Industry-Education Partners Prepare the Next Generation Manufacturing Workforce

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The Regional Center for Next Generation Manufacturing (RCNGM), a National Science Foundation Center of Excellence, and the Regional Advanced Machining Partnership (RAMP) have partnered with industry and each other to prepare the 21st century workforce for careers in manufacturing. Collaboration between education and industry are key to ensuring students are receiving preparation in skills that will make them employable upon graduation. The RCNGM and RAMP initiatives demonstrate how to address industry concerns in an educational setting.

Since 2007, the RCNGM has partnered with the Connecticut Business & Industry Association (CBIA) to administer manufacturing workforce surveys to manufacturers. The most recent survey, 2014 Survey of Connecticut Manufacturing Workforce Needs, was completed with the results released in May 2014. The results show a growing need for manufacturing employees since the last survey was completed in 2011. The number of respondents looking to hire full-time employees has jumped from 30% in 2011 to 85% expecting to hire primarily full-time employees by the end of 2015. According to the survey, manufacturers expect to hire CNC machinists, mechanical/manufacturing technicians, engineers, quality control workers, and tool and die makers during this period. Manufacturers were also asked to rank how difficult positions are to fill. Tool and die maker came in first, followed by CNC programmers, CAD/CAM technicians, CNC machinists, engineers, machinists, and mechanical/manufacturing technicians respectively. The survey clearly demonstrates that if students are trained in these particular fields, there will be positions for them when they graduate.

The RCNGM has also developed marketing materials that focus on engaging a diverse population for manufacturing careers. The You Belong: Women in Manufacturing DVD and the accompanying educator’s guide features women performing their jobs at local manufacturing facilities. These women serve as role models to young female students, demonstrating that females are capable of performing just as well as men in manufacturing careers. The educator guide includes activities with information from the videos, a history of manufacturing and women’s roles through the years, and other manufacturing activities. Other important marketing..
materials developed include a library of over 1,000 high resolution photos that were taken to show diversity in manufacturing. People of different races, genders, and ages are featured in manufacturing settings to show that there is a place for everyone in manufacturing. These photos are used in a variety of marketing initiatives.

Over the past year, the RAMP initiative found the information in the above mentioned survey to hold true in central Maine as well. RAMP team members have consulted with their regional industry representatives to provide information on the competencies needed in the workplace to assure that the Certificate in Advanced Machining they were creating would provide the necessary skills to meet the needs of local employers. The RAMP team developed an advisory board comprised of local manufacturing representatives to make sure the program meets local needs and to identify any skills gap. Through this collaboration, the RAMP initiative has developed eight new credit courses designed to bring high level skills in CNC programming and operations to central Maine. The Certificate in Advanced Machining offers graduates of associate degree programs in machining and experienced CNC machinists, opportunities to continue building their technical skills in a new academic program with a competency based hybrid delivery platform. This format will accommodate incumbent workers wishing to increase their skill levels by minimizing their trips to campus and scheduling time on equipment to complete projects.

The RCNGM and RAMP continue to collaborate to enhance manufacturing education. The RCNGM is working on an articulation agreement to transfer credits earned through the RAMP certificate to Central Connecticut State University through the use of an existing College of Technology stackable credential model. Both initiatives also recognize the importance of the dissemination of their best practices. The RCNGM invited RAMP team members to Connecticut for a Professional Development Day where several marketing and education/industry collaboration methods were discussed. The RAMP team is planning a Train the Trainer Workshop where techniques and the curriculum for the Certificate in Advanced Machining will be disseminated. RCNGM faculty members will be invited to participate. Plans to release an updated RCNGM Manufacture You Future 2.0 DVD with segments on the RAMP initiative are currently being developed.


Diane Dostie
*Dean of Corporate and Community Services, Central Maine Community College*

Diane Dostie serves as Dean of Corporate & Community Services at Central Maine Community College and is the Principal Investigator for the Regional Advanced Machining Partnership (RAMP). Previously, she served as Tech Prep Director at the college where she developed over 100 articulation agreements between high school vocational programs and the college. She taught technology classes in grades 6 to 12 where students learned problem solving and explored career options. She has over twenty five years of experience developing partnerships and implementing professional development and training programs. Since 2007, she has received $2.4 million in National Science Foundation ATE funding to improve manufacturing education.

Ms. Dostie has served as president of the National Coalition of Advanced Technology Centers and the Maine Vocational Association. She currently serves on boards for several local and state economic and workforce development organizations.
development organizations. In 1999, she received the Business-Education Partnership Award from the Androscoggin County Chamber and in 2008 she received the Education Excellence Award from the Manufacturers Association of Maine. Ms. Dostie earned B.S. degree in Industrial Arts Education and a M.S. Ed in Educational Leadership from the University of Southern Maine.

Dr. Karen Wosczyna-Birch  
*State Director, CT College of Technology; Executive Director, Regional Center for Next Generation Manufacturing*

Dr. Karen Wosczyna-Birch has been a champion of engineering and technology education for the past 30 years. Since 1995, she has been the state director of the CT College of Technology where through her leadership she has been instrumental in creating a nationally recognized seamless pathway in engineering and technology programs between all 12 public community colleges in CT with eight universities and high schools. She is also the Executive Director of the Regional Center for Next Generation Manufacturing, a National Science Foundation Center of Excellence and a Professor of Sciences at Tunxis Community College.

In 2012, she received the New England Board of Higher Education Excellence Award for the State of CT for her leadership in creating and implementing the statewide pathways for the College of Technology. She has received numerous awards and grants and has been recognized for her accomplishments as a professor and for her passion for increasing the diversity of the engineering and technology population. Since 2004, she has received over $9 million in funding to create and expand the Regional Center for Next Generation Manufacturing, a National Science Foundation Center of Excellence in Advanced Technological Education. She serves on numerous boards including the International Honor Society EPT and the National Coalition of Advanced Technology Centers, and Hartford High's Academy of Engineering and Green Technology.