning	47	4.6%
Industrial Maintenance / Trades	10	1.0%
Machine and Precision Technology	18	1.8%
Manufacturing Related Title	126	12.4%
Non-Destructive Testing	12	1.2%
Undecided	13	1.3%
Welding	332	32.5%
Left Blank	90	8.8%
Other	62	6.1%
Totals	**1020**	**100.0%**

Students participated in Project IMPACT appropriately across a wide range of programs that allowed a wide variety of integration of the four IMPACT courses across manufacturing-related programming.

Employment Status Upon Enrollment

As with most all community colleges across the country, many different types of students attended within the context of the Project IMPACT program. When looking at their employment status upon enrollment in a Project IMPACT college, the full time participants represented roughly 2/3 of the overall participants. (Note: Site coordinators may have shifted status from unemployed to employed as the participants secured jobs, so data may be skewed toward full or part time employment).

Table 2. Student Employment Status Upon Enrollment in Project IMPACT

Student Employment Status	N	Percent
Full time	674	66.1%
Part time	239	23.4%
Unemployed or No Employment	107	10.5%
Totals	**1020**	**100.0%**

Project IMPACT Course Completion Counts

As the course completions for the Project IMPACT program continue to rapidly expand during this last year, the following counts are currently identified by the five community colleges for course enrollments and completions.

Table 3. Project IMPACT Course Completions

Course (Intervention)	N	Percent
Safety	219	21.5%
Maintenance Technology	93	9.1%
Introduction to Manufacturing	78	7.6%
Quality Improvement	75	7.3%
No Course Reported Yet	555	54.5%
Totals	**1020**	**100.0%**

It is important to note that the courses are becoming increasingly popular and not all the initial course enrollments, particularly during pilot phases, were recorded officially by the individual community colleges. It is important to note that at the time of this report, some students were in progress and thus the frequencies are naturally higher than the completion frequencies above.

Table 4. Project IMPACT Coursework Interventions Totals Across Colleges

Course (Intervention)	CCC	MCC	NCC	SCC	WNCC
Safety Course	174	146	47	4	9
Maintenance Technology Course	1	23	65	4	3
Introduction to Manufacturing Course	3	46	27	2	3
Quality Improvement Course	1	46	24	4	2

Key Results Associated with Observed Outcome Relationships

The overall outcomes observable from the quantitative data are associated with the following tables.

Tooling U Use

Tooling U was established as a classroom resource and potential replacement for traditional textbooks as the project progressed. The participating community college identified in the participant spreadsheet indicates how many of the students had used Tooling U. The following table displays those results.

Table 5. Tooling U Integration

Course Completions by Student	N	Percent
Yes	625	61.2%
No	395	38.8%
Totals	**1020**	**100.0%**

Coaching Use

The project established an innovative new coaching model. The five community colleges replicated the process relatively closely and steadily increased the coaching over the period of the project. The majority of students in the reporting spreadsheet participated at least once per month in the coaching.

Table 6. Coaching Contact with Students

Regular Contact with a Coach	N	Percent
Yes	953	93.4%
No	67	6.6%
Totals	**1020**	**100.0%**

Outcomes: Community College Certifications

The project tried hard to help students to get a related community college certification within the process of participating in the IMPACT program. Many students are still in pipeline and finishing up coursework.

Table 7. Community College Certificate Completion Status of Project IMPACT Students

Community College Certificate Completion Status	N	Percent
Yes; Completed with CC Certificate	103	10.1%
No; Completed without CC Certificate	236	23.1%
In Progress	681	66.8%
Totals	**1020**	**100.0%**

Outcomes: Industry Certifications Achieved

The project also tried hard to help students to get a related industry certificate within the process of participating in the IMPACT program. Many of the students did complete one or more industry certifications, while others are still in the pipeline. Here is the status at the time of this reporting process.

Table 8. Industry Certificate Completion Status of Project IMPACT Students

Number of Industry Certificates Completed	N	Percent
0 Industry Certificate Completed	549	53.8%
1 Industry Certificate Completed	78	7.6%
2 Industry Certificates Completed	52	5.1%
3 Industry Certificates Completed	29	2.8%
4 Industry Certificates Completed	12	1.2%
5 or More Industry Certificates Completed	19	1.9%
Unknown	281	27.5%
Totals	**1020**	**100.0%**

Outcomes: Associate of Arts Degree Achieved

The project also tracked the students who achieved an associate of applied science community college degree. As some students are still in progress, the table below represents a significant number of students still in progress. This is to be expected considering that the IMPACT program coursework took some time to develop and admit students, so numerous students are still in the pipeline.

Table 9. Associate of Applied Science Degree Achievement Status of Project IMPACT Students

Student Achieved AA Degree	N	Percent
Yes	170	16.7%
No	273	26.8%
In Progress	577	56.6%
Totals	**1020**	**100.0%**

Outcomes: Employment Status After Leaving Community College

It is difficult to tell when a student actually leaves the community college environment, since many students are appropriately lifelong learners and come back to an institution for additional technical training or certification opportunities.

Table 10. Employment Status After Leaving Project IMPACT

Employment Status on Exit	N	Percent
Full-time	67	6.6%
Part-time	10	1.0%
In Progress (or Unknown)	943	92.5%
Totals	**1020**	**100.0%**

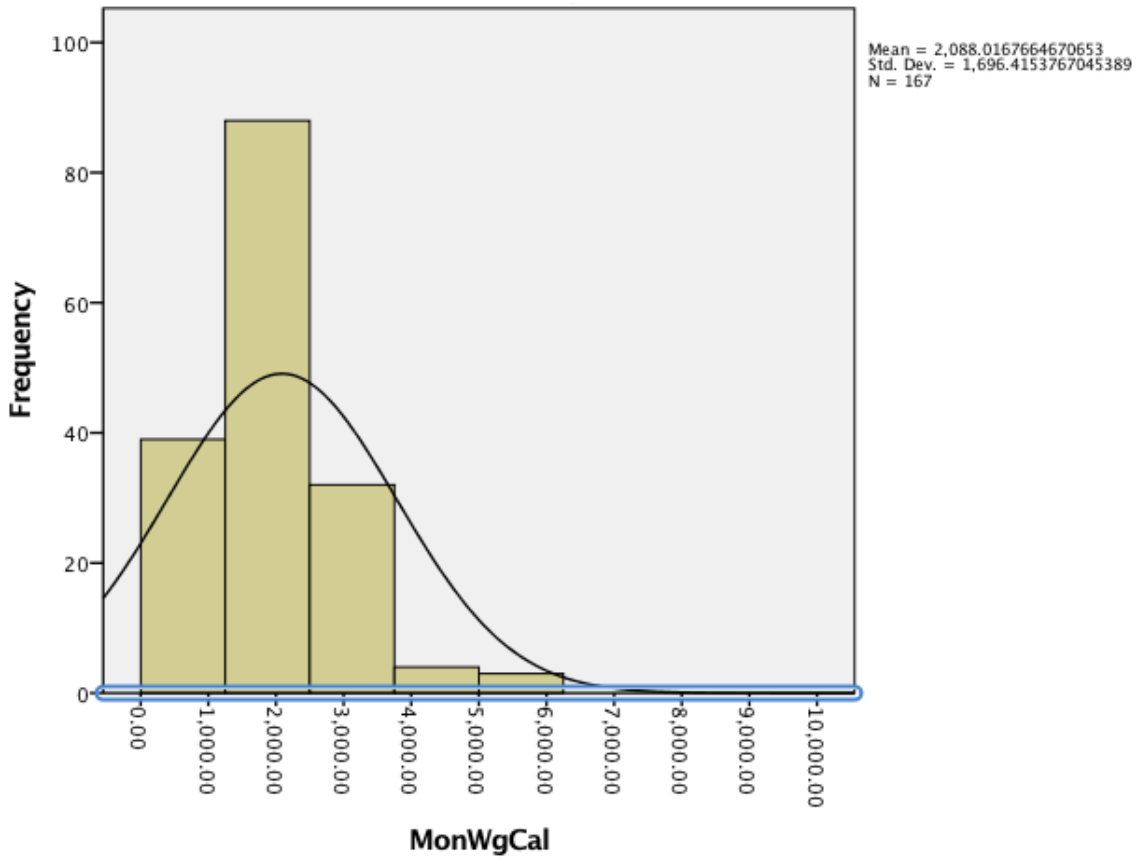
Outcomes: Monthly Wage Data After IMPACT Intervention

The monthly and yearly wage data for a sample of N=167 students across the IMPACT colleges was available by post-graduation survey. The data were secured by the colleges modifying their regular post-graduation survey, or from having contact with an IMPACT coach that followed up with the student. The wage information is provided in the following table and figure.

Table 11. Monthly Wages for IMPACT Course Participants

Wage Type	Monthly	Yearly
Mean	$2,088.02	$25,056.24
Median	$2,000.00	$24,000.00
Standard Deviation	$1,696.41	$18,356.92

Figure 2. Monthly Wage Distribution for IMPACT Course Participants



Outcome: Correlation of IMPACT Courses with Wages/Industry Certifications

The number of IMPACT courses taken, ranging from 0 to 4 courses was correlated with the wages and industry certifications, using a Pearson Product Moment Correlation.

Table 12. Correlation of Project IMPACT Courses with Wages and Industry Certifications

Number of IMPACT Courses Correlated with:	Correlation	Significance
Monthly Wages	r =.163	p =.272
Industry Certifications	r=.570	p = .000**

NOTE: ** = p < .001

The number of IMPACT courses was significantly related to the number of industry certifications attained with r=.570, p =.000. The number of IMPACT courses taken by a students were only weakly positively correlated with the monthly wages information, and not statistically significant. This could possibly be related to the early point in time in the new employment journey for these students.

Outcome: Triangulation with Nebraska Department of Labor Data

The retrieval of official Nebraska Department of Labor (NDOL) individual wage and employment data was an ongoing and significant problem for the IMPACT project in that the state policies did not permit individual wage data to be returned to any community college or project. The project team worked extensively over the duration of the project with NDOL in the context of numerous emails, personal meetings, and phone conversations, but could never make individual wage and employment data retrieval possible. Many strategies were tried, and the NDOL explored various options but it ended up being

impossible within the project timeline. The newest strategies are being conceptualized and will be piloted by Metropolitan Community College and NDOL, within the context of a third party vendor, called Heartland Workforce Solutions; however, those data were not to be available in time for this report.

An aggregate procedure was eventually tried in the summer of 2016 in order to get at least some NDOL data analysis in time for this report, data that were not self-reported by students. The following strategies and results were undertaken, again as a general attempt to retrieve some form of useful aggregate results from the NDOL data for at least some selected student cohorts.

Summary of Project IMPACT Wage Aggregate Data Strategy by Selected Cohort

Cohort 1

Cohort 1 of 96 randomly selected students included 27 students who had their incumbent status at the time of enrollment as "unemployed". The Social Security Numbers (SSN's) were sent to NDOL for aggregate summary and response.

Questions being answered—Of the Cohort 1 students, how many students became employed in any quarter after Date Entered Program?

Methodology—The social security numbers for all the 96 students were acquired through information technology services (ITS) and submitted to Department of Labor (DOL). A total of eight quarters (four quarters of 2014 and four quarters of 2015) wage data was obtained from NDOL. A student was determined to be "unemployed "if his/her SSN was nowhere in the wage records and also if they had wages in other quarters but not in the quarters we were looking for. A student was determined to be "employed" if he/she had wage records in any or all of the quarters after the student's last known participation date.

Results—Cohort 1 results include the following:

- 24 of the 27 students in **cohort 1** had at least one quarter of wage information within the acquired data. Of these 24 students, 7 students became employed in any quarter after the date they entered the program.
- For grant year 2 we have 3 students employed any quarter after last participation date.
- For grant year 3 we have 4 students employed any quarter after the last participation date.

Cohort 2

Cohort 2 included 69 random students who had their incumbent status at the time of their IMPACT program enrollment as "part-time or full time".

Questions being answered—Of the Cohort 2 students, how many students had wage increases in any quarter after the date they entered the program?

Methodology—The social security numbers for all the 96 students were acquired through information technology services (ITS) and submitted to Department of Labor (DOL). A total of eight quarters (four quarters of 2014 and four quarters of 2015) wage data was obtained from DOL. A student was determined to be "unemployed" if his/her SSN was nowhere in the wage records and also if they had wages in other quarters but not in the quarters we were looking for. A student was determined to be "employed" if he/she had wage records in the quarters after the student's last known participation date. If a student had a **wage hike between any two consecutive quarters** after he/she entered the program, that student was counted as a recipient of increase in wage.

Results—Cohort 2 results include the following:

- 58 of the 69 students in cohort 2 had at least one quarter of wage information within the acquired data. Of these 58 students, 18 students had a wage increase in any quarter after the date they entered the program.

- For grant year 2: we had 5 students who had increase in their wages.
- For grant year 3: we had 13 students who had increase in their wages.

Cohort 3

Cohort 3 that included 20 randomly selected students with a completed program of study.

Questions being answered—Of the Cohort 3 students, how many students enrolled in further education after completing a program of study?

Methodology—We received the data from National student tracker and ran the analysis, within the context of the host community college.

Results—Of the 20 students in Cohort 3 who had completed their program of study, 17 are still with the community college and 3 are working either full time or part time. There were no students who pursued further education away from the community college in that respective group.

Future NDOL Access

After many meetings and conversations, the NDOL worked out a smoother future agreement with the Nebraska community colleges for use with grants that need this information. This is simultaneous to the efforts being piloted with Heartland Workforce Solutions for more individualized data. Here is the procedure for aggregate data as it now stands with NDOL.

- Previous Wage Data requests have not all yielded useful information. To receive useful data, it is important that Consortium leaders and their IR departments as well as the NDOL staff understand precisely what information is needed and the related constraints.
- To obtain the most complete Wage Data in aggregate results format, each of the colleges should process an individual request. Per Mary Findley at NDOL, wage data requests can be processed within a two-week time period. *(NDOL officials were out of the office at the end of September and the beginning of October 2016)*
- To reduce the possibility for confusion, colleges need to restrict wage data requests for data which will allow the college to answer specific questions for particular cohorts. Additional information should be processed with additional requests.
- For purposes of NDOL data gathering capabilities, participant start dates and completion dates are limited to the quarter in which those events occur (third quarter 2015, second quarter 2016, etc.) The report period for the fourth year of the grant is October 2015 to the present.
- With SSN numbers from IR departments, NDOL can access Nebraska wage data and wage data from nearby states if needed.
- Accompanying these meeting notes is an Excel spreadsheet with a *Wage Data gathering template* and a simple *Summary of Project IMPACT Wage Data*.
- New requests are to be made with the following spreadsheet format.

	A	B	C	D	E	F	G	H	I	J	K
1	**Wage/Employment Data NDOL**			**Example**							
2											
3	**Community College***	**Name of Participant***	**Social Security #***	**Date of Birth***	**Quarter Enrolled at CC***	**Quarter Left CC Program***	**Secured Job (yes/no)**	**Date of Hire**	**Incumbent Worker at time of enrollment (yes/no)**	**Retention Data (2 quarters after leaving program)***	**Wage Increase (yes/no)***
4											

Comparison of Course Implementation with Self-Reported Wage Data

Using the comparison of the 184 students from IMPACT in which the colleges had secured the wage data, and splitting this file between the students who had 1 or more IMPACT courses compared to the students who did not have IMPACT courses, an independent t-test was completed on these data. The

results follow. Unfortunately, although there was a mean difference of $250.03 with the IMPACT coursework, this was not statistically significant when considering the overall dataset. This could well be the case that the project coursework is still fully underway and the statistical power is relatively small for this type of comparison.

Table 13. Comparison of Course Implementation with Self-Reported Wage Data

Number of IMPACT Courses Correlated with:	Mean	Standard Deviation
With IMPACT Courses	$2,165.72	$848.36
With No IMPACT Courses (Matched)	$1,915.69	$2071.10

NOTE: t = 1.036, p < .302, df = 182

Summary Outcomes with Project IMPACT Quick Glance

The project established a "Quick Glance" of summary outcomes to help keep stakeholders and the college administrations up to speed on how the project was going. This was very well received and useful for the many stakeholders associated with Project IMPACT. Following is an example of that report. This

Project IMPACT - Participant Outcomes for period ending 06.30.16

B. CUMULATIVE PARTICIPANT OUTCOMES (ALL PARTICIPANTS) (All fields Required)	06.30.16 Total	03.31.16 Total	12.31.15 Total	09.30.15 Total	06.30.15 Total	03.31.15 Total	12.31.14 Total	09.30.13 APR.Yr1	09.30.14 APR.Yr2	09.30.15 APR.Yr3	Change v. Lst Qrtr	
1. Unique Participants Served/Enrollees	1019	983	907		650	622	507	2	431	445	36	⇧
2. Total Number Who Have Completed a Grant-Funded Program of Study	279	224	237		174	78	66	0	58	144	55	⇧
2a. Total Number of Grant-Funded Program of Study Completers Who Are Incumbent Workers	177	133	141		95	44	39	0	37	68	44	⇧
3. Total Number Still Retained in Their Programs of Study (or Other Grant-Funded Programs)	291	378	307		218	304	251	2	198	274	-87	⇩
4. Total Number Retained in Other Education Program(s)	31	21	14		17	16	18	0	27	16	10	⇧
5. Total Number of Credit Hours Completed (aggregate across all enrollees)	32178.5	27823.5	22880.5		15255.5	12219	9132	0	6417	14414.5	4355	⇧
5a. Total Number of Students Completing Credit Hours	904	844	766		546	497	386	0	320	439	60	⇧
6. Total Number of Earned Credentials (aggregate across all enrollees)	713	547	647		496	244	206	0	129	480	166	⇧
6a: Total Number of Students Earning Certificates - Less Than One Year (aggregate across all enrollees)	141	96	125		90	60	59	0	47	102	45	⇧
6b: Total Number of Students Earning Certificates - More Than One Year (aggregate across all enrollees)	9	16	10		10	5	0	0	0	8	-7	⇩
6c: Total Number of Students Earning Degrees (aggregate across all enrollees)	305	210	192		155	78	64	0	48	133	95	⇧
7. Total Number Pursuing Further Education After Program of Study Completion	84	67	64		25	13	3	0	2	15	17	⇧
8. Total Number Employed After Program of Study Completion	111	51	44		41	28	28	0	9	68	60	⇧
9. Total Number Employed After Retained in Employment After Program of Study Completion	76	48	36		36	28	0	0	0	62	28	⇧
10. Total Number of Those Employed at Enrollment Who Receive a Wage Increase Post-Enrollment	80	27	7		7	5	8	0	8	28	53	⇧

example is from the end of June 2016, and aligns well with the other indicators.

Figure 3. Example of "Quick Glance" Summary Outcomes for Project IMPACT

Key Results Associated with Behavioral Battery and Work Capacity Study

As identified in the original proposal, the IMPACT project worked with two University of Nebraska Lincoln scientists to conduct a research study called "Innovations to Move People to Achieve Certified Training (IMPACT) Behavioral Battery and Physical Work Capacity" which was conducted by Dr. Terry L. Stentz, Ph.D, MPH, CPE, CPC and Dr. Kelli R. Herstein, Ph.D., which was completed on August 15, 2016. The summary of the results of this study is in the final appendix of this document, but a more complete summary with IRB approvals, illustrations and various appendices is available on request.

The Behavioral Battery (N=40) was deployed as an online survey using Qualtrics, LLC software. Participants were either given access to the webpage in a computer laboratory at their community college or we recruited via email. Screen prints of the Behavioral Battery in its entirety can viewed online at https://unlcba.az1.qualtrics.com/SE/?SID=SV_3waibglFZRIhAlT. An Expedited Institutional Review

Board (IRB) Review was necessary for the Behavioral Battery. The Behavioral Battery was initially approved in 2013 and was renewed in 2014 and 2015 through 2016 from the University of Nebraska Medical Center.

The Physical Work Capacity Assessment (N=59) was completed onsite at the IMPACT colleges and is a physical test. In an effort to increase participant recruitment, an informational brochure was created and disseminated to participant coaches on every community college campus. A Full-Panel IRB Review was required for the Physical Work Capacity Assessments. The Physical Work Capacity Assessment Protocol was approved by the IRB in 2013 and approved for continuing data collection in 2014 and 2015 through 2016. Every participant was read and signed an IRB-approved informed consent. The test apparatus used to collect physical work capacity assessment data was ERGOS®. The ERGOS® apparatus had a few space requirements including a door that ERGOS® could be attached to, a small desk for the tablet, a sturdy table, sturdy chair, power sources, and ample space for participant movement. The Physical Work Capacity assessment was thus performed using ERGOS® Work Simulator. Sixty-two (62) IMPACT Students and one (1) IMPACT instructor read and signed informed consents to participant in the Physical Work Assessment. Two (2) students opted out of testing before testing began and the data for one (1) did not save correctly and cannot be accessed. The assessment data for the remaining fifty-nine (59) students was aggregated based upon activity and rated based on Methods-Time Measurement (MTM-2) Performance or the work capacity as defined by The U.S. Department of Labor's (DOL) Dictionary of Occupational Titles (1986) of the full document, and as summarized in the appendix.

Behavioral Measures Battery Summary of Results

O*Net Interests Inventory—A self-assessment career exploration tool that helps a person identify the type of work activities and occupations that they would like to do and find exciting. Broad interest areas are identified that are most relevant to the individual. The score includes six (6) different constructs: realistic, investigative, artistic, social, enterprising, and conventional. Highly realistic people enjoy operating machines and being machinists.

- Most common result: Realistic (R), Investigative (I) and Social (S) (n=39)
- 33 of 39 students scored HIGH for realistic, 23 of the 39 scored HIGH for investigative, and 17 of 39 scored HIGH for social.

COPE Inventory—A self-rated assessment that identifies a person's stress coping responses as a reaction to various types of stress. The response scale includes 15 different coping behaviors and defines each behavior in terms of a positive coping behavior or a less positive (negative) coping behavior. For example, a positive coping behavior would be using emotional and social support to reduce stress. A negative coping behavior would be using a substance like alcohol or drugs to attempt to reduce (avoid) stress (n=37)

- Results indicated students frequently used the following positive coping strategies: positive interpretation and growth acceptance, active coping, humor, use of emotional social support, acceptance, and use of instrumental social support.
- Results indicated students frequently used the following negative coping strategy: focus on and vesting of emotions, denial, substance use, and suppression of competing activities.
- Results indicated students *less* frequently used the following positive coping strategies: planning, restraint, and religious coping.
- Results indicated students *less* frequently used the following negative coping strategies: behavioral and mental disengagement.

