



Hands-On Instructional Training for Transit Trainers

December 13, 2022





Workshop Agenda



- Welcome and Introductions
- Overview to Adult Learning Theory and Hands-on Instruction
- Augmented Reality Welding System
- Lesson Planning and Assessments
- Hands-on Demonstration
- Q&A



Introductions



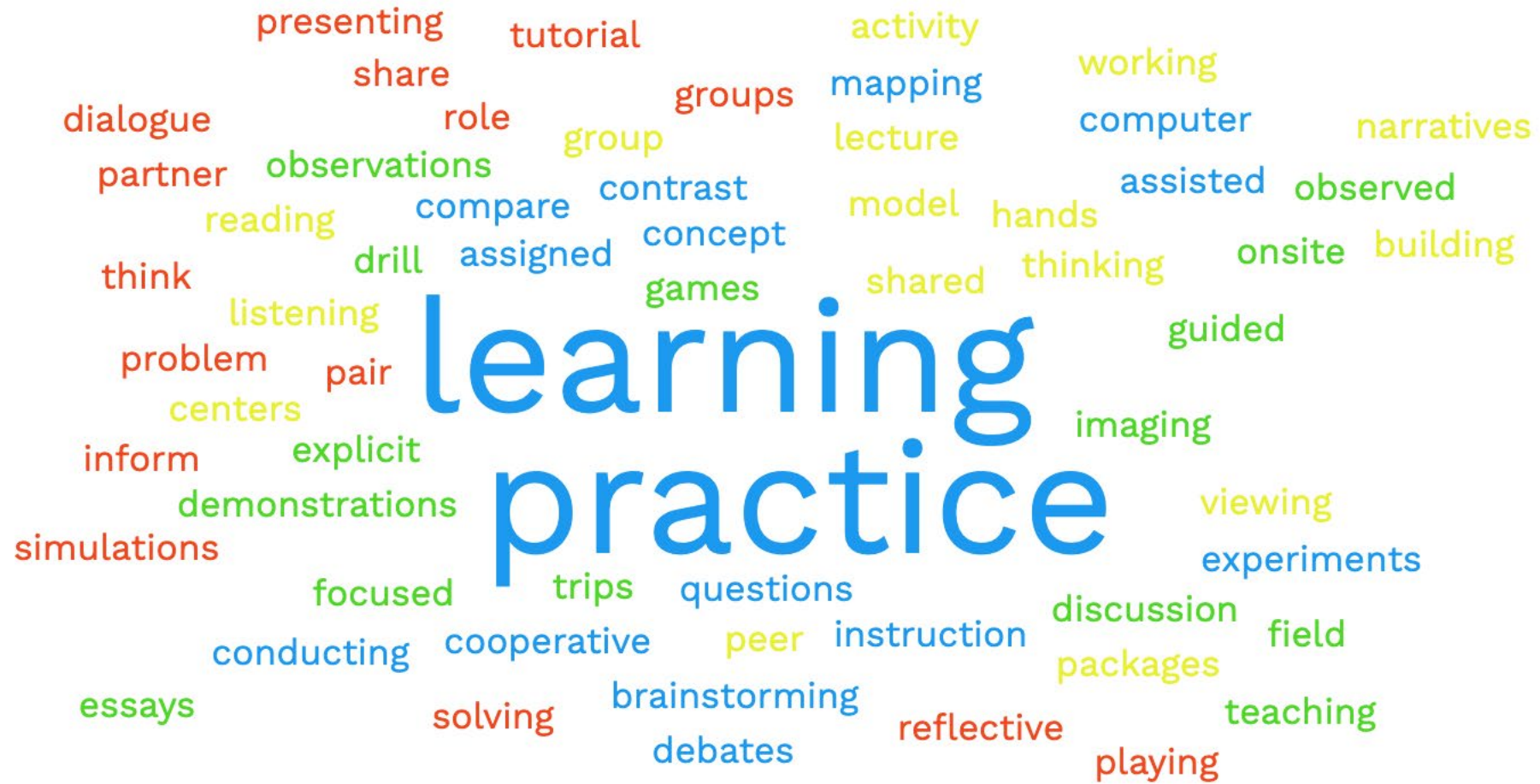
Ed Hogan
Southeastern Pennsylvania
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Adult Learning Theory and Assumptions

