THE NATIONAL ASSOCIATION OF MANUFACTURERS ENDORSED

Skills Certification System

Producing a High-Performance Manufacturing Workforce

Certification Learning Network

May 25, 2011
Webinar Logistics

• Please mute your phone line. If you are unable to manually mute your line **press *6** and your line will be muted.

• If you have a question, you can raise or lower your hand by clicking the Raise Hand icon and selecting Raise Hand from the drop down menu at the top of your screen.

• All questions will be addressed following the presentation.

• We would like to remind everyone that this call is being recorded and will be available on The Manufacturing Institute website shortly following the webinar.
Agenda

• Agenda
• Welcome and Introductions
• Implementation of the NAM-Endorsed Skills Certification System, Critical Components Driving Success
• Employer Engagement-
  – Conexus Indiana
  – Community Education Coalition
  – Ivy Tech Community College
• Q & A
• Tools to help you
Implementation of the NAM-Endorsed Skills Certification System, Critical Components Driving Success
Critical Components Driving Success

1. Identify Regional Economic Demands (Data Validation)
2. Developing a Timeline for Action
3. **Engage Industry Leaders/ Building Demand**
4. Engaging Faculty and College Leadership
5. Developing Advanced Manufacturing Career Pathways
6. Auditing Programs of Study
7. Aligning to STEM; Emphasizing/Integrating STEM Skills
8. Aligning and Mapping Certifications to Programs
9. Assessing Faculty and Implementing Professional Development
10. Developing Certification Partnerships
11. Deploying Dream !t Do !t (Student Recruitment)
12. Developing Feeder Systems (WIA, Adult Basic Education)
13. Developing Benchmarks
14. Driving a Policy Agenda
15. Sustaining Certifications (Administrative, Staffing and Fiscal Realities)
Presenters

Carol D’Amico
Senior Advisor
Conexus Indiana

John Burnett
Chief Executive Officer
Community Education Coalition

Vearl Turnpaugh
Assistant Vice Provost, Career and Technical Programs
Ivy Tech Community College
Carol D’Amico
Senior Advisor
Conexus Indiana
Employer Engagement

www.conexusindiana.com
The Formation of Conexus Indiana

Conexus formed by industry leaders in 2007 to address workforce development needs in Advanced Manufacturing and Logistics
Joined Family of “Cluster Initiatives”

- **BioCrossroads:** Life Sciences
- **TechPoint:** Information Technology
- **Energy Network Systems:** Energy

Conexus Indiana leads workforce development in all areas
Role of Conexus Indiana

Represent the voice of industry related to workforce development issues working with:

– K-12 educators
– Post-secondary institutions
– Workforce development system
How Conexus Engages Employers

- Fostering Program and Curriculum Development
  - Identification of skills
  - High school and post-secondary
  - Workforce development system

- Promoting Career Opportunities
  - Web site and arranged visits to companies
  - Videos showing jobs
  - Field visits for student, teachers and guidance counselors

- Developing a Voice for the Logistics Industry
  - Creation of Logistics Council to develop strategic plan for industry
  - Includes: workforce development, marketing, public policy & infrastructure
How Conexus Engages Employers (cont’d)

– Making Connections
  ▪ Supplier database to identify and connect in-state suppliers

– Raising Awareness
  ▪ Annual release of a Manufacturing and Logistics Report card at event attended by over 200 employers

– Supporting a Statewide Approach
  ▪ Network of Conexus affiliates made up of:
    o Local executives
    o Workforce professionals
    o Educators
  ▪ Network addresses specific regional areas of focus
Programs of Conexus Indiana

- **Dream It. Do It.**: Enticing young people to consider careers in Advanced Manufacturing and Logistics through interactive website and social media

- **Identification of Required Skills**: Produced the Conexus Indiana Skills Template for Advanced Manufacturing and Logistics (AML)

- **Curriculum Development**: Developed new curriculum with colleges based on industry needs

- **On-line Curriculum**: Developed prototype for new on-line curriculum for high school students
Example of Engagement: Skills Map

CONEXUS INDIANA’S ADVANCED MANUFACTURING AND LOGISTICS SKILLS MAP

To ensure that Hoosier students have access to the right advanced manufacturing and logistics educational pathways, Conexus Indiana assembled a group of 35 human resource and operation executives from companies across Indiana to determine the skills required for a successful middle-level logistics employee and for a skilled advanced manufacturing production worker. Participating companies ranged in size from 50 to over 1,000 employees and represented a full spectrum of products and services from automotive to life sciences. This task force first identified the highest demand positions, and then determined the knowledge required of successful employees in those areas.

