Getting People in the Right Jobs: Certification and Technical Assessment

Anne Gielczyk
Nocti Business Solutions Manager

Craig Hopkins
AMTEC - Project Director
Company Background

• Two Companies
  – NOCTI
    • 501c3 Advocating for Career and Technical Education (CTE)
    • Supplier of end-of-program assessments for all CTE Programs
  – Nocti Business Solutions (NBS)
    • For profit side-of-the-house working with Business and Industry
    • Supplier of off-the-shelf assessments for pre-employment, training, or promotion within a company or organization
    • Developer of customized assessment solutions for companies and organizations
Employee Retention

- Costs of employee turnover are as much as 1.5 to 2 times and employee’s salary [www.cio.com](http://www.cio.com) 1/14/2015
- 1/3 of new hires quit their job after about 6 months [www.eremedia.com](http://www.eremedia.com) 11/30/2015
- Engaged employees perform 20% better than their disengaged counterparts [www.screenwerk.com](http://www.screenwerk.com) 5/24/2015
- Customer retention rates are 18% higher on average, when employees are highly engaged [www.cvent.com](http://www.cvent.com) 12/9/2013
- 1 in 3 workers will change jobs in the next 6 months [www.saba.com](http://www.saba.com) 2015
How to Increase Employee Retention

• Support/invest in employee development and education
• Offer benefits and perks
  – Healthcare, paid sick leave, stock options, flexible work schedules, etc.
• Offer benefits and perks
• Create open communication between employees and management
• Employee recognition
• Performance appraisals
• Salary increases directly proportional to hard work of employees
• Employee motivation
Employee Retention

“One source of frustration in the workplace is the frequent mismatch between what people must do and what people can do. When what they must do exceeds their capabilities, the result is anxiety. When what they must do falls short of their capabilities, the result is boredom. But when the match is just right, the results can be glorious.” ~Daniel H. Pink
Employee Retention

• According to Aberdeen Group's research, companies that have implemented pre hire testing programs are
  – 24% more likely to have a high percentage of employees who exceed performance expectations
  – 17% more likely to have employees who rate themselves as highly engaged
  – 36% more likely to be satisfied with new hires than businesses that do not use pre employment testing.
Offerings

- Three Batteries of Standardized Assessments
  - Over 100 occupational areas
  - Soft-skills assessment (21st Century Skills)
  - Performance (hands-on) assessment

- Customized Assessment Services
  - Job and Task Analysis
  - Item bank of over 100,000 items
  - Validation and reliability services
  - Cut score determination
  - Customized reporting services

- QuadNet™ System
  - Secure, robust online-testing platform
  - Scoring and reporting services
  - Online data storage
Standardized Assessments

- Three Batteries of Standardized Assessments
  - Entry Level Assessments
  - Experienced Worker Assessments
  - Advanced Skill Assessments
Customized Assessment Development

Panel Selection ➔ Perform JTA ➔ Item/Job Development

Assessment Construction ➔ Pilot Test ➔ Analysis

Bias Review ➔ Cut Score Workshop ➔ Scoring and Database Management

Ready for Administration
Prior Learning Assessment (PLA)

- Technical skill assessments
- Assessments reviewed by the National College Credit Recommendation Service (NCCRS)
Research on PLA

PLA Students have higher college completion rates

Did Not Earn
- PLA: 30%
- Non PLA: 40%

Earned Bachelor's
- PLA: 7%
- Non PLA: 5%

Earned Associate's
- PLA: 12%
- Non PLA: 10%

62,475 students at 48 postsecondary institutions

Fueling the Race to Post Secondary Success
Research on PLA

PLA Students needed less time to complete degrees

Fueling the Race to Post Secondary Success
What is a credit “recommendation”?

• A credit equivalency assigned to structured, formal college-level work that takes place outside of the traditional college classroom with a focus on OUTCOMES.

• Credit recommendations are determined by a combination of required hours, academic rigor, comparability to existing college programs, and a strong correlation between learning objectives and student outcomes.
Process – How does it work?

