2015 CTAA EXPO Workshop

Upskill Your Frontline Workforce: National Resources and Local Implementation

June 3, 2015

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TRANSPORTATION LEARNING CENTER
Introduction and Expectations

• Introduction
  • Tell everyone about yourself and your organization
  • Very briefly, what are your biggest challenges when it comes to recruiting, training and retaining your frontline workforce?
  • What do you expect to get out of this workshop?

• About the Transportation Learning Center

• Session Topic
Engagement: Training Partnerships in Transit – Location Map
National sponsors and over 40 locations have worked together to build shared solutions
Session Overview

• The Big Picture - National Analysis of Transit Workforce Trends and Challenges

• Breakout Discussion – Small/Rural/Tribal Agency Skills Needs and Unique Challenges

• Small Agency Training Models and Sharing of Resources

• National Framework and Resources

• Breakout Discussion – Community Transportation Workforce Innovations

• Wrap-up and Q&A
126 Percent of Today’s Transit Workforce will have to be hired and trained in the next 10 years; 90 percent are frontline

Source: TLC Analysis of BLS and NTD data.
Transit has the highest percentage of older workers among all transportation sectors.

<table>
<thead>
<tr>
<th></th>
<th>&lt;25</th>
<th>25-44</th>
<th>45-54</th>
<th>55-64</th>
<th>&gt;65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>6%</td>
<td>40%</td>
<td>29%</td>
<td>19%</td>
<td>6%</td>
</tr>
<tr>
<td>Trucking</td>
<td>5%</td>
<td>41%</td>
<td>30%</td>
<td>19%</td>
<td>5%</td>
</tr>
<tr>
<td>Transit</td>
<td>4%</td>
<td>33%</td>
<td>28%</td>
<td>23%</td>
<td>12%</td>
</tr>
<tr>
<td>Air</td>
<td>6%</td>
<td>41%</td>
<td>32%</td>
<td>18%</td>
<td>3%</td>
</tr>
<tr>
<td>Highway</td>
<td>8%</td>
<td>44%</td>
<td>28%</td>
<td>16%</td>
<td>4%</td>
</tr>
<tr>
<td>Rail</td>
<td>5%</td>
<td>38%</td>
<td>27%</td>
<td>26%</td>
<td>4%</td>
</tr>
<tr>
<td>Maritime</td>
<td>7%</td>
<td>44%</td>
<td>27%</td>
<td>18%</td>
<td>4%</td>
</tr>
<tr>
<td>All US Industries</td>
<td>13%</td>
<td>43%</td>
<td>22%</td>
<td>17%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Women continue to be under-represented in transit, especially in technical positions e.g. mechanics.
African-Americans and Hispanics underrepresented in higher paid and skilled transportation jobs

<table>
<thead>
<tr>
<th>Job Category</th>
<th>White</th>
<th>Black or African American</th>
<th>Hispanic or Latin American</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generally Higher Wages, Skills &amp; Career Potential</td>
<td>Aircraft pilots</td>
<td>88%</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Highway maintenance</td>
<td>81%</td>
<td>9%</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Bus and truck mechanics</td>
<td>77%</td>
<td>6%</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>Aircraft mechanics</td>
<td>74%</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Truck drivers</td>
<td>64%</td>
<td>15%</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Bus drivers</td>
<td>57%</td>
<td>27%</td>
<td>14%</td>
</tr>
<tr>
<td>Generally Lower Wages, Skills &amp; Career Potential</td>
<td>Laborers</td>
<td>56%</td>
<td>18%</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>Vehicles cleaners</td>
<td>43%</td>
<td>21%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>All US Workforce</td>
<td>68%</td>
<td>11%</td>
<td>16%</td>
</tr>
</tbody>
</table>
Projected annual job openings are 68% larger than annual completions of related educational programs across selected transportation job groups.
Transit Lags in Human Capital Investment

Public Transportation Behind the Curve on Training Investment

Percent of Employee Salary

- US Public Transportation*: $91 m, .66-.88%
- All US Industries: $266 m, 2%
- FHWA Goal: $357 m, 3%
- Leading US Companies: 4.5%
- Paris Transit (RATP): 8.4%

*Estimated by the Transportation Learning Center based on a 2010 survey of the transit industry.
Transit Lags in Human Capital Investment