LEVEL 1 - INTRODUCTORY
- Advanced Manufacturing and Logistics
  - History of Manufacturing
  - History of Logistics
  - Introduction to Manufacturing
  - Design
  - Engineering
  - Materials
  - Processes/Equipment
  - Quality Control
  - Assembly
  - Technologies
  - Safety

LEVEL 2 - BASIC
- Advanced Manufacturing and Logistics
  - Awareness of Process Flow Principles
  - Systems Understanding
  - Basic Machine Operation Skills
  - Basic Mechanical Skills
  - Basic Understanding of Testing
  - Basic Understanding of Machining
  - Basic Understanding of Assembly Processes
  - Basic Understanding of Materials
  - Basic Electrical Skills
  - Internal and Global Level Material Movement
  - Basics of Inventory Principles
  - Basics of MSDS
  - Basics of Chart and Graph Reading
  - General Understanding of Shipping / Receiving Processes
  - Global Understanding of Markets

LEVEL 3 - INTERMEDIATE
- Advanced Manufacturing
  - Competence with:
    - Variation Control Techniques
    - Machine Reliability
    - Basic Statistical Process Control
    - Information Technology on the Shop Floor
    - Inventory Management
  - Working Knowledge of:
    - Geometric Dimensioning and Tolerancing (GD&T)
    - Shop Floor Metrics
    - OSHA Regulations
    - MSDS Requirements

LOGISTICS
- Concepts of:
  - Material Requirements Planning
  - Process Design
  - Quality Control
  - Warehouse Logistics
  - Outbound Shipping
  - Outbound Processing
  - Reverse Logistics
  - Inventory Control
  - Cost/Price Management
  - Safety in the Workplace

LEVEL 4 - INTERMEDIATE
- Advanced Manufacturing
  - Ability to Use CAD/CAM Software
  - Specific Knowledge of Process Testing and Quality Checks
  - Specific Knowledge of Total Quality Systems
  - Ability to Translate a Design into Requirements
  - CNC Programming Skills
  - Awareness of Regulatory Testing
  - Ability to Read/Interpret Diagram Reports
  - Understanding of Six Sigma Tools
  - Understanding of Lean Mfg.

LOGISTICS
- Competence with:
  - Inventory Accountability
  - Regulatory Compliance
  - Intermodal Operations
  - Import/Export Control
  - Customs Procedures
  - Transportation Management
  - Order Management Systems
  - MSDS Requirements
  - Value Added Services

LEVEL 5 - ADVANCED
- Advanced Manufacturing and Logistics Assessment Level
  - Safety & Environmental
  - Production & Inventory Control Systems
  - Six Sigma Tools
  - Lean Manufacturing Principles

LOGISTICS
- Understanding of:
  - Import/Export Control Laws
  - Regulatory Compliance
  - Scheduling
  - Lean Principles
  - Total Quality Management (TQM)
  - Material Requirements Planning and Systemic Product Movement
  - Process Design, i.e., Stream Mapping and Process Flows
  - Working Knowledge of Homeland Security and TSA Regulations

BASIC FOUNDATION
- Mathematics Skills
  - Communication Skills
  - Basic Geography

INTERMEDIATE FOUNDATION
- Advanced Manufacturing Skills
  - Basic Physics System Understanding

ADVANCED FOUNDATION
- Advanced Manufacturing Skills
  - Mathematical Skills
  - Computer Skills
  - Basic HR/Management Skills
  - Leadership/Supervisor Skills

PROBLEM-SOLVING SKILLS
Example: Annual Conference and Report Card

The 2010 Manufacturing and Logistics Report Card is released at an annual conference attended by over 200 employers.

Results in 2010 shows manufacturing is a strength, but Human Capital is the lowest grade; Productivity follows Human Capital.

These findings provide support for involvement with the NAM-Endorsed Manufacturing Skills Certification System.
Role in Skills Certification System

– Surveyed employers across the state on use and attitudes toward certifications and value of national certification system

– Series of statewide forums to explore issues and build business case for use of the Skills Certification System
Summary of Findings

- Employee readiness is a major issue
- Companies still not engaged in industry-wide solutions – in-house training still emphasized
- Existing training programs/certifications not recognized as leading indicators for hiring
  - Lack of awareness
  - Attitude that “certifications do not reflect the skills I need”
- However, industry beginning to see the need for a new approach – as skill demands and training costs rise, need a competitive solution
- A national system of relevant, consistent credentials would be well-received
- Certifications must be crafted with ongoing industry feedback and promoted to employers
Lessons Learned: Employer Engagement