Accident Locus of Control (ALC)—A self-rated forced choice measure of the degree of internal or external control a person believes they have related to accidents or accident potential. The scored measure is an overall indicator of how much an individual believes they have control of their own behavior related to being involving in an accident. People who have HIGH ALC scores believe that they control their

ability to avoid accidents and injury based on self-awareness and personal action to avoid or prevent accident involvement. (n=36)

- The scaled score is 0 to 24 with the student sample showing a high of 24, low of 5 and mean of 16.
- 28 of 36 students had a score of 12 or higher indicating higher internal locus of control related to accident involvement and their ability to identify and avoid accidents; 8 of 36 students had a score below 12.

Life Stressors Inventory (LSI)—A self-reported measure of the types of life stressors and frequency of occurrence experienced in the past year or will likely to be experienced in the next 6 months. The scored measure is an indicator of the likelihood that a person will be experience a stress-related illness or stress problem in the near future. People with a low LSI are not likely to experience a stress-related illness or problem in the near future as opposed to a person with a high LSI who could be more likely than not to experience such an illness or difficulty. Life stress can affect work performance as well as home and social life experiences. (n=36)

- A score of 150 or less indicates slight (30%) risk, 150-299 moderate (50%) risk and above 300 high (80%) risk.
- 3 of 36 students scored less than 150 (low risk). The lowest score was 46.
- 8 of 36 scored 150-299 (moderate risk)
- 27 of 36 scored above 300 (high risk). The greatest score was 2815.
- Average score was 525.
- Students most frequently cited changes in their financial and living situation as sources of stress.

Psychological Capital "E" (PSYCAP-EXPLICIT)—A self-rated "agreement-disagreement" measure of self-efficacy, hope, resiliency, and optimism. People with HIGH PSYCAP-E tend to see situations in a positive light and believe that personal effort and perseverance will lead to success in their endeavors. People with LOW PSYCAP-E tend to believe the opposite. (n=36)

- The average score for self-efficacy and optimisms was MODERATE.
- The average score for resiliency and hope was HIGH.

Psychological Capital "I" (PSYCAP-IMPLICIT)—A self-rated scale involving imaginary human situations and characters related to self-efficacy, hope, resiliency, and optimism as it relates to daily work performance and life. People with HIGH PSYCAP-I tend to see situations in a positive light and believe that personal effort and perseverance will lead to success in their endeavors. People with LOW PSYCAP-I tend to believe the opposite. (n=34)

- The average score for resiliency was MODERATE.
- The average score for hope, optimism, and self-efficacy was HIGH.

Big Five Inventory (BFI)—A self-rated five-factor model of personality structure used for predicting job performance. The five factors are extraversion, emotional stability (neuroticism), agreeableness, conscientiousness, and openness to experiences. BFI predictors of high job performance include all of the factors listed with the exception of neuroticism. Neurotic people in the work environment tend to be anxious, pessimistic, irritable, emotionally reactive, and have a low tolerance for stress resulting in low job performance and problems at work. (n=34)

- The student sample taken as a whole did not score HIGH in any category and LOW for openness to experiences. Of important note, three students scored HIGH for neuroticism and also LOW for conscientiousness.

Rosenberg Self-esteem—A self-rated "agreement-disagreement" scale that measures the extent to which a person believes himself/herself to have high self-worth as evidenced by positive beliefs and emotions. People with high self-esteem tend to be positive, confident, and balanced in work and life. (n=34)

- 19 of 34 student scored HIGH for self-esteem and 15 of 34 scored MODERATE.

IPIP Locus of Control—A self-rated "agreement-disagreement" scale that measures the extent to which a person has an internal locus of control, characterized by a belief that events occur in life as a result of their actions (as opposed to fate, luck, or the actions of others). People with high IPIP LOC make their life happen rather than have life happen to them. (n=34)

- 11 of 34 students scored HIGH and 19 of 34 scored MODERATE, and 4 of 34 scored LOW for locus of control.

IPIP Self Efficacy—A self-rated "agreement-disagreement" scale that measures the extent to which a person believes himself/herself to possess the ability to accomplish tasks and achieve goals. People with high IPIP SE tend to be goal-setting and goal-getting.

- 17 of 32 students scored HIGH, 15 of 32 scored MODERATE, and 0 of 32 students scored low for self-efficacy.

Work Capacity Summary of Results

Body Postures Results—Participants stood arm's length away from a four (4) feet by three (3) feet panel (center height = 44") containing twenty-four (24) metal disks placed equidistance apart (6 columns by 4 rows) while holding a wand in each hand. The wand in the right hand had a red light and the left wand had a green light. The test began when a red right light appeared randomly over one of the disks, then participant would touch the want in their right hand (red) to the corresponding disk to turn off the light, next the panel would illuminate a random disk with a green light, the participant would touch the left wand (green) to the corresponding disk to turn off the light, the panel continued to randomly illuminate the lights in alternating order for a total of two hundred (200) touches. Participant times were compared to MTM-2 and reported as a percentage of MTM-2 performance.

Table 14. Body Postures Results

Test	Sample	MTM-2 Performance		
		Min	Mean	Max
Body Postures	n=57	38.8% Below Competitive	88.2% Competitive	120.2% Above Competitive

Hand/Finger Dexterity: Pin Placement and Handling Results—For the pin placement assessment, participants placed a pin in one (1) of two (2) holes corresponding to a green light. In between pin movements, a green light illuminated at the bottom of the apparatus indicating the participant needed to touch the lower pad to turn off the light. The participant performed 250 repetitions per hand. For the handling placement, participants alternate between rotating a block 90° clockwise and thumb touches. Participant times were compared to MTM-2 and reported as a percentage of MTM-2 performance.

Table 15. Pin Placement and Handling Results

Test	Sample	MTM-2 Performance		
		Min	Mean	Max
Pin Placement (Right)	n=58	33.4% Below Competitive	96.2% Competitive	129.0% Above Competitive
Pin Placement (Left)	n=57	52.0% Below Competitive	91.2% Competitive	127.6% Above Competitive
Handling (Right)	n=57	43.4% Below Competitive	83.9% Competitive	119.0% Above Competitive
Handling (Left)	n=57	43.5%	83.9%	120.9%

		Below Competitive	Competitive	Above Competitive

Static Lifting/Pushing/Pulling Results—Participants were asked to lift, push, or pull a device attached to the ERGOS® monopole. The device remained static and measured the amount of force that was being applied to the handles. Participants were asked to lift straight up on handles located at bench height (36" above the floor) and push (or pull) on the device at cart height (42" above the floor). Participants performed three (3) repetitions for each of the three (3) tests.

Table 16. Static Lifting/Pushing/Pulling Results

Test	Sample	Physical Capacity (lbs)		
		Min	Mean	Max
Static Lifting (36in)	n=49	20.93	72.68	154.64
		Medium	Very Heavy	Very Heavy
Static Pushing (42in)	n=49	15.54	45.81	252.84
		Medium	Heavy	Very Heavy
Static Pulling (42in)	n=49	17.41	38.82	218.95
		Medium	Heavy	Very Heavy

Dynamic Carry Results—Participants began by standing in front a box with their hands at their sides, at the sound of a tone the participant lifted a weighted box from the floor and placed it on the plate mounted at thirty-six (36) inches above the floor, the participant returned their hands to their sides, a tone sounded again and the participant then lowered the box down to the floor, then returned to the standing position with their hands at their sides. This activity was repeated five (5) times for the box containing thirty (30) pounds, four (4) times for the box containing fifty (50) pounds, and three (3) times for the box containing seventy (70) pounds.

Table 17. Dynamic Carry Results

Test	Sample	Physical Capacity		
		Min	Mean	Max
Dynamic Lifting (30lbs-36in)	n=59	Refused	Pass	Pass
		Sedentary	Medium	Medium
Dynamic Lifting (50lbs-36in)	n=59	Refused	Pass	Pass
		Sedentary	Heavy	Heavy
Dynamic Lifting (70lbs-36in)	n=59	Refused	Pass	Pass
		Sedentary	Heavy	Heavy

Lateral Pinch Results—Participants sat on a chair at a table and held the pinch gauge like a key. The participant pinched the gauge as hard as they could for three (3) repetitions. Tones indicated to the participant when to start and stop pinching.

Table 18. Lateral Pinch Results

Test	Sample	Physical Capacity		
		Min	Mean	Max
Lateral Pinch (Right)	n=59	5.99	18.28	32.57
		Medium	Heavy	Very Heavy
Lateral Pinch (Left)	n=59	8.31	17.85	27.91
		Medium	Heavy	Very Heavy

3-point Pinch Results—Participants sat on a chair at a table and held the pinch gauge with their thumb on the round collection device and their index and middle fingers supporting the device. The participant pinched the gauge as hard as they could for three (3) repetitions. Tones indicated to the participant when to start and stop pinching.

Table 19. 3-point Pinch Results

Test	Sample	Physical Capacity		
		Min	Mean	Max
3-point Pinch (Right)	n=59	6.12 Medium	15.79 Heavy	26.21 Very Heavy
3-point Pinch (Left)	n=59	3.98 Light	14.86 Heavy	24.92 Heavy

Grip Results—Participants sat on a chair at a table and held the grip gauge with their hand. The participant squeezed the gauge with their hand as hard as they could for three (3) repetitions. Tones indicated to the participant when to start and stop squeezing.

Table 20. Grip Results

Test	Sample	Physical Capacity		
		Min	Mean	Max
Grip (Right)	n=59	13.56 Light	57.11 Heavy	174.10 Very Heavy
Grip (Left)	n=59	13.32 Light	56.41 Heavy	209.43 Very Heavy

Wrist Results—Participants sat on a chair at a table with the ProFlex device square with the shoulder of the wrist to be tested for both flexion and extension strength. Flexion is when the wrists bend the palm down toward the wrist, while extension is when the back of the hand is pulled back. The participant placed their wrist between the two foam pads that support the wrist and moved the static handle to the right or left. The participant pushed the handle toward the center of their body for flexion tests and pulled the handle away from their body for extension tests. Each of the four (4) tests in Table 9 was repeated three (3) times.

Table 21. Wrist Results

Test	Sample	Physical Capacity		
		Min	Mean	Max
Wrist-Flexion (Right)	n=57	1.21 Sedentary	39.61 Medium	82.37 Heavy
Wrist-Flexion (Left)	n=56	2.36 Sedentary	40.78 Medium	93.01 Very Heavy
Wrist-Extension (Right)	n=54	0.49 Sedentary	18.13 Medium	48.02 Very Heavy
Wrist-Extension (Left)	n=57	0.83 Sedentary	15.86 Medium	45.37 Very Heavy

Forearm Results—Participants sat on a chair at a table with the ProFlex device square with the shoulder of the forearm to be tested for pronation and supination. Pronation is when the arm is extended and the forearms rotate such that the palm is facing down, supination is when the arms rotate such that the palm is

facing up. The participant placed their wrist between the foam wrist supports and tried to rotate the static handle to the right or left. The participant rotated their forearm toward the center of their body for pronation test and away from their body for supination tests. Each of the four (4) tests was repeated three (3) times.

Table 22. Forearm Results

Test	Sample	Physical Capacity		
		Min	Mean	Max
Forearm-Pronation (Right)	n=54	16.85 Light	56.86 Heavy	131.22 Very Heavy
Forearm-Pronation (Left)	n=57	9.25 Light	49.05 Heavy	129.48 Very Heavy
Forearm-Supination (Right)	n=57	4.65 Light	43.22 Heavy	76.30 Heavy
Forearm-Supination (Left)	n=58	16.41 Light	42.41 Heavy	95.45 Very Heavy

5.3 Qualitative Data Summary

Case study data were gathered during quarterly site visits with each of the five (5) community colleges. The external evaluator utilized a nine (9) point agenda when interviewing the site coordinators and participant coaches at the respective colleges. The interviews were taped, with the only person having access to the tapes was the evaluator, who reviewed the tapes, taking notes and translating them into a quarterly series of narratives. The external evaluators also asked what extra assistance the staff might need from them and any "final thoughts," but those responses will not be included in the following narrative.

Management Structure/HR

One of the keys to the successful development and implementation of the Diversified Manufacturing Technology certification program at the community colleges was the selection of a "Champion" who could focus exclusively on managing the various facets of the DMT program. The colleges were initially successful at this key item; at one of the colleges, the site coordinator worked diligently to establish the program, acquiring approval of the courses at the college and Nebraska Post-Secondary Coordinating Commission level, involving instructors and beginning the marketing process. Unfortunately for the program, he retired and the tasks were left to part-time staff. The program floundered. At a second college both the site coordinator and the dean made the DMT certification program a priority, using a modified approach. The "Boot Camp" model met the needs for training employees in their catchment area; they went off-campus and conducted the courses on a Monday and Wednesday evening for ten (10) weeks, allowing full-time workers to attend. A third college had several shifts in site coordinator and participant coach, but those transitions were handled in a seamless fashion. The participation rate continued to grow through the changes in staff assignments. A fourth college designated one staff member as both site coordinator and participant coach. He worked to build the program through manufacturers' contacts and alternative school partnerships. Due to a relatively small catchment population, the program struggled. The fifth college had the overall program manager as the site coordinator. In addition, he had a full-time coach and several support staff to manage. In retrospect he felt that the hiring of a site coordinator at the college would have freed him up to better improve the quality of the overall DMT certification program.

Curriculum/Course Development and Implementation

A curriculum coordinator was hired to develop the overall curriculum and courses, including selecting the appropriate resources. The four courses: Safety, Production, Maintenance and Quality were developed using the outcomes in the MSSC curriculum. She fully developed the syllabi, with course descriptions, objectives, lesson plans and assessments. They were adopted and in some cases adapted to meet the guidelines each community college had regarding curriculum. Several of the colleges completely fleshed out the courses and passed them through their educational service departments and on to the Nebraska Post-Secondary Coordinating Commission for approval as a new certification program. Others merged the DMT certification into existing programs. The curriculum and associated courses maintained a high degree of continuity across the five community colleges, in the event that a student would transfer from one college to another. The colleges developed a "latticed" and "laddered" approach to the courses and the certification, allowing students to build from a certificate to a diploma to an AAS degree. It was hoped that this developmental approach would seamlessly be accepted for a Bachelor's degree at one of the state colleges or universities. However, most would accept the courses merely as electives. The curriculum was twice reviewed by outside curriculum experts and experts in the field of manufacturing.

Instructional Resources

The primary instructional resource utilized by all of the colleges was Tooling U, an online set of modules that merged well with the objectives in the DMT certification program and MSSC. Each of the four courses had a designated set of modules for students to complete; each had a built-in assessment that instructors could monitor. The set of modules was later reviewed by the instructors, site coordinators and coaches and shifted into one of three categories: need to know, nice to know and not necessary. The set of modules for each of the four courses was revised according to this analysis. Tooling U was deemed a very successful resource. Its use was spreading throughout several of the colleges by other programs and departments.

In addition to Tooling U, several other resources were developed. A manufacturing "island" was established in Second Life (SL), with a variety of sites for information, practice and assessment. The site had several buildings demonstrating safety hazards, a classroom for mock interviews, a series of quizzes and other interactive processes. SL was helpful for use in recruiting and presentations and in getting students more aware of various manufacturing tools and procedures. It did have several drawbacks. It was updated almost weekly, necessitating site coordinators and coaches to have their tech support conduct the updating. In addition, it was not overly intuitive, making it difficult to feel at ease with manipulating one's avatar. Another resource was the virtual reality (VR) simulations that demonstrated various manufacturing processes, both in diagrams and in real-time video. They proved helpful in giving students a visual image of equipment and how they function. Importantly, each of the colleges purchased manufacturing equipment, allowing students to have an essential "hands-on" experience of operating machines they would one-day work with as an employee.

Coaching

Each of the colleges had a full or part-time participant coach to assist students in a variety of ways: academically, career/job-wise and from a personal/social standpoint. They helped students navigate their way through the various systems that might otherwise stymie them. They assisted with enrollment, course selection, tutoring (or helping them find a tutor), seeking financial aid, trouble-shooting with them on transportation dilemmas, and more personal concerns. They served as the "guide-on-the-side" for a number of students. (See appendix) The coaches piloted this activity for each of the colleges; in fact, other departments, seeing the success of this form of pro-active coaching, have explored incorporating them into their programs.

Data Collection Process

As stated earlier, the external evaluators have utilized a developmental evaluation approach, with a Quasi-Experimental mixed method study. Qualitative data were gathered using a case study approach, supplemented with a semi-annual survey of Project IMPACT staff and other personnel associated with the program, attendance at bi-weekly phone conferences, and annual large group meetings. Quantitative data were collected through the site coordinators and placed into an SPSS spreadsheet for analysis. In addition, two curriculum reviews are conducted by the external evaluators, utilizing experts in curriculum and in manufacturing.

Remediation Issues

The curriculum coordinator and program director worked with two University of Nebraska-Lincoln professors with expertise in remediation to develop a series of resources to assist students with deficiencies in mathematics and reading/writing. Those resources were embedded within the modules of Tooling U and were available to community college instructors and their students to assist with the comprehension of the content in the four IMPACT designed manufacturing courses. In addition, the individual college instructors pulled from their own expertise in working with non-traditional students who might have been far removed from the classroom. All of the resources proved high successful in assisting students in understanding the course content.

Recruiting and Outreach

The program manager and his staff and each of the site coordinators and coaches at the individual community colleges developed and implemented a variety of outreach and recruiting "tools." They designed and disseminated brochures, posters and flyers. They presented at local and regional gatherings, such as career fairs, job placement events, manufacturing conferences and other places where perspective participants and/or potential employers might gather. The technical staff developed and maintained a website (www.impactnebraska.org/), in addition to posting on social media (FaceBook, SnapChat, etc.). They worked with local manufacturers and their HR departments to partner with the college in training their employees in the four crucial areas of safety, maintenance, production and quality. They also worked internally with the colleges' admissions, student services and counseling departments to make them aware of the DMT certification program. Finally, they used the most effective methods of recruiting: word-of-mouth, with instructors, students already in the DMT program, Project IMPACT staff and employers who have hired graduates talking to individual perspective students, students already enrolled in other departments who are seeking other options, and basically anyone who is seeking training that would lead to a greater opportunity for employment. The latter proved most effective in recruiting.

Partnerships with Business, Government and Manufacturing

All of the Project IMPACT site coordinators and coaches worked with the manufacturing operations and community agencies in their catchment area to build training and/or recruitment partnerships. They collaborated with Workforce Development offices, human service agencies, alternative education programs, penal systems and individual large and small businesses to provide information and training opportunities. They also worked with governmental agencies, including the Nebraska Department of Economic Development, the Nebraska Department of Education, and the Nebraska Department of Labor in addition to manufacturing associations, including the Nebraska Advanced Manufacturing Coalition, Dream-It-Do-It, and regional groups. The results were mixed; the partnerships with workforce development, several human service agencies, a handful of large manufacturing operations and a penal system yielded a positive connection, while the direct connection with most businesses appeared stymied by HR departments. They may have been protecting their existing training departments or were hesitant because bureaucratic issues, such as liability, OSHA or other policies.

Program Integration/Sustainability

The issue of program sustainability and scaling was brought up early and often by the external evaluation team and the program manager. He saw the DMT certification program as an "island" external to most of the community colleges' departments and envisioned that one of his tasks was to bring the program into the mainstream of his college and assist the site coordinators and coaches to do the same. Most of the colleges succeeded in this transition. One succeeded by having the instructor paid by the college and not through grant funds; another adopted a "boot camp" format, shifting the training to the local site and at a time when students who work either full- or part-time would be available and worked closely with local manufacturers to recruit participants. Another worked with manufacturers in an effort to become their "training department." The external evaluators developed and maintained a blog to assist with manufacturing-related information and tools to assist with building sustainability (http://projectimpacteval.blogspot.com/). The sustainability and integration of the DMT curriculum into the mainstream of each community college is still a "work in process."

6.0 Evaluation Results Discussion

The overall discussion of the evaluation summary results is now undertaken within the context of referencing the key outcome evaluation questions, the TAACCCT research questions, and the Impact analysis research questions.

6.1 Discussion by Key Outcome Evaluation Questions

1. **To what extent does the project increase attainment of certifications, certificates, diplomas, and other industry-recognized credentials to better prepare TAA-eligible workers and other adults for high-wage, high-skill employment or re-employment in growth industry sectors?**

   Project IMPACT prepared TAA-eligible workers and other eligible participants for employment or re-employment in potential high-wage and high-skill employment in a number of ways. It effectively addressed a need for introductory-level training in manufacturing in four essential areas: safety, production, maintenance and quality. The program connected with MSSC certification to increase credentials that participants can use in seeking employment. It provided coursework and support services to facilitate the completion of certificates, diplomas and further degrees. In addition, it provided quality instruction on a statewide, articulated basis. Lastly it provided a variety of approaches to achieving training in manufacturing fundamentals (traditional coursework on campuses, online courses, and on-site courses in local communities).

2. **To what extent does the project introduce innovative and effective methods for curriculum development and delivery that address specific industry needs and leads to improved learning outcomes and retention rates for eligible participants?**

   The core curriculum of Project IMPACT aligned precisely with The Manufacturing Skill Standard Council, known as MSSC. MSSC is a nonprofit organization that focuses on the core skills and knowledge needed for front-line and material handling workers. The four DMT courses: Safety, Quality Practices and Measurement, Manufacturing Practices and Production, and Maintenance Awareness, are the same four courses that lead to the Certified Production Technician (CPT) credential after passing assessments in all four modules. In addition to mirroring the MSSC coursework, the four courses offered for the Diversified Manufacturing Technician (DMT) certificate in the five (5) community colleges were intensely reviewed by the college instructors, many of whom worked in industry before becoming instructors. Industry professionals from across the state of Nebraska also periodically reviewed the curriculum. Many of the Project IMPACT students, after completing the four courses, sat for the MSSC certification assessment and successfully passed,

granting them the CPT certification in addition to the Diversified Manufacturing Technician (DMT) college certification.

From an instructional standpoint, the individual community colleges piloted a variety of approaches. A "hybrid" approach was used within the context of course innovations, with a combination of Tooling U modules, lab experiences, regular classroom activities, site visits to local manufacturing businesses, and activities and assessments within a virtual reality "island" in Second Life. All of the colleges utilized a "participant coaching" format (aka "intrusive coaching" or "proactive coaching", see appendix for job description). The colleges also had access to physical assessments, behavioral assessments and a Psychological Capital three-hour workshop offered by the University of Nebraska – Lincoln College of Engineering (UNL). In addition, UNL College of Engineering developed a series of virtual reality (VR) simulations that demonstrated various manufacturing processes. One community college formatted a "Boot Camp" approach, with hybrid classes on site, Monday and Wednesday evenings for ten (10) weeks. Another college offered courses on site for incarcerated individuals, helping them bridge the gap between prison life and a more productive life in society.

