



## **Final Evaluation Report**



### **Accelerating Advanced Manufacturing and Global Logistics Careers Partnership (AAMGLCP)**

**DOL TAACCCTTC-23855-12-60-A-45**

**October 1, 2012 – March 31, 2016**



## EXECUTIVE SUMMARY

This report provides final evaluation results for the Accelerating Advanced Manufacturing and Global Logistics Careers Partnership (AAMGLCP) funded by the U. S. Department of Labor (DOL) through the Trade Adjustment Community College and Career Training (TAACCCT) grant program. Orangeburg-Calhoun Technical College (OCtech) served as the state-designated lead college in the project, and Central Carolina Technical College (CCTC) as a subcontractor. Both colleges are two-year public Predominately Minority Institutions (PMIs).

According to the Statement of Work, the overarching AAMGLCP goal was to better prepare Trade Adjustment Assistance (TAA) participants, unemployed/dislocated workers, returning veterans, incumbent/underemployed workers, and other adult learners for high-wage, high-skill jobs in the advanced manufacturing and global logistics sector. This Final Evaluation Report assesses the degree to which objectives/deliverables were attained for each of the four project strategies: Leveraging of ASSIST (TAACCCT Round 1) Resources / Wrap-around Services (AAMGLCP Strategy 1), Creation of New Stackable Credentials (AAMGLCP Strategy 2), Online Course Development (AAMGLCP Strategy 3), and Creation of an e-Learning System (AAMGLCP Strategy 4).

SCATE Inc., a not-for-profit, 501(c)(3) corporation organized for educational purposes to improve the nation's technology workforce, served as external evaluator for the Accelerating Advanced Manufacturing and Global Logistics Careers Partnership (AAMGLCP). SCATE Inc. utilized a participatory approach in the evaluation of AAMGLCP, partnering from the beginning with project management in determining data requirements and assessment methods consistent with desired project outcomes.

Overall, the four AAMGLCP Strategies were projected to yield 11 deliverables, if the project was successful. In reviewing AAMGLCP-related documents and data, SCATE Inc. has determined that OCtech successfully attained all project deliverables by September 30, 2015 and exceeded the goal for one of the 11 deliverables. The projected number of newly created online/hybrid courses was 24. Yet, at the end of the project, OCtech had developed 26 new online/hybrid courses under the grant.

The fruits of AAMGLCP's implementation already are recognizable. Many new manufacturers, including Volvo, recently have announced that they will be moving into OCtech's geographic service area and providing new jobs in transportation, logistics, and advanced manufacturing. Due to the interactive courses developed under AAMGLCP; procurement, installation, and use of innovative equipment enabled by the grant; and the launching of a marketing campaign, the OCtech Mechatronics program has experienced a huge increase in enrollment. In fall 2014, the Mechatronics program had 15 enrollees. At the end of the extended project funding period (March 31, 2016), enrollment was 45, a 200% increase.

AAMGLCP continued into the grant spending extension period which lasted for six months beyond the end of grant funding, ending on March 31, 2016. During the grant spending extension period, AAMGLCP continued to serve participants and enhanced program activities supporting hybrid courses developed under the project. The continuation of student support services, as well as the tracking of employment for project participants will continue to September 30, 2016.

## Project Overview



Orangeburg-Calhoun Technical College (OCtech) functioned as the South Carolina state-designated grantee for a partnership involving two colleges focused on bringing Advanced Manufacturing jobs to South Carolina's Global Logistics Triangle. The initiative, Accelerating Advanced Manufacturing and Global Logistics Career Partnership (AAMGLCP) awarded under TAACCCT round 2, blended the delivery of education and training for advanced manufacturing and its accompanying demands for highly skilled distribution and logistics professionals with wrap-around support services and stackable credentials. Selected grant strategies allowed the colleges to better prepare Trade Adjustment Assistance (TAA) participants, unemployed/dislocated workers, returning veterans, incumbent/underemployed workers, and other adult learners for high-wage, high-skill jobs in the advanced manufacturing and global logistics sector.