- Entities such as Conexus Indiana are important. Employers need an informed advocate to engage in the area of workforce development.
- A “voice of industry” is essential to bridge the needs of employers with educators in developing content and delivery of education and training programs.
- Employers have adjusted to the inadequate skill levels of the existing labor pool. They need encouragement to raise the bar on their expectations.
- Workforce development should focus on both skilling up the existing workforce but also preparing the next generation for a more sophisticated industry.
John Burnett
Chief Executive Officer
Community Education Coalition
Founded in 1997, the Community Education Coalition is a partnership of education, business, and community leaders focused on aligning and integrating the Columbus, Indiana and region’s community learning system with economic growth and a high quality of life.
CEC
Strategic Goals

• Promote the value and importance of a seamless learning system that offers accessible, affordable education for students of all ages

• Foster collaboration to advance student achievement across the entire learning system (Pre-K through grade 16 and beyond)

• Serve as a catalyst for establishing Columbus as a regional center for higher education and workforce development

• Foster a stronger linkage between economic development and education initiatives
Advanced Manufacturing
Drives Columbus & Southeast Indiana Economy

• Over 25% of the workforce is employed in Advanced Manufacturing & Logistics
• Types of Advanced Manufacturing include:
  – Automotive & Original Equipment Manufacturers
  – Engineering and Design
  – Embedded Systems
  – Precision Tooling and Molds
• Columbus, Indiana has the country’s highest concentration of mechanical engineers employed per thousand workers (21.6 engineers); and three times the number of production associates (20.12 % vs. 7.34% for the U.S.)
How Does the Coalition Engage Employers?

- Meet with employers on their home turf (build relationships and trust)
- Understand most pressing business issues (including people)
- Share/discuss data regarding current and future projections
  - Workforce
  - Education
  - Economy
- Identify companies who want to work with their employees, education institutions and communities to build regional capacity
- Seek out companies who want to help raise people in Southeast Indiana “up one level” educationally or from a career standpoint
- Establish reasons (projects) for employers to meet and help create strategies to solve tough problems (credentialing needs for example)
- Conduct project, evaluate, and repeat process at a higher level
Level of Engagement

• We have a network of over 100 manufacturers with whom we work on workforce, education, & economic growth projects.
• These companies represent a large percent of the employment base of the region (~70% of those employed in manufacturing).
• This engagement has led to development of a regional learning network (industry, education, & community all involved).
## Advanced Manufacturing Integrated Technology Labs & Associated Programs  (PLTW/MSSC)

<table>
<thead>
<tr>
<th>Region</th>
<th>Schools/Programs</th>
</tr>
</thead>
</table>
| Bartholomew| Northside, Central, Hauser Middle Schools  
C4 Columbus East, C4 Columbus North, Hauser High Schools  
Advanced Manufacturing Center of Excellence  
Purdue College of Tech, Ivy Tech-Columbus (AMII), Indiana University Purdue University Columbus |
| Dearborn   | East Central, Lawrenceburg, So. Dearborn High Schools  
Ivy Tech-Lawrenceburg |
| Decatur    | Greensburg, North Decatur, South Decatur High Schools |
| Franklin   | Franklin County High School, Oldenburg Academy       |
| Jackson    | Brownstown Central, Seymour Middle Schools  
Brownstown Central, Crothersville, Medora, Seymour,  
Trinity Lutheran High Schools  
Seymour High School |
| Jefferson  | Madison Jr. High School  
Madison Consolidated, Shawe Memorial, Southwestern High Schools  
Ivy Tech-Madison |
| Jennings   | Jennings County Middle School  
Jennings County High School  
North Vernon Education & Training Center |
| Ohio       | Rising Sun High School  
Education Center of Rising Sun |
| Ripley     | Batesville, Jac-Cen-Del, Milan, South Ripley High Schools  
Ivy Tech-Batesville  
Southeastern Career Center |
| Switzerland| Switzerland County High School |
It took us years to get here…

- We started this work in one county in 1997
- In 2006 we prepared to launch Dream It. Do It. (5th launch in the country)
  - We conducted over 150 meetings in the region with employers, educators, students, community organizations in preparation for our launch (2006/2007)
  - Our goal was to understand the needs of all stakeholders, and in particular, the pressing workforce and education issues
  - We formed an employer, education, workforce system, community consortium
  - We raised a modest amount of money to launch the program (leveraged in-kind resources)
- We launched Dream It. Do It. in May 2007
- We continued to meet with all stakeholders and conduct such meetings to this day (primarily focused on projects today)
- Funding followed the work; it didn’t lead the work
It took us years to get here…
and we aren’t “there” yet