3. **To what extent does the project demonstrate, for TAA-eligible workers in particular, improved employment outcomes as a result of the funded program?**

   Project IMPACT has the potential to improve employment outcomes in a variety of ways. The coursework, with correlation to the MSSC content and assessments, related directly to the needs of manufacturers for their employees in the four main areas of safety, production, maintenance and quality. Businesses seek employees with background and certification in these four core areas. In addition, the students who completed these certificates had the assistance of participant coaches to help them decide on career options and seek employment. They have assisted students in finding internships and have set up meetings between graduates and potential employers.

6.2 Discussion by TAACCCT Research Questions

1. **What service delivery and/or system reform innovations resulted in improved impacts for participants?**

   From an instructional standpoint, the individual community colleges piloted a variety of approaches. A "hybrid" approach was used within the context of course innovations, with a combination of Tooling U modules, lab experiences, regular classroom activities, site visits to local manufacturing businesses, and activities and assessments within a virtual reality "island" in Second Life. All of the colleges utilized a "participant coaching" format (aka "intrusive coaching" or "proactive coaching", see appendix for job description). The colleges also had access to physical assessments, behavioral assessments and a Psychological Capital three-hour workshop offered by the University of Nebraska – Lincoln College of Engineering (UNL). In addition, UNL College of Engineering developed a series of virtual reality (VR) simulations that demonstrated various manufacturing processes. One community college formatted a "Boot Camp" approach, with hybrid classes on site, Monday and Wednesday evenings for ten (10) weeks. Another college offered courses on site for incarcerated individuals, helping them bridge the gap between prison life and a more productive life in society.

   From a system reform perspective, several innovative features emerged. The five (5) community colleges actively collaborated on curriculum development, instructional approaches and assessments options. Traditionally these colleges have taken a more competitive view of each other; this program could provide a "pilot" for the colleges for further collaborative efforts. They also modeled the use of online resources instead of expensive and quickly outdated textbooks. In addition, they demonstrated how embedded contextual remediation could function in supporting students with academic needs in math and reading/writing. Further their collaboration with the Nebraska university system revealed potential ways to connect the two-year colleges with a four-year system. They also showed how a "developmental evaluation" approach, rather than a more typical "objective" one that tries to maintain

distance to the program yields more in-depth, functional information that the program manager can use to make "mid-course" adjustments to the program. The external evaluators trained the Project IMPACT staff on the basics of evaluation and followed up with several large group presentations, in addition to two curriculum review sessions. They attended Second Life bi-monthly online meetings and maintained a blog related to evaluation, sustainability and scaling. The evaluation team was supported by an evaluation advisory council consisting of members from the Nebraska Department of Education, the Nebraska Department of Economic Development and local business partners.

2. Under what conditions can these innovations most effectively be replicated?

There are a variety of "conditions" that would greatly facilitate the replication of the curriculum, instruction, assessment and systemic innovations. The first is obvious: There must be an actual need in the potential service area. Don't go for a grant just for the money. The college must ascertain the value that businesses and industries link to various certifications (ex. industry certifications, community college certifications, diplomas, etc., and other credentials). Second: those who will be actively involved with the program must be part of its development from the very beginning, including the potential instructors. Third: there must be a clear understanding of the "culture" of the community colleges (i.e. – "How we do business") and how this program would fit into that culture for it to be successful. Fourth: there must be constant communication at all levels in the college, from support staff to instructors to the president. In addition, there must be clear articulation agreements among partners, including universities, other community college partners, the state department of labor, and other entities requiring written articulation agreements. Fifth: sustainability and scaling concepts will be introduced from the very inception of the project, and reinforced on a quarterly basis with information and dialogue. Sixth: a "developmental" evaluation process (i.e. external evaluators meet on a regular basis, conducting site visits, interviewing staff, surveying staff, reviewing curricula/courses, and providing feedback on an ongoing basis) can provide timely data to make mid-course corrections. Seventh: study ways to improve the connection between US DOL and state DOL more effective. The current system restricts the flow of individual data that would greatly enhance the analysis. Eight: the use of a participant coaching service is essential in providing support for student achievement, from academic, career and personal/social standpoints. Lastly: each program will require a "champion," someone who has the ultimate control over the project and can focus on maintaining/expanding the program.

3. What are the types of emerging ideas for service delivery change and/or system reform that seem the most promising for further research? Under what conditions are these ideas most effective?

There are a variety of emerging ideas for innovation at both the program level and the system level. First is the ability and willingness of community colleges to work together to develop and share curricula and instructional methodologies. There is strength through numbers. Second is the expanded use of "intrusive coaching" (Proactive coaching) to meet the needs of students at their level of need, whether it is academic, career or personal/social. Too many times students leave college, not because they cannot do the coursework, but because they have lost their means of transportation, or their source of income or a family crisis. Third there is the idea of bringing the coursework to the local communities and local businesses, through online course delivery with "hands-on" lab time to provide a real-life situation, or the use of a "boot camp" approach to deliver content, or the use of a Digital "island" for instruction and communication (Second Life). They might also consider modularizing courses to meet the needs of potential participants who might be full-time employees. From an outreach or recruitment standpoint, one could consider the expanded use of various forms of outreach/recruiting: social media, hard copy, web-based formats, PSAs, presentations to social service and human resources organizations, high school connections, or the use of a blog to promote dialogue on issues related to the project. In addition, colleges could expand the creation of dual enrollment processes with high schools and high school career academies.

4. **What directions for future research on the country's public workforce system, and workforce development in general, were learned?**

   In reviewing the progress of Project IMPACT, several areas would be worthy of future research. The first area is the connection between the U.S. Department of Labor and the state department of labor. The U.S. DOL rightly requested rigorous analysis of the impact of the program on employment data; however, the state DOLs could only return aggregated data to the community colleges, thus not allowing for the "cause-and-effect" analysis between an individual's college work and his/her employment, wage and retention. The second area is expanding grant opportunities, including partnering with middle schools, high schools, communities, and four-year colleges and universities; and lengthening the duration of grants. Attempting to hire the appropriate staff, develop robust curriculum, acquire the supportive resources and design the evaluation process takes time, cutting into the first and possibly the second year of the grant. The second year can easily be one of revision; by the third year most programs are operating at maximum capacity. The fourth year is one for evaluation only. A more feasible approach may be to keep the amount intact but lengthen the scope of the grant to five or possibly seven years, giving the program time to "mature" and evaluators to gather more longitudinal data for analysis.

6.3 Discussion by Implementation Analysis Questions

The project external evaluation team conducted an implementation analysis process at regular annual intervals in the project and was represented at all of the project leadership meetings to debrief ongoing observations and to engage the project staff, site coordinators, and frequently, community college administrators on perceptions of how the project was going across the project and within individual sites. The following cumulative results were guided by the implementation analysis questions.

1. **How was the curriculum selected, used, and/or created to undertake the overall project intervention (and related instructional activities) and how does it appear to be developing?**

   As of the date of this final report, the core curriculum of Project IMPACT has aligned precisely with The Manufacturing Skill Standard Council, known as MSSC. MSSC is a nonprofit organization that that focuses on the core skills and knowledge needed for front-line and material handling workers. The four courses: Safety, Quality Practices and Measurement, Manufacturing Practices and Production, and Maintenance Awareness, are the same four courses that lead to the Certified Production Technician (CPT) credential after passing assessments in all four modules. In addition to mirroring the MSSC coursework, the four courses offered for the Diversified Manufacturing Technician (DMT) certificate in the five (5) community colleges were intensely reviewed by the college instructors, many who worked in industry before becoming instructors. Industry professionals from across the state of Nebraska also periodically reviewed the curriculum. Many of the Project IMPACT students, after completing the four courses, sat for the MSSC certification assessment and successfully passed, granting them the CPT certification in addition to the Diversified Manufacturing Technician (DMT) college certification.

   From an instructional standpoint, the individual community colleges piloted a variety of approaches. A "hybrid" approach was used within the context of course innovations, with a combination of Tooling U modules, lab experiences, regular classroom activities, site visits to local manufacturing businesses, and activities and assessments within a virtual reality "island" in Second Life. All of the colleges utilized a "participant coaching" format (aka "intrusive coaching" or "proactive coaching"). (See appendix for job description) The colleges also had access to physical assessments, behavioral assessments and a Psychological Capital three-hour workshop offered by the University of Nebraska – Lincoln College of Engineering (UNL). In addition, UNL College of Engineering developed a series of virtual reality (VR) simulations that demonstrated various manufacturing processes. One community college formatted a "Boot Camp" approach, with hybrid classes on site, Monday and

Wednesday evenings for ten (10) weeks. Another college offered courses on site for incarcerated individuals, helping them bridge the gap between prison life and a more productive live in society.

2. **How were related courses, programs and program designs improved or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support services and other services were offered?**

   As of September 2016, the administrative structure for the grant continues to be well established and refined, with a program manager providing leadership and overseeing the development of the activities, services and resources. He had a support staff that provided outreach, technical support and training. The staff developed the website (http://www.impactnebraska.org); the islands in Second Life; outreach to community agencies and organizations, business and industry, and high schools; and print materials. Each community college had a site coordinator and a full or part-time coach, who worked closely with manufacturing instructors, internal research (IR) staff and other support staff (admissions, student services and remedial support). The site coordinators also worked with their deans, vice-presidents and other administrative staff at each of the colleges to keep them informed of the progress of the program and to develop processes to integrate the DMT certification program into the culture of the college.

   The program manager, his staff, the site coordinators and the participant coaches met on a bi-monthly basis via Second Life (SL) to plan outreach, to share successes and discuss curricular and instructional issues, to receive updates from the Department of Labor and other helpful sources, to discuss quantitative and qualitative data with the external evaluators and each other, and generally to keep each other informed and connected. In addition, annual face-to-face meetings were held with the program manager and his staff, the site coordinators and coaches, the University of Nebraska-Lincoln College of Engineering personnel and the external evaluators. The content of the meetings revolved around such issues as data gathering and analysis, outreach/recruiting tactics, instructional approaches and sustainability/scaling of the DMT certificate programs at each of the five (5) community colleges.

   In addition, the program was supported by a number of other services and resources. Each college had a full or part-time participant coach (see appendix for job description). The coaching model was successful in working with students in a variety of ways, from providing information on the DMT certificate program to advising on a job/career direction to assistance with personal/social issues to being that "sounding board" that so many students, both traditional and non-traditional, need to successfully navigate the coursework and successfully complete the program. All of the colleges had access to Tooling U licenses for their students and the contextual remediation support activities to help students who might be challenged by the math or reading/writing. They also had access to the virtual reality (VR) simulations to assist students in visualizing production process. The instructors were trained in the functioning of Second Life, a digital "island" with sites for instruction and assessments related to manufacturing. The University of Nebraska- Lincoln also partnered with Project IMPACT, developing physical assessments (ERGOS) and behavioral assessments and providing access to a three-hour workshop (Psychological Capital) for students.

3. **What particularly important contributions did some of the partners (employers, workforce system, other training providers and educators, philanthropic organizations, and others as applicable) make in terms of program design, curriculum development, recruitment, training, placement, program management, leveraging of resources, and commitment to program sustainability? What factors contributed to partner involvement or lack of involvement in the program? What contributions from partners were absolutely critical to the success of the grant program? Which contributions from partners had less of an impact?**

   As we have watched the project develop to this later stage, several partners played a crucial role in the development and implementation of Project IMPACT's curriculum. The University of Nebraska-Lincoln's College of Engineering assisted by designing a set of ten (10) virtual reality simulations.

They also built and implemented a format of assessing the physical capabilities of students called ERGOS. It is a set of nine (9) tasks that assess such physical issues as lifting, flexibility, dexterity, and hand strength. However, due to several logistical issues, such as travel (Western Nebraska Community College is over three hundred miles from the UNL campus), the ability to assess only two students at a time, and the hesitancy of manufacturing instructors to release students from instructional time, few students were assessed. UNL also conducted a set of behavioral assessments in tandem with ERGOS. The same logistical issues eroded the ability to conduct these assessments. In addition, UNL contributed a three-hour goal-setting workshop Psychological Capital (PsyCap); again logistics caused concern among the Project IMPACT staff. Many of the coaches incorporated the elements of PsyCap into their courses, principally in the Safety course.

One of the areas where a number of partners were approached was in regard to recruiting and outreach. The site coordinators, coaches and support staff made numerous contacts with local businesses and industries in their catchment areas, seeking to build a connection where the DMT certificate program could function as a basic training program. However, a roadblock appeared in the form of Human Resource (HR) departments. They were seeking immediate employees due to their need and the very low unemployment rate in Nebraska (under 4%). The colleges also reached out to community agencies and organizations, with presentations, printed material and "lunch'n'learns," among other activities. They all worked with the Nebraska Workforce Development offices. In addition, the program manager and the external evaluators worked closely with the Nebraska Department of Labor in developing a process for collection employment, wage and retention data. The roadblock that kept the community colleges from collecting individual data was the policy the data can only be released in aggregate. This kept the external evaluators from analyzing the impact of various levels of completion of Project IMPACT's courses with the employment status, wage increase and retention in a job.

With regard to sustainability and scaling after cessation of grant funding, a number of agencies and organizations worked with site coordinators and coaches to investigate processes that would be self-sustaining. One community college worked with two alternative schools who offer services to high school dropouts with the potential of a "pipeline" into the Diversified Manufacturing Technology (DMT) certificate program. Another college has developed a program offering courses for inmates at a local prison in an effort to give them a marketable skill set when they are released. A third college partnered with local businesses offering a "boot camp" approach for training their management staff and line personnel. The courses still meet on Monday and Wednesday evenings for ten weeks with a series working toward the DMT certificate. The college is able to sustain the innovation through tuition and future grants.

4. Was an in-depth assessment of participants' abilities, skills and interests conducted to select participants into the grant program and to facilitate a project comparison process? What assessment tools and processes were used? Who conducted the assessment? How were the assessment results used? Were the assessment results useful in determining the appropriate program and course sequence or refinements for participants? Was career guidance provided, and if so, through what methods?

The community colleges in Nebraska are required to admit anyone into certificate programs. Therefore, the assessments (the eCompass and ACT) are not for "screening" students. This information gives college staff and the students focused information on where the deficiencies are and how to remediate them. The assessments also give participant coaches information to work with students regarding remediation and career/job opportunities. In addition, the coaches utilize the activities in the Psychological Capital (PsyCap) workshops developed through a partnership with UNL. They coach act as "navigators" for many of the students, assisting them with obtaining financial aid, selecting follow-up courses if they wish to pursue education beyond the DMT certificate, directing them to other sources of information and support either within the college or in

the community, and working with them on procuring employment either during their college enrollment or after they leave the college system.

5. **Contextually, how are the program implementation components generally aligned with the nine required TAACCCT program indicators?**

   As of this final report, the Diversified Manufacturing Technology (DMT) program components at each of the five community colleges are closely aligned with the nine (9) indicators and these indicators were established within the context of a forty-eight (48) variable quantitative data spreadsheet and SPSS analysis. Each site coordinator worked with his/her college data services to gather, clean, and refine procedures for accurate data on student enrollment. The program manager and leadership team has maintained contact with the Nebraska Department of Labor to accurately gather employment, wage and retention data. Each of the colleges has approached the implementation of the DMT curriculum based on the culture of their school, culture defined as "how we do business." Several have taken a more traditional approach, with courses in-house; others have taken a more "hybrid" approach, with a combination of online, classroom and lab work; another has developed and implemented a "boot camp" approach, with evening classes off-site. However, no matter the method of program implementation, each has closely adhered to the nine program indicators and gathered data to meet those outcomes.

6. **How will the evaluation team discover, and the team respond to, unanticipated outcomes of the TAACCCT program, both positive and negative?**

   Throughout the project, the evaluation team worked closely with the Project IMPACT program manager, the site coordinators and the participant coaches. At least one of the evaluators participated in weekly Second Life (SL) conference calls, with the program manager allocating time for the external evaluator to solicit and answer questions, to provide updates on evaluation information and schedule meetings. In addition, the program manager had 24/7 ability to connect with the evaluation team. The evaluation team also conducted quarterly site visits to gather qualitative information for an individual case study for each community college (see Appendix). They gather quarterly quantitative data on all forty-eight items. On an annual basis, the entire Project IMPACT staff across the five community colleges met to provide updates on the implementation of the DMT program in their respective college, share data and jointly conduct data cleaning conversations; this allowed for a careful integration of all quantitative data loaded into the aggregated SPSS spreadsheet. The evaluation team conducted two (2) curriculum reviews and provided comprehensive feedback documents to the program manager. To triangulate the incoming information from all of the above, the evaluation team conducted semi-annual online surveys of the DMT staff across the five colleges and noted trends in the twenty survey items.

   By utilizing a developmental evaluation approach, the evaluation team gathered and analyzed the quantitative and qualitative data from the five colleges; they then had the information necessary to provide valid feedback to the program manager and his staff on an ongoing basis. They stayed abreast of the curriculum, instruction, recruiting/outreach and support services as they emerged, lessening the potential for "unanticipated" outcomes.

7. **How efficacious are the program interventions being undertaken (defined as "the power to produce a desired result or effect")?**

   At this final report, where we have reviewed the four years of the Project IMPACT program, a number of the interventions have proven efficacious; others have proven less so. The Diversified Manufacturing Technology (DMT) curriculum, developed along the guidelines of the four MSSC courses: Safety, Quality, Production and Maintenance has a solid core. The syllabi, objectives and activities were well-structured and readily adaptable for use by all five of the community colleges based on their individual culture, and by any community college that would like to develop a basic

manufacturing program. Tooling U as the main resource was very successful and will continue to be utilized, not just by the Diversified Manufacturing Technology program, but also by instructors in other manufacturing-related programs. Tooling U has been a cost savings from more expensive textbooks that were initially considered for the same content. The University of Nebraska-Lincoln (UNL) College of Engineering was also very successful in embedding contextual remediation activities into the Tooling U modules. These activities were actively utilized and greatly assisted students in reading and writing, and particularly in mathematics. Furthermore, the UNL efforts have been expanded to a doctoral dissertation that will examine the correlation and impact-related relationships between Tooling U and other project implementation efforts and the quantitative outcomes.

In order to effectively implement the DMT certificate program, several of the consortium colleges designed creative way of implementing the curriculum. One college utilized a "boot camp" approach, meeting the needs of full-time workers by holding classes in their town in the evenings for ten (10) weeks for each course. Another worked with a penal system to provide instruction in the prison; inmates completing the courses and gaining the certificate will be more "marketable" when they are released. Other colleges framed the DMT certificate program in a "hybrid" format, with a portion of classes online and labs on Saturdays or weekends. Others worked toward becoming the 'training department" for small and midsized businesses.

Another intervention that has produced a desired effect was the implementation of participant coaching (or "intrusive coaching" or "proactive coaching"). Coaches not only provided important information to perspective and active students, but they also served as "sounding boards" in listening to the students and helping them work through the various situations they confronted as they moved through the DMT certification program and its many facets. The coaches were able to meet the students' needs based on their level; some students benefited from a simple five-minute chat in the hallway. Others needed assistance in navigating the different their way through admissions, testing, financial aid and graduation. Still more needed help in dealing with personal/social issues like transportation, financing, and even the legal system. As other programs and departments in the colleges watched the successful outcomes of the coaching process, they are either considering adopting such a process or have actually integrated coaching into their programs.

Several of the program's interventions did not produce the desired results. One of the mechanisms thought to provide a conduit for communication, curriculum and instruction was Second Life (SL), a website where one could develop "islands" that housed manufacturing sites that students could visit for information, assessments on various manufacturing-related processes, and a pathway to Tooling U modules and other online resources. Several members of the Project IMPACT staff worked diligently creating the islands and populating them with a variety of manufacturing-related information sites, hands-on demonstrations, real-time assessments and other products that could potentially have been beneficial to the students. However, a number of problems emerged; the development process was very time consuming and slowed the implementation considerably. Logistical issues creating login issues. Second Life had an almost weekly updating process. This required many of the site coordinators and coaches to contact their technical assistance staff at the college to install the update since they did not have administrative assess to their computers.

One area where the University of Nebraska-Lincoln College of Engineering's effort fell short was in the implementation of a physical assessment and behavioral assessment program. They developed a process called "ERGOS," which is a set of nine (9) assessments designed to measure the types of tasks traditionally used in manufacturing, such activities as lifting, finger dexterity, hand strength, etc. The assessment required traveling to each of the five community colleges, locating a viable site, setting up their various apparatus, scheduling students, and conducting the assessments with two students at a time on an hourly basis. The entire process was very labor intensive, requiring two UNL

staff members. The behavioral phase consisted of eight (8) different assessments, measuring stress, goal setting, locus of control, etc. These typically took each student up to an hour to complete.

The ERGOS assessments and the bank of behavioral assessments had the potential of giving students information on their physical strengths and limitations, and a wealth of personal information about their thought processes; however, several problems prevented their successful implementation. Logistics became an overriding concern; travel to the most distant community college was over three hundred (300) miles. Two UNL staff members needed two travel days and at least one day on site. Other colleges were fifty to one hundred miles away. Another logistical concern came from the instructors; due to the heavy demand of the coursework and their perception of limited instructional time, they were reluctant to release students to take the assessments. A third concern was the correlation between the DMT coursework and the related outcomes mandated by the Department of Labor and the results of the ERGOS and behavioral assessments. Instructors', site coordinators' and coaches' main concerns related to the recruitment of students, completion of required coursework, retention, and all of the day-to-day requirements involved in each. The two assessments seemed an "add-on" that did not help with any of their concerns for their students.

7.0 Study Limitations and Final Comments

7.1 Evaluation Study Limitations

"Limitations are matters and occurrences that arise in a study that are out of the researcher's control. They limit the extensity to which a study can go, and sometimes affect the end result and conclusions that can be drawn. Every study, no matter how well it is conducted and constructed, has limitations. This is one of the reasons why we do not use the words "prove" and "disprove" with respect to research findings. (Simon, M. and Jim Goes, Scope, Limitations, and Delimitations, 2013)." There are a number of limitations with regard to the Project IMPACT evaluation study. Due to policy issues with the Nebraska Department of Labor, the site coordinators at each of the community colleges were only able to gather aggregated data on employment, wages and retention. This limitation minimized the ability to analyze data comparing the level of student involvement in the activities, resources and services with those data points. A second limitation could be the impact of the culture of each community college, culture defined as "the way we do business." The culture impacts the hiring process, the financial process, the recruiting process and ultimately the sustainability and scaling process after the grant funding ends. A third limitation is the students' life outside the scope of the training program; a variety of stressors, both positive and negative, can impact the continuation and ultimate completion. Examples include getting a well-paying job and ending the program of study; having serious family issues; losing one's means of transportation; obtaining financial support from family or employer to continue the program.

