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This webinar will be recorded and posted on: www.themanufacturinginstitute.org
Roadmap for Manufacturing Education: Promoting Industry Certifications and Enhancing Two- and Four-Year Articulation.

Community of Learners Webinar
February, 2013
Agenda

- **Context**: Brent Weil, Senior Vice President for Education and Workforce, The Manufacturing Institute

- **Roadmap for Manufacturing Education**: Dr. Audrey Theis, Technical Assistance Provider to The Manufacturing Institute

- **Higher Education Perspective**: Rich Dunfee, Executive Director, Grants Resource Center, American Association of State Colleges and Universities (AASCU)

- **Promising Practice: Indiana**
  - Vearl Turnpaugh, Assistant Vice President, Career and Technical Programs, Ivy Tech Community College
  - Dr. Robert English, Associate Dean, College of Technology, Indiana State University

- **Questions and Answers**

- **Preparing for Round 3 TAACCCT**: Brent Weil
Context

Brent Weil
Senior Vice President for Education and Workforce
The Manufacturing Institute
What Manufacturers Want

• Skillfully integrated academic and technical learning paths;
• A heightened focus on Science, Technology, Engineering and Math skills (STEM);
• More available alternatives for learning, with more “on” and “off” ramps to higher education and lifelong learning systems to acquire new skills as technology advances; and,
• The integration of nationally portable, industry-recognized credentials with educational pathways, leading to postsecondary credentials with real value in the workplace.
Roadmap for Education Reform for Manufacturing

- Manufacturing Executives
- Education Officials
- Thought Leaders
Principles for Manufacturing Education Reform

- Move to competency-based education models
- Establish and expand industry-education partnerships
- Infuse technology in education
- Create excitement for manufacturing careers
- Apply manufacturing principles like "lean" to reduce education costs
- Expand successful youth development programs
The SCS Aligns Systems

Certification Pathway

PROFESSIONAL
Engineering: Society of Manufacturing Engineers (SME)

OCCUPATION-RELATED
Transportation, Distribution and Logistics:
Manufacturing Skill Standards Council (MSSC);
American Society of Transportation and Logistics (ASTL)
Association for Operations Management (APICS)
Automation: International Society of Automation (ISA)
Die Casting: North American Die Casting Association
Fluid Power: International Fluid Power Society (IFPS)
Mechatronics: Packaging Machinery Manufacturers Institute (PMMI)
Quality: American Society for Quality (ASQ)
Lean: Society of Manufacturing Engineers (SME)
Construction: National Center for Construction Education & Research (NCCER)
Fabrication: Fabricators & Manufacturers Association (FMA)
Machining and Metalworking: National Institute of Metalworking Skills (NIMS)
Welding: American Welding Society (AWS)

CORE TECHNICAL
Safety, Quality Practices and Measurement, Manufacturing Processes and Maintenance Awareness
Manufacturing Skill Standards Council (MSSC)
Certified Production Technician (CPT)

FOUNDATIONAL
Applied Reading – Applied Math – Locating Information
ACT National Career Readiness Certificate (NCRC)
Results to Date

- Initial focus at community college level
- Example programs of study with embedded certifications: Machining Technology, Industrial Systems Technology, Welding, Mechanical Engineering Technology
- 36 states, 113 community colleges engaged
- 84,738 certifications awarded through 2011 (update coming soon)
Expanded Scope

Certification System 2.0: More advanced, occupationally-specific certifications:

- American Society for Quality (ASQ)
- International Society of Automation (ISA)
- Packaging Machinery Manufacturing Institute (PMMI)
- Fabricators & Manufacturers Association (FMA)
- Association for Operations Management (APICS)
- American Society of Transportation and Logistics (ASTL)
- National Die Casting Association (NADCA)
- National Center for Construction Education & Research (NCCER)
- International Fluid Power Society (IFPS)
- MSSC Certified Logistics Technician (MSSC/CLT)
Opportunity for Four-Year Articulation

- Imperative to extend the pipeline of certified workers beyond production level skills.
- Need workers with higher-level skills certifications in specific industries and occupations which can be aligned to baccalaureate and graduate degrees.
- **Premise:** Embedding industry-based certifications in manufacturing-related programs of study, and increasing articulation, will help ensure colleges and universities are graduating engineering technicians and technologists with the skills manufacturers need.
Roadmap for Manufacturing Education

Dr. Audrey Theis
Technical Assistance Provider
President, Key Links Inc.
Manufacturing Articulation Roundtable

- Convened early adopter community colleges and their partner four-year institutions.
- Roundtable co-chaired by Manufacturing Institute and Purdue University.

