



**Project COMPLETE**  
**Controlling, Operating, and Measuring:**  
**Pathways for Learners to Engineering Technology Employment**  
NSF Award #1801177

**External Evaluation Winter Report**  
**2020-2021**

*External Reviewers*

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## Introduction

This document reports the results of the external evaluation for July 2020 to February 2021, a portion of year three of the grant titled “*Controlling, Operating, and Measuring: Pathways for Learners to Engineering Technology Employment,*” under the National Science Foundation (NSF) Scholarships in the Advanced Technological Education program (ATE).

## Evaluation Objectives

As the time frame covered by this evaluation covers only a few months of year three of Project COMPLETE, the evaluation objectives for this period focus on the activities and evidence regarding the following project elements: project curriculum, industry-based certification, articulation agreements, dual enrollment, and dissemination and visibility initiatives. Our evaluation of implementation fidelity included ensuring that all program aspects were created and maintained as outlined in the NSF grant application, as well as ensuring that the timeline for these elements was followed. Each evaluation objective is followed by an explanation of interferences caused by the COVID-19 pandemic.

## Method

The following section includes information about the team of evaluators, materials, and methodology used in this evaluation.

## Reviewer Background

AROS is a faculty-supervised and student-led consulting group within Louisiana Tech University’s Industrial-Organizational Psychology doctoral program, leveraging the energy, expertise, and creativity of its graduate students. These students are well-versed in the theory and practice of program evaluation and have been through intensive courses on qualitative and quantitative research methods.

## Reviewer Staffing

The AROS Coordinator (**Tilman Sheets**) and faculty project supervisor (**Mitzi Desselles**) have appointed two doctoral graduate students (**Sidney Thomas**) and (**Matthew Johnson**) to the project.

## Process

Materials were evaluated using in-person meetings, online correspondence, survey results, management meeting records, and Project COMPLETE’s website.

## Meeting and Communication

The evaluation team maintained regular communication with program manager **Alicia Kiremire**, program coordinator **Rebekah Long**, as well as principal investigators **Gerry Caskey** and **Michael Swanbom** through email correspondence and online (via Zoom) meetings. Bi-weekly meetings allowed the project team to provide information on developments regarding the following: acquisition of partner schools, curriculum

development, industry-based certifications, articulation agreements, dual enrollment processes, marketing, and dissemination. The information was verified by extensive meeting minutes from meetings between the project team and all relevant entities. A shared cloud storage folder that contains records of information from the project team was also used to assess progress during this evaluation period.

## Results of the External Evaluation for July 2020 to February 2021

In this section, information collected from records of project team activities during the period between July 2020 and February 2021 of Project COMPLETE is presented. Each section focuses on an aspect of the program that was outlined in the original grant proposal. For each section description, observations and records made during the 2020-2021 winter period of Project COMPLETE are given. This is followed by the evaluation of the program's components.

### Overall Planning and Timeline

For the period between July 2020 and February 2021, the project team held bi-weekly management meetings focused on planning and coordinating project aspects. These bi-weekly meetings included the principal investigators, program manager, and program coordinator. Following the interference of COVID-19, the meetings were conducted through Zoom and bi-weekly email correspondence. Additionally, the external evaluator, AROS, was included in all meetings and online correspondence to maintain an awareness of project developments.

The content of these bi-weekly management meetings and COVID-19 contingent correspondence included the following: curriculum development, partner school involvement, partner school recruitment, student diversity initiatives, scholarships, and dissemination and visibility processes. The meetings allowed for all parties to coordinate on achieving overall timeline objectives.

To maintain accountability, the project team used various software such as shared cloud storage and a project role definition agreement – a document that specifies each project members' responsibilities during year three of Project COMPLETE. This system, in combination with the bi-weekly management meetings, has assisted the project team with staying on the scheduled timeline. Additionally, it has allowed the project team to correct any deviations from the original timeline.

### *Evaluation:*

A review of the meeting minutes indicates that the bi-weekly meetings have enabled the project members to stay aware of project needs and focus on what needs to be done.

The curriculum team has exceeded expectations for ensuring dissemination of project awareness and has finalized articulation agreements between Louisiana Delta Community College and Louisiana Tech University. They have also made a considerable effort to increase and maintain relationships with industry contacts and partner high schools. Finally, the curriculum development team has finalized the curriculum. Therefore, the project team has achieved the grant's objectives for year three of Project COMPLETE.

## Curriculum Development and Implementation

The curriculum development team (composed of Michael Swanbom, Krystal Corbett, William Long, David Hall, and Galen Turner) has finalized the curriculum. They have acquired all hands-on materials and textbooks. The Project COMPLETE website hosts the resources for the class, which includes General Curriculum Resources (i.e., planning resources, a pre-test, and curriculum terms) and Curriculum Units 1 through 6 (i.e., lessons, supplemental resources, and tests).