7.2 Evaluation Final Comments

The developmental evaluation approach utilized by the external evaluators proved to be very successful for an evolving program such as Project IMPACT's Diversified Manufacturing Technology certificate program. The program manager, site coordinators, coaches and department dean provided open access to the developmental process of the curriculum, services and resources; the evaluators were able to meet on a quarterly basis to talk with all staff members and solicit their feedback in an open and honest manner. The program as a whole attempted a series of innovative activities, such as the use of Tooling U as it main instructional resource, the development of a Second Life island, the formatting of the coursework with a "boot camp" approach, the partnering with UNL College of Engineering in the use of their ERGOS and behavioral assessments, and the further partnering with community organizations, governmental agencies and even a penal system. The activity that stood out as having the greatest potential of service to students was "intrusive coaching." Students entering the program had a variety of needs that were not being addressed by conventional services; having the "guide-on-the-side" was so important to helping

successfully navigate the certification program. One of the shortcomings of the DMT program was the limited duration of the grant itself, with such a short time to hire staff, development and implement the curriculum and gather any longitudinal data to fully analyze the impact of the program. The program manager and external evaluators were also restricted in the analysis due to policies of the Nebraska Department of Labor, only allowing for aggregated data on employment, wage increases and retention.

8.0 Appendices

Numerous documents were generated by the project evaluation process. Samples of some of these documents follow as appendices. Examples included here are not the full documents, but rather excerpts of those documents, due to report space constraints. The full documents are available upon request.

Appendix 8.1 Sample Evaluation Case Study
Appendix 8.2 Sample Evaluation Blog
Appendix 8.3 Sample Curriculum Review
Appendix 8.4 Sample Partner Job Description
Appendix 8.5 Staff and Stakeholder Survey Summary
Appendix 8.6 Evaluation Advisory Group
Appendix 8.7 Behavioral Battery and Work Capacity Study
Appendix 8.8 Summary of Project Activities Example (Spreadsheet Sample)

APPENDIX 8.1—SAMPLE EVALUATION CASE STUDY

Project IMPACT Metro Community College (MCC)

Case Study

February 13th – 19th, 2014

Project IMPACT (PI) is a four-year grant funded by the US Department of Labor under the Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant Program. The project is working with five (5) community colleges to establish a Diversified Manufacturing Technology (DMT) program, with a consistent curriculum covering safety, production, maintenance and quality. In addition the project provides a variety of resources and strategies, such as an online set of industry courses (Tooling U, MSSC, Second Life and virtual simulation from the University of Nebraska – Lincoln College of Engineering), career coaching, assessment (ERGOS and behavioral/cognitive assessments), equipment for each community colleges' labs, and the potential to continue one's education from a certificate to a diploma to an associate of applied science and finally a bachelor of science. Project IMPACT is the "umbrella" concept under which each college works; however, in reality each community college, due to its unique culture (defined as "the way we do business") is implementing the project in its own way. The purpose of these case studies is to document the "how" of the implementation develops and, over the next two years, to examine what is going well and what pitfalls each site is facing.

Management Structure at MCC

The structure of Project IMPACT at MCC is under the broad heading of "Academics"; it is further subdivided into three areas: Applied Technology (Manufacturing with Dean – Kirk Ahrens and faculty), Information Technology (Dean – Dr. Tom Pensabene, Pam Perry – Workforce Innovation, and the future involvement of "FabLab"), and Student Services (Military Veterans Student Services – Robert Caldwell). Applied Technology has the manufacturing and related courses, with Kirk Ahrens and the majority of faculty. Information Technology Department with the Workforce Innovation Division is headed by Tom Pensabene, with Pam Perry as the Director of WID and contact person for Project IMPACT. MCC is planning to add supporting elements, such as a second coach (part-time), adult education to provide contextualized learning in the manufacturing courses, and non-credit education with the use of Bridge programing on a pilot basis. Currently MCC has explored the possibility of aligning with high school dual credit, but has not pursued the idea.

Development/Implementation of Curriculum/Courses

MCC started with four (4) existing programs that may meet the requirements of Project IMPACT's four areas of safety, production, maintenance and quality. They have not developed four independent courses but are revising their existing four courses to align with the requirements of Project IMPACT. After some hesitation from faculty, the instructors are have agreed to work toward a uniformity of MCC's courses and those under the project. MCC course titles/numbers and those of PI could be listed together; the faculty is still hesitant with this proposal. Currently Bob Boyer is teaching a PI class based on the lesson plans developed through the project; he is teaching it as in introductory course as process operations, applicable to all manufacturing pathways. He sees it as a viable option for entry-level employment. It is similar to MCC's Bridge class but offered for credit. In addition Bob is working with Betsy (adult education department) to utilize contextualized education. During the spring quarter, Betsy will work with Bob during one class to further implement contextualized learning into the classroom on a co-teaching basis. Bob will incorporate Tooling U online courses into the curriculum.

Another area that is being explored is incorporating the FabLab into the PI options, from a safety perspective. This will include OSHA 10 instruction; this transition is still in process. The instructor is still

learning the operation of the equipment and the use of Tooling U resources. A "Boot Camp" for PI is being considered as an accelerated program that could lead to entry-level positions. In addition there is conversation with adult education leaders and several others about setting up a more explicit course for people coming out of corrections. Pam will continue to work with Tom Pensabene and Kirk Ahrens about further aligning the classes at MCC with the four courses of PI; this further connect with a potential Boot Camp and segue into other MCC programs.

Virtual Reality – (Second Life, simulations from UNL, etc.)

The site coordinator and coach are considering selecting several students who would be willing to explore Second Life (SL) and give feedback on its potential from their perspective. Students from various ages and backgrounds would be chosen. The coordinator and coach suggested the islands as a way to learning about the world of manufacturing, with separate islands being mock-ups of actual manufacturing facilities. The students would be able to "tinker" with the equipment and explore the world of manufacturing. However they don't see many students being interested in SL because of the mechanics of it; they might see it as tedious with many barriers. They would like to develop a student feedback form for reviewing Second Life. This exploration is still in the early stages of implementation.

Outreach

One of the main tools MCC is using for outreach is the coach, who is housed in the Military Veteran Student Center. Robert, with faculty support, goes into classrooms and recruits students for PI. He states that the faculty is very supportive and has open access to the students in the classroom. He has mentioned a scholarship program to support student involvement in PI and other certificate programs. He has made flyers for upcoming trainings and posted in various classrooms in an attempt to brand PI. He will be starting workshops soon. He has also been in continuing conversations with the faculty and staff in adult education and has found them very helpful. He mentioned Diane Good-Collins, MCC Express Coordinator, which is an "on-ramp" for credit. In summary, Robert feels he is doing outreach on an ongoing basis.

Coaching (including PsyCap)

Robert Caldwell is the coach at MCC for PI. He states the he is not a "counselor," but is good at "pointing people in the right direction." He supports students in a variety of ways on academic, career and personal issues. Examples of topics include filling out paperwork and requesting transcripts, retention issues, interactions with instructors, classroom concerns, and personal problems. He works to develop personal relationships with the students and many times acts as a sounding board, providing input and helping them work through decisions. He in essence helps them understand what going on with the academic and career issues. He sees his job as providing service to the students.

Robert has developed a "coaching log" detailing who he is seeing, what is happening in their lives and the types of service. From this log, he is working to identify the key "trigger" words that come up in the conversation from which he will develop categories in order to quantify and aggregate data. In the works are quarterly coaches' meetings to talk about their experiences; this focus group format can provide "rich" information to understand the lives of the students in order to better assist them in being successful. The coaches would get a clearer picture of their barriers and avenues to success.

ERGOS/Cognitive & Behavioral Assessments

The ERGOS and the Cognitive/Behavioral Assessments have been discussed with the coaches, both on the coaches' conference calls and during the PI Retreat in January. Robert appreciates combining the two processes into one for the sake of expediency (The ERGOS can handle two students at a time while other students are completing the behavioral assessment that are now computer-based). He sees the ERGOS as an "outreach tool" to give students information about their capabilities in manufacturing and piquing their interest in the world of manufacturing. He would suggest taking the faculty through the ERGOS and the assessments to give them a working knowledge of the processes to pass on to students

who might be hesitant to complete the assessments. He is suggesting conducting the assessment in the summer of 2014 at the MCC South Campus and possibly involving the FabLab club.

Summary

Communication has been an issue with MCC from a curriculum perspective; the instructors have not been actively involved in either course development or training in Tooling U. They evidently have not supported the development of the safety course and the contextualized learning that support the course. Their instructors still need more comprehensive training in connecting their instruction to Tooling U modules. MCC has monies available for additional hiring and extended contracts but have not done so. If a new hire is brought on board, he/she will be in the "catch-up" mode through the summer.

From the MCC point of view, both Pam and Robert state that there has been good communication among all parties concerned, particularly with the PI director. The retreat, regular phone conferences and the use of OneDrive as a site for all of the documentation have been very helpful in furthering the development of PI. They realize the PI director began with a "tough charge" of "herding" all of the community colleges in the same direction, engaging staffs and keeping effective communication pathways open. The opus is on MCC site coordinator to utilize the documents in OneDrive, the bi-weekly conference calls and the retreat information to move PI ahead in their own community college. They are pushing themselves to get their work done in their respective community college and attempting to be patient due to the complicated process of moving five colleges together with one project. They are hoping for "commitment" rather than "compliance" from their faculty and staff.

When asked about the "evolution" of Project IMPACT, they felt that the structure of PI at the individual community colleges is becoming more similar, with the emergence of a common intake form (similar to NECC's), the work of the coaches, and the various outreach techniques. They learn from the other site coordinators and coaches and translate that learning into more effective processes at MCC.

June 12th, 2014

Management Structure at MCC

Metro Community College has undergone a reorganization that has impacted the connection to Project IMPACT. The new system is called "matrix management," and the new division is "Workforce Innovation (WID)." Tom Pensabene is dean of IT and the executive in charge of WID. The new division's role is to spearhead new program development, in a sense the "place where things start." As a program progresses and is successful, it transitions into an academic area. Project IMPACT is under the auspices of WID, with Tammy Green now the site coordinator. Pam Perry's role has shifted to that of a liaison between Tammy Green and Project IMPACT and the business office; she also is the cost-center manager. She will be the connection to Kirk Behrens, who is an academic dean and supervises the instructors. As Pam has stated, the transition has contributed to the challenges with Project IMPACT, but will hopefully contribute to the solutions as well.

Tammy will be involved in the day-to-day operations, including student tracking. She will be the contact with PsyCap training and will work closely with Jane Stentz, a sub-contractor. Robert Caldwell is shifting out of Project IMPACT into a new position at MCC. The coaching position will be posted and will take a month or two to hire the new person. Robert will mentor the new person into the position.

Development/Implementation of Curriculum/Courses

Two courses are currently being offered at MCC during the summer quarter: Introduction to Safety and Introduction to Maintenance. An additional course will be added during the fall quarter. Bob and Willy have been able to correlate the Tooling U modules with MSSC. They were at first uncomfortable and a bit confused with the new process. However eventually they made the connection with the objectives, the Tooling U modules and the instructional process; students are now taking the MSSC assessments and passing them. The next step is one toward standardization of the program and the connection with the contextualized remediation in math and reading/writing. The question of ownership and plagiarism came up with regard to the objectives in the courses. However, that issue appears to have

been worked out with the revision of the objectives on OneDrive. As a student completes the sequence of the four core courses, she/he will be awarded a department certificate, a "Process Operations Technology Certificate" which is stackable to any number of diplomas and eventually an Associate of Applied Science and on a Bachelor's Degree. The MCC staff expressed an interest in a state-wide meeting of all instructors to discuss instructional issues, resources, and challenges/successes.

Instructional Resources – Tooling U (licenses, training, usage, etc.)

Tooling U is the primary "textbook," with the possibility of pulling in other resources. The key issue is making sure the lessons from Tooling U align with the course the instructors are teaching and with the MSSC assessments. In addition to the classroom and online instruction, the students spend time in the labs to have a hands-on experience with the equipment and the tools. The instructors and the MCC Project IMPACT staff attempt to maintain a close contact with industry, assessing the instruction with the needs of industry. The issue of "employability skills" is a predominate one, with both students and employers struggling with what they are, how to teach them, and how to assess them. The instructors are finding that as students progress through the first courses and complete the MSSC assessments, they are hired on-the-spot. Instructors are stressing that the more courses they take and the more MSSC certifications they receive, the higher the potential of a wage increase. The general sense from the instructors is that the students are excited about the classes and some have even expressed how "grateful" they are that the courses are available. Much of this could be due to the expertise of the two instructors – Bob and Willy. Both have considerable real-life experience and the ability to differentiate instruction to meet the needs of individual students.

Virtual Reality - Second Life, simulations from UNL profs, etc.

The MCC staff has not had contact with the UNL professors working on the virtual simulations other than the January retreat. However they said now might be a good time to revisit the use of the virtual reality simulations but aren't sure of how the product would be delivered. They thought they might be a good complement to the modules in Tooling U. They also added that the simulations might be a useful outreach "tool" to help potential participants understand the world of manufacturing. They could be accessible through FaceBook, U-Tube or possibly Second Life.

Regarding Second Life (SL), they felt that it had progressed through the "life-cycle" of product development and usage and might be nearing the end of that cycle. They felt the initial concept, to use SL as the virtual island from which students could move to the Tooling U modules, the virtual simulations from UNL and other resources, began as a good idea, but it doesn't seem to be emerging. In addition Second Life as a "social site" seemed to be detrimental to the professional image.

Coaching (including PsyCap)

Metro CC is in the process of seeking a replacement for Robert, who has taken a new position at the college. He currently has a consistent base of students, some he sees on a regular basis and others he sees as-needed. He documents the majority of the interactions. He has had a broad range of experiences with both students and internal/external agencies, with such activities as assisting with scheduling, doing some advising and counseling, being an advocate and a sounding board and working with students to procure scholarships. He has worked to a large degree with military personnel. The incentive program he developed and procured funding for has worked well on a small scale. Even though he is transitioning into a new position, he feels obligated to finish the project; he wrote it and wants it to be successful.

Data Collection Process (agreement, spreadsheet, etc.)

Robert has kept track of participants and potential participants using the SPSS spreadsheet provided by Dr. Grandgenett. He submitted the updated data at the end of the quarter.

Recruiting/Outreach/Student Enrollment

Robert set up a Project IMPACT booth at a series of career fairs and felt they were really successful. Five students signed up for the manufacturing courses in two days, with many more expressing interest. The also connected with industry partners. Regarding the connection to business, the staff talked about linking to the Midlands Business Journal, developing PSAs, or utilizing radio interviews when possible. Metro CC has its own council focused on manufacturing and IT. They are looking for industry to commit to the partnership, with such activities as internships, donations of equipment and serving on advisory panels. Overall they expressed disappoint in the delay of getting courses developed, approved and marketed. Most recently, they are pleased that the courses now offered have students and other courses will be offered in the fall.

What do you need from Project IMPACT leadership?

The MCC staff expressed an interest in setting a day in the fall for all instructors to meet to discuss their challenges and successes. They also wanted to stress the concept making sure that the courses correlate to jobs. In addition they want to continue to work to connect faculty and staff with industry leaders. They want to continue tracking students into the fourth year and expand the data to include where students are employed, since many times business come to the instructors to find potential employees.

September 15th, 2014

The management structure at MCC has shifted, with Pam Perry as cost center manager and Tammy Green as site coordinator. Robert Caldwell has resumed the duties as participant coach on a full-time basis. The team of Tammy, Pam and Robert continued outreach to potential students; one of the issues was tuition: either charge for tuition or find scholarships. They found the necessary funding in a short time, with eleven (11) students enrolling in the maintenance course, nine (9) in the safety course and nine (9) in the manufacturing course. The quality course will be offered in the winter quarter. They are attempting to offer at least three of the DMT courses each quarter.

The team at MCC continues to be actively involved in recruiting. Tammy has completed a series of presentations, reaching out to her community connections. Instructors have brought in several referrals, with two (2) students signing up for the DMT certifications. In addition the team has placed flyers at strategic locations around the MCC campuses. They anticipate full courses for the fall and winter courses, conducting what they called "preemptive work" through Project Everlast and Vocational Rehabilitation. They have presented at a metro industrial career fair and made connections with local employers. They have also connected with the "Learning Express," which is a bridge program that assists students with the knowledge needed to be successful in a college environment. They spent time onsite and will conduct a "manufacturing day."

The DMT certification is fully approved and will appear in the course catalog. The instructors are utilizing Tooling U and definitely see the relevance in this resource. They particularly see the value in the Spanish version and are using it to actually teach the classes. The instructors note that students know the content but are held up by the language barrier. The instruction using dual languages has greatly benefited the success of the ESL students. They continue to refer to the MCC Learning Express and the associated community partners and will work to transition those students into the DMT certification courses. In addition MCC is working with a potential industry partner that would like to conduct employee training through Project IMPACT and the DMT certification process. Tammy and Robert are working with the executive director and shipping director to pilot a course, with the possibility of doing complete employee training. This "pilot" has the potential be a functional marketing concept, with the employer endorsement. It appears to be a "perfect fit" for the needs of the organization and the ability of MCC to meet those training needs.

MSSC certifications are moving ahead. Two students have taken and passed their certification assessments. More students are aware of the MSSC certification process and seem more willing to complete the assessments. Robert has been approved as a proctor for the MSSC assessments. In addition,

MCC is considering implementing the NIMS certification process. One issue that raised a bit of concern was the higher than average dropout rate among the students. Robert will work with students to ascertain any difficulties.

The MCC team is moving ahead with the other facets of Project IMPACT; Robert continues his outreach activities, with career fairs every quarter; workshops on such topics as conflict resolutions and personal finance. He has applied for a two-quarter extension of a successful incentive program. Contextual remediation has received positive feedback from both instructors and students. The use of the Spanish version of Tooling U has been particularly successful. The ERGOS and behavioral assessments have been postponed until the winter quarter. Mention was made about the manufacturing island in Second Life and the possibility of placing the UNL virtual simulations on the island.

Though MCC does not have a written marketing plan, they are approaching outreach on many fronts: community and business partners, internal networks, instructor contacts, printed and digital media, career fairs, connection with Dream It – Do It, a major "kick-off" event and other emerging sources.

In summary, Tammy, Pam and Robert had a very positive outlook for the DMT certification courses and supporting activities. They mentioned the community colleges' requirement on a "report card" and will forward information to other site coordinators. They did request adequate lead time when data are requested, due to the large number of participants.

March 9th, 2015

The **management structure** of Project IMPACT at MCC is in transition; however as in past transitions, the shift of leadership remains smooth. MCC currently has all four courses running, with approximately six or seven students in each of the classes. The courses are structured in a "hybrid" format, with a combination of online, classroom instruction and lab. Several students are scheduled to complete all four required courses for the Diversified Manufacturing Technology (DMT) Certification. Because of the limited number of students, two of the courses (Quality and Production) are being conducted during the same time in the same classroom. The spring quarter starts on March 6th, 2015; enrollment is slightly down, but with two weeks until the course begins, there is still an opportunity for more students to register.

Instructional Resources: the instructors have continued to utilize the Tooling U modules as the primary "textbook." Tooling U remains the primary "textbook" for all four courses; both the instructors and the students find it useful. The coursework is supplemented with contextual remediation in writing/reading and math, with the later having a part-time instructor with funding through ABE. One instructor is working with the lead staff from Project IMPACT on expanding the use of Second Life (SL), particularly with the Safety course. Because of logistic issues, such as continued updates, somewhat complicated processes in using the software and the prospect of funding ending at the end of the grant cycle, the use of SL has not progressed beyond use as an outreach/recruiting tool. The virtual simulations developed by the University of Nebraska – Lincoln have been shared and well received, although they have not been used in the classroom. However the instructors agree that these simulations would be helpful with students who have not had direct contact with equipment. Concerning the other instructional tools developed by the UNL partners, four MCC students have been assessed using the ERGOS equipment, including the behavioral assessments; the students did receive feedback on the results of the inventories. The MCC site coordinator has discussed the use of the Psychological Capital (PsyCap) workshop content, but the staff is concerned about the amount of time PsyCap takes away from Tooling U and classroom instruction.

Recruiting/Outreach: the MCC Project IMPACT staff is using multiple methods of reaching students: career fairs, tours with such places as human services agencies, flyers (which have been the most successful source of recruitment), working with academic advisors and connecting with potential business partners. MCC staff have met with industry professionals who might hire graduating students. In addition there have been discussions about MCC serving as the training component for smaller businesses. There have been ongoing contacts with a number of businesses. As always there is a constant need for updated marketing materials.

Coaching: there is a need to articulate the duties and responsibilities of a coach. The MCC site coordinator recommends that the five sites get a group together to develop collective format and write it down; it would then be submitted to the Skills Commons website.

Issues: the MCC staff voiced a number of concerns and methods of addressing those issues. They recommended a face-to-face meeting of all Project IMPACT staff once or twice a year. They felt this personal approach enhances the exchange of information and increases the connection among all staff. Such a meeting would also give the external evaluators an opportunity to present all of the data, both quantitative and qualitative, with all at the table to assess, discuss and decide on potential next-steps on instruction, content, coaching, recruiting, and a number of other issues. The MCC staff also discussed the concepts of sustainability and scaling, when the grant funding in the summer of 2016. They want to explore the activities, resources and content that have made a definite impact on student learning and ways to make sure they continue to be offered to students. The concept of coaching is one of the activities that seems to make difference in student success. The use of the participant coach with Project IMPACT has been a model for other programs at MCC. The other resource that has potential for being sustained is Tooling U. Other programs within the realm of manufacturing have explored its use the primary textbook.

October 7th, 2015

Human Resources: Robert Caldwell has shifted positions to grant manager, with Tom Pensabene as his direct supervisor; in addition Esperanza Bernal is an Americorp volunteer serving as a part-time coach.

Curriculum/Courses: MCC is adding credentialing from the National Coalition of Certification Centers (NC3), which is highly recognized for its certifications. One example is the "electrical multi-meter assessment," which is accomplished in the maintenance course where students demonstrate the use of basic tools electricians use. Employers are interested in know that students can use these particular tools. The certificate is also something prospective employees can put in their resumes. Manufacturers are more and more looking for applicants that have completed standardized credentials such as NC3 or NIMS.

