The Best of Both Worlds: Creating Pathways from Apprenticeship to College Degrees

Presenters:

• Beth Arman, Director, Technical Training, Community College of Baltimore County, MD
• Jeanine Nagrod, Executive Director, NJ PLACE, University College Community, Rutgers, State University of New Jersey
• Dr. Holly Moore, Executive Dean at Georgetown/South Seattle College
• Dr. Eric Roe, Director of Applied Technology & Manufacturing TDI, Polk State College, FL
Background - National

• Registered apprenticeship – college work group convened by U.S. Department of Labor and U.S. Department of Education at request of Secretary of Labor’s Advisory Committee on Apprenticeship

• Rationale:
  • Facilitate college credit for graduates of registered apprenticeship programs
  • Support broad educational goals such as completion agenda and improving number of Americans with post-secondary training
  • Identify best practices in articulation agreements
  • Publicize and promote best practices to bring them to scale
Background - National

• DOL hopes to establish a consortium to:

  • Strengthen relationships among Registered Apprenticeship and community college representatives nationwide;
  • Facilitate informed partnerships that recognize the resources, limits, and requirements of one another’s systems;
  • Enhance national understanding of and responses to needs of apprentices; and
  • Advocate for flexibility to enable apprentices to
    • earn credit for their Registered Apprenticeship experience
    • pursue further credentials in community college programs, and
    • utilize transfer opportunities to four-year universities to earn Bachelors degrees.
Background - National

• DOL is also:

  • Developing a database of existing articulation agreements between registered apprenticeship programs and community colleges

  • Exploring how the consortium could be staffed – may have to be contracted to a non-federal organization

  • Convening discussions with various stakeholders, including representatives from regional accrediting bodies
Consortium Principles

**Principle 1.** Successful Registered Apprenticeship program graduates should be able to receive appropriate college credit.

**Principle 2.** Educational institutions should maintain necessary flexibility.

**Principle 3.** Consortium members should exhibit a clear understanding of and support for their respective roles.
Initial Conditions for Membership

- Post-secondary institutions:
  - Be in Council for Higher Education Accreditation’s Database of Accredited Programs;
  - Grant degrees;
  - Accept prior learning assessment and transfer credits; and
  - Provide program information.

- Apprenticeship sponsors:
  - Have program with standards registered with DOL or a State Apprenticeship Agency;
  - Submit to program review to assess program quality and rigor, and determine credit value; and
  - Provide program information.
Criteria for Consortium Operation

**Criterion 1.** Crediting Learning from the Registered Apprenticeship Certificate.

**Criterion 2.** Consistent Policies with Peer Colleges.

**Criterion 3.** Transfer of College Credit.
State and Regional Level

• Articulation agreements began at the local level, between individual colleges and apprenticeship programs.

• Some activity is happening on a state/regional basis.

• It may be easier to build and expand on state/regional models than to develop a national system.
What is Apprenticeship?

Structured
post secondary
learning experience
=
On-the-job learning
+
Classroom theory & practice
NEW JERSEY PLACE
Pathways Leading Apprentices to a College Education

PROGRAM VISION
Contribute to a 21st century education and workforce development system in New Jersey that values and links academic and vocational education.
Institutional Stakeholders

- Relevant State Government Departments/Commissions
- US Department of Labor, Office of Apprenticeship
- State County College Consortium
- All 19 NJ Community Colleges
- State University
- Industry: Employer Representatives and Labor Organizations
- Apprenticeship and Training Programs
Apprenticeship Program Stakeholders

- Automotive Technicians
- Carpenters
- Certified Nursing Assistants
- Early Child Development Specialists
- Culinary Workers
- Electrical Workers

- HVAC Refrig. Techs
- Insulators
- Iron Workers
- Plumbers
- Sheet Metal Workers
- State Corrections Officers
- Steamfitters

Avenues for Partner Expansion:
Stage Technicians, Health Care, Advanced Manufacturing, Banking, and more
Translating apprenticeship into college credits -- a 2 step process

Rigorous Evaluation of Apprenticeship Training Programs for College Credit

Articulation of Credit Recommendations into College Degree Programs
Related Bachelor Degree
Associate of Applied Science:
Technical Studies
Automotive Technology
Culinary Arts
Early Childhood Education
...