The project team intended to begin a lesson-by-lesson curriculum pilot testing in a high school during year one, but moved the pilot testing of the curriculum into year two due to complications with a partner school. The curriculum was successfully pilot tested in the fall of 2019, and has been carried out in part or in full with several Louisiana High Schools. BPSTIL and Weston High School successfully carried out the full curriculum in the fall of 2020. Instructors at both schools reported that any difficulties in implementing the curriculum were due to setbacks produced by the COVID-19 pandemic (e.g., students were in and out of the classroom due to infection and quarantine-related absences). At least two schools plan to implement the curriculum during the spring 2021 semester (Quitman High School and Summerfield High School). At least one school (Eunice High School) has admitted to implementing the curriculum once their parish allows them to have students on campus.

According to a survey we used to gauge the fall 2020 curriculum's impact on students (38% response rate), we found that nearly all of the students surveyed were satisfied with the curriculum's content and would recommend the course to other students interested in instrumentation technology. All of the students agreed that the course met their developmental needs and the materials were not too difficult to grasp.

## Educator Workshops

To provide resources to teachers that instruct or plan to instruct the curriculum, the project team hosted a summer 2020 teacher workshop on July 22, 2020. Thirty teachers, counselors, and administrators from 25 schools attended the virtual workshop. There were 21 teachers and counselors who watched the professional development videos for the summer 2020 workshop and took corresponding quizzes on the videos' content (a total of 186 quizzes were completed).

Survey results from those who attended the workshop were positive. There were 18 responses from workshop attendees (60% response rate). Over 80% of respondents felt that the professional development videos were informative and facilitated their understanding of the workshop's content. Nearly every respondent agreed that all three presentations were a valuable use of time and that the workshop was an appropriate length of time. However, only 61% of respondents agreed that they feel comfortable explaining Project COMPLETE's purpose to colleagues, and 67% agreed that they would advocate for Project COMPLETE at their school. All but one respondent felt that Project COMPLETE's importance to students was clearly communicated at the workshop.

A second workshop was held on December 5, 2020. Two teachers who have both implemented the Project COMPLETE curriculum (Weston High School and Summerfield High School) attended the workshop. The goal of this workshop was to obtain feedback and discuss the

teachers' experiences with the curriculum. This workshop was beneficial for both the teachers and the project team.

#### *Evaluation:*

The development of the curriculum has incorporated elements and guidance from several sources, including an industry-recognized curriculum, high school, and university instructors, requirements set forth by both Louisiana Tech University and LDCC, and industry contacts. The curriculum targets the key automation competencies outlined in the grant proposal. The curriculum has been developed and finalized following the plan laid forth in the grant proposal.

Since the curriculum's development has deviated from the initial timeline, the curriculum team increased their efforts starting in December 2019. While the curriculum was set to be finalized by the end of the spring 2020 semester, COVID-19 interrupted the process. Despite this interruption, they were able to finalize the curriculum by the summer of 2020.

The original grant proposal indicated that the project team would hold two dissemination workshops for teachers/counselors from at least ten schools during Year 3. At present, the grant team has exceeded this goal by reaching over 30 educators between the virtual summer workshop, the winter workshop, and the workshop professional development quizzes. Survey results from the summer workshop suggest that the workshop time is being properly utilized. Open-ended responses consisted of several raving reviews (e.g., "Well put together, worthwhile looking project, and nice to know its available!"). Recommendations from respondents include: shortening some of the videos, adding more teachers that have implemented the program to the delivery of the workshop, adding a hands-on training component, as well as perspectives from students who have completed the curriculum.

To encourage current and future participation in workshops and the curriculum, the grant team is offering stipends for education partners for attending workshops, completing video quizzes, and implementing the curriculum. As COVID-19 protocols diminish over the coming year and stipends are presented to partners, we believe that curriculum implementation will continue to expand.

#### **Industry-Based Certifications, Dual Enrollment, and Articulation Agreements**

The project team has finalized documentation of dual-enrollment accreditation with BPSTIL for students enrolled in Project COMPLETE's curriculum in the spring 2020 semester. The articulation agreement between LA Tech and LDCC was finalized in the spring 2020 semester. At this time, no other partner schools have completed documentation of dual-enrollment accreditation. In July, the team shifted its focus from dual enrollment to "industry-based certifications" (IBCs). This decision was made by the team and approved by NSF because the team has found that IBCs are more fitting to the Louisiana Department of Education's strategic plan and funding incentive program for high schools. Therefore, more high schools are interested in an "IBC option" of the curriculum instead of dual enrollment. BPSTIL students completed the National Center for Construction Education & Research (NCCER) Electricians Helper IBC modules during the fall 2020 semester.

### *Evaluation:*

The dual-enrollment process has been formalized with one school, BPSTIL. The articulation agreement between Louisiana Tech University and LDCC was established. Therefore, the project team has met the original objective of establishing dual-enrollment and articulation agreements. In addition, the team met their goal of having a partner school integrate an industry-based certification into the curriculum. Based on education partner's interest in the curriculum, we predict that participation in IBCs and dual-enrollment will increase as COVID-19 social-distancing protocols are relaxed at schools.