Instructional Resources: the MCC instructors are continuing to utilize the Tooling U modules and find them very beneficial for their students. The program director and instructors would like to connect directly with the Tooling U contacts as opposed to working through Central CC. They feel they can't turn around the licenses for their students and have access to the students' results. The delays in assigning students licenses appears to set the instruction back and negatively impacts students' motivation. They would like to have the individual instructors handle the entire process, possibly on a "pilot" basis. The instructors are serving as "champions" of the Diversified Manufacturing Technology (DMT) certification program. They are the consistent contacts for the students and are enthusiastic about the program.

Outreach/Recruiting: MCC enrollment is down a bit, but still with enough students to conduct the courses. The program manager and participant coach are going to career fairs and conferences to disseminate information. They are maintaining their connections with the manufacturing business; in fact some businesses are very interested in training options and particularly options for accelerated training formats.

April 28th, 2016

HR – Robert Caldwell continues as Metro CC's site coordinator; Angela Baker is the new coach.

Curriculum/Courses – Metro Community College is offering National Coalition of Certification Centers (NC3) certifications related to Diversified Manufacturing Technology. Omaha Public Schools (OPS) has also partnered with MCC with the NC3 certifications. They are developing a high school to college pathway. The OPS career center is offering dual enrollment and putting measurement

certifications into their math program and auto program. In addition area businesses are becoming more interested in measurement certifications.

Resources: Metro CC is using contextualized remediation math resources developed by UNL at both the college and OPS Career Center. Tooling U continues as textbook resource. One way that the college is enhancing the success of the DMT program is by infusing it into existing program; the coursework is now connected to a career pathway and has a "champion." The use of Tooling U is being explored for other programs, such as IT fabrication, and precision machining. The Dean has become an advocate for the DMT certification; he considered it the first grant that fits a degree path because it dovetails into a variety of career areas. The programs in the technical areas have grown 15% over the last year, with a connection to recruiters and to jobs. When students complete the DMT certification requirements and an MSSC certification, the site coordinator brings in employers at the awards ceremony; the graduates are able to link up with employers to talk about the work of work. Thus far, 107 MSSC certifications given out, which are nationally recognized certifications.

Coaching – Angela uses a process called "intrusive advising"; in addition she goes beyond merely coaching and adds other facets that assist students. She has "embedded" advisors specific to the various career programs who understand the content. She connects with career services helping students with interview skills, mock interviews, and budget skills. In addition as a coach she can get on Tooling U with students and help them with best utilizing the modules.

Data collection – Robert assisted in a variety of ways in employment, wage and retention data. He piloted the spreadsheet that was sent to the Nebraska Department of Labor and conducted phone interviews to gather anecdotal data from students who have left the college.

ERGOS/behavioral assessment: Similar to the other colleges, MCC encountered logistical issues. There was too much content to cover to give up time for physical assessments; in addition it was difficult to know how to use any of the data. The college did run the sequence of activities of ERGOS three times. The students liked it, and found it competitive. The college may find a way to possibly use before students enter the program.

Research Questions in the Context of the Case Study:

The goal of Project IMPACT and the Diversified Manufacturing Technology program was to increase the attainment of industry certification, such as NC3 (National Coalition of Certification Centers), measurement certification, Snap-On certifications, forklift certification, OSHA 10-Hour, and MSSC certification, and NIMS safety, MCC DMT certification "completers" (students who complete four-course sequence). These certifications also are related to employment outcomes; the "completers" get various these certifications that employers recognize. In addition the DMT program and the equipment purchased drive the welding and precision machines and assists with revamping the programming that may lead to more advance pathways such as CNC programming and serving as a precursor to robotics.

System reform: Project IMPACT has been influential in supporting innovation college-wide, such as the I-BEST concept and "intrusive coaching" that is being utilized in other grants (PROTO). Coaching is another concept that is being expanded at MCC, such as Trio advisors who are more program-specific. Project IMPACT developed a model of what program-specific would resemble. In addition, the equipment purchased through the grant has helped to drive the curriculum; students need to know how to run the equipment and the curriculum accomplishes that goal.

Another area that Project IMPACT influenced related to the project management at MCC eliminates "gaps" in expertise from project to project through use of "talent pool." This allows staff to focus on sustainability of grant and not searching for another job as the grant ends. The support services are important in insuring that students who begin the programs actually complete them; these services aid in facilitating persistence on students' parts.

The program also must maintain its connection with work force and look at long-term programs to remedy skills gap; it is essential to rebrand the program away from "grant" to a sustainable program and integrate the DMT program into the college. This creates "institutional awareness" and informs the

whole staff across the campus. Another way to maintaining the DMT program is to demonstrate successful placement of students in jobs. The program needs to show consistent pattern of where students go and be able to document it.

One question that arose is: "what constitutes success"? The US Department of Labor (DOL) counts success by the number of "completers," yet many of the students who come and go through the various courses and services at the college find "success" on their own terms, with a job, a promotion or a pay raise, yet do not complete the four-course cycle.

In summary, the staff and administration at Metro Community College look on Project IMPACT as a good grant; they saw immediate benefit and have succeeded in dovetailing in with existing program. They have a solid support structure in place and see it continuing. Their advice to any other community colleges contemplating such a program: find a place to interface with existing program through resources, equipment, and laddering to advanced programs.

APPENDIX 8.2—SAMPLE EVALUATION BLOG

Note: The following is a sample of the Blog entries created for the IMPACT project by Dr. Shain. These were posted and discussed at various meetings, including advisory group meetings.

Project IMPACT Evaluation Blog Entry Example

Thursday, January 21, 2016

Workforce Innovation and Opportunity Quick Start Action Planner

Food for Thought as you continue to plan for sustainability and scaling within your community college

WIOA Quick Start Action Planner

User Guide

What is the WIOA Quick Start Action Planner?
The Workforce Innovation and Opportunity Act (WIOA) presents an extraordinary opportunity for the public workforce system to transform and improve the quality of life for job seekers and workers through an integrated, job-driven system that links diverse talent to our nation's businesses.

The WIOA Quick Start Action Planner (QSAP) is an interactive, self-paced assessment tool designed to help leaders at all levels of the public workforce system plan for this transformation and prepare for the implementation of WIOA. The WIOA QSAP helps workforce leaders identify areas of strength and targets for improvement in their workforce system and connect to targeted resources to prepare and plan effectively.

Who should use the Quick Start Action Planner?
The QSAP is designed for leaders in the public workforce system at the state and local levels. Completing the QSAP and holding a team discussion on the results will help states and local areas develop a common understanding of their readiness to implement WIOA – and jointly develop a plan to address opportunities for action.

How does the Quick Start Action Planner Work?
The WIOA QSAP is comprised of a series of assessments on critical topics, such as partnerships, governance and leadership, One-Stop service design, and youth strategies. State and local leaders are encouraged to complete all of the relevant QSAPs in the series.

QSAP	Target Group
Partnerships	State and local leaders
State Governance and Leaders	State level leaders
Local Governance and Leader	Local level leaders
One-Stop Center Service Desi	State and local leaders
Youth Service Strategies	State and local leaders
Eligible Training Providers	State and local leaders

Each QSAP contains a list of indicator statements related to the topic. Review each indicator statement and rate how well your state or local area is prepared for WIOA implementation in that area.

Starting the WIOA Quick Start Action Planner

Step 1 – Select a QSAP
Start by selecting a topic on the WIOA QSAP page at **https://wioa.workforce3one.org/page/planner.**

Step 2 – Complete the QSAP
You will be asked to respond to a series of indicator statements that assess where you believe your workforce system currently stands related to WIOA implementation. Some indicator statements will be applicable to both the state and local level, while others are for state or local level leaders. The indicators will be clearly identified – respond to only those indicator statements that are applicable to your level in the workforce system.

Step 3 – Get the Results
Once you have responded to all the indicators and completed the QSAP, you will receive a report of the results. This report will also include direct links to technical assistance resources related to that topic area that can help you to prepare and plan effectively for WIOA. You can choose to download the results report or e-mail the report to yourself and others.

As you begin, please keep in mind…
- Each QSAP will take approximately 20 minutes to complete.
- In order to ensure confidentially in completing the assessment, your responses will not be saved.
- You therefore must respond to all the indicator statements in the individual QSAP – if you leave the website before completing the assessment, your responses will be lost!

How to use the Quick Start Action Planner for Results

The WIOA QSAP can be used in multiple ways to prepare for the implementation of WIOA and identify the changes needed to transform the public workforce system. Regardless of the approach, you will get the most benefit from using the QSAP if the results are discussed with a team, such as the State or Local Board, a coalition of partner programs, or the designated WIOA implementation workgroup. A team discussion will help develop a common understanding of the level of readiness to implement WIOA, and help align around targets for change and improvement in the workforce system.

When holding a team discussion, consider the following questions:
- What areas represent our strengths?
- What areas represent opportunities for improvement?
- Do we have internal disagreements about our self-assessment scoring? What can we learn from the different perspectives?
- What are the priorities for change for our workforce system?

The following are examples of ways you can use the WIOA QSAP and get the most use out of the tool!
Individual Results and Team Discussion
Multiple individuals in a group can take the QSAP separately using the on-line assessment tools available at **https://wioa.workforce3one.org/page/planner**. The results can be saved by individuals and e-mailed to share with others in the group.

Once the group members have individually completed the QSAPs, the team then comes together to discuss the results, develop a shared understanding of areas of strength and improvement, and collectively identify priorities for change.

Facilitated Group Discussion
Each QSAP is also available as a PDF document at **https://wioa.workforce3one.org/page/planner**. You can print the QSAPs to use as a tool as part of a strategic planning meeting. A facilitator can lead your team through a discussion of the indicators in the QSAP, and help resolve disagreements and reach consensus about the current status of the workforce system and where changes are needed.

Benchmarking Progress
The WIOA QSAP can also be a valuable tool to help assess your efforts to implement WIOA and make changes to your workforce system over time. Complete the QSAP now and save the results as your benchmark – then take the QSAP in 6 months or a year to assess your progress.

Develop a WIOA Action Plan
After you have completed the QSAP and discussed the results with your team, you can develop a WIOA Action Plan to address the areas of opportunity identified during the group discussion.
An Action Plan template is available on the WIOA QSAP page at
https://wioa.workforce3one.org/page/planner.

Use the template to develop a plan of the actions needed to prepare for and implement WIOA, and make the transformative changes envisioned for the workforce system under the new law.

APPENDIX 8.3—SAMPLE CURRICULUM REVIEW

External Curriculum Reviews For Project Impact (2 Sessions)

====== Report Date of March 27, 2016 ======

For the Project:

Innovations Moving People to Achieve Certified Training

External Review Lead Facilitator: Neal Grandgenett, Ph.D.
Haddix Community Chair of STEM Education
University of Nebraska at Omaha; Omaha, NE 68182
(402) 554-2690; ngrandgenett@unomaha.edu

External Review Lead Facilitator: Elliott Ostler, Ed.D.
Professor of STEM Education
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Table of Contents

======= Curriculum Review Report =======

1. Introduction and Project Context:

This document is an external evaluation report that summarizes two different formative evaluation reviews of the curriculum for Project IMPACT. Curriculum reviews were conducted first on June 1, 2014 and then a second time on December 15, 2015. Both of these reviews took place in Lincoln, Nebraska.

Project IMPACT, as a Department of Labor funded initiative, aims to increase the achievement of certifications, credentials, diplomas, and degrees through blended learning combined with experienced instructors, advanced labs, and modern technology in the context of a new Diversified Manufacturing Technology Certificate. Central Community College (CCC) is leading a partnership of five Nebraska community colleges including CCC and Metropolitan Community College (MCC), Southeast Community College (SCC), Northeast Community College (Northeast), and Western Nebraska Community College (WNCC) to expand and to improve education and career training programs to U.S. Trade Adjustment Assistance (TAA) eligible workers, veterans, unemployed and underemployed workers, and traditional students.

The focus of the curriculum-related formative review process, as represented by these two curriculum reviews, was to help the Project IMPACT team in the refinement of a four-course curriculum, by providing systematic external expert reviews, partner input, and staff reflection. As described in the project documentation available on the OneDrive for Project IMPACT, and its project website at www.impactnebraska.org, the Nebraska Diversified Manufacturing Technology Certificate offers the four courses with an intent to align with the nationally-recognized Manufacturing Skill Standards Council (MSSC) Certified Production Technician (CPT) credentials. The courses include:

- Introduction to Industrial Safety
- Introduction to Quality and Continuous Improvement
- Introduction to Manufacturing Technology
- Introduction to Maintenance Technology

Project IMPACT uses a blended learning approach in the courses, including 3D/4D graphic simulations of manufacturing equipment and industrial environments, a traditional classroom experience, and online coursework. Mathematics remediation, reading comprehension, and writing are also covered in the context of the certificate courses for those needing a refresher.

The project also assists students through a participant coach, whose goal is to support students both academically and personally in their individual endeavors. Those services include academic advising, one-on-one personal coaching, and opportunities hosted throughout the year to help students to obtain skills across a wide variety of topics such as financial planning, goal-setting, resume writing, interviewing, problem-solving, conflict resolution, leading a balanced life, stress management, teamwork, and being a successful employee. Cognitive and physical assessments in Project IMPACT are available as part of the support program that introduces them to thinking about their goals by discussing their past successes and how they were achieved, walking through potential barriers that could arise, and finally creating a plan to reach their ultimate goals.

Another distinctive element of Project IMPACT is that students can take advantage of the ERGOS assessment, where the student will perform a series of everyday tasks that would be similar to their job functions in industry. After the tasks are complete, the students will receive a report discussing the strengths and weaknesses that were found and how that will affect them in their chosen field of study. In addition, Second Life® is also a part of Project IMPACT, and is a Virtual 3D environment in which a virtual island will house several virtual manufacturing facilities. Students will eventually be able to tour the island and participate in activities that align with their classes in the Diversified Manufacturing Technology Certificate. Examples of these activities include exploring potential jobs in manufacturing related careers as well as interactive quizzes, lectures, workshops, study groups, and other socialization focused curricular enhancements. It is important to note that the Second Life component of Project IMPACT was shown in other meetings with the evaluation team, and that both of the project curriculum review facilitators were very familiar with Second Life as an interactive learning technology, that supports the overall Project IMPACT efforts as a specialized curriculum component.

The evaluation process described in this report is related to an expert review within the context of two structured focus groups that included specialists as described in the next section. These specialists assembled at either or both of the review sessions in Lincoln. The review team was given prior access to an electronic folder and full login privileges, as would be viewed by the instructors and students. In addition, resources, such as course syllabi, were also reviewed. Feedback from the focus group, as well as the prior review of the IMPACT documents, was then the basis of this report.

2. The External Facilitators:

The external facilitators for the curriculum review process, and the leadership of both of the focus groups, consisted of two experienced curriculum evaluation consultants, Dr. Neal Grandgenett and Dr. Elliott Ostler, each of the University of Nebraska at Omaha. Together, Drs. Grandgenett and Ostler have nearly 50 years of curriculum development and evaluation work, in many federally funded projects. Dr. Grandgenett was the lead review facilitator and Dr. Ostler assisted him in the review process related to the evolving IMPACT curriculum. The evaluation team worked closely with the participants of the curriculum review focus groups to help to ensure that the feedback contributed to overall curriculum investigation, refinement and improvement. The background of each of the two lead facilitators is now described.

Dr. Neal Grandgenett: Dr. Neal Grandgenett is the Dr. George and Sally Haddix Community Chair of STEM Education at UNO, where he coordinates the campus STEM priority and teaches courses in interdisciplinary STEM learning, research and evaluation. He has authored over 130 STEM-related publications and is a frequent project evaluator having evaluated nearly 30 different large-scale projects for the U.S. Department of Education, NSF, the National Academy of Sciences, and various other national, state, and private agencies. He is also a review editor for the international journal, Mathematics and Computer Education (MACE). Dr. Grandgenett has received various awards for his work, including the UNO Chancellor's Medal, the Alumni Teaching Award, the Distinguished Research and Creativity Award, the Nebraska Technology Professor of the Year, and the NASA Mission Home Award. He has also presented at numerous national and international conferences related to STEM Education and Project Evaluation.

Dr. Elliott Ostler: Dr. Ostler is a Professor of STEM Education in the College of Education at UNO, where he teaches courses in curriculum design, interdisciplinary STEM instruction and research. He is a well-respected curriculum and evaluation expert who is on the College Board National Consultant Advisory Panel and is College Board Trainer for Pre-AP Vertical Teams in Mathematics and AP Assessment. He has published nearly 100 journal articles and papers related to STEM curriculum, including four textbook resource publications. He also holds a United States Patent (#D506938) for an *Improved Ruler Set* for Mathematics Instruction, which is an original Invention for middle and secondary level mathematics education. He is a frequent NASA product review consultant for NASA education products in the *Institute for Global Environmental Strategies* (IGES) and a periodic reviewer of National Science Foundation curriculum-based grants.

3. Full Curriculum Review Focus Group Team:

The curriculum review process included the following team members whom provided both an external perspective, as well as an internal source of curriculum explanation and questions for one or more of the focus groups. The review team included the following members.

Focus Group Participants:

Dr. Neal Grandgenett, Facilitator

UNO, Haddix Community Chair of STEM Education

Dr. Elliott Ostler, Co-Facilitator

UNO, Professor of STEM Education

Dr. Mike Shain, External Evaluator Project IMPACT

President, Shain Evaluation and Consulting, Inc.

Mr. Dan Davidchik, Project IMPACT Manager

Central Community College, Columbus, Nebraska

Ms. Jamey Peterson-Jones, Project IMPACT Curriculum Designer

Central Community College, Columbus, Nebraska

Ms. Beth Vavrina, TAA Project IMPACT Site Coordinator

Southeast Community College, Lincoln, Nebraska

Ms. Shannon Okray, Job Training Program Coordinator
State of Nebraska Department of Labor, Lincoln

Mr. Dwayne Probyn, Executive Director
Nebraska Advanced Manufacturing Coalition, Lincoln

Ms. Rachael McLeod, Director of Resource Development
Southeast Community College, Lincoln

Ms. Erika Volker, Administrative Director
Partnerships for Innovation, Lincoln

Ms. Whitney Baumgarner, Advisory Council Coordinator
Nebraska Department of Economic Development, Lincoln

Mr. Tony Glenn, Skilled and Technical Sciences Career Field Specialist
Nebraska Department of Education, Lincoln

Ms. Robin Coan, Curriculum/Engagement Coordinator
Central Community College, Columbus

Mr. Robert Caldwell, Site Coordinator
Metropolitan Community College, Omaha

Ms. Colleen Nienaber, Virtual Site Coordinator
Central Community College, Columbus

Ms. Kate Loden, Participant Coach / Site Coordinator
Southeast Community College, Columbus

4. Agendas Used for the Curriculum Review Focus Groups:

As mentioned, the curriculum review process used two different focus group interactions (one on June 1, 2014 and then a second one on December 15, 2015). Both of the reviews took place in Lincoln, Nebraska. At the focus groups, the available members (about 12 participants each session) stepped

through the IMPACT curriculum. During the sessions, notes were taken to acknowledge where the curriculum appeared strong, where it might be improved, and then other thoughts as perceived within the discussion process. The two focus group agendas were similar, and followed a relatively structured discussion process. The two agendas now follow on the next page, with the second agenda representing a timeframe of about 18 months after the first agenda.

Agenda for IMPACT Curriculum Review

June 1, 2014; Lincoln, Nebraska

9:00 amIntroductions of Participants (All)

9:10 amIntent of the Curriculum Review Process (Mike, Neal, Dan)

9:15 amIntroduction of Curriculum and Review Constructs (Neal, Elliott)

> *Curriculum: A group of planned educational offerings including materials, exercises, and activities intended to create a change in knowledge, behavior, or action (ISU)*
>
> *Curriculum Review: Evaluation of educational offerings, delivery, and evaluation of those activities designed for a specific audience to maintain consistent standards of quality and credibility (ISU)*

9:30 amReminders of the Intent of the Curriculum for IMPACT (all)

10:00 am A Structural Look at the Four Courses

11:00 am Reflecting on Materials, Exercises and Activities

12:00 Noon Lunch and Further Conversation (On-Site)

1:00 PM Considering Curriculum Strengths and Areas of Potential Improvement

2:00 PM Reviewing Key Points to Make in the Report

2:30 PM Report Next Steps and Strategies for Engaging Others

3:00 PM Adjourn

Agenda for IMPACT Curriculum Review (2nd Edition)

December 15th, 2015, Lincoln, Nebraska

9:30 amIntroductions of Participants (All)

9:45 amIntent of the Curriculum Review Process (Mike, Neal, Dan)

10:00 am Introduction of Curriculum and Review Constructs
(Neal, Elliott)

Curriculum: A group of planned educational offerings including materials, exercises, and activities intended to create a change in knowledge, behavior, or action (ISU)

Curriculum Review: Evaluation of educational offerings, delivery, and evaluation of those activities designed for a specific audience to maintain consistent standards of quality and credibility (ISU)

Checklist Reminders and Overall Process

10:30 am Reminders of the Intent of the Curriculum for IMPACT (all)

10:45 am A Structural Review of the Four Courses

11:15 am Review of Materials, Exercises and Activities
(Strengths, Potential Issues and Recommendations)

12:00 Noon Lunch and Continued Conversation

12:30 PM Introduction of Sustainability/Scaling Format

1:00 PM Individual CCs Processing Sustainability/Scaling & CC Culture

2:30 PM Report Out on Draft Plan (w/Feedback)

3:00 PM Adjourn

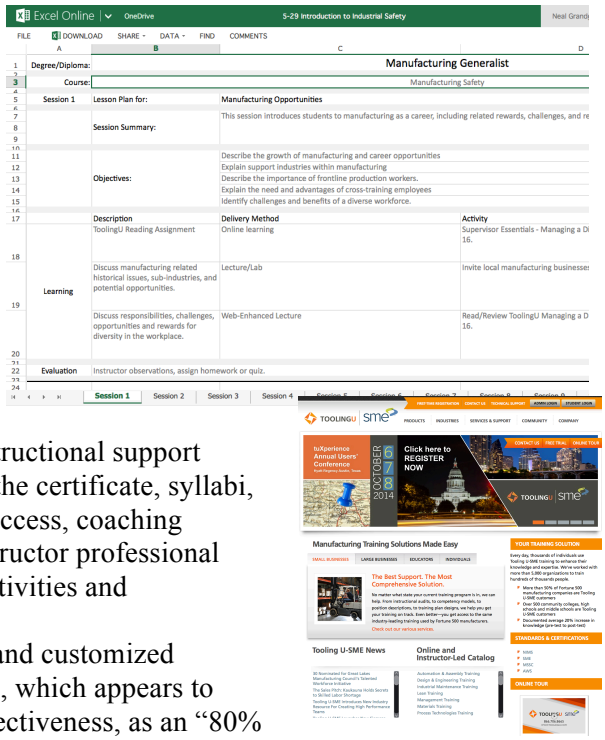
======== Feedback on the Curriculum ========

5. Process:

The process related to the two focus groups for feedback on the IMPACT curriculum was purposefully structured to be very candid, reflective and using fully open dialogue. Generally, the review conversations started with a walk through selected curriculum elements by either the IMPACT Project Coordinator, or the IMPACT Project Director. Following a typical curriculum review format, the strengths observed were then acknowledged. After that acknowledgement, the conversation was then steered toward areas of potential improvement. Questions were asked at any time. The facilitators ensured that the conversations moved along efficiently. In addition, a set of curriculum definitions, and a curriculum review rubric were available and used by the team at both sessions, as developed by Iowa State University, and that is included in the appendix of this report.