• Score a 70% or better on an approved NOCTI multiple-choice technical assessment
• Request a Report and/or transcript
• Present transcript to one of 1500+ cooperating colleges/universities

http://www.nationalccrs.org/colleges-universities
What assessments are offered?

**ASSESSMENTS RECOMMENDED FOR ONE SEMESTER HOUR:**
- Automotive Technician Core
- Manufacturing Technology
- Business Information Processing
- Cabinetmaking
- CAD
- CAD-CAM
- Carpentry
- Collision Repair
- Collision Repair & Refinishing Technology
- Commercial Foods
- Computer Networking Fundamentals
- Computer Programming
- Computer Repair Technology
- Construction
- Construction Masonry-Block
- Construction Masonry-Brick
- Cosmetology
- Criminal Justice
- Criminal Justice-Advanced
- Culinary Arts Level 1 Prep Cook
- Dental Assisting
- Design & Pre-Construction
- Diagnostic Services
- Diesel Technology
- Early Childhood Development & Services
- Early Childhood Education & Care: Advanced
- Early Childhood Education & Care: Basic
- Education & Training
- Electric Power & Distribution
- Electrical Construction/Technology
- Electrical Occupations
- Electronics
- Electronics Technology
- Emergency & First Management Services
- Emergency Medical Services
- Family & Community Services
- Financial & Investment Planning
- Floral Design
- Floriculture/Greenhouse
- Forest Products & Processing
- Fundamentals of Construction
- General Management
- Graphic Production Technology
- Health Assisting
- Health Information
- Heavy Equipment Maintenance & Repair
- Human Health Aide
- Horticulture/Landscaping
- Hospitality Management-Lodging
- Human Resources Management
- HVAC
- HVAC/R
- HVACR-Installation & Startup
- HVACR-Service & Repair
- Industrial Electricity
- Industrial Electronics
- Industrial Maintenance Mechanics
- Information Support & Services
- Interactive Media
- Interior Decorating & Design
- Legal Services
- Lodging
- Logistics Technology/Distribution Center Services
- Maintenance Operations
- Mechanical Drafting & Design
- Mechatronics
- Medical Assisting
- Natural Resource Systems
- Network Systems
- Nursing Assistant
- Performing Arts
- Personal Care Services
- Plumbing
- Practical Nursing
- Pre-Engineering/Engineering Technology
- Production Agriculture
- Protective Services
- Recreation, Amusements, & Attractions
- Retail, Food & Beverage Services
- Retail Commercial Building
- Retail Merchandising
- Security & Protective Services
- Small Animal Science & Technology
- Small Engine Technology
- Technical Drafting
- Technical Theater
- Telecommunication
- Therapeutic Services
- Travel & Tourism
- Visual Arts
- Visual Communications & Multimedia Design
- Web Design
- Welding
- Wind Turbine Maintenance Technician
- Workplace Readiness

**ASSESSMENTS RECOMMENDED FOR THREE SEMESTER HOURS:**
- 112 Assessments in total!
Certification Partners

[Images of various certification logos]

Nocti Business Solutions
A Corporate Assessment Provider
A "Big" Collaboration (2008)

- 8 States
- 18 Automotive Industry Partners
- 12 Community College Partners
A Bigger Collaboration? (2016)

53 Colleges and Educational Partners

47 Industry Partners

AMTEC in 16 States
AMTEC Products Supported by NBS

Technical Standards
- Industry Validated
- Multi-Skilled Maintenance

Online Curriculum
- 13 courses
- 57 modules

Assessments
- 2 Comprehensive Assessments
- 13 End-of-Course (topic) assessments
What do you do all day?