- Learner Centered vs Content Centered
- Characteristics of (and Assumptions about) Adult Learners
 - **Self Motivated**
 - **Purposeful**
 - Logical and Problem-centered
 - **Experienced and Knowledgeable**
 - **Want to Participate**
 - Repetition and Practice are Valuable

May lack confidence in a classroom setting

Multiple demands



Hands On Instruction

A Powerful Learning Tool for Transit

- **Relevant to the Transit Industry?**
- **Principles**
 - Adults learn best with practice
 - Mimics real-world experience
 - Provides actual work environments (on-the-job)
- **Applications**
 - Skills and Performance Assessments
 - Technical
 - Onsite
 - Safety
 - Refresher



Hands On: Pros and Cons

Strengths:

- Improved Learning Effectiveness
- Increased Skills Retention

Weaknesses:

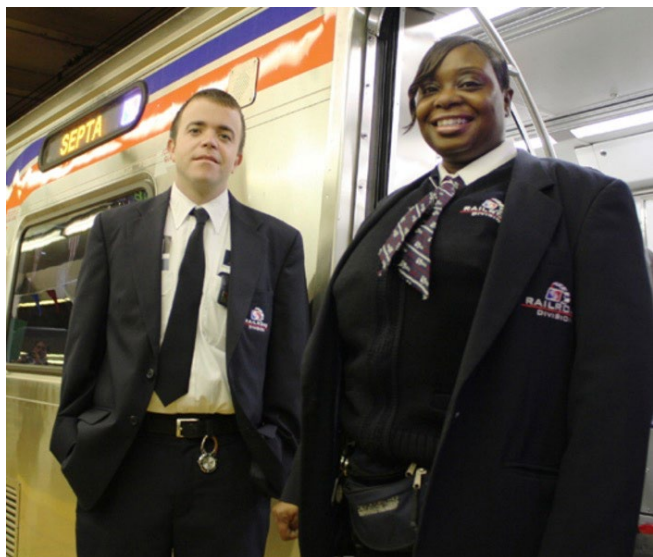
- Time consuming/Time in the field
- Space Intensive - Equipment & Mock-ups

Overall Benefits



Hands on Delivery Instruction Flow

1. Instructor Demonstrates
2. Learner Describes what they saw
3. Co-learning - Opportunity for Q&A
4. Learner performs with guidance
5. Instructor Opportunity for feedback
6. Student - Practice, practice, practice
7. Co-learning - On the Job evaluation and support
8. Constructive feedback is the key to being effective!



Grace Kuka
Ed Hogan

Augmented Reality Welding System

- Miller *AugmentedArc*
- Shortage of 275,000 welders by 2024
- Average age of welder today is 55
- *AugmentedArc* implements real-time process correction and keeps track of employee progression. [Video](#)
- No consumables
- Safe training environment





AugmentedArc®

AUGMENTED REALITY WELDING SYSTEM

2018 Gateway Technical College Study Overview

20 students with a novice level of welding knowledge participated in the study over one semester.
They were split into two groups each using a different method of training:
Traditional welding training only vs. a blend of AugmentedArc + traditional training.