6a. Focus Group 1 (June 1, 2014) - Strengths of the Curriculum:

The following comments surfaced related to the perceived strengths of the curriculum, as the review focus group progressed over the June 1, 2014 discussion timeframe. Overall, the team had lots of very positive comments about the emerging structure, strategy and progress of the curriculum, and was generally quite impressed with the IMPACT curriculum to this point in time. The following are some comments that surfaced for the first focus group.



1) It was first acknowledged that organizing a functional curriculum of four shared courses, and a related certificate, across five community colleges is indeed a daunting curriculum-related task, and the project was commended for having operationalized a collaborative structure for such an extensive curricular endeavor.
2) The curriculum itself is quite extensive, and includes interrelated instructional support mechanisms such as: the four courses, the certificate, syllabi, course lessons, Tooling U, One Drive access, coaching support by advisors, IMPACT lead instructor professional development, and various integrated activities and assessments.
3) Tooling U is used as a well-integrated and customized instructional resource in the curriculum, which appears to support both sustainability and cost effectiveness, as an "80% solution" to the student interaction and support that also

provides automatic documentation of the completion of various curriculum elements. It also provides some potentially useful reporting components such as completed classes, time spent in class, exams, note taking, print capabilities and student log in histories. The variety of Tooling U assessments (true-false, matching, multiple choice, etc.) is also a curricular strength.

4) Overall, there appears to be a useful blend of basic and higher order instructional strategies within the curriculum activities, as well as individual sessions, providing some instructional flexibility for instructors and institutions.

5) The four courses, as defined by carefully organized syllabi, appear to align well into "stackable achievements" for students that provide a convenient student pathway into a certificate, to a diploma, and ultimately to a degree.

6) Contextual remediation is integrated into the curriculum and support mechanisms, allowing possible student remediation within the context of mathematics, reading, and writing.

7) The organizing of the four course structures into small "session units" appears to work well for establishing convenient units of focused instruction.

8) There is a well-organized spreadsheet overview of the course content, covering 30 sessions and providing content flexibility by college as well as structural guidance and assistance to instructors.

9) The ongoing attempts to align the curriculum with business and industry perspectives as well as national certificates, through the strategic use of an advisory council, partnership meetings and personalized conversations with business and industry representatives appears to a useful strategy to directly support both the ongoing relevance and sustainability of the curriculum.

10) The four courses appear to allow good instructor flexibility in the learning process, while keeping content as stable as possible. The curriculum also appears to be aligning well with the instructional resources and expertise as provided by the five partner community colleges and the University of Nebraska at Lincoln.

6b. Focus Group 2 (December 15, 2015) - Strengths of the Curriculum:

The following comments surfaced related to the perceived strengths of the curriculum, as the 2nd review focus group progressed over the December 15, 2015 discussion. The efforts of all five IMPACT Community Colleges were again considered, including Central Community College (CCC), Northeast Community College (NECC), Southeast Community College (SCC), Metropolitan Community College (MCC), and Western Nebraska Community College (WNCC).

By the time of this second focus group, the project had now established four very robust courses, including courses with themes in Safety, Quality, Production, and Maintenance. The course development and implementation efforts had been very synergistic with the use of the resource Tooling U, which has been used as a carefully aligned instructional resource. Efforts in Second Life had also continued and

evolved, as well as work with the University of Nebraska Lincoln with various workplace assessments such as the ERGOS system. Discussion on the strengths included the following bullet points.

1) Project IMPACT has steadily evolved into being a "successful example" of how Nebraska Community Colleges can work together successfully as well as with the NU system on complex instructional efforts and large collaborative projects.
2) From its inception, Project IMPACT has worked to meet industry needs associated with Diversified Manufacturing. Many businesses in Nebraska have been receptive to these efforts and there is a broad foundation for further work and sustainability.

3) Tooling U has been well embraced by the faculty and students. It is a great instructional resource that is being seen as user-friendly, cost effective (compared to textbooks), customizable, flexible, and closely aligned with industry needs. Tooling U is less expensive than typical textbooks and there is a reduced cost for high school students.

4) Some career academies have evolved through Project IMPACT, such as for example, the Metropolitan Community College's recent efforts in Fremont, Nebraska which has involved 17 students new to higher education in this first session.

5) Project IMPACT has encouraged an effort by Community Colleges to "benchmark" progress in building their manufacturing programs – allowing for transferability, including into two-year and four-year programs.

6) Credentialing is becoming more important for Community Colleges and Project IMPACT has represented a shared investigation and effort into increased credentialing opportunities.

7) Project IMPACT has helped to contribute to marketing efforts, both internal and external to individual colleges and has helped DMT certification to increasingly become a shared "brand" that crosses colleges. The five colleges have consistently worked together collectively to "sell" DMT externally.

8) Second Life as an interactive teaching tool has been a vital "value-added" to some of the collaborative efforts, including keeping instructional technology on the forefront of shared learning environment thinking and planning for the colleges.

9) Project IMPACT has steadily investigated and initiated assessments using the ERGOS system. Instructors have been supportive of the process, and there has been perceived value for both students AND instructors.

10) There has been a culture of "lessons learned" where the five community colleges share openly what has worked and what has not worked, in order to help colleagues avoid repeating what's not working.

11) There has been a steady transition toward sustainability in efforts to market DMT certification at each Community College.

12) All five Community Colleges have agreed that contextual remediation has been a very important and useful Project IMPACT component, while representing a great "value-added" and enabling expanded work with the Math and English departments.

13) Coaching has also been an essential element of Project IMPACT success allowing for "tailored guidance" where coaches can adapt a plan for the students to be increasingly successful.

14) Coaching has expanded across the five colleges, and Project IMPACT has become an "example" for other programs across the country.

15) Second Life has generally been well received, with a popular demonstration undertaken recently at the new Omaha "Do Space" that helped to showcase shared efforts.

16) Many new instructional lessons and modules have been aligned with wider industry considerations such as for example, OSHA certifications and guidelines.

7a. Focus Group 1 (June 1, 2014) Potential Improvements:

It is important to note that the initial focus group team was generally quite impressed with the efforts to date, and that the project was still relatively early in the five-year timeline at the time of the 1st focus group. As the purpose of the focus group was generally to provide curriculum suggestions, the majority of the time was spent in discussing potential curriculum refinements. Naturally, some of these potential refinements may or may not be now seen as useful, and some insights may no longer apply as the IMPACT curriculum continues to be refined with use and sustainability.

1) The careful attention and monitoring of the various electronic curriculum structures by Ms. Peterson-Jones (IMPACT Curriculum Designer), is truly an outstanding support mechanism. However, it was unclear how the curriculum would continue to grow and to be supported if Ms. Peterson-Jones were not available. Her ongoing expertise, or someone of equal abilities and technical capabilities, would seem to be critical to a successful future use of the curriculum. It would also seem that an "IMPACT Instructor Guide" or "IMPACT Curriculum Guide" would also be useful for capturing the organizational knowledge for the ongoing use of the curriculum.
2) Although the courses can currently be taken in order, it would appear that some encouragement mechanism would be useful for taking the safety course first.

3) Later potential expansions of IMPACT curriculum use beyond Nebraska may need to be considered by the planning team, since such extensive federally funded curriculums often receive inquiries from other states.

4) It was somewhat surprising that everyone entering into the IMPACT instructional system had full access to the editing and modification structures (with some protections in place). It seemed important for higher levels of security features for editing privileges, in order to prevent inadvertent changes by curriculum users.

5) The extensiveness of the curriculum support features are a strength, but instructors may need a 1-page logic model or conceptual overview, to help them to understand how all features interact and support each other for the delivery of the curriculum.

6) Course and session titles have been good but may need additional revisions to support the content listed within the aligned lessons.

7) There appeared to be a very wide range of readability levels across the various curriculum pieces, ranging from 4th grade levels to well above grade 16 levels. Typically, reading comprehension levels should strive for a lower high school level when possible. The readability level of text can be checked using various websites or by using the features of MSWord. See the following website for MSWord steps: http://www.internet4classrooms.com/technology_tutorials/msword_readability.htm

8) Curriculums in areas such as Manufacturing often need periodic reviews and updating as standards change, particularly within the context of problem-based learning strategies. Developing an action plan for future curriculum updates, as standards change, might be helpful to the IMPACT project.

9) The use of image copyright is an important consideration in national curriculums, and although there did not seem to be any images in need of change, it might be important for someone to check the remaining work, to ensure that all images used are either cited with permission or come from an open source such as creative commons. In addition, any person identifiable in the pictures (such as an instructor or student) should have a permission form on file for use of the image.

10) It was brought up during the focus group conversations, that some instructors were being asked to teach the course based upon the need for load, rather than having a full expertise within the specific course context. This can be a problem for the utility of the curriculum, and especially for the "fidelity" or consistency of the instruction. Fidelity of the curriculum is an essential element on whether a course might transfer effectively both within and outside of the five-college consortium. It was also identified that some instructors, particularly new ones, may need some initial assistance to get started. A well packaged "training" for all instructors would also seem important for maintaining course fidelity. Ideas such as a video "glimpses" of instructors interacting with students were mentioned in the focus group discussions.

11) Maintaining the fidelity (consistency) of a large scale, multi-partner curriculum is always a typical problem for large curriculum efforts, and usually works best by keeping the conversation going at the instructor level, with an institutional acknowledgement of the importance of general curriculum fidelity for transfer and replication purposes. If there is a purposeful deviation from the common curriculum lessons or support strategies by a partner, it really helps to have that deviation recognized by all partners, in a periodic disclosure process.

12) It can be useful to continue the official "letters of intent" process from key partners on large-scale projects. For example in Project IMPACT, a letter of intent from each college could be

provided stating the extent and use of course curriculum, and how they plan to award student accreditation for completion of an intended track(s).

13) Short meetings with each of the instructors that will be teaching the course, before they actually teach the course, and perhaps quarterly thereafter, would appear to be relatively critical for this set of courses. Strategies for instructor training surfaced in the focus group discussions, and included a potential "Show on the Road" strategy, as well as perhaps some sort of online training component, with video samples.

14) It would help to capture common instructor and student questions in a short Frequently Asked Questions (FAQ) resource that users of the curriculum could access or have ahead of time as a supporting document. In addition, it might help to have a team establish a documented mapping of the activities between the syllabi.

15) The focus group participants talked about the ongoing need to ensure that there is a good media presence for the IMPACT curriculum, such as downloadable flyers and brochures. Such media resources are typically relatively critical for new curriculum efforts, and the course contexts, benefits, requirements and certificate options may need to be fully identified for the students, instructors and institutions that are helping to recruit for the program.

16) In most places of the curriculum, it appeared that the fictional names of persons mentioned, were relatively "white/Caucasian" and it seemed that the project might diversify a bit more in the use of fictional names. This is a common review notation for many first reviews of a curriculum.

17) A suggested format for assignments that request a student report or open-ended response might be a useful resource to include in the curriculum. For example, reinforcing to student respondents the utility of an introduction-body-conclusion approach when asking for an open-ended response would seem to be useful for enhancing the quality of student responses. Such student suggestions might also be given (or provided by a link) when they are asked to provide a business letter or other professional document as part of their response.

18) It was noted that it might be better to not limit the length of student response options, since this is often considered an ADA issue, in that some people write more or less extensively because of hand-eye coordination or eyesight.

19) It was noted that in some locations in the curriculum, there was some relatively dense text that increased both its readability, and also potential problems for ensuring full access within the curriculum as identified in ADA guidelines.

20) It would seem important to ensure that all pictures are also examined carefully to ensure that people captured within the images are following safety practices, such as wearing safety glasses near machinery, not being distractive around machinery, not wearing watches or bracelets when working at machinery, etc.

7b. Focus Group 2 (December 15, 2015) Potential Improvement:

The second focus group in the curriculum review process was generally quite similar with the previous one, but many challenges had been addressed in one way or another. The project concerns had also generally shifted to long-term sustainability considerations. Thus, a significant majority of the time in the 2nd focus group was spent in discussing project strategies for sustainability. These thoughts surfaced.

1) It is unclear how IMPACT might sustain some of the assessment efforts, such as after the grant funding for special assessments ends.
2) It would be helpful to have some money to continue to build the instructor pool, and to keep instruction at current levels.

3) It is important to continue to build "program laddering" and to integrate program options further with marketing efforts.

4) It continues to be a problem to hire and retain qualified instructors, particularly since they can make far more in the manufacturing world. It is also important to match the right instructor to fit for particular courses. It may be that a team approach will be helpful.

5) There is limited perception of MSSC/CPT as a value added when compared to completing four courses and getting community college credentials.

6) The grant funding initially limited the ability to connect programs to high school students, yet this continues to be a critical pipeline consideration for IMPACT sustainability and scaling. Of course, we will continue to count the number of high school students who have gone through or are in the college IMPACT courses.

7) It is unclear the possible connections to home school student recruitment, and that opportunity needs to be further investigated.

8) Keeping the website up to date is an ongoing challenge, and it may make sense to revisit the look and utility contexts as we move into sustainability.

9) The typical level of quarterly/weekly student workload, often 18 credits per term is often too heavy of a workload for many students. Financial aid and Pell grants are also a consideration. Students sometimes can't complete more than two classes per term due to the workload of the classes.

10) Although there has been progress, there is still somewhat of a lack of understanding institutionally about what exactly DMT is – from an internal standpoint – and we will need to continue to build marketing materials and refine our "elevator speech". Perhaps we could start to parallel our efforts to CNA and nursing credentialing, since that is more widely understood.

11) Second Life will be a long-term sustainability challenge. For example, we need to determine how we move forward with who owns Second Life and how it would it be specifically continued. Currently, five separate islands (each CC) walk into a building and have access to all the

documents and activities and resources. We will want to revisit how we move forward beyond the grant with Second Life strategies.

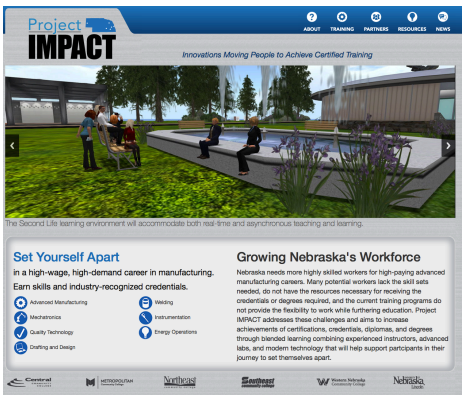
8a. Focus Group 1 (June 1, 2014) Other Thoughts that Surfaced:

In addition to the strengths and potential areas of potential improvement mentioned in Focus Group 1, some additional thoughts or comments surfaced in the first focus group conversation that did not fit into either of those two sections, but that might still be of use to consider by the IMPACT staff in future updates of the curriculum. These thoughts are identified in the next section, with the caveat that they might or might not be helpful suggestions, depending on the context.

1) It seemed that a standard list of prerequisites at the beginning of each module might be useful, but it was unclear whether this would be a good idea or not, and whether it would instead be best left to individual institutions to provide that information so as to permit a closer alignment with the local courses and context of each college.

2) It was acknowledged that the instructional objectives had been rewritten in the last few weeks before the focus group's meeting, and that some components of the course structures would need to be adjusted to more closely parallel the new instructional objectives as the course is continued to be reviewed.

3) It was acknowledged that there will also be hybrid coursework options (part in person and part online) or even online course options in the future, and that some training on such delivery strategies would be needed, as new formats are embraced by individual institutions for the IMPACT course sequence. It appeared that hybrid or online formats would provide some excellent opportunities for both the fidelity of some curriculum elements, as well some additional flexibility for other components.



4) It was acknowledged that although the evolving 2nd Life components were not reviewed at this particular focus group, that 2nd Life might indeed have some utility in future features of the curriculum, such as for recruiting students, holding student and instructor meetings, demonstrations, questioning, and enhanced coaching. Opportunities for looking at virtual manufacturing tours, interview practicing, and socialization of students with manufacturing professionals seemed clearly a potential value added with 2nd Life as well. However, it was also recognized that there could be lots of challenges in operationalizing a 2nd Life instructional environment, to make it a true value added in the context of IMPACT instruction. It seemed important that the review of this component include university and curriculum specialists in 2nd Life and its ability to potentially maximize the effectiveness of specific curriculum elements.

5) It was acknowledged by the focus group participants, that the curriculum would generally benefit from a periodic examination of the writing assignments required of students to ensure that they would mimic or mirror the reports required for the jobs.

6) It seemed that it might help to have a more consistent format of assignments that were required of students, or at least for Project IMPACT to consider that potential.

7) Some referenced employee activities in the curriculum, such as the use of timecards, might benefit from an acknowledgement of newer technologies, and perhaps a reflection or consideration as to whether these activities fit with the particular job being showcased or highlighted in the lesson, session, or course.

8) It was discussed that most of the media branding appeared to generally reinforce the IMPACT project rather than the five individual colleges. The team wondered whether it might be helpful in the future to consider a branding process that highlights the colleges as well as the project. Just a thought for consideration.

9) It might be helpful to the complete success of Project IMPACT to engage Chief Instructional Officers (CIO's) in providing additional strategies and impetus to full adoption of the program.

8b. Focus Group 2 (December 15, 2015) Other Thoughts that Surfaced:

Similar to the first focus group, in addition to the strengths and potential areas of improvement, some additional thoughts or comments surfaced that did not fit into either of those two sections, but that might still be of use to consider by the IMPACT staff in future discussions. These further thoughts are identified in the next section, with again, the caveat that they might or might not be helpful suggestions, depending on the context.

1) It might be a good time for college representatives to meet with cabinet members, the board of governors, and a range of administrative leaders to explore grant-related sustainability, influence instructors to create more long-term buy-in, and to do some positive storytelling about IMPACT and our efforts.

2) We may want to remind administrators to be accountable to the past grant program, and to encourage them to continue to advocate for program?

3) It might be good to look again at what is emerging on each campus, in particular at the building level and how to continue to support it. It will be nice to find the champions and to further to support them during sustainability.

4) We should look more closely at funding from other programs and sources for the possible continuation of various parts of the grant, such as Second Life.

5) The IMPACT collaborators should continue to discuss strong long-term outcomes such as certificate, degree, continuing education, etc. to ensure that the end of the pipeline discussions are continuing during this last push of efforts.

6) Marketing is continuing to be a challenge, and we perhaps need to revisit shared strategies for effective marketing.

7) We should continue to aggressively support increased communication mechanisms between IMPACT collaborators and campuses.

8) We might revisit Skills.Commons.com, and perhaps break elements into 3 modules per course (prior learning credits aggregated into one course – pay for credit). We might also look at how to sustain our joint efforts related to Skills.Common.com.

9) We still appear to have too much content (45 objectives) to teach during one semester. We may want to gather to again revisit what is "need to know" versus "nice to know"? How many modules in each of the four courses in Tooling U can be covered in a semester when not employed versus the need for having the skills and competencies necessary to be successful on a manufacturing site?

9. Final Comments and Thoughts:

In both of the curriculum review focus groups, the curriculum development, refinement, and implementation process for Project IMPACT, it appears that a strong and conceptually appropriate curriculum was indeed created. A broad range of experienced professionals have provide a strong foundation of expertise and enthusiasm, and a truly innovative manufacturing curriculum has been created, including a certificate, courses, activities, and support strategies that will be both effective and engaging. The five community colleges, partners and stakeholders appear to have worked together relatively well, and that Project IMPACT is will most likely achieve its curriculum-related objectives. Getting five different institutions of higher education to collaborate on any shared curriculum endeavor is really a herculean task, and it is a testimonial to the commitment of the IMPACT leadership team that they have generally been able to pull this off effectively. There are of course many ongoing challenges that still face the project for sustainability, which is again common large scale and diverse curriculum projects, but the IMPACT curriculum appears to be steadily refining, and will increasingly integrate into the individual cultures of the host colleges as the project moves toward sustainability.

It is thus believed by the facilitators of this recent curriculum review process that the IMPACT project curriculum development and refinement process is well on track for ending this shared journey as a promising national model. Progress to date on the project and its challenging curriculum has been encouraging. The external facilitators applaud the strong curriculum efforts that have been undertaken and that continue to be underway in the project, and we look forward to continuing to assist as desired as the project moves toward institutional sustainability.

Submitted by:

Dr. Neal Grandgenett

Dr. Elliott Ostler

Appendices:

As detailed in the report, several appendices are included for reference. These appendices include the following:

- Appendix 1: Curriculum Review Definitions
- Appendix 2: Curriculum Review Checklist
- Appendix 3: Curriculum Review References

Appendix 1: Curriculum Review Process Definitions (From Iowa State)

The following is the curriculum definitions, which were developed by Iowa State University, and used to support the IMPACT curriculum review process.

Curriculum Review Process Definitions – ISU Extension and Outreach

Program:
A coordinated set of learning experiences designed to achieve predetermined outcomes. Programs follow a continuum – starting with an initial environmental scanning, followed by application of the learning experiences, and resulting in changes in knowledge, behavior, and condition (as stated in the ISUEO program development process).

Program Review:
The assessment of the program environmental scanning process, program development, and reporting impacts. A review includes an assessment of how the program will be evaluated to determine what it has achieved.

Curriculum:
A group of planned educational offerings including materials, exercises, and activities intended to create a change in knowledge, behavior, or action

Curriculum Review:
Evaluation of educational offerings, delivery, and evaluation of those activities designed for a specific audience to maintain consistent standards of quality and credibility

Peer Review:
A process conducted by colleagues knowledgeable in the content and educational practices to assess subject matter and curriculum or program quality

Evidence-Based:
Programs that have been found to be effective based on the results of rigorous evaluations (What Works, Wisconsin, Small et al.)

Evidence-Informed:
Research-based principles of program effectiveness are incorporated into current programs (Small, Cooney and Connor)

Best Practices:
Activities and behaviors that work most effectively, informed by research and experience

Research-Based:
Careful study of a given subject, field, or problem undertaken to discover facts or principles

Information:
The communication of facts, data, or evidence

Information Checking:
Reviewing documents for errors, accuracy, and format of data being presented

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Appendix 2: Curriculum Review Checklist

The following curriculum review checklist, as developed by Iowa State University, was the basis of the focus group conversation on the IMPACT curriculum.

