

**ASU Mid-South
TAACCCT-ROUND 2 Grant
TC-23837-12-60-A-5**

Participant Tracking. Original plans called for using the services of the Arkansas Research Center in Conway, Arkansas, to track all participant data. This partnership did not work out, however, and for the most part participant tracking was a manual process taken on by the Case Manager and Data Specialist. The Arkansas Research Center Database does provide employment data, but cannot provide real-time for reporting.

Curriculum. ASU Mid-South (ASUMS) extensively researched ways to align individual grant-supported course objectives with related industry certifications through consulting with the Manufacturing Institute and with Thomas P. Miller & Associates. The Manufacturing Institute researched Process Technology Apprenticeship models and provided a white paper on the subject covering best practices. By the end of the grant period, all programs reflect stacked and latticed credentialing, and ASUMS is one of only thirteen institutions in the country recognized as a Right Skills Now Model School, with endorsement for its machining program and curriculum. Switching from a semester model to an accelerated instructional model, the Machining program is putting individuals to work at a more rapid pace than originally. Participating students are interviewing and testing for jobs even before completing the 15-week program.

ASUMS also worked closely with the Council for Adult and Experiential Learning (CAEL) to formulate a plan for implementing protocols for Prior Learning Assessment. One of the first steps ASUMS took was to increase the maximum number of PLA hours that a student could be awarded from 18 to 30, greatly enhancing the ability of students to complete certificate programs quickly. A PLA Intake Tool was created, incorporating learning outcomes from specific courses so that it could be customized for ASUMS learning objectives and possible PLA recommendations. An Advisor Toolkit was also developed, with training held in January 2016.

Certifications. ASUMS has received National Institute for Metalworking Skills (NIMS) accreditation for the Machining program and Packaging Machinery Manufacturers Institute (PMMI) accreditation for Mechatronics, allowing certifications to be earned by those students. The Mechatronics/Process Technology program has also been approved to offer certifications aligned to the ASUMS's North American Process Technology Alliance (NAPTA)-endorsed curriculum. Students in the Welding program are able to take American Welding Society certification tests.

Partnerships with Industry. Companies have become increasingly more willing to open up their shops for student tours, helping students become better aware of work environments and conditions so they can make informed decisions on where they desire to work. Numerous employers also participate in Career Fairs at ASUMS, allowing students to apply for jobs on campus. Cooperating businesses include Microport Orthopedics, Smith & Nephew, Engineered Medical Systems, BASF, Hershey, Onyx Medical Frito-Lay, Big River Steel, and Mitsubishi Electric Power. Valero loaned ASUMS training equipment/supplies for use in training

In addition to offering its for-credit programs, ASUMS has provided non-credit GD&T and Supervisory training to employees of Hino Motors.

Memphis Chamber Manufacturing Council has provided linkages to the Medical Device Industry Sector Council employer group. There is strong interest in developing a Welding Employer Council for the region, and a meeting has been held with BASF, Chemours, and Valero to begin planning for a Process Technology Regional Advisory Council.

Memphis Workforce Investment Network (WIN) is now providing referrals and information on employer needs to the college, something it had not previously done. The Eastern Arkansas Workforce Investment Board in partnership with Arkansas Economic Development Commission (AEDC) and local economic development teams, have conducted several prospect visits.

Partnerships with Other Educational Entities.

MOUs have been created with local high schools to allow high school students to take Mechatronics/Process Technology as concurrent high school credit programs, thus placing students in the pipeline towards a degree.

A partnership has been developed with Southwest Tennessee Community College in Memphis for shared training initiatives centered around manufacturing.

In 2015, ASUMS began collaborating with the Greater Memphis Alliance for a Competitive Workforce to bring community college and technical schools together to form partnerships to increase transferability and articulation.

ASUMS has also worked on articulation of grant-supported programs with four-year degree programs at the University of Arkansas at Pine Bluff, University of Arkansas at Fort Smith, and Arkansas State University in Jonesboro.

