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Preview of Award 1601487 - Annual Project Report

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Federal Agency and Organization Element to Which Report is Submitted:	4900
Federal Grant or Other Identifying Number Assigned by Agency:	1601487
Project Title:	Comprehensive Integration of Advanced Manufacturing Competencies throughout an Associates Degree and a Stackable Certificate Curricula
PD/PI Name:	David I Spang, Principal Investigator Eric W Constans, Co-Principal Investigator Edem G Tetteh, Co-Principal Investigator
Recipient Organization:	Rowan College of Burlington County
Project/Grant Period:	09/15/2016 - 08/31/2019
Reporting Period:	09/15/2016 - 08/31/2017
Submitting Official (if other than PD\PI):	David I Spang Principal Investigator
Submission Date:	06/14/2017
Signature of Submitting Official (signature shall be submitted in accordance with agency specific instructions)	David I Spang

Accomplishments

*** What are the major goals of the project?**

Rowan College at Burlington County (RCBC) is the lead institution and is partnering with Rowan University to provide seamless transition from the associate to baccalaureate degree. The project has two primary goals:

Goal 1: To strengthen an Engineering Technology program serving the southern New Jersey region.

Goal 2: To serve as a conduit for the creation of programs and educational pathways that address unmet training needs and the needs of emergent high growth industries.

*** What was accomplished under these goals (you must provide information for at least one of the 4 categories below)?**

Major Activities:

During year one, project staff attended a number of professional development conferences including the 2016 NSF ATE Principal Investigators Conference held Oct. 26-28, 2016. Attending the conference were Dr. David Spang-PI, Dr. Edem Tetteh-Co-PI and Dr. Nicole Scott. Dr. Scott also attended the Pre-Conference Workshop A: "Getting Started for New Grantees". In addition, Dr. David Spang-PI and Dr. Edem Tetteh-Co-PI attended and presented at the annual conference for the American Society for Engineering Education.

As part of the year one planning process, the college leveraged initiatives through the Workforce Development Institute and previous industry-centered collaborations and activities to illustrate how the ATE project will continue to build institutional commitment and sustainability. The college will use the competencies identified through these collaborations as a starting point with industry. The Workforce Development Institute hosted an Advanced Manufacturing forum for businesses and other interested stakeholders on June 11, 2015. Approximately 70 industry partners and workforce professionals attended the event. Forum attendees participated in one of three focus groups to provide answers to questions so the Workforce Development Institute could design and implement an Advanced Manufacturing program and develop training and apprenticeship programs to support the machine shop sector of the manufacturing industry. A detailed analysis of the focus group statements and survey responses identified five key findings: 1.) Employees with strong "soft" skills are in high demand; 2.) Employees with basic technical education and machine skills are in high demand; 3.) Specialized and advanced skills are in demand, but the types of skill(s) needed varies by employer; 4.) Manufacturers express the need for training, apprenticeships, and to reach younger students, and 5.) Individuals from the millennial generation are not necessarily interested in manufacturing as a career. The goal is to ultimately minimize the degree to which employers must deliver on the job training to recent graduates who lack the set of skills most valued by employers.

Specific Objectives:

Highlight technical and non-technical (soft) skills across the curriculum; align with industry needs, including student work-based learning opportunities such as undergraduate research projects and internships.

Significant Results:

The evaluator found that the college has made substantial progress in implementing the activities and tasks outlined in year one of its revised grant timeline. All project personnel are in place - the college hired a full time project manager in April and a part-time project coordinator in May. Other members of the RCBC team include the Provost/Senior Vice President, Dean of STEM, Director of Educational Programs and Grants Development, and the Grants Specialist and from Rowan University a full-time Mechanical Engineering professor, all of whom have been active participants in the planning and dissemination process.

Key outcomes or Other achievements:

The college held its first Advanced Manufacturing Industry Forum, on June 8, 2017. The forum was to designed to hear from industry on the requisite skills and competencies needed in the fields of advanced manufacturing and mechanical

engineering. Feedback from employers is being used to address both the competencies and more importantly how these competencies should be delivered. The ultimate goal is to ensure that RCBC graduates can secure gainful employment within the advanced manufacturing industry and add value to a company's operation.

A total of 46 industry representatives participated in the forum. The college is currently compiling forum results. The outcomes from June 8th will help set the agenda for the four-day faculty workshop set for July 17-20, 2017 and will be used by faculty as they begin the process of redesigning and aligning college curriculum with industry. Note that the evaluator surveyed industry participants and is in the process of analyzing results.

*** What opportunities for training and professional development has the project provided?**

The project has afforded staff the opportunity to attend conferences as well as meet with four year partners to discuss the continuum of education necessary for students to be successful in industry. Professional development for faculty will begin in July 2017. As previously stated the college will hold a 4-day professional development workshop with faculty from two and four-year partner institutions as well as several high schools who have articulation agreements with the colleges. During the workshops faculty will discuss institution-wide reform of the advanced manufacturing and mechanical engineering programs as well as new strategies for curriculum delivery. They will also be trained to use applications library resources.

*** How have the results been disseminated to communities of interest?**

Dr. David Spang-PI and Dr. Edem Tetteh-Co-PI a presented a paper at the annual conference for the American Society for Engineering Education. The paper titled ***"Two-Year College and University Collaboration in Creating Advanced Manufacturing Curricula and Programs"*** details the beginning efforts of a multi-year project between a community college (Rowan College at Burlington County) and a four-year institution (Rowan University) to create curriculum, academic programs, and career pathways resulting meaningful employment in the advanced manufacturing sector. The paper details the planning of close collaboration with industry partners as well as the college's Workforce Development Institute and how they will lead to associate, baccalaureate and stackable credentials. The paper leverages past activities as well as activities resulting from this NSF project and speaks to the institutional commitment of the college.