College Coursework:
General Ed + Electives

Apprenticeship Certificate
Program Participants

- Current apprentice or completed apprenticeship with NJ PLACE partner
- Mobile Population
- Address needs with common NJ PLACE Principles among NJ’s Community Colleges
  - Location flexibility among the community colleges for completing remaining courses.
  - In-county tuition rates regardless of county residence
Apprenticeship Enrollment or Completion
Classroom Instruction
On-The-Job Learning

Community College Enrollment
College Success Strategies
Placement Test Prep
College Coursework
(1 per semester for Active Apprentices)

Associate of Applied Science

Related Bachelor Degree
# Articulated Credits by Apprenticeship

<table>
<thead>
<tr>
<th>Evaluated Apprenticeship</th>
<th>Credits</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive Technicians</td>
<td>45</td>
<td>AAS in Automotive Technology</td>
</tr>
<tr>
<td>Carpenters</td>
<td>25-39</td>
<td>AAS or ASAST in Technical Studies; AAS in Construction &amp; Maintenance; BSAST in Construction; BS in Labor &amp; Empl Rel</td>
</tr>
<tr>
<td>Early Child Development Specialists</td>
<td>18-19</td>
<td>AAS in Early Childhood Education</td>
</tr>
<tr>
<td>Culinary Workers</td>
<td>17</td>
<td>AAS in Culinary Arts</td>
</tr>
<tr>
<td>Electrical Workers</td>
<td>20-40</td>
<td>AAS in Technical Studies; BS in Labor &amp; Empl Rel</td>
</tr>
<tr>
<td>Insulators</td>
<td>25-40</td>
<td>AAS in Technical Studies; BS in Labor &amp; Empl Rel</td>
</tr>
<tr>
<td>Iron Workers</td>
<td>25-40</td>
<td>AAS in Technical Studies; BS in Labor &amp; Empl Rel</td>
</tr>
<tr>
<td>Pipe Trades</td>
<td>25-45</td>
<td>AAS in Technical Studies; BS in Labor &amp; Empl Rel</td>
</tr>
<tr>
<td>Sheet Metal Workers</td>
<td>25-42</td>
<td>AAS in Technical Studies; BS in Labor &amp; Empl Rel</td>
</tr>
<tr>
<td>State Corrections Officers</td>
<td>25</td>
<td>AAS in Technical Studies; BS in Labor &amp; Empl Rel</td>
</tr>
</tbody>
</table>
Washington State - 34 Community and Technical Colleges

- 29 Community Colleges
- 5 Technical Colleges
- 18 Puget Sound Area
- 22 Apprenticeship
- 7 AAS – Apprenticeship
- 7 BAS Colleges
Washington State

- Colleges served nearly 14,000 apprentices in 2008 and 9,000 in 2010 (current estimate 10,000)
- Nearly 800 Approved Occupations
- 190 Approved Programs
- All programs in agreement with JATCs
- Serving Union, Non-Union and Federal
- Pre-Apprenticeship programs in Colleges, Non-Profits and High Schools
Washington State

- Primary apprenticeship AAS degree: “Multi-Occupational Trades”

- Covers most construction apprenticeship programs that are least 3 years long

- Journeyperson Card in conjunction with degree completion

- Offered by largest college apprenticeship providers, most geographic regions

- Apprenticeship graduates request and receive block of 70 credits (technical core) towards AAS degree, must take 20 credits of general education

- Between 2000 and 2010 nearly 600 completed
Washington State

- Concept developed by statewide work group: State Board; colleges; apprenticeship sponsors

- State Board does not have authority to grant a statewide degree

- Any college that wants to offer the degree must submit paperwork, get approval from local Board of Trustees, and get approval from State Board

- Easy for additional colleges to implement because groundwork has been done
Washington State - Exceptions

• U.S. Department of Defense apprenticeship programs with Olympic College:
  • Each occupation has its own degree program
  • Classes are transcripted each quarter