Employer Perceptions. Area employers were recently surveyed about their perceptions of the grant-supported programs. While response was small, it is worth reporting the results. All agreed that the curriculum covers the skills necessary in the different fields and that appropriate credit is awarded for previous training and experience. Respondents also believed that the available training equipment is adequate to prepare students for work and that completers have the necessary technical skills and soft skills needed for success.

There was some disagreement, however, on the degree to which completers demonstrate an adequate work ethic, e.g., show up on time, rarely absent from work, complete tasks in an appropriate amount of time, etc. One respondent indicated that in his experience, too many are either excessively tardy and or absent during their first 90 days of employment. He stated, "Our company upholds a low tolerance in this field, so as a result they are terminated or do not receive the raise that they could be worth." While some students come from a background that has little experience with a manufacturing workplace and simply have not developed a strong work ethic, instructors in ASUMS's technical programs should try to find a way to get students' attention in this matter. Perhaps it would be helpful to bring in an employer who could talk about employees who have good skills but are tardy or absent so often that they do not get the wages they could be

earning and are sometimes even fired. Perhaps an employer would make a stronger impact than an instructor makes when talking about work ethic.

Participation. By the end of the grant period dedicated to program development, 246 for-credit students had participated in training. Of these, 69 (28.0%) were in the machining program, 30 (12.2%) in the mechatronics/process technology program, and 147 (59.8%) in welding. These numbers relate directly to the status and timing for program redesign or development, with a basic welding program already in place as the grant began. The machining program was largely a new creation, building on a small pre-existing related program. The same situation existed for the most recently developed program for mechatronics. It is reasonable to expect both of the newer programs to continue to progress and enroll increasing numbers of students.

STUDENT DEMOGRAPHIC CHARACTERISTICS	
Male	229
Female	17
Hispanic/Latino	8
American Indian or Alaskan Native	1
Asian	0
Black or African American	142
Native Hawaiian or Other Pacific Islander	2
White	144
More Than One Race	11
Full-Time Status	136
Part-Time Status	165
Incumbent Workers	123
Eligible Veterans	18
Participant Age (mean)	28.7
Persons with a Disability	3
Pell-grant eligible	165
TAA-eligible	0

Student Demographics.

Participating students are similar to others enrolled at ASU-MS. The low participation by females is typical for these sorts of industry-oriented technical programs. The racial-ethnic mix is representative of the area’s population, as is the low-income status of the majority of students.

Projected Grant Outcomes.

Out of 10 outcomes projected in the grant proposal, only two were met, but one was spectacularly successful, with more than 5 times the expected numbers of credit hours completed. Total number of credentials earned also exceeded the expected number by nearly 40%. Two other outcomes reached

about 70% of the expected totals: 220 students are still retained in a grant-funded program (reflecting the time when programs became fully developed and the time required to complete those programs), and 68.6% of incumbent worker participants received pay increases after enrolling in training.

While achieving only 52.2% of the enrollment objective was disappointing, this number, like the number still retained in their programs, relates directly to the time required to develop Machining and Mechatronics/Process Technology. That these programs, by the end of the development period, have achieved NIMS and PMMI accreditation, respectively, speaks to the quality that was carefully put into the curriculum. Increased enrollment should be seen with the MOUs in place with area high schools to allow their students to take introductory courses in both programs for concurrent credit.

Outcomes as Stated in Grant Proposal October 2012 - March 2016	GOAL	ACTUAL	PERCENT of GOAL
Unique Participants Served/Enrollees	471	246	52.2%
Total Number Who Have Completed a Grant-Funded Program of Study	377	41	10.9%
Total Number Still Retained in Their Programs of Study (or Other Grant-Funded Programs)	302	220	72.8%
Total Number Retained in Other Education Program(s)	424	5	2.3%
Total Number of Credit Hours Completed (aggregate across all enrollees)	423	2203	520.8%
Total Number of Earned Credentials (aggregate across all enrollees)	47	65	138.3%
Total Number Pursuing Further Education After Program of Study Completion	59	5	8.5%
Total Number Employed After Program of Study Completion	338	7	2.1%
Total Number Retained in Employment After Program of Study Completion	295	3	1.0%
Total Number of Those Employed at Enrollment Who Receive a Wage Increase Post-Enrollment	70	48	68.6%

