Final Evaluation Report

Executive Summary

Round 3 TAACCCT Grant: Mission Critical Operations

Grant Consortium Partners: Cleveland Community College, Wake Technical Community College, Nash Community College, Southern Regional Technical College, University of North Carolina Charlotte

E-1. Introduction

In September 2013, Cleveland Community College, along with its institution partners (Nash Community College, Southern Regional Technical College, University of North Carolina at Charlotte, and Wake Technical Community College) were awarded a Department of Labor TAACCCT grant (Round 3) to form the National Consortium for Mission Critical Operations (MCO). The lead institution, Cleveland CC contracted with North Carolina State University's Industry Expansion Solutions (hereafter referred to as "the Evaluation Team") to be the third party evaluator. The MCO Consortium had *three main objectives*:

1) Increase attainment of certificates, diplomas, and other industry related credentials to better prepare TAA-eligible and other adults with high-skill, high-wage employment or re-employment in growth industry sectors;
2) Introduce innovative and effective methods for curriculum development and delivery that address specific industry needs and lead to improved learning outcomes and retention rates for TAA workers and other adults; and,
3) Demonstrate for TAA workers in particular improved employment outcomes as a result of the funded program. (MCO Proposal, p. 3).

In order to achieve the three MCO program objectives, eight work plan activities were specified in the proposal. These activities can be broadly viewed as *three major program interventions*:

1) Curriculum Development (including development of articulation agreements; course design; credential development);
2) Curriculum Delivery (including 'Digital Study' resource; and telepresence); and
3) Student Support Services (including prior learning assessments; academic and career coaching; job placement assistance; and Digital Learn component)

These interventions were designed to increase retention in the program of study, increase attainment of industry-recognized credentials, and improve employment outcomes for TAA-eligible and other adults. The employment outcomes include wage increases for students employed upon entering the MCO program [i.e. incumbent workers], and employment for non-incumbent workers.

The MCO Project design was based on a number of educational practices and models. These include virtualization as a model[1], research done on the RAMP Plus project from Georgia, the "small chunks" model for instructional delivery[2], hybrid and/or blended learning approaches (emporium or buffet models)[3], use of the Basic Skills Plus approach to accelerating mastery of

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[1] Park, J. (2011). Does occupational training by the Trade Adjustment Assistance program really help reemployment?: Success measured as matching. US Department of Labor, Employment and Training Administration.

[2] Govindasamy, T. (2001). Successful implementation of e-learning: Pedagogical considerations. The Internet and Higher Education, 4(3), 287-299.

[3] Twigg, C. A. (2003). Models for online learning. Educause review, 28-38.

developmental education subjects[4], and the Career Pathways Initiative[5] as a model for career pathway development.
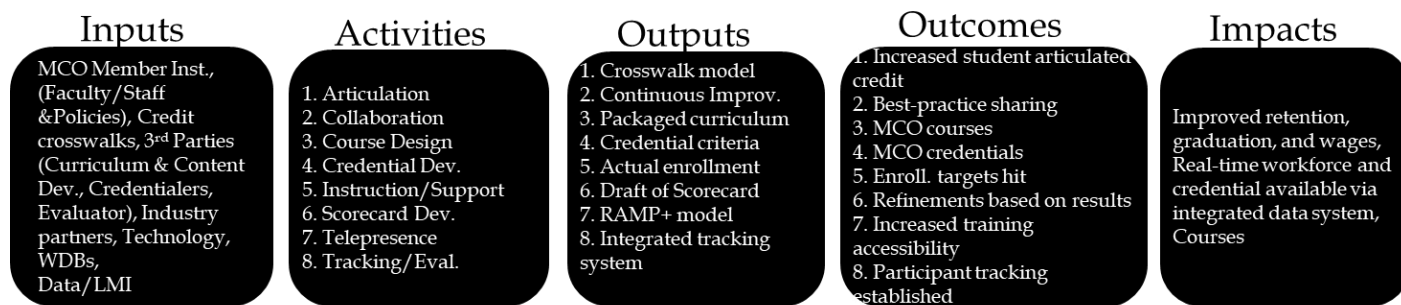
E-2. Evaluation Design

Evaluation Goals

      Evaluation of the MCO program was focused on achieving three major goals (succinctly stated): (1) Reporting program interactions and activities; (2) Assessing program implementation and process management; and (3) Evaluating MCO program impacts. Achievement of evaluation Goal 1 is a natural consequence of achieving evaluation Goals 2 and 3, which are described in further detail below.