• Stationary Engineering apprenticeship program with Renton Technical College
  • Can get degrees in Commercial Building Engineering, Industrial Engineering, or both
  • Non-apprentices take same courses

• Machinist apprenticeship programs articulate to most college degrees in Machine Technology (or related title)
Washington State

Requirements:

• High School diploma or GED
• 18 years old
• Selected by JATC or employer
• Programs range from 1 to 6 years
• Work and Learn
Washington State – One College Approach

• South Seattle Community College – Georgetown
  • Largest Apprenticeship Training Facility in NW
  • 45% of the States Programs and Apprentices
  • Over 70 different trades and hundreds of employers
  • Robust Pre-Apprenticeship program feeders
  • General Education at worksite or campus
  • Nearly 500 AAS degrees granted
  • Offering 2 BAS degrees for Journeypersons
  • New BAS in Trades Leadership/Management
Washington State – One College Approach

- Pre-Apprenticeship Programs (ANEW, SODO, AJAC, VICE, BEAM)
  - Outreach, recruitment, orientation
  - Assessment
  - Connect Financial services
  - Prior Learning Portfolio Development
  - Try – A - Trade
  - Credit Generating
  - Stackable Credentials
  - Wrap around services
  - Preferred Entry
AJAC, ANEW, and SODO Models

College Intake – King County and Employers
- Register & Assess
- re-orientation, PLAR
- Skill update, Interviews

Industrial Manufacturing Academy
- Applied Learning, Online
  - 28 college credits
- Trades Rotation
  - Tours/Shadow

Specialization
- Internship, Apprenticeship, OJL, Coursework
- Skill refinement (Welding, Composites, Electrical, HVAC, Maritime, etc.)
IBEW Local 46 – V.I.C.E.
Veterans In Construction - Electrical

Register on H2H and WOWI and Enroll with J-9

Completes the ERS and WOWI to determine aptitude, attitude, and ‘fit’ for electrical work and readiness. Completes financial stability packet. Makes application for GI bill.

Candidate w/o documentable electrical work experience.

Receives ‘Training for Tomorrow Today’. Goes through three months advanced placement electrical pre-apprenticeship training. Performance in class determines direct entry advance placement.

Direct entry into 1st year of Commercial or Marine Electrical Apprenticeship – GI Bill.

Goes through Local 46 Apprenticeship interview process and is accepted by Apprenticeship Coordinator or Committee.

Direct entry as 2nd year Apprentice.

Candidate with documentable electrical experience – on Letterhead from unit with MOS or a private sector.

Receives Training for Tomorrow Today.

Goes through three months advanced placement electrical pre-apprenticeship training. Performance in class determines direct entry advance placement.

Direct entry as 3rd year Apprentice.
Industrial Manufacturing Academy
The Industrial Manufacturing Academy starts here at South Seattle’s Georgetown Campus.

We house the largest representation of apprenticeships at a Community College in Washington State.

Our campus is uniquely designed for teaching industry trades.

We take learning a trade seriously.
Starting Here

You will earn 28 College Credits starting here, along with these Industry Certifications

✓ Forklift Operation

✓ Traffic and Flagging

✓ Industrial CPR/First Aid

✓ OSHA 30
Training includes

✔ Lean Manufacturing
✔ Beginning Composites
✔ Math for Technicians
✔ Manufacturing Tools & Trades
✔ Basic Welding
Financial Aid Helps Cover

We involve both college and community resources to help you address –

- Tuition Assistance
- College Fees
- Emergency needs such as
  - Childcare
  - Transportation
  - Needed Supplies
Funding Sources Include

Eligible students may qualify for
✓ Worker Retraining
✓ Basic Food, Employment & Training
✓ Temporary Assistance for Needy Families
✓ Veteran’s Assistance
✓ Workforce Investment Act Funds

For Tuition Assistance
Go Anywhere!