OTHER IMPORTANT OUTCOMES	
Total Number of Grant-Funded Program of Study Completers Who Are Incumbent Workers	21
Total Number of Students Completing Credit Hours	276
Total Number of Students Earning Certificates - Less Than One Year (aggregate across all enrollees)	35
Total Number of Students Earning Degrees (aggregate across all enrollees)	15
Industry Credentials Earned	192
Participants Earning Industry Credentials	132

Other Notable

Outcomes. Besides the outcomes stated in the grant proposal, the project has led to other significant advances, as shown in the adjacent table. It is especially noteworthy that nearly half of students completing credit hours also earned industry

credentials, sometimes of greater value to employers than technical certificates or degrees.

Outcomes of Students in Grant-Related Programs Compared to a Matched Control Group.

ASU-MS selected a group of students who enrolled during the 2009-10, 2010-11, and 2011-12 academic years in programs leading to the AAS in General Technology, Business Technology, Hospitality Management, Information Systems Technology, Medical Assisting, and Renewable Energy Technology, and the AS in Middle School Teaching, along with Certificate programs in Aviation Maintenance, EMT, Machine Technology, Digital Media, Administrative Office Specialist, Heavy Truck Diesel Maintenance, Machining Technology/Machinist, Warehousing Distribution Center Operations, and Welding.

Comparability of Groups. Using a post-test only control group design study, differences in outcomes between participants (treatment cohort) and non-participants (control cohort) of the TAACCCT program can be tested.

While the time enrolled at the institution for the treatment and control cohort differs, they are similar enough in nature and number to warrant examination. Without granular-level data, demographic variables cannot be statistically controlled. However, summary data has shown these groups are eligible to be compared. The treatment group attempted the same number of career credit hours (15.68) as the control group before it (15.38; no statistically significant difference found).

Student Characteristics	Participants		Comparison Group	
Male	226	100%	185	100%
Female	15		27	
Not Hispanic	232	96.3%	208	98.1%
Hispanic	7	2.9%	4	1.9%
Caucasian	114	47.3%	109	51.4%
Native Hawaiian	2	0.8%	0	0.0%
Native American	1	0.4%	1	0.5%
Asian	0	0.0%	2	0.9%
Black	113	46.9%	100	47.2%
More than 1 race	8	3.3%	0	0.0%
Veteran	12	5.0%	8	3.8%
Non-veteran	227	94.2%	204	96.2%
Disability	2	0.8%	0	0.0%
No disability	237	98.3%	212	100.0%
Pell eligible	126	52.3%	120	56.6%
Not Pell eligible	113	46.9%	90	42.5%
Full-time	104	43.2%	74	34.9%
Part-time	135	56.0%	138	65.1%
Avg. math score*	15.1		14.5	
Avg. Engl score*	16.7		16.6	
Avg. read score*	18		18.7	
Avg. age	29		35	
* COMPASS and ASSET scores were converted to their ACT equivalents for comparison purposes.				

Research Design. To identify potential differences in the outcomes between each cohort, the dataset was cleaned to standardize the formatting, and career attempted and career earned credit hours were calculated by adding the term totals for each student. Duplicate student records were then removed ensuring each student had one record with the appropriate career totals associated with that record. The outcomes are; career credits earned, overall grant GPA, overall institutional GPA, and program withdraw rates. A two-tailed unpaired t-Test was used to determine the

means for each outcome. This test was used because it is possible either cohort represents a higher mean outcome. It is unpaired because the individuals in the treatment group differ from the individuals in the control group. A t-Test was used because it is the simplest test that satisfies the requirements of this study.