Curriculum Review Checklist – ISU Extension and Outreach

Procedural

- ☐ Meets the curriculum definition. (See Curriculum Review Definitions.)
- ☐ Curriculum goals match program goals and ISU Extension and Outreach's mission.

Content

- ☐ Information and materials are research-based.
- ☐ Curriculum is sponsored by, or approved by, a land-grant university or other reputable institution. Examples include: Federal and State agencies (USDA, DOE, HHS, Commerce, etc.) and non-Land Grant public universities.
- ☐ Intended curriculum outcomes focus on positive behavior changes leading to economic, environmental, civic, and/or social conditions.
- ☐ Non-original content is clearly and appropriately cited.

Readability

- ☐ Training materials and facilitator/instructor notes included.
- ☐ Teaching materials match intended facilitator/instructor knowledge and teaching skills while addressing specified learning objectives.
- ☐ Learning objectives are clearly stated and are developmentally appropriate.

Utility

- ☐ Curriculum has been piloted or previously used with clientele in a relevant context.
- ☐ Curriculum is learner centered.
- ☐ Learner materials are culturally appropriate.
- ☐ Educational, hands-on activities accommodate different learning styles.
- ☐ Intended curriculum audience has been involved in developing or shaping the curriculum.

Evaluation

- ☐ Program evaluation methodology and outcome evaluation tools and processes are included.
- ☐ Curriculum outcomes are realistic for the audience and context.
- ☐ Information and activities are easily replicable.
- ☐ Information and activities are easily adapted for changes in types of learners, learning environments, scope of educational learning experience, etc.

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Appendix 3: Curriculum-Related Review Process References

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APPENDIX 8.4—SAMPLE PARTNER JOB DESCRIPTION

Project IMPACT Community College Consortium Partner

Job Description

NAME: TBD

FLSA STATUS: Exempt

JOB TITLE: Participant Coach (Project IMPACT)

GRADE SCALE:

CAMPUS: College-wide

DATE: 1/01/13

GENERAL SUMMARY:

The *Participant Coach* will coordinate, plan, and facilitate academic, career, and employment services for Project IMPACT participants under the direction of the Project Manager. These services include but are not limited to: academic advising, career awareness, mentoring, assisting students with study priorities, personal and college finance planning, job skills development, and placement and support services. The *Participant Coach* will provide services in person and using an immersive online media environment for group and one-on-one coaching, informational workshops and career awareness activities; facilitate job trainings and workshops to participants; and provide and coordinate services between local partners, employers and project participants. All duties and responsibilities will be performed in accordance with applicable college policies and procedures.

ESSENTIAL FUNCTIONS:

1. Working with available partner resources, assess student participant career needs and provide career and job counseling services for students; discuss career goals and work history. Explore career ladder options; work in cooperation with college, community resources, project partners, employers, and participants to reduce employment barriers.
2. Provide student participants with weekly individualized mentoring support which focuses on prioritizing studies, creating success plans, and overcoming barriers to academic success.
3. Develop an understanding of the cognitive, physical, and psychological assessments provided by project partner UNL and implement participant support based upon that information.
4. Become proficient in the Second Life virtual environment and other online project resources.
5. With their Site Coordinator, assists in the development of materials which includes virtual manufacturing environments, project brochures and other promotional activities.
6. Implements a schedule of project awareness and orientation activities online and in-person. Facilitate twelve workshops per year in a virtual learning environment on topics such as personal finance, college finances, academic advising, local career awareness, and work-life balance.

7. With their Site Coordinator, conducts follow-up surveys of Project IMPACT graduate (completers), compiles data, analyzes results and publishes information to Project Director. Assists in grant reporting as needed.
8. Provide direct referrals and coordination to/from project partners, outside agencies and college resources to assist students in successful completion of employment and career goals.
9. Recruits, supports and maintains Project IMPACT partnerships, up to 10% of the time.

JOB SPECIFICATIONS:

1. High level of general education and professional ability to administer student service programs, conduct correspondence, make presentations, counsel and advise students normally acquired through a Bachelor's Degree in Education, Business or a related area.
2. Knowledge of career and job market information needed to develop job opportunities for students and high level of organizational skills needed to develop and implement special projects normally acquired through two years of experience.
3. Relatively high level of analytical ability is needed to find solutions to human, technical, or administrative problems. Demonstrates familiarity with college academic requirements.
4. Requires substantial interpersonal skills needed to persuasively interact with student participants, faculty, and staff, and to work with employers, and consortium partner institutions. Requires excellent oral and written communication skills.
5. Requires the ability to transport boxes of materials, research data, and office supplies weighing 11 to 20 pounds in approximately 6-20% of the work time.
6. Requires strong computer skills and aptitude - both with hardware and software. This position will deliver workshops and conduct awareness activities in online virtual education environments.

WORKING CONDITIONS:

1. Normal office environment with little exposure to noise, dust, and temperature extremes, with exposure to heat, noise, dust, etc., for up to 10% of work time when working in industrial settings.
2. Computer use 35-50 percent of the time.
3. Driving required up to 10 percent of the time.

REPORTING RELATIONSHIPS:

1. Reports to their institution's Site Coordinator.

The above is intended to describe the general content of the requirements for the performance of this job. It is not to be construed as an exhaustive statement of duties, responsibilities, or requirements. In no way does this job description constitute a contract, implied or otherwise.

APPENDIX 8.5—STAFF AND STAKEHOLDER SURVEY SUMMARY

The five surveys of Project IMPACT staff and contributing partners over the course of the grant (2013 – 2016) reveal a number of positive trends and several that remained ongoing concerns. The surveys were administered via Survey Monkey with assurances of anonymity and confidentiality. The only person with access to the raw data was the external evaluator. He released the aggregated results to the Project IMPACT manager to share with the staff and partners. The sample size was 27, and the open-ended responses are representative, from the recent 2016 survey.

There are several positive trends related to curriculum and course development. The overall curriculum itself, along with alignment of the courses and the resources supporting the curriculum moved steadily upward with initial percentages in the mid to upper fiftieth percentages and the final survey having those percentages move to almost eighty percent. The training of the Project IMPACT staff also showed a healthy increase from the mid-fortieth percentages to over eighty percent. The pronounced increase might be due to a combination of state and regional conferences and the trainings in data usage and sustainability/scaling by the external evaluators. In addition, the staff and associated partners who were surveyed had an increasingly positive attitude toward the ultimate success of the program. The shift from the initial survey to the final response regarding the program being "on the right track" moved from thirty percent to seventy percent; the response of "making appropriate progress" increased from thirty-three percent to seventy-eight percent. The final survey indicated that eight five percent of the respondents would recommend the Diversified Manufacturing Technology (DMT) certificate program and seventy percent thought that the DMT program would be sustained at the community colleges.

Three areas received less than positive results. One area was the partnership with the University of Nebraska – Lincoln College of Engineering with regard to three of its contributing activities. One activity, the ERGOS assessments, whose task was to assess students' level of physical abilities in a number of areas (lifting, dexterity, hand/finger strength, etc.), encountered logistical problems, such as travel across the state, time to set up and administer the assessments, and the reluctance of instructors to give up any instructional time with their students. The second, a series of computer-based assessments regarding career decisions, stress levels, locus of control and a number of other attitude related assessments ran into the same concerns of time away from instruction and a reluctance to self-disclose. The third offering, Psychological Capital, originally presented as a three-hour workshop for students with the potential for a follow-up session to discuss results and set up a career/job plan. Lack of time was again an issue, with instructors not wanting to give up the instructional time. However, several of the instructors did integrate some of the content into their courses, particularly in the Safety course. All of the above created a downward trend in the perceived articulation with UNL, from sixty-seven percent down to thirty percent.

The second area related to outreach and recruiting. The initial perception was somewhat positive, with a sixty-seven percent approval. The second survey results dropped the percentage significantly to twenty-five percent. The following two surveys indicated at rise in the percentages (fifty-eight to sixty-eight); however, the final survey results dropped to forty-five percent. Possibly the site coordinators and the coaches were leery of the continuance of the DMT program at each community college beyond the funding.

The third area of concern was data collection and assessment of outcomes, with final percentages in the mid forty percent. These low percentages could be related to several factors. One factor involved the fluctuating definition of the term "participant." The Department of Labor refined the term several times, with an initial broadening of who is a participant followed by a tightening of the terminology with a subtle shift in the wording in the final description. It left site coordinators and the external evaluators constantly reviewing the list of participants, moving them from being part of the intervention to part of

the control group and then moving them back. Another issue regarding data collection and assessment involved requesting employment, wage information, and retention. The policy of the Nebraska Department of Labor (NDOL) and most state departments of labor was not to release individual information on wage data. They could only release aggregated data and the requests were sent from the community college site coordinators through their internal research (IR) departments to the NDOL, back to the IR departments and to the site coordinators, who in turn sent the aggregated data to the external evaluators. The external evaluators and program manager met several times with the NDOL staff to create a seamless process; the NDOL staff were as helpful as their policy restrictions would allow. However, this part of data gathering created a glitch in the important data, namely to ascertain who was employed, who received a raise and who was retained in a job for six months. These data, if they could have been correlated directly with each individual student, those who completed the certificate and those who left early, the results could have shown if completing the DMT certification were more successful in their job. However, no such analysis could be conducted.

Summary of Responses to Likert-Scale Survey Questions

Survey questions were rated on a scale of "strongly disagree" to "agree." The following table summarizes the percentage of respondents who indicated that they "strongly agree" or "agree" with each of the questions listed. Staff and stakeholders were surveyed at each point in the project, as noted on the column headings.

Table 8.1-A. Percentage of Respondents that "Strongly Agree" or "Agree" by Survey Question

Question #	2013	2014-1	2015-1	2015-2	2016
5. Right Track Curriculum Development	50.0%	69.0%	77.0%	73.0%	78.0%
6. Right Track – Alignment of Courses	54.0%	68.0%	77.0%	73.0%	78.0%
7. Right Track – Curricular Resources	58.0%	66.0%	68.0%	77.0%	78.0%
8. Right Track – Articulation Among CCs	67.0%	48.0%	61.0%	64.0%	67.0%
9. Right Track – Articulation CCs - UNL	67.0%	39.0%	31.0%	41.0%	30.0%
10. Right Track – Articulation CCs – Mfg.	50.0%	42.0%	64.0%	68.0%	70.0%
11. Right Track – Training of PI Staff	46.0%	66.0%	65.0%	68.0%	82.0%
12. Right Track – Outreach/Recruiting	67.0%	25.0%	58.0%	68.0%	45.0%
13. Right Track – Communication - Staff	57.0%	69.0%	69.0%	68.0%	74.0%
14. Right Track – Data Collection	42.0%	47.0%	56.0%	68.0%	48.0%
15. Right Track – Assessment of Outcomes	38.0%	31.0%	58.0%	63.0%	56.0%
16. Right Track – Completion of Outcomes	38.0%	31.0%	54.0%	73.0%	70.0%
17. Understand Purpose of Proj I	100.0%	93.0%	85.0%	91.0%	93.0%
18. Making Appropriate Progress	33.0%	34.0%	56.0%	73.0%	78.0%
19. Methods of Instruction Appropriate	50.0%	47.0%	72.0%	71.0%	85.0%
20. Deliverables Appropriate	75.0%	75.0%	76.0%	71.0%	81.0%
21. Recommend DMT Program	75.0%	79.0%	68.0%	82.0%	85.0%
22. DMT Will Be Sustained After Grant	–	–	–	64.0%	70.0%

Open Response Question Results (Selected Responses)

The surveys also included open response questions that were provided consistently on each of the survey responses. The following open ended responses are representative of the many provided from survey respondents.

23. Changes

- In my opinion, the issue has always been and continues to be recruiting.

- More flexibility to fit the needs of industry in the areas being served.
- Recruit students
- I think one idea is we should have more employer tie-ins to our supplemental resources that we have built. If we would do this, I can see how businesses would potentially be more on board with the educational partners' role in preparing prospective employees. Generally speaking, it has been the faculty that has given us ideas of what they think the businesses want but maybe we should be asking businesses themselves what we can do for them that they would find more useful.
- Stronger outreach and recruiting efforts
- Change course content to a level that gives students a working knowledge, not just a surface level familiarity.
- The need to market the programs on a statewide basis.
- Job shadowing
- Focus on recruitment of high school students into the program by offering dual credits.

24. Potential Barriers and Solutions

- I have no idea what to recommend. There should be people smarter than me dealing with the recruiting issue.
- Not sure Lincoln Public schools will get involved
- "Manufacturing" needs defined to reach a more targeted audience.
- Low unemployment
- ###
- Recruitment issues.
- Lack of recruiting/outreach
- The Second Life platform does not align with the needs of the instruction.
- Cost of industry certification
- Low employment rate. Potential students are employees receiving on the job training.

27. Comments

- The material is excellent and the certifications, and so forth, create opportunities. There are just not the numbers of participants there should be.

25. Ideas for Partnerships

- High school involvement similar to that of Career Academy.
- More participation with local Careers fairs. Print ads were never published.
- We have very strong relationships with manufacturing, schools, government agencies and continue to build upon on those.
- We are on the right track, we just need the ability to keep going and grow the connections out as ideas are starting to spread.
- ###
- Stronger outreach and recruiting efforts
- Focus on middle/high school students. Provide hands-on opportunities and/or dual credit classes for them in the area of manufacturing.

26. Sustainability and Scaling

- Networking, networking, and then more networking.
- Formalized articulation agreements, a formal manufacturing committee dedicated to program
- Marketing was a major hindrance as it started out promoting Project IMPACT and not the college's or the programming. Marketing was very one-sided and inconsistent among what colleges were allowed to do or not due.
- The project should have begun with sustainability in mind. Such inclusions such as ERGO's and PsyCap were simply expensive short-term research projects that provided little to no benefit or sustainable practices.

- Project IMPACT Spring 2016 TAACCCT Survey
- (Continuing the comment from Question 23) offering the ability to customize to our partners' unique needs is powerful especially now that we have experience with adapting to much more potential situations than we did before we started the grant. Branding and customizing once the resource has actually been created is usually a trivial process.
- We have been fortunate in this grant in being able to create many different types. For Second Life in particular, I think we should be offering our partners customized: buildings, training quizzes / models, simulations, etc. I do think uploading our resources to SkillsCommons will ultimately net us interest in these kinds of services later on.
- Stronger outreach and recruiting efforts
- Our program has established itself and will be sustained beyond the grant termination.
- Career coaching is required Life coaching makes a difference 3/29/2016 6:16 PM
- Program should sustain itself without a problem provided manufacturing ramps up again
- Find funding for scholarships

APPENDIX 8.6—EVALUATION ADVISORY GROUP

Welcome Project IMPACT Evaluation Advisory Group!

What is Program Evaluation?

There are probably as many definitions of "program evaluation" or "evaluation research" as there are program evaluators. One of the most commonly used definitions is offered by Michael Quinn Patton, **"Program evaluation is the *systematic* collection and analysis of information about program activities, characteristics, and outcomes to make judgments about the program, *improve* program effectiveness, and/or *inform decisions* about future programming."** (Patton, 1997). When it comes down to it, evaluation is an important tool that any organization can use to demonstrate its accountability, improve its performance, and showcase the impact its programs and services are making.

Vision

All decision-making concerning evaluation will be made using robust evidence and consensus.

Mission

To ensure the best programming outcomes for people seeking education/career opportunities in manufacturing, we will build a culture of experimentation, evaluation, research and evidenced-based practice, increasing evaluation capacity in all services, activities and resources throughout Nebraska's community colleges, the University of Nebraska – Lincoln, manufacturing businesses and agencies supporting manufacturing.

Goals

a. To promote the strong educational/employment outcomes among Nebraska residents pursuing careers in manufacturing by ensuring excellence in evaluation and research.

b. To build a culture of evaluation and research across all partners engaged in manufacturing education/career development/employment in Nebraska

c. To promote evidence-based decision-making in policy, practice and program planning.

Roles & Responsibilities

a. Shain Evaluation & Consulting will take the lead role in facilitating this project.

b. The senior external evaluator will look after logistics, meetings, private and public communication, debriefing and introducing new members or guests, consultants, etc.

c. Group members will commit to attending "most" working group meetings each year, reading all meeting minutes and contributing a total of approximately 6 hours towards group activities each month.

d. All group members will contribute to knowledge translation and exchange activities.

e. Group members will complete assignments and respond to requests for information or feedback in a timely fashion.

Membership

Membership in the group will be determined and expanded as needed by the working group.

Appointments

Each group member may invite an alternate to attend in their absence.

Meetings & Communications

Minutes will be kept at each meeting by the senior evaluator and will be made available on the Project IMPACT evaluation blog. Meeting frequency will be on an as required basis, determined by the working group under the advisement of the senior evaluator.

Sub-committee meetings will take place on an as needed basis. The senior evaluator will attend all sub-committee meetings and report sub-committee activities at the following working group meeting.

Reporting Relationship

This evaluation advisory group is facilitated through a Shared Leadership Model:

- Shared Information
- Shared Responsibility and Accountability
- Shared Purpose
- Respect
- Embrace Differences
- Valued Partnership

Shain Evaluation & Consulting holds the facilitation and administrative responsibility for the Working Group. The Working Group members are ultimately responsible to their respective stakeholders in keeping them up-to-date with the activities and information from the working group. The senior evaluator will take the lead in reporting all group activities to the senior leadership of Project IMPACT.

Decision-making

The working group will strive to make decisions by consensus. Consensus means that all members of the group can accept a given course of action. If the group cannot achieve consensus, members must agree on a process to deal with the outstanding issue (e.g. vote, continue discussion, do further research, or table the issue to another meeting). With the understanding that it is important for the work to move forward, members agree that in order to have feedback included in decisions made, feedback must be given by deadlines determined. This working group will work under the philosophy that silence is acceptance.

APPENDIX 8.7—BEHAVIORAL BATTERY AND WORK CAPACITY STUDY

Innovations to Move People to Achieve Certified Training (IMPACT) Behavioral Battery and Physical Work Capacity Documentation

Terry L. Stentz, PHD, MPH, CPE, CPC and Kelli R. Herstein, Ph.D.

August 15, 2016

Behavioral Battery Documents

Behavioral Battery

The Behavioral Battery contains was deployed as an online survey using Qualtrics, LLC software. Participants were either given access to the webpage in a computer laboratory at their community college or we recruited via email. Screen prints of the Behavioral Battery in its entirety can viewed in Appendix A or online at https://unlcba.az1.qualtrics.com/SE/?SID=SV_3waibglFZRIhAlT.

IRB Application Documents for the Behavioral Battery

An Expedited Institutional Review Board (IRB) Review was necessary for the Behavioral Battery, the Behavioral Battery was initially approved in 2013 and was renewed in 2014 and 2015 through 2016. The initial IRB Application is found in Appendix B and the Continuing Review Applications for 2014-2015 and 2015-2016 are found in Appendices D and E, respectively. In 2014, the Behavioral Battery was converted from a paper and pencil battery to a web-based survey resulting in the necessity for a Change Request Approval by the IRB, the Application for the Change Request is found in Appendix C.

IRB-Approved Scripts for in-person and email recruitment of Behavioral Battery participants

The IRB requires researchers submit a script stating what will be said to potential participants during recruitment. Since the behavioral battery was administered in-person in computer laboratories on the community college campuses and via email, two (2) scripts were required. These scripts are found in Appendix F.

IRB-Stamped Behavioral Battery Informed Consent

All participants are required to sign an IRB-Approved Informed Consent. Appendix G contains screenshots of the informed consent found on the Behavioral Battery website that are stamped by the IRB noting their approval.

Behavioral Battery Final Summary Report

The Behavioral Battery (Appendix A) included eleven (11) sections and was taken by forty (40) Project IMPACT students, two (2) IMPACT instructors. The first section asked participants questions regarding their demographics followed by ten (10) separate self-assessed behavioral measures which included the O*Net Interests Inventory, COPE Inventory, Accident Locus of Control, Life Stressors Inventory, Psychological Capital-Explicit, Psychological Capital-Implicit, Big Five Inventory, Rosenberg Self-Esteem, IPIP Locus of Control, and IPIP Self-Efficacy. A summary of the aggregate results of the Behavioral Battery for the IMPACT student participants are found on pages two (2) through four (4) of this report. A brief description of each behavioral measure is given for each section of the behavioral measures results.

Behavioral Measures Battery General Descriptions –Participant (n=40) Results

Note: All results in this summary for demographics and behavioral measures battery are aggregated data; no names or personal identifiers are shown.

Demographics Information Sheet (n = 40 students):

Measure	High	Mean	Low	Comments
Gender		Male	Female	37 males and 3 females
Age (aggregate)	70	28.45	17	11 of 40 students are under 19*.
Age (17 to 55, n=39)	55	27.38	17	Median age = 20
Ethnic/Racial Background		Caucasian		31 of 40 students are Caucasian.
Current Marital Status	Single	Single	Divorced	13 of 40 students are married.
Children	6	0.92	0	15 of 40 students have no children.
Primary Language	English	English	Spanish	5 of 40 students spoke Spanish.
Highest Level of Education Completed	Bachelor's	Some College	Some HS	3 of 40 students have bachelor's degrees.
Industry and Employment History				Most indicated PT/FT Manufacturing or Construction
Past Employment Length	72 months	16 months	2 months	Most indicated PT.
Confidence Level for Post-Training Job Placement in Chosen Field	Completely	Very	Not at all	1 of 40 students was not at all confident.
Anticipated Starting Annual Salary for First Job Employment in Chosen Field	$90K-95K	$40K-45K	<$15K	
Perceived Length of Time to Find First Job Employment in Chosen Field	12 months	2.4 months	1 week	
Military Experience/Affiliation	4	0	0	4 of 40 students are active military.
GI Bill Educational Benefit Use	1	0	0	1 of 40 students is using GI bill.

*Age of majority in Nebraska.