OCtech is a two-year public Predominately Minority Institution (PMI) with approximately 3,300 credit students and 5,500 continuing education students annually. The College is accredited by the Southern Association of Colleges and Schools and serves the largely rural South Carolina counties of Orangeburg and Calhoun and surrounding Bamberg and Barnwell counties. Central Carolina Technical College (CCTC), an OCtech sub-contractor under AAMGLCP located in Sumter, SC, is also a PMI and serves a largely low income rural area of Sumter, Clarendon, Lee and Kershaw Counties.

Over the course of AAMGLCP, OCtech shared content and sub-contracted with CCTC for curriculum development in Mechatronics. The two colleges collaborated to coordinate curriculum and workforce training to meet the employment demands of newly located industries in their service areas needing over 2,000 new and highly trained employees.

According to the Statement of Work, AAMGLCP was implemented to expand and improve the College's ability to deliver education and career training programs designed to accelerate the workforce readiness of individuals eligible for training under the Trade Adjustment Assistance for Worker's program, as well as the dislocated, unemployed, and incumbent workers, and prepare them for employment in high-wage, high-skilled occupations in the advanced manufacturing and global logistics sector. This was to be accomplished through four strategies that respond to three stipulated DOL priorities.

### **AAMGLCP Priorities and Strategies**

AAMGLCP responded to the following three DOL priorities:

1. Develop or enhance a program of study for online or hybrid delivery that includes stackable education or training credentials.
2. Deliver the program in an accelerated format.
3. Include innovative and sophisticated multimedia learning strategies into online and hybrid courses.

The four AAMGLCP strategies to attain the above DOL priorities were to:

- Leverage the Workforce Readiness Centers established at OCtech and its partner CCTC in Round 1 of TAACCCT Consortium funding to provide wrap-around support services, including prior learning assessments for the needs of populations identified above and for all adult and nontraditional students (Strategy 1);



- Create new stackable credentials that articulate competencies with existing programs for Machine Tool Technology, Mechatronics, Industrial Engineering/Instrumentation, Industrial Electronics, and Industrial Maintenance Technology, as well as a new certificate program for Transportation and Global Logistics (Strategy 2);
- Use technology-enhanced, multi-media-rich online courses combined with open laboratories to provide a hybrid and accelerated delivery model for 24 technical courses, including technical math courses required for Advanced Manufacturing and Global Logistics related programs (Strategy 3); and
- Leverage an OCtech owned Manufacturing E-Learning platform to create a delivery system for both Round 1 and Round 2 TAACCCT-developed courses that can be used across the 16 South Carolina technical colleges engaged in Advanced Manufacturing and Global Logistics (Strategy 4).

Selected grant strategies were aimed at enabling OCtech and its sub-contractor CCTC to effectively prepare TAA participants and other identified populations for high-wage, high-skilled jobs in advanced manufacturing and its accompanying highly automated supply chain management support industries.

## Evaluation Strategies

SCATE Inc., a not-for-profit, 501(c)(3) corporation organized for educational purposes to improve the nation's technology workforce, served as external evaluator for the Accelerating Advanced Manufacturing and Global Logistics Careers Partnership (AAMGLCP). SCATE Inc., having experience in evaluating projects funded by the U. S. Department of Education, National Science Foundation, and state agencies for two-and-four-year colleges, universities, and not-for-profit corporations, also served as the external evaluator for the Department of Labor TAACCCT Round 1 ASSIST grant in the state of South Carolina.

Guided by evaluation standards and accepted practices and standards provided by The Evaluation Center at Western Michigan University, the National Science Foundation, and the Kellogg Foundation, SCATE Inc. utilized a participatory approach in the evaluation of AAMGLCP, partnering from the beginning with project management in determining data requirements and assessment methods consistent with desired project outcomes. SCATE Inc.'s rigorous and comprehensive evaluation process utilized a mixed-method design that included quantitative and qualitative methods and formative and summative reporting. These methods were employed to describe project progress and outcomes and were discussed in site visit, quarterly, and annual project reports.

Overall, the evaluation process was driven by the following research question:

*To what degree has the AAMGLCP project accelerated the workforce readiness of target audience participants and prepared them for employment in high-wage, high-skilled occupations in the advanced manufacturing and global logistics sector?*

Specifically, to what degree did AAMGLCP address the four U. S. Department of Labor core elements?