Findings. Four outcomes were examined: career credits earned, career grant credits completed, overall grant GPA, and overall institutional GPA. For each of the statistical readouts, Group 0 represents the control group and Group 1 represents the treatment group.

Because of the time available within the grant program, participants in the control group have not all had adequate time to complete the program. Comparing withdrawal and completion rates would therefore put the treatment group at a significant disadvantage. This became evident when examination of the data indicated that only 10% of the treatment group had completed a program (compared to 24% of the control group) and that only 46% of the treatment group was coded as withdrawn (compared to 76% of the control group).

Career credits earned. There is not a statistically significant difference in the amount of career credits earned between the control and treatment groups.

COMPARISON OF TWO MEANS: CAREER CREDITS EARNED					
Variable	Mean	Variance	Std.Dev.	S.E.Mean	N
Group 0	11.78	106.71	10.33	0.71	214
Group 1	11.99	140.34	11.85	0.77	236

Cohen's d = -0.019

Assuming unequal variances, t = -0.198 with probability = 0.8432 and 447.33 degrees of freedom

Difference = -0.21 and Standard Error of difference = 1.05

Confidence interval = (-2.26, 1.85)

F test for equal variances = 1.315, Probability = 0.0209

Career Grant Credits Completed. There is not a statistically significant difference in the amount of career grant credits earned between the control and treatment groups.

COMPARISON OF TWO MEANS: CAREER GRANT CREDITS COMPLETED					
Variable	Mean	Variance	Std.Dev.	S.E.Mean	N
Group 0	9.12	67.91	8.24	0.56	214
Group 1	9.29	70.96	8.42	0.55	236

Cohen's d = -0.021

Assuming unequal variances, t = -0.218 with probability = 0.8276 and 445.42 degrees of freedom

Difference = -0.17 and Standard Error of difference = 0.79

Confidence interval = (-1.72, 1.37)

F test for equal variances = 1.045, Probability = 0.3721

PLA Credits. There is not a statistically significant difference in the amount of PLA credits completed between the control and treatment groups.

COMPARISON OF TWO MEANS: PLA CREDITS					
Variable	Mean	Variance	Std.Dev.	S.E.Mean	N
Group 0	0.50	7.01	2.65	0.18	210
Group 1	0.81	23.40	4.84	0.31	236

Cohen's d = -0.078

Assuming equal variances, t = -0.823 with probability = 0.4107 and 444 degrees of freedom
Difference = -0.31 and Standard Error of difference = 0.38
Confidence interval = (-1.05, 0.43)

F test for equal variances = 3.339, Probability = 0.0000

Overall grant GPA. There is not a statistically significant difference in the overall grant grade point average between the control and treatment groups.

COMPARISON OF TWO MEANS: OVERALL GRANT GPA					
Variable	Mean	Variance	Std.Dev.	S.E.Mean	N
Group 0	2.48	2.18	1.48	0.10	210
Group 1	2.49	1.91	1.38	0.09	236

Cohen's d = -0.008

Assuming equal variances, t = -0.085 with probability = 0.9324 and 444 degrees of freedom
Difference = -0.01 and Standard Error of difference = 0.14
Confidence interval = (-0.28, 0.25)

F test for equal variances = 1.141, Probability = 0.1632

Overall institutional GPA. There is not a statistically significant difference in the overall institutional grade point average between the control and treatment groups.

COMPARISON OF TWO MEANS: OVERALL INSTITUTIONAL GPA					
Variable	Mean	Variance	Std.Dev.	S.E.Mean	N
Group 0	2.52	1.69	1.30	0.09	210
Group 1	2.41	1.64	1.28	0.08	236

Cohen's d = 0.079

Assuming equal variances, t = 0.834 with probability = 0.4049 and 444 degrees of freedom

Difference = 0.10 and Standard Error of difference = 0.12
Confidence interval = (-0.14, 0.34)

F test for equal variances = 1.036, Probability = 0.3963

Conclusion. No statistically significant difference was found for any outcome between the treatment and control groups.