*** What do you plan to do during the next reporting period to accomplish the goals?**

On July 17-20, 2017 the college will hold a summer institute to create curriculum, academic programs, and career pathways. The summer institute is a major activity where faculty will be tasked with developing a library that can be used to supplement application of learning. Faculty will have time to research and identify applications that will have a direct application to both the design and delivery of curriculum. The college is using the June 8th Industry Forum results to plan the agenda for a four-day curriculum workshop on advance manufacturing. A total of 75 faculty (full and part time) from Rowan University, Rowan College at Burlington County, Burlington Institute of Technology and other area high schools are expected to attend.

The college will use fall 2017 to begin the curriculum update. Faculty will be tasked with developing an applications library and database that will serve as a resource for faculty to support curriculum and the teaching of industry relevant competencies. Modules and applications will be principals-based and will include simulations from different sources, case studies, and /or technologies. Faculty administrators and advisory committee members will meet regularly to further the development and incorporate the applications into the curriculum. Part of the process will include faculty training in application use and delivery.

During the next reporting period the college will work to create and complete a new academic program in Mechanical Engineering Technology, with a concentration in Advanced Manufacturing. The program will be designed with discrete certificate elements that can be stackable. Appropriate texts, advising outlines detailing prerequisite pathways and a firm articulation between secondary and four year partners will be identified.

Supporting Files

Filename	Description	Uploaded By	Uploaded On
RCBC-RU ASEE Paper ID#20221 (1).pdf	ASEE Conference Paper written by Dr. David Spang (PI), Dr. Edem Tetteh (Co-PI), and Dr. Eric Constans (Co-PI).	David Spang	06/14/2017

Products

Books

Book Chapters

Inventions

Journals or Juried Conference Papers

Licenses

Other Conference Presentations / Papers

Dr. David Spang, Dr. Edem Tetteh, Dr. Eric Constans (2017). *Two Year College and University Collaboration in Creating Advanced Manufacturing Curricula and Programs*. American Society for Engineering Education. Columbus Ohio. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

Other Products

Other Publications

Patents

Technologies or Techniques

Thesis/Dissertations

Websites

Supporting Files

Filename	Description	Uploaded By	Uploaded On
RCBC-RU ASEE Paper ID#20221 (1).pdf	ASEE Conference Paper	David Spang	06/14/2017

Participants/Organizations

What individuals have worked on the project?

Name	Most Senior Project Role	Nearest Person Month Worked
Spang, David	PD/PI	1
Constans, Eric	Co PD/PI	1
Tetteh, Edem	Co PD/PI	1

Full details of individuals who have worked on the project:

David I Spang

Email: dspang@rcbc.edu
Most Senior Project Role: PD/PI
Nearest Person Month Worked: 1

Contribution to the Project: Provide overall project leadership and management. Dr. Spang oversees all major activities including curriculum development and pathway alignment. He oversees and coordinate the budget and the activities of the co-PIs, the project manager and project coordinator. Dr. Spang helped to develop the conference paper for ASEE.

Funding Support: 0

International Collaboration: No
International Travel: No

Eric W Constans
Email: constans@rowan.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 1

Contribution to the Project: Dr. Constans participated in the forum and is an important member of the project. Dr. Constans helped to develop the conference paper for ASEE. He is an integral team member for building pathway alignment of RCBC and Rowan University.

Funding Support: 0

International Collaboration: No
International Travel: No

Edem G Tetteh
Email: etetteh@rcbc.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 1

Contribution to the Project: Serves as co-Principal Investigator and is responsible for overseeing the Project Manager and Project Coordinator, work-based learning activities such as internships and undergraduate research opportunities, and job placement support for graduates and industry partners. Dr. Tetteh helped write the conference paper for the ASEE conference.

Funding Support: 0

International Collaboration: No
International Travel: No

What other organizations have been involved as partners?
Nothing to report.

What other collaborators or contacts have been involved?
Nothing to report

Impacts

What is the impact on the development of the principal discipline(s) of the project?

The advanced manufacturing forum was the first in a series of project activities designed to support and collaborate with advanced manufacturing industry. The feedback received from industry regarding soft skills and technical skills ensured that

RCBC students recieve relevant education that creates great opportunities for workplace readiness. Project personnel will work with industry professionals for the 4-day summer technology conference for continuous involvement to strenghthen and increase the understanding of our curriculum development process and career pathways.

What is the impact on other disciplines?
Nothing to report.

What is the impact on the development of human resources?
Nothing to report.

What is the impact on physical resources that form infrastructure?
Nothing to report.

What is the impact on institutional resources that form infrastructure?
Nothing to report.

What is the impact on information resources that form infrastructure?
Nothing to report.

What is the impact on technology transfer?
Nothing to report.

What is the impact on society beyond science and technology?
Nothing to report.

Changes/Problems

Changes in approach and reason for change
Nothing to report.

Actual or Anticipated problems or delays and actions or plans to resolve them
Nothing to report.

Changes that have a significant impact on expenditures
Nothing to report.

Significant changes in use or care of human subjects
Nothing to report.

Significant changes in use or care of vertebrate animals
Nothing to report.

Significant changes in use or care of biohazards
Nothing to report.

Special Requirements

Responses to any special reporting requirements specified in the award terms and conditions, as well as any award specific reporting requirements.
Nothing to report.