      The Evaluation Team's standard practice for an evaluation project is to generate a program logic model in order to provide a dynamic and holistic view of the program. Logic models allow for the consideration of causal relationships, where specific activities (interventions) are expected to produce specific outputs and lead to measurable outcomes and/or impacts. See Figure E1 below for the MCO Program Logic Model.

Figure E1: MCO Program Logic Model

Inputs	Activities	Outputs	Outcomes	Impacts
MCO Member Inst., (Faculty/Staff &Policies), Credit crosswalks, 3rd Parties (Curriculum & Content Dev., Credentialers, Evaluator), Industry partners, Technology, WDBs, Data/LMI	1. Articulation 2. Collaboration 3. Course Design 4. Credential Dev. 5. Instruction/Support 6. Scorecard Dev. 7. Telepresence 8. Tracking/Eval.	1. Crosswalk model 2. Continuous Improv. 3. Packaged curriculum 4. Credential criteria 5. Actual enrollment 6. Draft of Scorecard 7. RAMP+ model 8. Integrated tracking system	1. Increased student articulated credit 2. Best-practice sharing 3. MCO courses 4. MCO credentials 5. Enroll. targets hit 6. Refinements based on results 7. Increased training accessibility 8. Participant tracking established	Improved retention, graduation, and wages, Real-time workforce and credential available via integrated data system, Courses

      This program framework guided the division of the evaluation project into two components (formative and summative) described below:

Formative Evaluation (focused on assessing implementation and processes)

      The formative evaluation was primarily shaped by three logic model elements; the inputs and activities, and to some degree outputs, with a focus on process quality, efficiency, and continuous improvement. Key features of the formative evaluation are described below.

<u>Research Focus</u>: Along with assessing fidelity to the activities described in the proposal, the formative evaluation involved a research focus on processes related to Work Plan Activities. The seven research questions related to this evaluation component are presented in the report, but can best be summarized as follows:

- How was the curriculum created?
- How was the curriculum delivered?

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[4] North Carolina Community College System (2013). Basic Skills Plus, Student Success Transition.
[5] Workforce3One, 2011. "Career Pathways Initiative Grantee Profiles 2011." pp.22-23.

- What academic and career pathway support services were offered to students?
- What contributions did MCO program partners make to the program?

Methodology and Data: The methodology for performing the formative evaluation involved the periodic comparison of progress reports to project plan (as an indicator of staff capacity), but primarily depended on the Evaluation Team observing several meetings, and conducting over 40 interviews, focus groups and surveys. A semi-standardized structure for gathering qualitative data from MCO program staff and faculty was followed in order to allow for probing questions that could adapt to, or expand upon, responses during interviews or focus groups. The surveys, interviews, and focus groups involved the following stakeholders as data sources: Deans, Project Directors, Industry Partners, Faculty, Instructional Designers, Recruitment and Retention Coordinators, Analytics Liaison, Career Coaches, Employers, Philanthropic Organizations, and Principal Investigators.

Summative evaluation (focused on outcomes and impacts)

The evaluation design also included a summative evaluation component, which was primarily based on two logic model elements; the program outcomes and impacts (and how they may be associated with program interventions).

Research focus: The summative evaluation focuses on how the MCO program has impacted the degree to which retention, graduation (completion), program progress, *employment, and wages*[6] have improved over the comparison group.

Methodology and Data: The summative evaluation included the presentation and review of descriptive statistics, as well as calculation of inferential statistics based on a quasi-experimental model designed to determine the extent to which grant activities appear to affect performance measures for MCO participants in each institution. MCO participant (treatment group) characteristics and outcomes data were compared with a comparable historical (comparison) group after adjusting for selection bias using propensity scoring.

The Evaluation Team compiled and analyzed data related to enrollment, student demographics, academic performance, and other sources to document the outcomes for program participants. Evaluation of the MCO participant outcomes/impact involved the collection and analysis of quantitative data from each of the four community college's Institutional Research departments.

E-3. Evaluation Findings

Formative Evaluation Findings

Institutional Capacity: The process evaluation, and its findings, indicate the following increases in institutional capacity:

- Digital learning platform increases the capacity to support students in their coursework;
- New or updated equipment/facilities enabled institutions to increase access to courses;

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[6] Employment and wage data was not available by the end of the grant for the summative evaluation, despite efforts by the partners to retrieve this data from other state agencies.