- Leveraged Workforce Readiness Centers established in round 1 of TAACCCT;
- Created new stackable credentials in existing manufacturing technology programs and a new certificate program for Transportation and Global Logistics;
- Delivered online and hybrid instruction for 24 technical courses; and
- Leveraged the OCtech-owned Manufacturing E-learning platform to create a delivery system that can be used across the 16 technical colleges in South Carolina.

## STRATEGY 1

### Leveraging of ASSIST resources/Wrap-around Services

TAACCCT Round 1 funding enabled the implementation of the ASSIST project at OCtech. One of the ASSIST strategies associated with Round 1 was the creation of a Workforce Readiness Center (WRC) charged with offering a suite of workforce readiness services that support basic skills development, college preparation, and academic success. At OCtech, the TAACCCT Round 1 designated WRC is named the Academic Success and Career Center (ASCC).

The goal of the AAMGLCP project (funded under TAACCCT Round 2) was to expand and improve the College's ability to deliver education and career training under the Trade Adjustment Assistance (TAA) for Workers program, as well as dislocated, unemployed, and incumbent workers, and prepare them for employment in high-wage, high-skilled occupations in the advanced manufacturing and global logistics sector.

**Conclusion:** Based on the following, the evaluator has determined that OCtech attained AAMGLCP Strategy 1 deliverables:

1. **Development and implementation of prior learning assessments.** Throughout the life of the project, participants were engaged in the following learning and skills assessments or development activities: College Admissions Testing Prep, Career Readiness Assessment, Technical Assessments, Online Learning Orientation, Fast Track/contextualized modules, Keytrain®, and GED.
2. **Development and implementation of career readiness preparation sequences.** OCtech and AAMGLCP leveraged ASSIST resources, e.g. the WorkKeys exam, that supported the career readiness of AAMGLCP participants.
3. **National model to increase workforce readiness skills implementation via bundled software and targeted skills sequences.** Career Ready 101 was the selected national model utilized under AAMGLCP to increase participants' workforce readiness skills.
4. **Codified agreements with regional business and associate degree programs to recognize academic and/or placement credit for career readiness and technical skills assessments for transfer and/or articulation for employment.** A total of seven apprenticeships were created across three local industries: Continental Tires (2 apprenticeships both as Electrical Instrumentation Technicians); Husqvarna (4 apprenticeships – Tool and Die Maker, Electro-Machinery Technician, Electrician, and Mig Welder); and Koyo (Machine Set-up Operator). An additional 11 industries and 5 trucking companies entered into partnerships with AAMGLCP.



5. **New curricular innovations to enhance academic learning and student performance.** OCtech implemented a flipped classroom format to enhance academic learning and student performance. The format yielded positive feedback from surveyed AAMGLCP participants enrolled in classes where the format was utilized.

## STRATEGY 2

### Create New Stackable Credentials

In response to the U. S. Department of Labor’s interest in providing more opportunities for TAA-eligible workers and other adults to earn a range of post-secondary credentials that have labor market value, OCtech, via AAMGLCP, proposed to incorporate a variety of credentials, including certificates, certifications, diplomas, and degrees into the proposed program design. Under Strategy 2, OCtech committed to creating stackable credentials and programs supporting side-by-side credentialing. Included in this process was OCtech’s active engagement of employers and/or industry associations to identify certifications necessary for hiring and promotion purposes. Overall, the premise was that stacked and latticed credentials (including stacked industry certifications and certificates) that lead to a degree and improve employability would make it possible for participants to accelerate their time attainment of an industry-recognized credential and improve career ladder opportunities across advanced manufacturing and transportation and logistics sectors.