### **Industry Contacts**

During this evaluation period, the industry partner board has gained one partner and now totals eight individuals representing seven organizations. The restrictions due to COVID-19 have limited field trip options and other in-person industry interactions. The project contacted industry partners about the possibility of virtual field trips. Some partners agreed to discuss the next steps, but no virtual field trips have occurred.

One industry partner, Union Pacific, granted three scholarships at Louisiana Tech and three at Louisiana Delta Community College during this evaluation period.

The industry partner advisory board has not met in this time period, and no known activity has occurred regarding their involvement. The evaluation team surveyed the industry partners for their awareness and understanding of Project COMPLETE. With a 62.5% response rate, the survey indicates an above-average level of understanding, support, perceived efficacy, awareness, and intended collaboration with the project, with *support of the project's purpose* ranking as the highest category.

### *Evaluation:*

The industry partners have not been heavily engaged during this time. This is in large part due to restrictions in place for the prevention of COVID-19. One opportunity for remote participation with an industry partner is currently being planned for execution in the spring. The industry partner scholarships granted demonstrate the ongoing effects of previous efforts exerted to establish the partnerships.

### **Partner Schools**

There are a total of seven partner schools that signed the memorandum-of-understanding in December 2020. In the document, the school representative indicates the partner school and their level of intended participation. They are:

Bossier Parish School for Technology & Innovative Learning (BPSTIL), Bossier Parish, full participation and implementation. Gueydan High School, Vermilion Parish, professional development for teachers and/or counselors. Homer High School, Claiborne Parish, professional development for teachers and/or counselors and partial implementation in their Agricultural Science III and IV classes. Summerfield High School, Claiborne Parish, full participation and implementation. West Feliciana High School, West Feliciana Parish, professional development for teachers and/or counselors and partial implementation

in their NCCER Electrical 1 and 2 classes, coordinated industry experiences, and marketing scholarship opportunities to students. Weston High School, Jackson Parish, full implementation of the curriculum.

In the fall of 2020, D'Arbonne Woods discontinued the curriculum, and Summerfield did not implement it as planned. BPSTIL and Weston High School implemented the full curriculum. BPSTIL's enrollment increased 300% from the pilot semester.

The teachers and counselors from both schools have submitted feedback. The teacher and administration relayed positive comments about the Project COMPLETE team, specifically in the areas of communicating expectations, availability as a resource, timeliness of support, and diligence. Overall, their encouragements to the team were to continue to refine the curriculum and evaluation procedures, the continuation of recruitment efforts to parents and students, and to other districts to ensure the project is made widely available.

#### *Evaluation:*

Participation and implementation of the services and curriculum offered by Project COMPLETE were low during the fall of 2020. The semester began with statewide guidelines and restrictions for the opening of schools. Many schools opened late, and most offered a combination of in-person, virtual, or a hybrid. Uncertainty persisted on whether schools would remain open, and some did eventually have to close. Considering the unprecedented circumstances, the Project COMPLETE team did well in remotely assisting the curriculum's full implementation in two partner schools.

#### **Visibility and Dissemination**

Throughout this evaluation period, the team has engaged in promoting and maintaining awareness of Project COMPLETE. These activities include actively updating their website, three installments of a thorough newsletter complete with embedded videos from team members. They have also spotlighted local industry partners on the website as they have funded scholarships and other organizations that have posted industry news that details relevant technological developments within their facilities.

The project team's submission about the project was accepted at the American Society for Engineering Education's 2021 conference in Long Beach, California.

The team has hired a consultant to direct the initiative to reach and recruit from a more diverse student population. He will present to schools and maintain contact with them throughout the duration of his contract. His computer science background and his current role as a dean in a higher education institution make him a great additional partner to the Project COMPLETE team.

#### *Evaluation:*

The team implemented various virtual dissemination efforts such as website updates and newsletter to showcase the project. Outreach work to potential school and industry partners



is active and ongoing. The team continues to work on getting more instructive content accessible online for use by partner schools. The addition of a consultant to reach underrepresented minority groups is a positive step in the going plan to disseminate the project in the region.

COVID-19 significantly impacted the extent to which students were exposed to the industry through field trips and other events. If ongoing COVID-19 irregularities ensue, education partners' suggestion is to market directly to parents and provide live online Q&A panel sessions. Also, direct marketing, such as flyers to students, is still needed in schools currently implementing the curriculum.

## Conclusion

Overall, the July 2020 through February 2021 period of Project COMPLETE was successful in pursuing the goals outlined by the grant proposal. Although there were some minor deviations from slated programming (e.g., field trips, lunch & learns, in-person workshops), the project team has made several strides forward. They have greatly increased and maintained visibility of the project via different avenues, both academic and industrial.

In the coming months, the evaluation team will continue to assess aspects of Project COMPLETE to provide formative feedback that can further improve the program process. Additionally, the evaluation team will assess student demographics, academic performance, and academic impact on relevant competencies through the use of qualitative and quantitative methods.