- FTA investment in Human Capital Lags: Only 0.1% of its Investment is Physical Capital
  - Annual Federal investment in transit workforce development (Map-21): Total $12 million
  - Annual Federal investment in physical capital: Total $9.6 billion
The Challenge - Recap

• Industry growth, retirement and turnover creating large number of job openings in next decade

• Inadequate supply of qualified workers to fill needs, despite generally good wages and career potentials

• Low level of industry and government investment in human capital development

• Transit lacks the capacity to train the next generation of blue-collar technicians

• The smaller the agency, the bigger the challenge
Roundtable Discussion (1)

1. Is your agency or community transportation in general experiencing any of the workforce trends described earlier?
   a. Large retirement?
   b. Need to hire and train large numbers of drivers and mechanics?
   c. Underrepresentation of women and minorities in highly skilled and high paying jobs?
   d. Inadequate supply/pipeline of qualified workers for these high demand jobs?
   e. Inadequate investment in training?
   f. Lack of training resources?

2. What are the most difficult to hire positions in your frontline operations and maintenance workforce?

3. In which positions do you experience the most turnover and why?
Small Agency Innovations

- Labor-Management Partnerships:
  - Keystone Transit Career Ladder Partnership – PA small agencies, SEPTA, and Pittsburgh Port Authority
  - Project Empire Career Ladder Partnership – Upstate NY
- SOP for Training – Des Moines
- Outcomes and Impact
Employer and union jointly governed workforce development program

Partners work together to identify workforce skills to upgrade

The Partnership develops training programs to meet identified challenges
Keystone Partnership - Need

- Increase in Ridership

- Large-scale Retirement of Skilled Mechanics – 40% of Rail Vehicle Mechanics can retire tomorrow

- New Technologies – Computer-controlled Electronics on Rail Cars, Automated Signals Systems

- Lack of Structured Career Ladders for Incumbents and New Hires – Over 50% Failure Rate in Practical Promotion Tests

- Workforce in Dire Need of Training to Maintain State of Good Repair
Keystone Partnership - Formation

- Labor & Management found Common Interest in Frontline Workforce Training
- Originally Funded by PA Dept. of Labor & Industry – $715,000 Grant Statewide
- Supported by PA AFL-CIO
- Initially between SEPTA/TWU Local 234
- Grew to be Statewide partnered with PPTA to include smaller agencies and later Pittsburgh
- 33 Agencies and 23 Unions Participated
Project Empire Partnership

- Project Empire Transit Career Ladder Partnership since 2006
- Labor-management partnership similar to Keystone
- Created to alleviate technical skills shortages and improve state of good repair
- Focused on PMI Training after identifying deficiencies
Process for Data-driven Frontline Training

Skill Assessment (Gap Analysis)
Curriculum and Courseware
Instructor Development (Train-the-Trainer)
Classroom Training and OJT
Mentor Program
Credential and Career Ladder
### Sample Workforce Skill Survey

**Key**

- 0 - Unaware of this type of work
- 1 - Aware of this type of work
- 2 - Able to perform this type of work with supervision
- 3 - Able to perform this type of work independently
- 4 - Able to instruct others in this type of work.

**Read and interpret multimeters**

<table>
<thead>
<tr>
<th>Task</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4</td>
<td>Use digital multimeter</td>
</tr>
<tr>
<td>0 1 2 3 4</td>
<td>Use analog multimeter</td>
</tr>
<tr>
<td>0 1 2 3 4</td>
<td>Understand multimeter abbreviation, symbols and terminology</td>
</tr>
<tr>
<td>0 1 2 3 4</td>
<td>Understand displays on multimeters, reading data</td>
</tr>
<tr>
<td>0 1 2 3 4</td>
<td>Measure AC voltage</td>
</tr>
<tr>
<td>0 1 2 3 4</td>
<td>Measure DC voltage</td>
</tr>
<tr>
<td>0 1 2 3 4</td>
<td>Measure resistance and continuity</td>
</tr>
<tr>
<td>0 1 2 3 4</td>
<td>Measure AC or DC current</td>
</tr>
<tr>
<td>0 1 2 3 4</td>
<td>Apply Ohm's law</td>
</tr>
<tr>
<td>0 1 2 3 4</td>
<td>Use data from multimeter to make diagnostic determinations</td>
</tr>
</tbody>
</table>
## Sample Skills Gap Report