- Development of new stackable credentials:
  - Career Readiness: this is a national credential
  - Manufacturing Skills Standard Certification (MSSC) Logistics Associate: this is an industry level credential
  - Manufacturing Skills Standard Certification MSSC Logistics Technician: this is an industry level credential
  - Quality Assurance: covered in a module of a statistical process control course (Lean Six Sigma – Yellow Belt)
  - Manufacturing Skills Standard Certification MSSC Production: this is an industry level credential
  - LabVIEW – this is an industry certificate
  - Supply Chain and Automated Warehouse: now the Transportation Logistics Credit Certificate
- Enhancement of the following existing credentials:
  - Machine Tool Technology (MTT) Production Operator: equipment was installed that enhances program offerings
  - Computer Numerical Control (CNC) Operator: implemented as a credit certificate
  - PLC: the hybrid course EET 235 – Programmable Controllers, which is a component of the credential, was developed, piloted and revised based on reviews after the pilot course.
  - Advanced PLC: equipment for training on advanced PLC systems was installed
  - Commercial Driver’s License (CDL): implemented as a national credential



- Robotics: incorporated into Mechatronics and has the potential for becoming a Continuing Education certificate
- Industrial Maintenance Technician (IMT): this is a credit credential
- Mechatronics: this is a credit credential
- Development of formal career pathways: A new Logistics certificate started in Fall 2014.

To further respond to AAMGLCP Strategy 2, a transfer agreement between OCtech and South Carolina State University for AAMGLCP-related grant programs was completed. Among the included programs are Electronics Engineering, Industrial Technology, Surveying, and Nuclear Engineering. Also, an articulation agreement/process was completed for OCtech Continuing Education to Credit.

**Conclusion:** Based on the following, the evaluator has determined that OCtech has successfully implemented AAMGLCP Strategy 2 deliverables:

1. **Repository of leveraged and enhanced technical and gatekeeper courses.** Courses have been uploaded into the shared repository and are available for sharing with other area technical colleges, and 4-year college partners.
2. **Targeted learning multimedia enhanced opportunities embedded in technical courses.** Highly interactive and visually enhanced online courses that include content presented in the context of real-world manufacturing and distribution and logistics applications, including hands-on laboratory experiences were created.
3. **Equipment installed and operational.** All equipment has been delivered, install, and placed into use.

## STRATEGY 3

### Online Course Development

At the core of AAMGLCP was the development of online/hybrid and technology-enabled courses, responding to DOL's premise that these learning strategies provide adults an opportunity to balance the competing demands of work and family with acquiring new knowledge and skills at a time, place, and/or pace that are convenient for them. Strategies embedded in the courses developed under AAMGLCP include interactive simulations, personalized and virtual instruction, and educational gaming.

Integral to the manufacturing industry are the online courses developed under AAMGLCP. These courses also support the targeted occupations. Online course content quality was guided by standards established by the College's accrediting agency, SACS. All of the new online courses meet the Department of Labor's online course standards and the Sloan Quality Framework and quality pillars with student learning assessments and continuous quality improvement embedded. Additionally, all courses developed under AAMGLCP continue to follow the CAST Universal Design for Learning (UDL) methodology, utilized by Round 1 TAACCCT partners, thus leveraging Round 1 experience and expertise in developing online courses in accordance with this standard. Under AAMGLCP, both OCtech and sub-contractor CCTC developed courses.

The project plan specified that online and technology-enabled learning include the development of 24 online and hybrid courses focused on Advanced Manufacturing, Instrumentation, Mechatronics, and



Distribution and Logistics, including Intermodal Freight careers such as Truck Driving. The intent was to structure courses for online delivery with open laboratories for maximum flexibility in the timing of course offerings. It was anticipated that the completed courses would be added to the Creative Commons Initiative course catalog and placed into an online delivery system that can serve any of the 16 technical colleges across the state. The AAMGLCP plan was for new technologies and equipment specific to the regional manufacturers and distributors to be incorporated into a created educational model of stacked credentials.

Open laboratories and equipment were planned to allow for student progression from novice to mastery. It was anticipated that video capture and streaming equipment would greatly increase access for those who live in rural areas, as well as allow the College to expand the numbers who can be accommodated since virtual classes are not limited by numbers of seats. The online, open laboratory for flexible learning concept was informed by the regional business partners during the development of both ASSIST (Round 1, TAACCCT) and AAMGLCP (Round 2, TAACCCT) projects.