Identified 26 Core Duties & 170 tasks

<table>
<thead>
<tr>
<th>Letter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>MECHANICAL EQUIPMENT</td>
</tr>
<tr>
<td>B</td>
<td>PNEUMATIC/HYDRAULIC EQUIPMENT</td>
</tr>
<tr>
<td>C</td>
<td>STEAM SYSTEM</td>
</tr>
<tr>
<td>D</td>
<td>PREDICTIVE/CORRECTIVE MAINTENANCE</td>
</tr>
<tr>
<td>E</td>
<td>BLUEPRINT READING/SCHEMATICS</td>
</tr>
<tr>
<td>F</td>
<td>EQUIPMENT CONTROLS AND SENSORS</td>
</tr>
<tr>
<td>G</td>
<td>ELECTRICAL EQUIPMENT</td>
</tr>
<tr>
<td>H</td>
<td>ELECTRONIC EQUIPMENT</td>
</tr>
<tr>
<td>I</td>
<td>NETWORKING</td>
</tr>
<tr>
<td>J</td>
<td>PLC EQUIPMENT</td>
</tr>
<tr>
<td>K</td>
<td>MAINTAIN NC/CNC EQUIPMENT</td>
</tr>
<tr>
<td>L</td>
<td>ROBOTS</td>
</tr>
<tr>
<td>M</td>
<td>RESISTANCE WELDING</td>
</tr>
<tr>
<td>N</td>
<td>ROBOTIC GMAW WELDING</td>
</tr>
<tr>
<td>O</td>
<td>FABRICATE</td>
</tr>
<tr>
<td>P</td>
<td>COMPUTER LITERACY</td>
</tr>
<tr>
<td>Q</td>
<td>PREVENTATIVE MAINTENANCE</td>
</tr>
<tr>
<td>R</td>
<td>DUST AND MIST COLLECTORS</td>
</tr>
<tr>
<td>S</td>
<td>UTILITIES</td>
</tr>
<tr>
<td>T</td>
<td>POWER DISTRIBUTION</td>
</tr>
<tr>
<td>U</td>
<td>SPECIALIZED MACHINERY</td>
</tr>
<tr>
<td>V</td>
<td>METROLOGY</td>
</tr>
<tr>
<td>W</td>
<td>SAFETY AND DOCUMENTATION</td>
</tr>
<tr>
<td>X</td>
<td>LASER ETCHER</td>
</tr>
<tr>
<td>Y</td>
<td>AUTOMATIC WELDER</td>
</tr>
<tr>
<td>Z</td>
<td>SPECIALIZED EQUIPMENT</td>
</tr>
</tbody>
</table>
Example “Mechanical Equipment”

<table>
<thead>
<tr>
<th>A</th>
<th>MECHANICAL EQUIPMENT</th>
<th>Tools and Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Troubleshoot/repair/replace brakes &amp; clutches (electromechanical and mechanical)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a Inspect brake for wear, leaks, damage, excessive wear on pads, etc.</td>
<td>Common hand tools</td>
</tr>
<tr>
<td></td>
<td>b Disassemble discs and pads</td>
<td>Vernier caliper</td>
</tr>
<tr>
<td></td>
<td>c Clean rotors</td>
<td>Micrometer</td>
</tr>
<tr>
<td></td>
<td>d Reassemble</td>
<td>Surface grinder</td>
</tr>
<tr>
<td></td>
<td>e Adjust or set air pressures or mechanical springs</td>
<td>Lathe</td>
</tr>
<tr>
<td></td>
<td>f Set gap on electrical brakes (air gap on electromechanical or gap on mechanical brake)</td>
<td>Milling machine</td>
</tr>
<tr>
<td></td>
<td>g Troubleshoot/repair/replace electromagnet on electromechanical brake</td>
<td>Feeler gauge</td>
</tr>
<tr>
<td></td>
<td>h Set brake and clutch timing using transducers and monitors</td>
<td>Hydraulic press</td>
</tr>
<tr>
<td></td>
<td>i Maintain couplings</td>
<td>Instruction book</td>
</tr>
<tr>
<td></td>
<td>j Maintain fans</td>
<td></td>
</tr>
<tr>
<td></td>
<td>k Install/maintain valves (cut-off, pressure relief...)</td>
<td></td>
</tr>
</tbody>
</table>