Charge:

- Identify barriers/challenges to articulation and transfer of credit as relates to the Skills Certification System.
- Identify strategies to overcoming barriers/challenges
- Showcase promising strategies and practices
- Develop recommendations for driving change
Assumptions

- Embedding industry-based certifications in education pathways provides third-party validation of skills and minimizes hiring risk for employers.
- Aligning education and training to nationally portable, industry-driven certifications developed by employers increases placement and wage gains for students.
- Embedding industry-based certifications in education pathways increases the acceptance of credits for articulation across programs and institutions, enhancing efficiencies of the educational delivery system and promoting student completion.
External Factors

- Funding
- Legislation
- Employer Engagement
- Industry Image
- Measures of Success
- Accreditation
Organizational and Programmatic Factors

- AS vs. AAS Degrees
- Transfer Mechanisms
- Financial Aid
- Math Requirements
- Embedding Certifications into Courses
Internal and Cultural Factors

University Mission
Leadership
University Faculty
Perception of Community Colleges
Next Generation Roadmap

1. Increase Employer Demand for Industry Certifications.
2. Link Industry Certifications to an Agenda of Business Competitiveness and Innovation.
3. Influence Accreditation Standards.
4. Advocate for Industry Certifications as a Measure of Completion.
5. Launch NAM-Endorsed Schools Recognition Program.
Next Steps

1. Expand employer engagement
2. Engage four-year institutions and policy leaders in a national dialogue on the relevance of skills certifications to economic competitiveness and innovation
3. Define/refine metrics to track progress and define success
4. Capture promising practices
5. Promote the Manufacturers Endorsed Education Alliance
Polling Question #1
Higher Education Perspective

Rich Dunfee, Executive Director, Grants Resource Center, American Association of State Colleges and Universities (AASCU)
AASCU

... a Washington-based higher education association of nearly 420 public colleges, universities, and systems

- Teacher education
- Regional comprehensive
  - Partnerships
  - Economic/Community development
- Workforce education
  - College readiness
  - Graduation rates
Grants Resource Center / AASCU

... a research and sponsored programs information service with 174 subscribers

- Health care education and research
- Energy economy
- Workforce education (attention to skills)
- Community/Economic development
  - Partnerships
  - Workforce

- Innovation and entrepreneurship
  - Technology transfer
  - Long-term relationships with local business
Why Articulation Matters

- Multiple factors require enhanced attention to the policies and practices around transfer and articulation:
  - Declining resources and diminishing investments in education
  - Changing nature of the student population and employment
  - Making it easier for students to efficiently manage education plans
  - Greater need for transparency related to costs and performance outcomes

- Institutions that can show mutually beneficial links to industry, flexible delivery systems, and high placement rates for students will validate their contribution and have competitive advantage.
We are facing unprecedented, fundamental challenges and are surrounded by dramatic, rapid changes. This is not simply a difficult moment for higher education: it is the dawn of a very different era. The institutions that will succeed—indeed, thrive—in this era will be those that constantly innovate.

George L. Mehaffy
Vice President for Academic Leadership and Change
American Association of State Colleges and Universities (AASCU)
Coping with Innovation/Disruption

- Performance funding
- Student progress and completion (certification and/or graduation)
- Efficient external relations
- Inter-discipline, system, institutional priorities
- New perspectives on sponsored programs
AASCU Conference

- Concerns about accreditation
- Opportunities for faculty to remain current
- Options for faculty/student groups to use local industry as laboratory/internship sites
- Possibilities for collaborative research
- The need for best practices in designing long-term regional partnerships
- The need to re-design and negotiate win-win relationships with partners
- Priority for addressing faculty concerns about technical training
- Opportunities for new revenue sources
Next Steps

- Sharing best practices
- Developing templates and formats
- Addressing conflict of interest
- Rethinking the steps to education completion
- Demanding improved assessment
  - Student
  - Institutional
- Restructuring the curriculum
- Developing inter-institutional pipelines
Polling Question #2
Best Practice: Indiana

Vearl Turnpaugh, Assistant Vice President, Career and Technical Programs, Ivy Tech Community College

Dr. Robert English, Associate Dean, College of Technology, Indiana State University
MSSC Certifications