Employment

The Industrial Manufacturing Academy teaches skills that can be applied to a broad range of industries including:

- Plastics
- Aluminum
- Glass
- and Renewable Energy
- Steel
Partner Industries Are

Re-employment comes in many shapes and sizes. This is a laminate machine for solar power.
Go Anywhere!
Training

At South -
- Composites
- Welding
- Aviation Mechanic Technician

At Renton -
- HVAC
- Precision Machining Technologies

At Green River -
- Aerospace and Advanced Manufacturing
- Machining and Manufacturing Technology

At Shoreline -
- CNC Machinist

At Edmonds -
- Materials Science Technology
Go Anywhere!

Apprenticeship

How it works -
Apprenticeship combines
1) on-the-job training
with
2) classroom instruction
under
3) the supervision of a
journey-level trade
professional

This combines both
practical and
theoretical aspects of a
highly skilled
occupation.
Washington State – One College Approach

Associate of Applied Science Degree
(Multi-Occupational)

**Apprenticeship Requirements**
1. Completion of an apprenticeship program of at least 6,000 hours (certified by JATC)

2. Completion of at least 450 of related training (certified by JATC)

**General Education Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 105</td>
<td>Applied Composition</td>
<td>3 credits</td>
</tr>
<tr>
<td>ENG 106</td>
<td>Technical Writing</td>
<td>3 credits</td>
</tr>
<tr>
<td>PSY 240</td>
<td>Psychology of Human Relations</td>
<td>3 credits</td>
</tr>
<tr>
<td>MAT 110</td>
<td>Applied Mathematics for Technicians</td>
<td>3 credits</td>
</tr>
<tr>
<td>SMG 210</td>
<td>Project Management</td>
<td>3 credits</td>
</tr>
</tbody>
</table>
Washington State – One College Approach

- Applied Baccalaureate Degrees
  - Teach Tech
  - Sustainable Building Maintenance Technology
  - Trades Technology Leadership and Management*
Washington State

Opportunities

- Integrate Services
- Recognize Applied Learning
- Refine Mentor Training
- Meet Employer Needs
- Family Wage Jobs
- Career Pathway/Wage Progression
- Contribute to Economy

Challenges

- Funding Cuts to Colleges
- Cost to JATCs or Apprentices
- Direct Entry
- Accelerated OJT and RSI
- Standardization
- Collaboration
- General Education Delivery
- Public Awareness

Apprenticeship + Credits + Credentials + Degrees = Careers for a Lifetime
Maryland

• 230 occupations are “apprenticeable”

• Most apprenticeship programs are 4 years; some are as short as 2 years or as long as 5 yrs

• Most apprenticeship programs are in the construction trades; manufacturing and public utilities are common too

• Related instruction is 144 – 200+ hours/year, depending on program
Maryland

- Many apprenticeship sponsors partner with the 16 MD community colleges

- 6 community colleges do the bulk of apprenticeship training
  - Community College of Baltimore County
  - Prince George’s Community College
  - Montgomery College
  - College of Southern Maryland
  - Frederick Community College
  - Baltimore City Community College
Maryland

• Similar model to Washington State:
  
  • Some colleges that work closely with apprenticeship programs have developed “apprenticeship degree”
  
  • One degree title for multiple trades
  
  • Covers most construction apprenticeship programs
  
  • Credits are requested and awarded after apprenticeship graduation
Maryland

• Differences from Washington State:
  
  • Inconsistent degree titles from one college to another, less name recognition statewide
  
  • Apprenticeship graduates get fewer credits (6 cr/year of apprenticeship program)
  
  • Transcription of courses is clearer (e.g. Blueprint Reading, Construction Materials and Methods), not just block of credits
FLORIDA

and

Modern Apprenticeships for Adv. Manufacturing

Dr. Eric A. Roe, Manufacturing Talent Development Institute / Polk State College
Florida College System

• System Facts at a Glance
• Who are we?
  • Colleges Total 28 (Campuses 66)
    • “Community” Colleges 8
    • “Colleges” 8
    • “State” Colleges 12
• What do Florida College System students look like?
  • Total Unduplicated Annual Headcount 2010–11:
    • Students 903,846
• Student Profile, Fall 2011 “award-seeking” students:
  • Full-time students 39%
  • Part-time students 61%
  • Average student age 26 years
  • Gender 59% female
  • Minority enrollment 46%
Florida - Colleges