Each task defined into sub-tasks and supporting information
Curriculum created by Instructional Design Experts using National Standards

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Clock Time</th>
<th>Lecture</th>
<th>Lab</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid Power and Electrohydraulics/pneumatics</td>
<td>120</td>
<td>60</td>
<td>60</td>
<td>13%</td>
</tr>
<tr>
<td>General PM and Predictive Maintenance</td>
<td>30</td>
<td>20</td>
<td>10</td>
<td>3%</td>
</tr>
<tr>
<td>PLC</td>
<td>100</td>
<td>40</td>
<td>60</td>
<td>10%</td>
</tr>
<tr>
<td>Blueprint Reading/Schematics</td>
<td>30</td>
<td>20</td>
<td>10</td>
<td>3%</td>
</tr>
<tr>
<td>Robotics</td>
<td>80</td>
<td>40</td>
<td>40</td>
<td>8%</td>
</tr>
<tr>
<td>Controls and Instrumentation</td>
<td>100</td>
<td>40</td>
<td>60</td>
<td>10%</td>
</tr>
<tr>
<td>Basic Electricity and Electronics</td>
<td>100</td>
<td>40</td>
<td>60</td>
<td>10%</td>
</tr>
<tr>
<td>Mechanical Systems/Mechanical Drives/Power Transmissions</td>
<td>100</td>
<td>40</td>
<td>60</td>
<td>10%</td>
</tr>
<tr>
<td>Safety</td>
<td>40</td>
<td>30</td>
<td>10</td>
<td>4%</td>
</tr>
<tr>
<td>Computer Literacy</td>
<td>40</td>
<td>10</td>
<td>30</td>
<td>4%</td>
</tr>
<tr>
<td>Welding and Fabrication</td>
<td>120</td>
<td>24</td>
<td>96</td>
<td>13%</td>
</tr>
<tr>
<td>Machine Tool</td>
<td>100</td>
<td>20</td>
<td>80</td>
<td>10%</td>
</tr>
</tbody>
</table>
| **Total Clock Hours**                                   | 960        | 384     | 576 | 100%

Credit (Lecture at 15:1 and Lab at 30:1)
The courses were broken down into smaller, manageable modules which incorporate the national standards

<table>
<thead>
<tr>
<th>Mod.</th>
<th>Fluid Power and Electrohydraulics/pneumatics</th>
<th>Lecture</th>
<th>Lab</th>
<th>Standard Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fundamentals</td>
<td>16</td>
<td></td>
<td>20, 42</td>
</tr>
<tr>
<td>2</td>
<td>Flow, Directional, Pressure Control Valves</td>
<td>10</td>
<td>18</td>
<td>13, 14, 17</td>
</tr>
<tr>
<td>3</td>
<td>Actuators</td>
<td>6</td>
<td>8</td>
<td>15, 23</td>
</tr>
<tr>
<td>4</td>
<td>Pumps and reservoirs</td>
<td>8</td>
<td>8</td>
<td>21, 22</td>
</tr>
<tr>
<td>5</td>
<td>Fluids and Filters</td>
<td>5</td>
<td>3</td>
<td>18, 19, 25</td>
</tr>
<tr>
<td>6</td>
<td>Hose, pipes and tubing fabrication</td>
<td>3</td>
<td>9</td>
<td>16, 24</td>
</tr>
<tr>
<td>7</td>
<td>Electrohydraulics/pneumatics</td>
<td>12</td>
<td>14</td>
<td>17, 26, 27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>
AMTEC Assessments

• 13 Diagnostic Assessments
• Aligned to Subset of National Standards
• Developed by Industry

• 1 General Mechatronic Assessment
• Aligned to National Standards
• Developed by Industry

National Standards Developed by Industry
Benefits

• Data Analysis
  • Allows AMTEC to determine paths of Professional Development

• Hands-off
  • AMTEC and NBS work seamlessly

• Manpower savings
  • AMTEC does not have the manpower to enroll students, enroll assessment users
QUESTIONS