- Ivy Tech has been using the Manufacturing Skill Standards Council (MSSC) Certified Production Technician (CPT) since 2006 in Workforce Development.
- Embedded the CPT certification within the Advanced Manufacturing degree at 10 regional campuses in 2007. Enrollment = 250+.
- Opportunities:
  - Provide a crosswalk from training to academic credit
  - Increase regional adoption of CPT assessments
  - Create a climate of demand for the certification (pull system)
Ivy Tech Approach

- Assess current status of manufacturing programs with respect to the NAM-Endorsed Skills System
- Develop a strategy to implement the appropriate certifications within Ivy Tech courses and program
- Work with Indiana Manufacturers to build business case
- Opportunities:
  - Implement welding (AWS) certifications
  - Pursue NIMS certification in Machine Tool programs
  - Embed MSSC Certified Logistics credentials into Advanced Manufacturing degree
  - Assess the appropriate placement of ASQ certifications
Current Articulation Agreements

- Advanced Manufacturing Career Lattice Model - MSSC
  ISU Advanced Manufacturing Management

- Advanced Manufacturing Career Lattice Model - MSSC
  ISU Technology Management

- Industrial Technology Career Lattice Model - AWS
  ISU Technology Management

- Machine Tool Career Lattice Model - NIMS
  ISU Technology Management
Ivy Tech Career Lattice Model - ISU Advance Manufacturing Management

1. Math
2. Troubleshooting/problem solving/critical thinking
3. Leadership concepts/teamwork
4. Quality systems/Lean
5. Manufacturing Enterprise/Computer concepts
6. Technical Skills
   - Electro-Mechanical
   - Manufacturing Management
   - Automation Systems
   - Manufacturing Design: CNC, CAD-CAM
Implementation Challenges

- **External**
  - Alignment of career pathways that certifications fit
  - Dual enrollment alignment with career pathways
  - Certified Programs – Certified Faculty – Certified Students

- **Internal**
  - Some faculty maintain that embedded certifications will hurt articulation possibilities
  - Change for sake of institutional goals
  - Remembering the audience: students

- **Cultural**
  - Belief that AAS degree structures can’t work
  - Belief that AAS degree students won’t succeed
  - Reality – AAS degrees – untouched market
ISU Applied Baccalaureate Degree

- Presents an opportunity to further Associate of Applied Science degree completers into a 4-year program.

- The BAS is specifically designed for professionals who:
  - have earned an associate of applied science degree and
  - are interested in furthering their career through leadership in their technology-related field
ISU Applied Baccalaureate Degree

- Provides degree completion program for advancement within specific workforce sectors
- Targets AAS degree graduates of the community college system within Indiana
- Focuses more on career-oriented instruction than the BS degree
- Requires slightly fewer general education hours
ISU Applied Baccalaureate Degree

- Enhances technical knowledge and special skills required for career advancement, increasing the individual’s marketability
- Allows more “on” and “off” ramps to higher education
- Promotes certifications (ISA, APICS, PMMI, etc.) as an integral part of education
The BAS program engages individuals through the use of project-based instruction and involvement in real world situations.

The BAS helps individuals fulfill their specific career goals by enhancing AAS skills and acquiring additional general skills necessary for success and advancement in the workplace.

The BAS prepares individuals to:
- be promoted from entry-level positions
- understand how their job fits within the organization
- manage people, projects, and/or information
Polling Question #3
Questions and Answers
Follow Up

- Roadmap to Manufacturing Education: www.manufacturinginstitute.org

- Comments on the Report: astheis@keylinkssinc.com
TAACCCCT Round #3
Riding a Wave

- In 2012, TAACCCT Round #2 saw $175 million in awards to advanced manufacturing programs at community colleges and consortia.
- The NAM-Endorsed Skills Certification System was a powerful target for winning proposals.
- The third solicitation is expected this spring…
Lessons Learned

- Start early
- Partner now
- Focus, focus, focus!
- Prepare your data
Plans for Round 3

- Considering support to our community college partners
- Forging new ground
- Supporting those that are gelling or weren’t funded in Round 2
A Targeted Webinar

- March 6 at noon ET
- Explore plans and discuss approaches before the Solicitation for Grant Applications
- Consider partnerships
- Review round 2 lessons
Schedule of Webinars

Next Webinar Planned for Wednesday, April 17

12:00 p.m. - 1:30 p.m. (Eastern)
11:00 a.m. – 12:30 p.m. (Central)
10:00 a.m. – 11:30 a.m. (Mountain)
9:00 a.m. – 10:30 a.m. (Pacific)

(Optional Webinar March 6 at noon ET on TAACCCT Round 3)