**Conclusion:** Based on the following, the evaluator has determined that AAMGLCP successfully attained two of the three Strategy 3 deliverables, and exceeded the target for the other:

1. **Repository of 24 new online/hybrid courses available in e-Learning platform.** All (26) courses developed under AAMGLCP have been loaded into the e-Learning system and are sharable with other technical colleges in the area, as well as 4-year partners.
2. **All coursework meets or exceeds quality criteria according to DOL online course standards, accrediting agency standards and the Sloan Quality Framework and quality pillars.** Throughout the life of AAMGLCP, project leadership and course developers provided evidence of how standards were incorporated at several development “checkpoints.”
3. **Continuous improvement process institutionalized.** Midway through year 3, continuous improvement processes had been institutionalized to improve course quality, student learning, and services to students.

## **STRATEGY 4**

### **Creation of e-learning System**

Transferability and articulation were intended to promote the development of career pathways created across colleges and other regional education entities involved in both rounds 1 and 2 of DOL TAACCCT projects. It was anticipated that Strategy 4 would result in the creation and an e-learning delivery system that can be used across the 16 technical colleges in South Carolina. The AAMGLCP project leadership team anticipated that the use of a common e-manufacturing, e-learning platform would promote articulation efforts and house articulation agreements.

**Conclusion:** Similar to Strategy 3, the following summarizes the evaluator’s contention that AAMGLCP successfully attained two of the three Strategy 4 deliverables, and exceeded the target for the other:





1. **Repository of 24 new online/hybrid courses available in e-Learning platform.** All (26) courses developed under AAMGLCP have been loaded into the e-Learning system and are sharable with other technical colleges in the area, as well as 4-year partners.
  
2. **All coursework meets or exceeds quality criteria according to DOL online course standards, accrediting agency standards and the Sloan Quality Framework and quality pillars.**  
Throughout the life of AAMGLCP, project leadership and course developers provided evidence of how standards were incorporated at several development “checkpoints.”
  
3. **Continuous improvement process institutionalized.** Midway through year 3, continuous improvement processes had been institutionalized to improve course quality, student learning, and services to students. AAMGLCP continued into the grant spending extension period which lasted for six months beyond the end of grant funding, ending on March 31, 2016. During the grant spending extension period, AAMGLCP continued to serve participants and enhanced program activities supporting hybrid courses developed under the project.

### Annual Performance Outcome Measures

The table below presents the nine Annual Performance Outcome Measures as projected in the AAMGLCP grant proposal and AAMGLCP Statement of Work. Evaluation of these measures is embedded in the SCATE Inc. scope of work. At the end of project year 1, three of the nine outcome measures (measures #1, 3, and 4) reported participant data; at the end of project year 2, an additional three measures (measures 2, 5, and 7); and at the end of Project Year 3, only one measure (measure #9) was without participant data. For each of the outcome measures for which data is reported at the end of project year 3, three outcome measures (measures #1, 3, and 4) report data beyond the projected outcome; and five outcome measures (measures #2, 5, 6, 7, and 8) report data significantly less than the projected outcome.

Annual Performance Outcome Measures				
Outcome Measures		Targets for TAACCCT Program (All Participants)		Evaluation Comments
		Targets are in Raw Numbers		
1	<b>Total Unique Participants Served</b> Cumulative total number of individuals entering any of the grant-funded programs offered	Year 1: 30 Year 2: 100 Year 3: 170	Total: 300	At the end of the grant spending extension period, AAMGLCP project management reported <b>350</b> participants. This represents 117% of the Year 3 target.
2	<b>Total Number of Participants Completing a TAACCCT-Funded Program of Study</b> Number of unique participants having earned all of the credit hours (formal award units) needed for the POS	Year 1: 0 Year 2: 56 Year 3: 144	Total: 200	As of this Final Evaluation Report, AAMGLCP project management reports <b>66</b> participants. This represents 33% of the Year 3 target.
3	<b>Total Number of Participants Still Retained in Their</b>	Year 1: 10 Year 2: 25	Total: 60	As of this Final Evaluation Report, AAMGLCP project management reports <b>244</b> participants. This represents 406% of the Year 3 target.