<table>
<thead>
<tr>
<th>Responsibility Name</th>
<th>responding &quot;3&quot; or &quot;4&quot;</th>
<th>responding &quot;0&quot;, &quot;1&quot; or &quot;2&quot;</th>
<th>Average responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take readings from meters at established intervals and make corrective steps</td>
<td>65.6%</td>
<td>34.4%</td>
<td>2.63</td>
</tr>
<tr>
<td>Take readings from gauges at established intervals and make corrective steps</td>
<td>36.4%</td>
<td>63.6%</td>
<td>1.98</td>
</tr>
<tr>
<td>Use control boards to operate or control power generating equipment such as generators</td>
<td>36.4%</td>
<td>63.6%</td>
<td>1.86</td>
</tr>
<tr>
<td>Regulate equipment operations and conditions based on data from recording and indicating instruments or from computers</td>
<td>29.6%</td>
<td>70.4%</td>
<td>1.75</td>
</tr>
<tr>
<td>Operates or controls machinery that generates electric power, using control boards or semiautomatic equipment.</td>
<td>12.6%</td>
<td>87.4%</td>
<td>0.93</td>
</tr>
</tbody>
</table>
Hands-on and OJT

• Lecture is Least Effective
• Works for Teaching History...
  – Easily relate to human events
• Not for Adjusting Valves!
  – “Telling how” doesn’t relate
• ASE Survey for TRB
  – 95% want more hands-on learning
Hands-on and OJT

Prior to training
20%

During training 10%

On the job 70%

Josh Bersin and Associates, 2008
Regional Collaboration

• Involvement of PPTA
• SEPTA training slots were opened up to small agency bus mechanics
• SEPTA trainers traveled in some cases to other locations to deliver training
Using SOPs for Training

- SOPs – Standard Operating Procedures
- Step-by-step Instructions for Performing Routine Jobs (tune-ups, brake reline, etc.)
- TLC helped DART develop SOPs that were in turn used for classroom and hands-on training
- Worker involvement
- Generate task checklists for mentoring
## Impact: Frontline Training and SOGR

<table>
<thead>
<tr>
<th>Performance Indicators</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeat and chronic failures</td>
<td>↓</td>
</tr>
<tr>
<td>Repair costs (labor and parts)</td>
<td>↓</td>
</tr>
<tr>
<td>Safety accidents</td>
<td>↓</td>
</tr>
<tr>
<td>Unnecessary part replacement</td>
<td>↓</td>
</tr>
<tr>
<td>Customer Complaints</td>
<td>↓</td>
</tr>
<tr>
<td>Vehicle spare ratio</td>
<td>↓</td>
</tr>
<tr>
<td>Late pullout/Bus days lost/Runs cancelled</td>
<td>↓</td>
</tr>
<tr>
<td>Cost per mile</td>
<td>↓</td>
</tr>
<tr>
<td>Vehicle Life-cycle Costs</td>
<td>↓</td>
</tr>
<tr>
<td>Mean distance between failures/road calls</td>
<td>↑</td>
</tr>
<tr>
<td>Repair efficiency</td>
<td>↑</td>
</tr>
<tr>
<td>Insourcing</td>
<td>↑</td>
</tr>
</tbody>
</table>
Effects of Training on Productivity

Keystone Transit Career Ladder Partnership

Statewide Training Survey - Workers

Training helps augment individual worker skills. Overall efficiency and productivity improve dramatically.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have been able to work more effectively since I attended Keystone training.</td>
<td>86.5%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Training helps problem resolution at the workplace.</td>
<td>93.6%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Since Keystone, workers here have become more productive.</td>
<td>73.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Training helps build mutual trust between supervisors &amp; workers on the job.</td>
<td>79.1%</td>
<td>3.2%</td>
</tr>
</tbody>
</table>
### Knowledge Test Score Improvements

**Project Empire Transit Career Ladder Partnership**

Partnership: CDTA & ATU Local 1321

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#### Albany Pre-training and Post-training Test Scores