- Increased staff knowledge of incorporating a telepresence component in coursework;
- Increase in online courses increased institution capacity to serve more students.

Program Administration: Cleveland CC led the proposal development process for the MCO grant and served as the lead grantee since the grant was awarded in 2013. Each partner college established a similar organizational structure (project manager and support staff) by which their institution's program activities were managed. Initially, Cleveland CC assigned two project managers to address the two unique disciplines of focus at its institution: Information Technology and Operations Technology. In Year 3, the Cleveland CC team restructured to accommodate a single project manager. One difference among partner colleges was that Cleveland CC assigned faculty members to manage the project, while other partners hired new staff members to lead the project.

In their leadership role, Cleveland CC shared their process of identifying and tracking student participants and committed to helping consortium members set up student tracking processes.

Key Partnerships: As a result of the MCO consortium partnership, UNC Charlotte is conducting research that is tied to cybersecurity in MCO-related industry settings. The findings of this research could have positive impacts on the MCO partner colleges as well as MCO-related industries. Cleveland CC worked with contractor ISA on the management of the *Certified Mission Critical Professional* (CMCP) certification, and ISA agreed to manage the certification for at least one year after the grant expiration. The colleges sought additional employer partners who were aligned with MCO objectives. Cleveland CC was successful in recruiting volunteers from local employers to participate in the MCO Digital Learn platform, where they interacted with students in a chat/forum environment and responded to questions.

Fidelity to Funded Proposal Narrative: Assessment of grantee fidelity to the original proposal design was performed as part of evaluating the implementation process. Results of the assessment indicate a high-level of fidelity to the eight proposed activities and associated tasks, with the following notable exceptions:

- There was little evidence of rigorous and standardized process for awarding credit for prior learning (done on a case by case basis at each partner site).
- The partners were unsuccessful in their efforts to collect employment and wage data for participants.
- The proposal stated that there was low representation of females and other underrepresented groups in MCO-related programs. After looking into the results after the grant, there was some progress towards addressing this issue, but a low level of planning and other observable activities to this end.

Program Operational Strengths and Challenges: An overview of the prominent strengths and challenges of the program, based on themes identified while evaluating the eight Work Plan Activity processes, is provided below. This is elaborated on more in Chapter 24 of the full Final Evaluation Report.

Table E1: High-level Strengths and Challenges

Strengths	Challenges
• Broader Institutional Impact • Continuous Improvement • Coordination • Employer engagement and feedback • Adaptability of the program • Student support services • Knowledge-sharing	• Awareness of the program • Content development • Data collection • Data quality • Program sponsor delays • Standard processes across institutions

Summative Evaluation Findings

<u>MCO Participant Outcomes:</u> Nine outcomes were articulated in the Round 3 Solicitation for Grant Applications. The MCO Consortium-wide projected outcomes and actual outcomes are shown in Table E2 below.

Table E2: MCO Consortium-wide outcomes (Projected vs. Actual)

Outcome Indicator	Year 1 Projection	Year 1 Actual	Year 2 Projection	Year 2 Actual	Year 3 Projection	Year 3 Actual
1. Total Unique Participants Served	322	**728**	602	**8124**	695	**4869**
2. Total Number of Participants Completing a TAACCCT Program of Study	65	**51**	311	**253**	451	**237**
3. Total Number of Participants Still Retained in Their Programs of Study (or Other TAACCCT-Funded Programs)	112	**318**	303	**837**	425	**1282**
4. Total Number of Participants Completing Credit Hours	252	**621**	489	**6109**	593	**3115**
5. Total Number of Participants Earning Credentials	0	**112**	291	**934**	365	**438**
6. Total Number of Participants Enrolled in Further Education After TAACCCT-funded Program of Study Completion	5	**13**	24	**110**	49	**64**

7. Total Number of Participants Employed After TAACCCT-funded Program of Study Completion	25	**4**	110	**16**	135	**4**
8. Total Number of Participants Retained in Employment After Program of Study Completion	114	**4**	182	**4**	229	**3**
9. Total Number of Participants Employed at Enrollment Who Received a Wage Increase Post-Enrollment	6	**200**	30	**203**	42	**77**

MCO Program Impact: Outcomes were also analyzed in order to determine if there is evidence that the MCO program had an impact on participant outcomes, particularly retention, program progress, and program completion. The impact of program participation, as well as the specific intervention of student support services, was explored.