• Pursuing MSSC for the region:
  – 2007: worked with Ivy Tech and Cummins; State Board of Education; High School Career and Technical Education
  – 2008: High school launch, offerings to incumbent workers; economy tanked
  – 2008 to 2010: Worked with manufacturers and nine have endorsed MSSC
Current Advanced Manufacturing

Projects Include:

• Two current initiatives with Ivy Tech:
  – Displaced worker initiative with Ivy Tech (and Indiana Department of Workforce Development)
    • Conducting OJT training with one group of people, paying 50% of wages and assessing skill attainment
    • Second group receiving MSSC training before placement with employer
  – Skills assessment initiative: assessing knowledge and skills before placing in training
## EcO15

### Advanced Manufacturing Scorecard

<table>
<thead>
<tr>
<th>Advanced Manufacturing Enrollment Pipeline</th>
<th>Student Enrollments</th>
<th>Baseline March 2008</th>
<th>Actual Spring, 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Yr/4 Yr:</td>
<td>492</td>
<td>812 ( +65% )</td>
<td></td>
</tr>
<tr>
<td>*MSSC</td>
<td>*359</td>
<td>*752 (+95%)</td>
<td></td>
</tr>
<tr>
<td>PLTW</td>
<td>459</td>
<td>3,115 (+ 578%)</td>
<td></td>
</tr>
<tr>
<td>STEM</td>
<td>24,532</td>
<td>32,670 (+33% )</td>
<td></td>
</tr>
<tr>
<td>**Adv. Mfg./STEM related Career Tech Ed</td>
<td>**2,626</td>
<td>**2,324 (- 12% )</td>
<td></td>
</tr>
</tbody>
</table>

*MSSC numbers are cumulative  
**EcO15 focused courses

### Region 9 STEM Career Awareness

<table>
<thead>
<tr>
<th>People impacted by career activities</th>
<th>Baseline</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008: 58,433</td>
<td>2011: 321,660 (+ 450%)</td>
<td></td>
</tr>
</tbody>
</table>
Vearl Turnpaugh
Assistant Vice Provost, Career and Technical Programs
Ivy Tech Community College
Ivy Tech Community College

National Association of Manufacturers

NAM- Endorsed Manufacturing Skills Certification System

Vearl Turnpaugh
Assistant Vice Provost
Career and Technical Programs
About Ivy Tech

• Indiana’s largest public and the nation's largest singly-accredited, statewide community college system serving nearly 200,000 students annually
• 23 campuses; 57 programs offered through nine instructional schools; one statewide curriculum
• Single state board of trustees appointed by the Governor
• Most citizens in Indiana within 50 miles of a campus or instructional center
Workforce and Economic Development

- National Certifications: Manufacturing Skills Standards Council (MSSC), National Institute for Metal Working Skills (NIMS), American Welding Society (AWS) marketed to Industry

- Linkage to National Manufacturers Association endorsed certifications

- National certifications crosswalk to college credit

- 24 Workforce certification centers to validate employee skill base and training outcomes
Academic Program Options

• Industrial Technology – AAS
  – Multicraft Maintenance (Mechanical, Electrical, & Fluid Power)
  – Welding (MIG, TIG, Stick, & Oxy)
  – Machine Tool (Mill, Lathe, & Grinding)
  – Electrician (Construction and Industrial)

• Advanced Manufacturing – AAS
  – MSSC Certified Production Technician (CPT) as Foundation
  – Manufacturing Design (CAD/CAM)
  – Production Technologies (Mechatronics, CNC, Plastics, Electrical Controls, & Robotics)
  – Conexus Interaction on Degree

• Machine Tool Technology – AAS, TC, Institute
  – Rollout of New Curriculum in Fall of 2011
  – 8 NIMS Certifications Embedded in Curriculum
  – Biocrossroads (Orthoworx) Interaction on Degree
## Indiana Certification Levels at Ivy Tech

### FY10

<table>
<thead>
<tr>
<th>Exam</th>
<th>Taken</th>
<th>Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWS Certified Shielded Metal Arc Welding</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AWS Certified Welder</td>
<td>279</td>
<td>236</td>
</tr>
<tr>
<td>AWS: Gas Tung Arc (Tig) Welding</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>AWS-MIG (Welding)</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>AWS-Stic (Welding)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MSSC Certified Logistics Associate</td>
<td>88</td>
<td>78</td>
</tr>
<tr>
<td>MSSC Certified Logistics Technician</td>
<td>91</td>
<td>79</td>
</tr>
<tr>
<td>MSSC Maintenance Awareness</td>
<td>325</td>
<td>274</td>
</tr>
<tr>
<td>MSSC Manufacturing Processes and Production</td>
<td>323</td>
<td>285</td>
</tr>
<tr>
<td>MSSC Quality Practices and Measurement</td>
<td>350</td>
<td>283</td>
</tr>
<tr>
<td>MSSC Safety</td>
<td>386</td>
<td>355</td>
</tr>
<tr>
<td>NIMS CNC Milling Operations</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>NIMS CNC Turning Operations</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### FY11 (through April 30, 2011)