Behavioral Measures Battery Summary of Individual Measures Results:

- **O*Net Interests Inventory** – A self-assessment career exploration tool that helps a person identify the type of work activities and occupations that they would like to do and find exciting. Broad interest areas are identified that are most relevant to the individual. The score includes six (6) different constructs: realistic, investigative, artistic, social, enterprising, and conventional. Highly realistic people enjoy operating machines and being machinists.
    - Most common result: Realistic (R), Investigative (I) and Social (S) (n=39)
    - 33 of 39 students scored HIGH for realistic, 23 of the 39 scored HIGH for investigative, and 17 of 39 scored HIGH for social.
- **COPE Inventory** – A self-rated assessment that identifies a person's stress coping responses as a reaction to various types of stress. The response scale includes 15 different coping behaviors and defines each behavior in terms of a positive coping behavior or a less positive (negative) coping behavior. For example, a positive coping behavior would be using emotional and social support to reduce stress. A negative coping behavior would be using a substance like alcohol or drugs to attempt to reduce (avoid) stress. (n=37)
    - Results indicated students frequently used the following positive coping strategies: positive interpretation and growth acceptance, active coping, humor, use of emotional social support, acceptance, and use of instrumental social support.
    - Results indicated students frequently used the following negative coping strategy: focus on and vesting of emotions, denial, substance use, and suppression of competing activities.
    - Results indicated students *less* frequently used the following positive coping strategies: planning, restraint, and religious coping.
    - Results indicated students *less* frequently used the following negative coping strategies: behavioral and mental disengagement.
- **Accident Locus of Control (ALC)** – A self-rated forced choice measure of the degree of internal or external control a person believes they have related to accidents or accident potential. The scored measure is an overall indicator of how much an individual believes they have control of their own behavior related to being involving in an accident. People who have HIGH ALC scores believe that they control their ability to avoid accidents and injury based on self-awareness and personal action to avoid or prevent accident involvement. (n=36)
    - The scaled score is 0 to 24 with the student sample showing a high of 24, low of 5 and mean of 16.
    - 28 of 36 students had a score of 12 or higher indicating higher internal locus of control related to accident involvement and their ability to identify and avoid accidents; 8 of 36 students had a score below 12.
- **Life Stressors Inventory (LSI)** – A self-reported measure of the types of life stressors and frequency of occurrence experienced in the past year or will likely to be experienced in the next 6 months. The scored measure is an indicator of the likelihood that a person will be experience a stress-related illness or stress problem in the near future. People with a low LSI are not likely to experience a stress-related illness or problem in the near future as opposed to a person with a high LSI who could be more likely than not to experience such an illness or difficulty. Life stress can affect work performance as well as home and social life experiences. (n=36)
    - A score of 150 or less indicates slight (30%) risk, 150-299 moderate (50%) risk and above 300 high (80%) risk.
    - 3 of 36 students scored less than 150 (low risk). The lowest score was 46.
    - 8 of 36 scored 150-299 (moderate risk)
    - 27 of 36 scored above 300 (high risk). The greatest score was 2815.

  - Average score was 525.
  - Students most frequently cited changes in their financial and living situation as sources of stress.

- **Psychological Capital "E" (PSYCAP-EXPLICIT) -** A self-rated "agreement-disagreement" measure of self-efficacy, hope, resiliency, and optimism. People with HIGH PSYCAP-E tend to see situations in a positive light and believe that personal effort and perseverance will lead to success in their endeavors. People with LOW PSYCAP-E tend to believe the opposite. (n=36)
  - The average score for self-efficacy and optimisms was MODERATE.
  - The average score for resiliency and hope was HIGH.

- **Psychological Capital "I" (PSYCAP-IMPLICIT)** – A self-rated scale involving imaginary human situations and characters related to self-efficacy, hope, resiliency, and optimism as it relates to daily work performance and life. People with HIGH PSYCAP-I tend to see situations in a positive light and believe that personal effort and perseverance will lead to success in their endeavors. People with LOW PSYCAP-I tend to believe the opposite. (n=34)
  - The average score for resiliency was MODERATE.
  - The average score for hope, optimism, and self-efficacy was HIGH.

- **Big Five Inventory (BFI)** – A self-rated five-factor model of personality structure used for predicting job performance. The five factors are extraversion, emotional stability (neuroticism), agreeableness, conscientiousness, and openness to experiences. BFI predictors of high job performance include all of the factors listed with the exception of neuroticism. Neurotic people in the work environment tend to be anxious, pessimistic, irritable, emotionally reactive, and have a low tolerance for stress resulting in low job performance and problems at work. (n=34)
  - The student sample taken as a whole did not score HIGH in any category and LOW for openness to experiences. Of important note, three students scored HIGH for neuroticism and also LOW for conscientiousness.

- **Rosenberg Self-esteem** – A self-rated "agreement-disagreement" scale that measures the extent to which a person believes himself/herself to have high self-worth as evidenced by positive beliefs and emotions. People with high self-esteem tend to be positive, confident, and balanced in work and life. (n=34)
  - 19 of 34 students scored HIGH for self-esteem and 15 of 34 scored MODERATE.

- **IPIP Locus of Control** – A self-rated "agreement-disagreement" scale that measures the extent to which a person has an internal locus of control, characterized by a belief that events occur in life as a result of their actions (as opposed to fate, luck, or the actions of others). People with high IPIP LOC make their life happen rather than have life happen to them. (n=34)
  - 11 of 34 students scored HIGH and 19 of 34 scored MODERATE, and 4 of 34 scored LOW for locus of control.

- **IPIP Self Efficacy** – A self-rated "agreement-disagreement" scale that measures the extent to which a person believes himself/herself to possess the ability to accomplish tasks and achieve goals. People with high IPIP SE tend to be goal-setting and goal-getting.
  - 17 of 32 students scored HIGH, 15 of 32 scored MODERATE, and 0 of 32 students scored low for self-efficacy.

Physical Work Capacity Assessment Documents

Physical Work Capacity Assessment Recruitment Brochure

In an effort to increase participant recruitment, an informational brochure was created and disseminated to participant coaches on every community college campus. The informational brochure is in Appendix I of full document.

Institutional Review Board (IRB) Application Documents for the Physical Work Capacity Assessment

A Full-Panel IRB Review was required for the Physical Work Capacity Assessments. The Physical Work Capacity Assessment Protocol was approved by the IRB in 2013 and approved for continuing data collection in 2014 and 2015 through 2016. The initial IRB application and communication with the IRB is found in Appendix J the full document. The continuing review applications for 2014-2015 and 2015-2016 are in Appendices K and L, respectively in the full document.

IRB-Approved Scripts for recruitment for the Physical Work Capacity Assessment

The IRB requires all researchers submit a script that will be read to potential participants upon recruitment. The script approved by the IRB and used for Physical Work Capacity. The assessment participant recruitment script is in Appendix M of the full document.

IRB-Stamped Informed Consent

Every participant is required read and sign an IRB-approved informed consent. A stamp containing the IRB seal, Project ID number, and expiration date is affixed to the informed consent to signify approval. The current informed consent that was used during data collection is in Appendix N of the full document.

ERGOS® Setup Requirements

The test apparatus used to collect physical work capacity assessment data was ERGOS®. The ERGOS® apparatus had a few space requirements including a door that ERGOS® could be attached to, a small desk for the tablet, a sturdy table, sturdy chair, power sources, and ample space for participant movement. To better express the needs of the researchers, the document and photos provided in Appendix O of the full document were sent to all Participant Coaches at every community college location.

Physical Work Capacity Final Summary Data

The Physical Work Capacity assessment was performed using ERGOS® Work Simulator. Sixty-two (62) IMPACT Students and one (1) IMPACT instructor read and signed informed consents to participant in the Physical Work Assessment. Two (2) students opted out of testing before testing began and the data for one (1) did not save correctly and cannot be accessed. The assessment data for the remaining fifty-nine (59) students was aggregated based upon activity and rated based on Methods-Time Measurement (MTM-2) Performance or the work capacity as defined by The U.S. Department of Labor's (DOL) Dictionary of Occupational Titles (1986) of the full document.

MTM-2 is a predetermined standard of time for how long it should take an average worker to perform basic motions under normal working conditions (Maynard et al., 1948). The MTM-2 time (100%) for each task is then compared against the participant's performance as a percentage of the standard. Scores below 70% are considered "below competitive", 70-80% are "entry", 80-100% are "competitive", and scores about 100% are considered "above competitive". Participants performed five (5) tasks that compared the participant's time to MTM-2, the aggregated average results of these tests are found in the following tables.

Body Postures Results. Participants stood arm's length away from a four (4) feet by three (3) feet panel (center height = 44") containing twenty four (24) metal disks placed equidistance apart (6 columns by 4 rows) while holding a wand in each hand. The wand in the right hand had a red light and the left wand had a green light. The test began when a red right light appeared randomly over one of the disks, then

participant would touch the want in their right hand (red) to the corresponding disk to turn off the light, next the panel would illuminate a random disk with a green light, the participant would touch the left wand (green) to the corresponding disk to turn off the light, the panel continued to randomly illuminate the lights in alternating order for a total of two hundred (200) touches. Participant times were compared to MTM-2 and reported as a percentage of MTM-2 performance. Figure 1 in Appendix O of the full document contains a photograph of a participant performing the Body Postures Test.

Test	Sample	MTM-2 Performance		
		Min	Mean	Max
Body Postures	n=57	38.8% Below Competitive	88.2% Competitive	120.2% Above Competitive

Hand/Finger Dexterity: Pin Placement and Handling Results. For the pin placement assessment, participants placed a pin in one (1) of two (2) holes corresponding to a green light. In between pin movements, a green light illuminated at the bottom of the apparatus indicating the participant needed to touch the lower pad to turn off the light. The participant performed 250 repetitions per hand. For the handling placement, participants alternate between rotating a block 90° clockwise and thumb touches. Participant times were compared to MTM-2 and reported as a percentage of MTM-2 performance. Figures 5-7 in Appendix O if the full document are photographs of a participant performing the pin placement test and the test apparatus prepared for the pin placement and handling tests.

Test	Sample	MTM-2 Performance		
		Min	Mean	Max
Pin Placement (Right)	n=58	33.4% Below Competitive	96.2% Competitive	129.0% Above Competitive
Pin Placement (Left)	n=57	52.0% Below Competitive	91.2% Competitive	127.6% Above Competitive
Handling (Right)	n=57	43.4% Below Competitive	83.9% Competitive	119.0% Above Competitive
Handling (Left)	n=57	43.5% Below Competitive	83.9% Competitive	120.9% Above Competitive

The DOL Dictionary of Occupational Titles defines physical work demands in five (5) categories: sedentary, light work, medium work, heavy work, and very heavy work (DOL, 1986). Table 3 defines the maximum weight for each of the five (5) categories for each of the ten (10) types of physical tasks performed by participants.

Table 3 – Physical categories as defined by US DOL for each test (DOL, 1986).

Strength Test	Maximum weight (lbs) for each category				
	Sedentary	Light	Medium	Heavy	Very Heavy
Static Lifting (36 in)	0 - 6.7	6.7 -13.4	13.5 - 33.5	33.6 – 67.0	>67.0
Static Pushing (42 in)	0 - 5.3	5.4 - 10.6	10.7 - 26.5	26.6 - 53.0	>53.0
Static Pulling (42 in)	0 - 4.4	4.5 - 8.8	8.9 - 22.0	23.0 - 44.0	>44.0

Dynamic Lifting	0 – 10.0	10.1 - 20.0	21.1 - 50.0	50.1 - 100.0	>100.0
Lateral Pinch	0 - 2.4	2.5 - 4.8	4.9 - 12.0	12.1 - 24.0	>24.0
3-point Pinch	0 - 2.5	2.6 - 5.0	5.1 - 12.5	12.6 - 25.0	>25.0
Grip	0 - 9.1	9.2 - 18.2	18.3 - 45.5	45.6 - 91.0	>91.0
Wrist-Flexion	0 – 9.0	9.1 - 18.0	18.1 - 45.0	45.6 - 90.0	>90.0
Wrist Extension	0 - 4.5	4.6 - 9.0	9.1 - 22.5	22.6 - 45.0	>45.0
Forearm	0 – 8.0	8.1 - 16.0	16.1 - 40.0	40.1 - 80.0	>80.0

Static Lifting/Pushing/Pulling Results. Participants were asked to lift, push, or pull a device attached to the ERGOS® monopole. The device remained static and measure the amount of force that was being applied to the handles. Participants were asked to lift straight up on handles located at bench height (36" above the floor) and push (or pull) on the device at cart height (42" above the floor). Participants performed three (3) repetitions for each of the three (3) tests. A photograph of a participant performing the static pull test is in Appendix O of the full document, Figure 3.

Test	Sample	Physical Capacity (lbs)		
		Min	Mean	Max
Static Lifting (36in)	n=49	20.93 Medium	72.68 Very Heavy	154.64 Very Heavy
Static Pushing (42in)	n=49	15.54 Medium	45.81 Heavy	252.84 Very Heavy
Static Pulling (42in)	n=49	17.41 Medium	38.82 Heavy	218.95 Very Heavy

Dynamic Carry Results. Participants began by standing in front a box with their hands at their sides, at the sound of a tone the participant lifted a weighted box from the floor and placed it on the plate mounted at thirty-six (36) inches above the floor, the participant returned their hands to their sides, a tone sounded again and the participant then lowered the box down to the floor, then returned to the standing position with their hands at their sides. This activity was repeated five (5) times for the box containing thirty (30) pounds, four (4) times for the box containing fifty (50) pounds, and three (3) times for the box containing seventy (70) pounds. A photograph of the box and mounted plate are in Appendix O of the full document, Figure 2.

Test	Sample	Physical Capacity		
		Min	Mean	Max
Dynamic Lifting (30lbs-36in)	n=59	Refused	Pass	Pass
		Sedentary	Medium	Medium
Dynamic Lifting (50lbs-36in)	n=59	Refused	Pass	Pass
		Sedentary	Heavy	Heavy
Dynamic Lifting (70lbs-36in)	n=59	Refused	Pass	Pass
		Sedentary	Heavy	Heavy

Lateral Pinch Results. Participants sat on a chair at a table and held the pinch gauge like a key (Appendix O full document, Figure 8). The participant pinched the gauge as hard as they could for three (3) repetitions. Tones indicated to the participant when to start and stop pinching.

Test	Sample	Physical Capacity		
		Min	Mean	Max
Lateral Pinch (Right)	n=59	5.99 Medium	18.28 Heavy	32.57 Very Heavy
Lateral Pinch (Left)	n=59	8.31 Medium	17.85 Heavy	27.91 Very Heavy

3-point Pinch Results. Participants sat on a chair at a table and held the pinch gauge with their thumb on the round collection device and their index and middle fingers supporting the device (Appendix O full document, Figure 9). The participant pinched the gauge as hard as they could for three (3) repetitions. Tones indicated to the participant when to start and stop pinching.

Test	Sample	Physical Capacity		
		Min	Mean	Max
3-point Pinch (Right)	n=59	6.12 Medium	15.79 Heavy	26.21 Very Heavy
3-point Pinch (Left)	n=59	3.98 Light	14.86 Heavy	24.92 Heavy

Grip Results. Participants sat on a chair at a table and held the grip gauge with their hand (Appendix O full document, Figure 10). The participant squeezed the gauge with their hand as hard as they could for three (3) repetitions. Tones indicated to the participant when to start and stop squeezing.

Test	Sample	Physical Capacity		
		Min	Mean	Max
Grip (Right)	n=59	13.56 Light	57.11 Heavy	174.10 Very Heavy
Grip (Left)	n=59	13.32 Light	56.41 Heavy	209.43 Very Heavy

Wrist Results. Participants sat on a chair at a table with the ProFlex device square with the shoulder of the wrist to be tested for both flexion and extension strength. Flexion is when the wrists bends the palm down toward the wrist, while extension is when the back of the hand is pulled back. The participant placed their wrist between the two foam pads that support the wrist and moved the static handle to the right or left. The participant pushed the handle toward the center of their body for flexion tests and pulled the handle away from their body for extension tests. Each of the four (4) test in Table 9 was repeated three (3) times. A photograph of the ProFlex is in Appendix O full document, Figure 11.

Test	Sample	Physical Capacity		
		Min	Mean	Max
Wrist-Flexion (Right)	n=57	1.21 Sedentary	39.61 Medium	82.37 Heavy
Wrist-Flexion (Left)	n=56	2.36 Sedentary	40.78 Medium	93.01 Very Heavy
Wrist-Extension (Right)	n=54	0.49 Sedentary	18.13 Medium	48.02 Very Heavy
Wrist-Extension (Left)	n=57	0.83 Sedentary	15.86 Medium	45.37 Very Heavy

Forearm Results. Participants sat on a chair at a table with the ProFlex device square with the shoulder of the forearm to be tested for pronation and supination. Pronation is when the arm is extended and the forearms rotate such that the palm is facing down, supination is when the arms rotate such that the palm is facing up. The participant placed their wrist between the foam wrist supports and tried to rotate the static handle to the right or left. The participant rotated their forearm toward the center of their body for pronation test and away from their body for supination tests. Each of the four (4) tests was repeated three (3) times. A photograph of the ProFlex is in Appendix O full document, Figure 11.

Test	Sample	Physical Capacity		
		Min	Mean	Max
Forearm-Pronation (Right)	n=54	16.85 Light	56.86 Heavy	131.22 Very Heavy
Forearm-Pronation (Left)	n=57	9.25 Light	49.05 Heavy	129.48 Very Heavy
Forearm-Supination (Right)	n=57	4.65 Light	43.22 Heavy	76.30 Heavy
Forearm-Supination (Left)	n=58	16.41 Light	42.41 Heavy	95.45 Very Heavy

References

Maynard, H.B., Stegemerten, G.J., and Schwab, J.L. *Methods-Time Measurement*. New York: McGraw-Hill, 1948.

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APPENDIX 8.8—SUMMARY OF PROJECT ACTIVITIES EXAMPLE (SPREADSHEET SAMPLE)

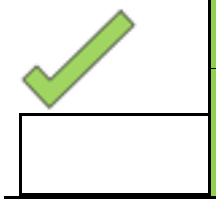
Status as of June 2016	Project IMPACT - Activities Summary as of 6/30/2016					
	ID #	Status	Activity Title			
	1	Complete	Strategy 1.1 Activity 1			
			Description: Hire Project Manager (PM) and Administrative Assistant			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	3/1/13	10/30/12	12/1/12
	2	Complete	Strategy 1.2 Activity 1			
			Description: Hire Curriculum Design Specialist, Site Coordinators, Coaches			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	3/1/13	11/16/12	8/1/13
	3	Complete	Strategy 1.3 Activity 1			
			Description: Conduct site visit to Washburn Univ, first round TAA grantee to collaborate & explore best practices			
			Expected Start	Expected End	Actual Start	Actual End
			6/1/13	12/31/13	2/2/13	9/19/13
	4	Complete	Strategy 1.4 Activity 1			
			Description: Attend annual DOL Grant Administration meetings - 2 staff per year			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	12/31/16	5/16/14	2/10/16
	5	Ongoing	Strategy 1.5 Activity 1			
			Description: Establish office space and administrative supplies for all project staff			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	12/31/16	10/1/12	On-going activity
	6	Complete	Strategy 2.1 Activity 1			
			Description: Design online ADA compliant core Manufacturing Generalist(MG)curriculum - 12 credit hours			
			Expected Start	Expected End	Actual Start	Actual End
			3/1/13	12/31/13	11/16/12	12/20/13

	7	Complete	Strategy 2.2 Activity 1			
			Description: Identify courses within the seven concentration tracks			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	12/31/13	11/16/12	7/31/14
	8	Complete	Strategy 2.3 Activity 1			
			Description: Map concentration track courses from consortium colleges to NAM Skills Certification System			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	12/31/13	1/14/13	7/7/14
	9	Complete	Strategy 2.4 Activity 1			
			Description: Integrate basic skills remediation into occupational skills courses in a contextualized format.			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	12/31/16	11/9/12	6/9/16
	10	Complete	Strategy 2.5 Activity 1			
			Description: Engage employers in curriculum development process.			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	12/31/13	10/25/12	7/7/14
	11	Complete	Strategy 2.6 Activity 1			
			Description: Develop and implement project marketing campaign.			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	12/31/15	10/1/12	6/16/16

Status as of June 2016	Project IMPACT - Activities Summary as of 6/30/2016					
	ID #	Status	Activity Title			
	12	Complete	Strategy 3.1 Activity 1			
			Description: Hire (1) Second Life Coordinator (SLC) and (2) Web Developers (WD's)			
			Expected Start	Expected End	Actual Start	Actual End
			1/1/13	3/31/13	10/17/12	10/28/13
	13	Complete	Strategy 3.2 Activity 1			
			Description: Create Second Life campus for real-time and asynchronous course delivery			
			Expected Start	Expected End	Actual Start	Actual End
			4/1/13	12/31/13	1/17/13	10/31/15

	14	Complete	Strategy 3.3 Activity 1			
			Description: Develop interactive 3D/4D simulations and game design to enhance DMT program courses			
			Expected	Expected	Actual	Actual
			Start	End	Start	End
			1/1/13	12/31/16	2/25/13	10/31/15
	15	Complete	Strategy 3.4 Activity 1			
			Description: Conduct faculty training for educational use of Second Life and SL curriculum design			
			Expected	Expected	Actual	Actual
			Start	End	Start	End
			7/1/13	12/31/13	7/25/13	3/31/16
	16	Complete	Strategy 3.5 Activity 1			
			Description: utilize SL environment for coaching, mentoring, and career awareness activities			
			Expected	Expected	Actual	Actual
			Start	End	Start	End
			1/1/14	1/1/15	7/25/13	6/9/16
	17	Complete	Strategy 3.6 Activity 1			
			Description: Upgrade equipment and software in consortium colleges' STS programs integrate w/online simulators			
			Expected	Expected	Actual	Actual
			Start	End	Start	End
			3/1/13	12/31/13	2/25/13	8/31/15
	18	Complete	Strategy 4.1 Activity 1			
			Description: Provide enhanced coaching to experimental group w/at least 2 coach/participant interaction per month			
			Expected	Expected	Actual	Actual
			Start	End	Start	End
			1/1/13	12/31/16	1/7/13	6/9/16
	19	Complete	Strategy 4.2 Activity 1			
			Description: Offer career awareness opportunities through virtual manufacturing business simulations			
			Expected	Expected	Actual	Actual
			Start	End	Start	End
			4/1/13	12/31/16	6/3/13	6/9/16
	20	Complete	Strategy 4.3 Activity 1			
			Description: Conduct KSAO Assessments for self-selected program participants			
			Expected	Expected	Actual	Actual
			Start	End	Start	End
			1/1/13	12/31/16	2/11/13	6/9/16

21	Ongoing	Strategy 5.1 Activity 1			
		Description: Articulate courses w/Consortium community colleges & first round TAA grantees			
		Expected Start	Expected End	Actual Start	Actual End
		7/1/13	12/31/14	2/2/13	Verbal established, written in process



22	Complete	Strategy 5.2 Activity 1			
		Description: Work w/four year postsecondary institutions to articulate pathways to baccalaureate programs			
		Expected Start	Expected End	Actual Start	Actual End
		7/1/13	12/31/16	11/9/12	6/30/15