1. Brevard Community College, Cocoa
2. Broward College, Fort Lauderdale
3. Chipola College, Marianna
4. College of Central Florida, Ocala
5. Daytona State College, Daytona Beach
6. Edison State College, Fort Myers
7. Florida State College at Jacksonville, Jacksonville
8. Florida Keys Community College, Key West
9. Gulf Coast State College, Panama City
10. Hillsborough Community College, Tampa
11. Indian River State College, Fort Pierce
12. Florida Gateway College, Lake City
13. Lake-Sumter Community College, Leesburg
14. State College of Florida, Manatee-Sarasota, Bradenton
15. Miami Dade College, Miami
16. North Florida Community College, Madison
17. Northwest Florida State College, Niceville
18. Palm Beach State College, Lake Worth
19. Pasco-Hernando Community College, New Port Richey
20. Pensacola State College, Pensacola
21. Polk State College, Winter Haven
22. St. Johns River State College, Palatka
23. St. Petersburg College, St. Petersburg
24. Santa Fe College, Gainesville
25. Seminole State College of Florida, Sanford
26. South Florida Community College, Avon Park
27. Tallahassee Community College, Tallahassee
28. Valencia College, Orlando
Florida – Where do students enroll?
## Florida - Apprenticeship

### Past Calendar Year 2011

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Registered</th>
<th>Total Active Programs</th>
<th>Total Active Apprentices</th>
<th>Total New Apprentices</th>
<th>Total Completions</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Apprenticeship programs</td>
<td>15</td>
<td>243</td>
<td>8,270</td>
<td>1,261</td>
<td>1,928</td>
</tr>
<tr>
<td>New Preapprenticeship programs</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New On-the-Job training (OJT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Current Calendar Year 2012

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Registered</th>
<th>Total Active Programs</th>
<th>Total Active Apprentices</th>
<th>Total New Apprentices</th>
<th>Total Completions</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Apprenticeship programs</td>
<td>5</td>
<td>228</td>
<td>7,703</td>
<td>1,022</td>
<td>1,589</td>
</tr>
<tr>
<td>New Preapprenticeship programs</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New On-the-Job Training (OJT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Florida - Apprenticeship
Florida - Apprenticeship

• What are the major expenditures of the apprenticeship?
  • Some sponsors of registered apprenticeship programs provide their own classroom instruction, many program sponsors partner with local school districts and community colleges.
  • Florida contributes funds to apprenticeship programs through a provision in the General Appropriations Act that allocates base and performance funding to workforce programs through aid to local governments (community colleges and school districts).
  • In 2004-05 school districts reported expenditures of $16.0 million for apprenticeship programs and community colleges reported $24.5 million.
Florida – Manufacturing Example

Mosaic Current Staff
• Large eligible retirement population
• 60% of critically skilled maintenance technicians planned to retire within the next 7 years

Current Skills Shortage
• Immediate need for new multi-skill Maintenance personnel
• Traditional Electrical and Mechanical skills sets are crossing over into one another
• Instrumentation and Automation competencies are in short supply in the existing workforce

Replacement workers
• Hard to find - few personnel with maintenance and electrical knowledge or that have shadowed the experienced skilled workers
• Ability to hire employees with the needed industrial skill set is extremely difficult.
Florida – Mosaic/Polk State Apprenticeship Overview (Mechanic/Millwright & EIA Tech’s)

- Mosaic/ManufacturingTDI/Polk State College Program
  - 1232 hours classroom, 4000 hours OJT (combined with advanced standing)
- Employer provided Hands-on OJT
- 16 students/apprentices per cohort
- Run a cohort of EIA’s and a cohort of Mech/Millwrt concurrently
- $ 18 per student hour
- Apprentices spend two days in class & three days in field each week (OJT)
- Class days based on work schedule
  - 2 weeks off for summer break (July)
  - 2 weeks off for Christmas
Credentials Awarded

FL DOE
- Journeyman Completion of Apprenticeship

MSSC
- CPT (Cert. Prod. Tech.)
  - Safety
  - Quality
  - Maint. Awareness
  - Production Processes

OSHA 10

ICML (International Council for Machinery Lubrication)
- Maint. Lubrication Tech.