<table>
<thead>
<tr>
<th>Classes</th>
<th>Pre-test Score</th>
<th>Post-test Score</th>
<th>Percent Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adv. Elec./MPX</td>
<td>70%</td>
<td>94%</td>
<td>34%</td>
</tr>
<tr>
<td>Air/Air Brakes</td>
<td>67%</td>
<td>84%</td>
<td>26%</td>
</tr>
<tr>
<td>Elec. I</td>
<td>47%</td>
<td>81%</td>
<td>74%</td>
</tr>
<tr>
<td>Engine I</td>
<td>52%</td>
<td>95%</td>
<td>83%</td>
</tr>
<tr>
<td>HVAC</td>
<td>77%</td>
<td>91%</td>
<td>18%</td>
</tr>
<tr>
<td>Hydraulics</td>
<td>49%</td>
<td>84%</td>
<td>71%</td>
</tr>
<tr>
<td>PM</td>
<td>92%</td>
<td>93%</td>
<td>1%</td>
</tr>
<tr>
<td>Trans.</td>
<td>63%</td>
<td>88%</td>
<td>40%</td>
</tr>
</tbody>
</table>

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Knowledge Test Score Improvements:

Project Empire Transit Career Ladder Partnership

Partnership: CDTA & ATU Local 1321

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**Classes**

- Adv. Elec./MPX
- Air/Air Brakes
- Elec. I
- Engine I
- HVAC
- Hydraulics
- PM
- Trans.
Keystone Career Partnership has been a God-sent program to the smaller Class 4 and Class 5 properties across the Commonwealth. The Authority is experiencing fewer A/C failures and our repairs are lasting longer through multiple cooling seasons. A side bar to fewer A/C failures is fewer customer complaints. The mechanics that have attended classes come back to the Authority with their “batteries charged” and ready to go. They feel good about themselves, their jobs and bring back a wealth of knowledge garnered from the training session they attended. The entire Keystone program has been a “win-win” program for ATA.

Charlie Shilk, Director of Maintenance
Johnsonburg Area Transportation Authority
CDTA System-wide Monthly Average MDBF, Pre and Post Training

Nov 06 - Jul 07 (Pre-training) 3,389 Miles
Nov 07 - Jul 08 (Post-training) 4,027 Miles
**Reduction in Bus Defects by Training Area**

**Defects per Bus**

<table>
<thead>
<tr>
<th>Defect Category</th>
<th>2007</th>
<th>2008</th>
<th>Percent Reduction in Defects - Average 46%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine (5 classes)</td>
<td>2.64</td>
<td>1.49</td>
<td>44%</td>
</tr>
<tr>
<td>Transmission (1 class)</td>
<td>0.27</td>
<td>0.16</td>
<td>41%</td>
</tr>
<tr>
<td>Electrical (4 classes)</td>
<td>0.06</td>
<td>0.04</td>
<td>33%</td>
</tr>
<tr>
<td>Air/Brake (2 classes)</td>
<td>0.5</td>
<td>0.3</td>
<td>40%</td>
</tr>
<tr>
<td>Climate Control (1 class)</td>
<td>0.07</td>
<td>0.03</td>
<td>57%</td>
</tr>
<tr>
<td>Suspension/Steering (1 class)</td>
<td>0.29</td>
<td>0.12</td>
<td>59%</td>
</tr>
</tbody>
</table>
CDTA has successfully reduced its bus spare ratio from close to 20 percent in FY 07 to 15 percent in FY 08.
100 percent of transmission, brake and injector repair jobs have been insourced since Project Empire began.
Transit Partnership Training: Metrics of Success

Transportation Learning Center

Expanded Edition
National Resources

• National Training Standards
  • Bus operators
  • Bus maintenance

• Sharing of Training and Resources
  • TransitTraining.net – sharing training materials
  • Regional Distance Learning – instructor-led e-learning and local mentoring
  • Online Learning Videos

• Local Career Pathways and CTE Connections
1. Given the workforce challenges you have shared earlier, what initiatives has your agency or agencies in your region implemented? What are the outcomes?

2. Does your agency conduct skills gap analysis to determine training needs? If yes, what are the results and how did you use them? If not, is this something you’d like to explore in the future?

3. Does your agency have a formal or informal mentorship program for frontline workers?

4. Do agencies in your region (small or large) share training resources? Instructors, materials, equipment, exchange of knowledge and information, etc.?

5. Would your agency benefit from regional distance learning or a combination of learning videos and online classes for your mechanics? What would be the most desirable format? What are some priority training topics?
Questions? Comments?

Contact the Transportation Learning Center

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