	<b>Program of Study or Other TAACCCT-funded program</b> Number of unique participants enrolled who did not complete and are still enrolled in a grant-funded POS	Year 3: 25		
4	<b>Total Number of Participants Completing Credit Hours</b> Total # of students enrolled that have completed credits	Year 1: 20 Year 2: 30 Year 3: 110	Total: 160	As of this Final Evaluation Report, AAMGLCP project management reports <b>212</b> participants. This represents 133% of the Year 3 target.
5	<b>Total Number of Participants Earning Credentials</b> Aggregate number of degrees and certificates completed by participants in grant-funded programs of study.	Year 1: 0 Year 2: 56 Year 3: 144	Total: 200	As of this Final Evaluation Report, AAMGLCP project management reports <b>58</b> participants. This represents 29% of the Year 3 target.
6	<b>Total Number of Participants Enrolled in Further Education After TAACCCT-funded Program of Study Completion</b> Total number of students who complete a grant-funded program of study and enter another program of study	Year 1: 0 Year 2: 20 Year 3: 20 Year 4 (follow-up only): 10	Total: 50	As of this Final Evaluation Report, AAMGLCP project management reports <b>5</b> participants. This represents 10% of the Year 3 target.
7	<b>Total Number of Participants Employed After TAACCCT-funded Program of Study Completion</b> Total number of students (non-incumbent workers only) who completed a grant-funded program of study entering employment in the quarter after the quarter of exit	Year 1: 0 Year 2: 40 Year 3: 130 Year 4 (follow-up only): 25	Total: 195	As of this Final Evaluation Report, AAMGLCP project management reports <b>52</b> participants. This represents 27% of the Year 3 target.
8	<b>Total Number of Participants Retained in Employment After Program of Study Completion</b> Total number of students (non-incumbent workers only) who completed a grant-funded program of study and who entered employment in the quarter after the quarter of program exit who retain employment in the second and third quarters after program exit	Year 1: 0 Year 2: 35 Year 3: 125 Year 4 (follow-up only): 10	Total: 170	As of this Final Evaluation Report, AAMGLCP project management reports <b>14</b> participants. This represents 8% of the Year 3 target.
9	<b>Total Number of Those Participants Employed at Enrollment Who Received a Wage Increase Post-Enrollment</b> Total number of students who are incumbent workers and who enrolled in a grant-funded program of study who received an increase in wages after enrollment	Year 1: 0 Year 2: 10 Year 3: 25 Year 4 (follow-up only): 5	Total: 40	As of this Final Evaluation Report, AAMGLCP project management reports <b>0</b> participants. This represents 0% of the Year 3 target.



DOL also requires grantees to provide Cumulative Participant data, not including targeted outcomes for categories that document the gender, ethnicity/race, full-time or part-time enrollment status, and other demographics. Participant intake processes served as the source for this data.

## Conclusion

To assess AAMGLCP's success in responding to the three DOL Priorities and four AAMGLCP Strategies, the evaluation process was driven by the following research questions:

*To what degree has the AAMGLCP project accelerated the workforce readiness of target audience participants and prepared them for employment in high-wage, high-skilled occupations in the advanced manufacturing and global logistics sector?*

Overall, the four AAMGLCP Strategies were projected to yield 11 deliverables, if the project was successful. In reviewing AAMGLCP-related documents and data, SCATE Inc. has determined that OCtech successfully attained all project deliverables and exceeded the goal of one of the 11 deliverables. The projected number of newly created online/hybrid courses was 24. Yet, at the end of the project, OCtech had developed a total of 26 new online/hybrid courses under the grant.

The fruits of AAMGLCP's implementation already are recognizable. Many new manufacturers, including Volvo, recently have announced that they will be moving into OCtech's geographic service area and providing new jobs in transportation, logistics, and advanced manufacturing. Due to the interactive courses developed under AAMGLCP; procurement, installation, and use of innovative equipment enabled by the grant; and the launching of a marketing campaign, the OCtech Mechatronics program has experienced a huge increase in enrollment. In fall 2014, the Mechatronics program had 15 enrollees. As of this Final Evaluation Report, enrollment is 45, a 200% increase.