<table>
<thead>
<tr>
<th>Exam</th>
<th>Taken</th>
<th>Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWS Certified Shielded Metal Arc Welding</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>AWS Certified Welder</td>
<td>149</td>
<td>133</td>
</tr>
<tr>
<td>AWS Certified Welding Educator</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AWS Gas Tungsten Arc Welding (GTAW)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>AWS Medical Gas Certification</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>AWS Orbital Tube Welding</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>MSSC Certified Logistics Associate</td>
<td>102</td>
<td>86</td>
</tr>
<tr>
<td>MSSC Certified Logistics Technician</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td>MSSC Maintenance Awareness</td>
<td>120</td>
<td>101</td>
</tr>
<tr>
<td>MSSC Manufacturing Processes and Production</td>
<td>145</td>
<td>127</td>
</tr>
<tr>
<td>MSSC Quality Practices and Measurement</td>
<td>175</td>
<td>154</td>
</tr>
<tr>
<td>MSSC Safety</td>
<td>199</td>
<td>191</td>
</tr>
<tr>
<td>NIMS CNC Milling Operations</td>
<td>52</td>
<td>43</td>
</tr>
<tr>
<td>NIMS CNC Turning Operations</td>
<td>24</td>
<td>22</td>
</tr>
<tr>
<td>NIMS Measurement, Materials &amp; Job Safety Exam</td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>
Industry Engagement

• Direct Employer Engagement – MSSC, NIMS, AWS – Cummins, Caterpillar, Bristol – Myers, Mitsubishi, Grote, Dilling Mechanical

• Regional Consortiums – Eco15, Indiana Energy Consortium, Dream It. Do It. Indiana, Regional Providers, Employer Consortiums

• Statewide Appointed Sector Entities – Needs of Current Industry
  Conexus Indiana – Manufacturing & Logistics
  BioCrossroads – Life/Medical Sciences (OrthoWorx)
  TechPoint – Information Technology
  Indiana Energy Systems Network – Energy Technology

• Indiana Economic Development Corporation – Needs of companies coming to Indiana both National and International ventures
It’s Our Strategy:
All About the Partnerships:

• Conexus Indiana – Advanced Manufacturing & Logistics
• OrthoWorx – Machine Tool Technology
• Grant Partnerships – Purdue University
• Visit the Customer at his house
• Statewide Advisory Board structure
• Development of Statewide Skills Inventory
• Continued Training of Workforce
NAM Endorsed Certification System

Key Points

- Consistent message - Certified Programs – Certified Faculty – Certified Students
- One thing leads to another – cost, faculty development, credit crosswalk, faculty credentials, grades for certification, etc.
- Include the consortiums/partners in final approvals
- Work towards foundational (MSSC) and occupational (NIMS, AWS) certification of dislocated employees
- Award credit for certifications and make sure employers know it is available
- Define the career pathways that certifications fit into
- Align dual enrollment with career pathway
NAM Endorsed Certification System

Tips

• Don’t try and defend the indefensible

• Have employers take the training and certifications

• Work towards preferred interview status with employers

• Not everything fits – but parts do

• Try new things in new ways
Questions
CONTACT INFORMATION

• **Carol D’Amico**  
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  Conexus Indiana  
  cdamico@conexusindiana.com

• **John Burnett**  
  Chief Executive Officer  
  Community Education Coalition  
  jburnett@educationcoalition.com

• **Vearl Turnpaugh**  
  Assistant Vice Provost, Career and Technical Programs  
  Ivy Tech Community College  
  vturnpau@ivytech.edu
Tools to Help You

1. Sample Survey from Conexus
2. Sample Forum Agenda
3. Skills Template
4. 2010 Conexus Indiana Manufacturing and Logistics Report Card
5. Dream It. Do It. –
   • http://www.dreamit-doit.com/Southeastindiana/
6. Helpful links
   • http://www.conexusindiana.com/
   • http://www.educationcoalition.com/
   • http://eco15.org/
   • http://www.ivytech.edu/
2011 Schedule of Webinars

Webinars will be from 12:00-1:30 p.m. Eastern Time

June 15    July 20
August 17  September 21
October 18  November 16