Non Credit Certificates
- Pumps & Seals
- Welding

Rockwell Automation
- Vibration Analysis Level 1 Certification
- Continuing Education Units (CEUs) - IACET authorized
- Certificates of Completion:
  - Motors & Drives
  - PLC Fundamentals
  - ControlLogix
  - Ladder Logic
  - PowerFlex Drives
  - Networks: DeviceNet, Ethernet, ControlNet
  - ArcFlash Safety
- ControlLogix Maintainer and PowerFlex Drives Certificate Program eligibility
Florida – Pathways to Degrees

With these credentials in hand the Apprentices can avail themselves of the pathways into college as part of Florida’s unified pathway for manufacturing education.
Pathway to the Engineering Technology A.S. Degree @ Polk State

15 Credit Hours for the MSSC CPT

+ 16 Credit Hours of internal articulation based on the other credentials awarded
Engineering Technology A.S. Degree in Florida

The MSSC CPT articulation applies at any of these community or state colleges:

- Brevard CC
- Central Florida CC
- Daytona State College
- Florida State College at Jacksonville
- Hillsborough CC
- Lake City CC
- State College of Florida
- Polk State College
- St. Petersburg College
- Pensacola Junior College
Florida - Next Steps

- Ensure alignment with national standards
  - US DOL Competency Models
  - Other national industry certifications
- Register the program beyond a single employer
- Promote articulation pathways
- Package the curricula for easier replication

- Collaborate for replication and best practices discussions with college consortia and NCCET.
Alignment with Competency Models

- Automation Model
  - Developed by National Association of Manufacturers (NAM), Automation Federation (AF), and US Dept. of Labor
  - Collaboration with industry leaders to develop a comprehensive model for automation careers
  - Industry model framework is based on competency model building blocks, which are aligned to meet industry needs.
  - Clearly defines skills and knowledge in order to successfully perform tasks required in automation careers
Automation Competency Model

- Tiers illustrate how occupational and industry competencies build on foundation of personal effectiveness, academic and workplace competencies.
- Each tier represents skills & knowledge essential for successful performance in the industry or occupation.
  - Base – competencies apply to large # of occupations/industries
  - Higher levels – competencies become industry and occupation specific
- Key behaviors identified in each block
Mechatronics Competency Model

- Tiers illustrate how occupational and industry competencies build on foundation of personal effectiveness, academic and workplace competencies.
- Each tier represents skills & knowledge essential for successful performance in the industry or occupation.
  - Base – competencies apply to large # of occupations/industries
  - Higher levels – competencies become industry and occupation specific
- Key behaviors identified in each block
Analysis Process

• Comparison and identification of competencies, skills, and knowledge covered in the apprenticeship program:
  – Mechanic/Millwright track
  – Electrical Instrumentation & Automation Technician track
  – Existing overlap between both tracks

• Crosswalk and comparison with MSSC CPT competencies (Certified Production Technician)

• Comparison with ISA CCST model (Certified Controls System Technician)

• Ranking of competencies based on:
  – Overlap between program and certifications
  – Level of importance (pertaining to apprentice program and successful job performance)
Results: Automation Competency Model

- Apprenticeship Curriculum
- Manufacturing TDI MSSC CPT Curriculum
Results: Mechatronics Competency Model
Florida - What have we learned

• Participant selection is important
  – Math-math-math
  – Work experience
  – Ramsey Testing, TABE, NCRC
• Identification of national industry certifications is essential
• Focus on development of regional and statewide articulation pathways
• Pace slower than college level
  – Test taking/Study habits
• Industrial needs are specialized
Florida - What have we learned

• Multi-source text and materials
• DOE approval process time consuming
• Must have experienced instructors
• Flexible content with local decisions
• Client wants earlier practical skills embedded in the delivery
• Find industry standard curricula and vendor certifications that add value and can serve as completion points
• Thank you!

• Any questions?