Table E3: MCO Program Participation - Evidence of Impact

Outcome Metric	Hypothesis Testing Results
Retention	For all three of the institutions providing sufficient data, MCO program participation was associated with a higher retention rate. MCO participants were approximately twice as likely to be retained as non-MCO-participants. Analysis of the specific intervention of student support services revealed mixed results regarding impact on retention.
Program Progress	For two of the three institutions providing sufficient data, MCO participation was associated with a higher proportion of course grades A, B, or C. Analysis of the specific intervention of student support services revealed mixed results regarding impact on program progress.
Program Completion	No conclusive evidence was found to indicate that MCO participation contributed to an improved rate of program completion. Analysis of the specific intervention of student support services revealed positive results regarding impact on program completion.

External and Internal Validity: Due to the natural conditions and campus setting in which the MCO program activities took place, the impact findings above are expected to be generalizable to the routine community college setting. However, while threats to external validity are expected to be minimal, threats to internal validity exist. Threats to internal validity include the four-year passage of time and associated maturity changes of younger students. Furthermore,

even though propensity scoring was used to reduce selection bias, the study design was quasi-experimental, not experimental.

Exploratory analysis: an exploratory analysis of outcomes was also conducted in order to detect any issues warranting further study, including the following:

- To varying degrees, participant characteristics such as gender, race, and age were found to be associated with program retention, progress, and completion.
- Courses with a traditional (face-to-face) course delivery method had the lowest course drop rate, as well as the highest (or close tie to the highest) median proportion of students passing the course.

It is important to note that the study was not designed to reach conclusions regarding the factors examined in the exploratory section, so these issues are only being suggested for further study.

E-4. Conclusions

Table E4: Key Implications of the MCO Program – Lessons Learned

Issue	Lesson Learned
Budget Modification Approval	Several of the MCO partner colleges had to submit budget modifications and they noted at the end of the grant that they would have planned more thoroughly to be able to submit the modification requests much earlier. In at least one case, the delays in modification approval led to unspent grant funds.
Project Management Skills	For Cleveland CC, the project management of the grant was led by a faculty member. As this is not completely out of the ordinary for a P.I. / project director to be a faculty member, a lessons learned that is being offered to other grantees in this position is to invest in some level of project management training for faculty P.I. / project directors on grants.
Data Collection	Significant data collection challenges were encountered regarding the collection of employment data, and support services for the outcomes analysis. With impact evaluations on the rise, grantees should work closely with their research / evaluation team to define the data needs of the project from the onset, and execute a plan with data collection milestones to build the analysis data set over time. Addressing these challenges early in a new grant would put the grantees in the best position to more fully demonstrate the impact of the program.
Adaptability of the Program	Articulation efforts were expedited when the decision was made to implement Memoranda of Understanding (MOU) for transferable credit rather than official articulation agreements, which have to be approved by college/university leadership.
Communication	Some faculty seemed to be unaware of the course and content development work taking place at other partner colleges. A more collaborative approach to content development by more frequently convening the faculty teaching MCO-related courses to discuss

	curriculum / content development would have been helpful.
Student Support Services	While outcomes analysis suggests that student support services had a positive impact on student performance, retention at one of the colleges was lower for students using support services. This result suggests substantial variation in type of support services between institutions, as well as the importance of a thorough examination of how such services are designed and delivered.
Time Availability of Subject Matter Experts	Some of the participating SMEs were interested in providing more assistance to the project but were challenged in finding available time to do so. Any process for involving SME participation that can reduce time demand would likely increase the number (or level of participation) of SMEs.

Table E5: Implications of the MCO Program – Program Sustainability

Theme	Description
Establishment of Credential Programs	The development and establishment of multi-layer credential programs (certifications and degrees) legitimized the MCO program efforts, as these credentials come with some sort of accreditation and/or markers of quality (e.g. Quality Matters Certifications). The legitimization of the program contributes to the sustainability – now based on an enrollment supply and demand model, the program will sustain itself as long as there is a demand for MCO graduates in the workforce.
Building Program Awareness	Program sustainability can be partially attributed to outreach and awareness-building that took place through the MCO partners at different capacities. Throughout the grant, career fairs, presentations at conferences, paper/online marketing collateral, and connections with the local workforce development boards were ways in which awareness was built around the MCO program.
University Partnerships and Research	University partnerships contributed to the sustainability of the MCO program. As a result of the MCO consortium partnership, UNC Charlotte is conducting research that is tied to cybersecurity in MCO-related industry settings. The findings of this research could have positive impacts on the MCO partner colleges as well as MCO-related industries.