22

Live Welding
Exercises

JOINTS



BEAD ON PLATE



T



LAP



BUTT

POSITIONS



FLAT



HORIZONTAL



VERTICAL



OVERHEAD



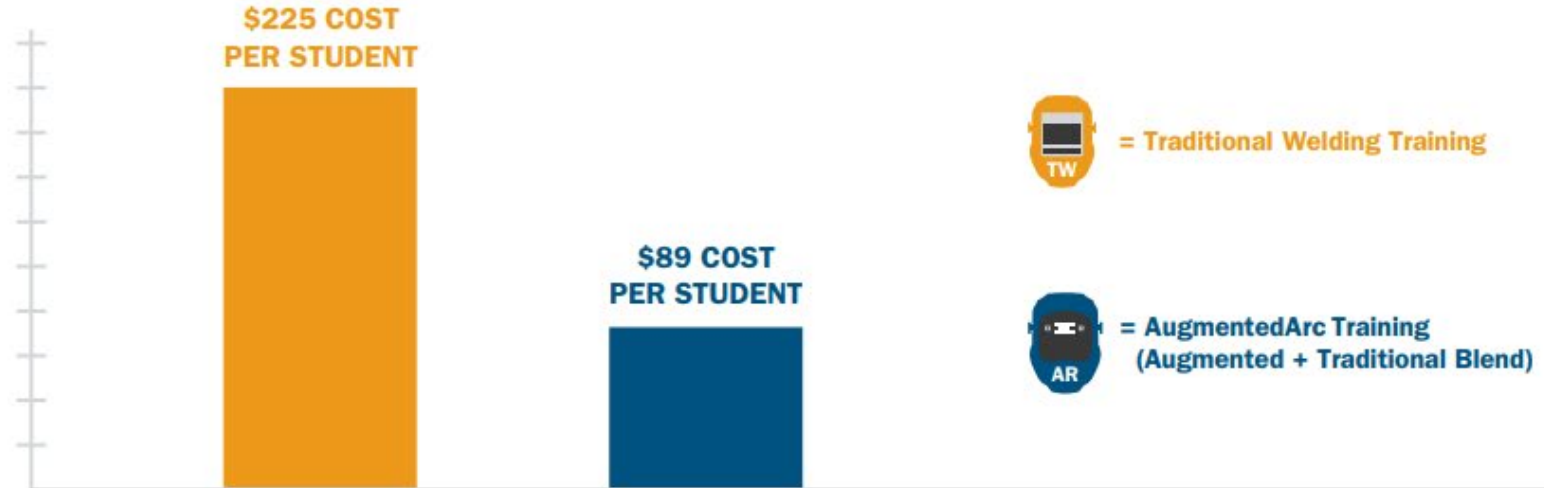
Benefits experienced by the AugmentedArc Training Group

COST SAVINGS



60% reduction in material waste and expense on coupons

TOTAL COUPON COST PER SEMESTER

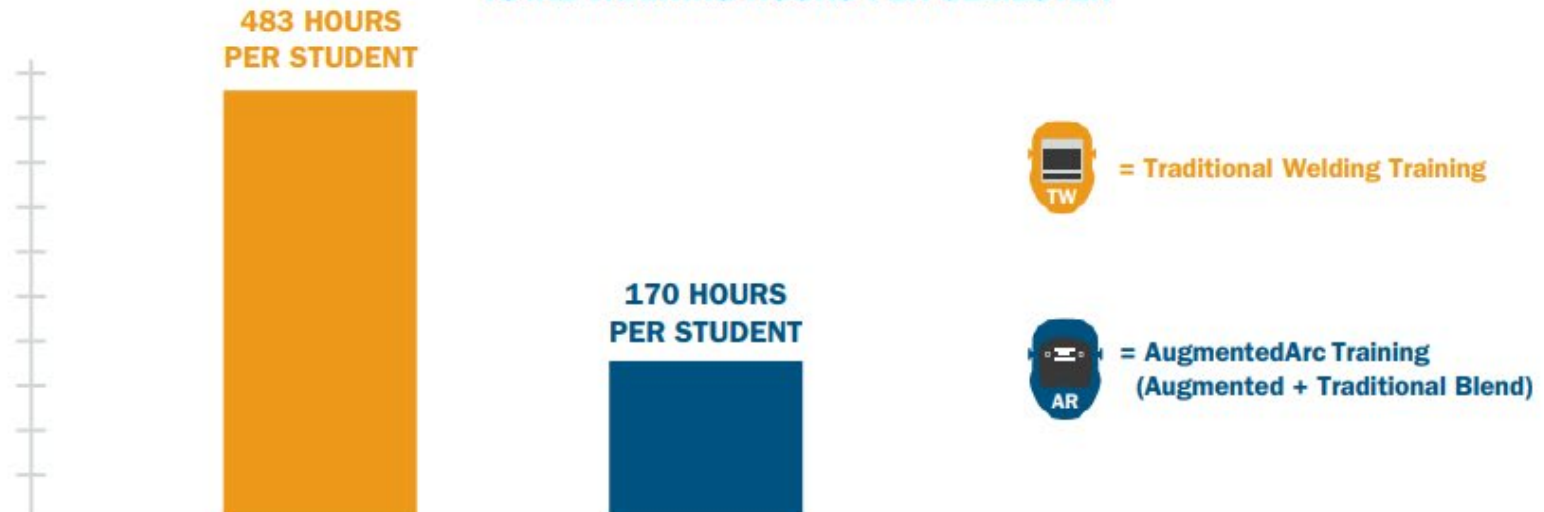


TIME SAVINGS



65% fewer training hours for the AugmentedArc Group

TOTAL TRAINING HOURS PER SEMESTER





Lesson Planning

An Instructor's Road Map

- **Objectives**
- **Activities**
- **Content Delivered**
- **Review**
- **Assessment of Learning**



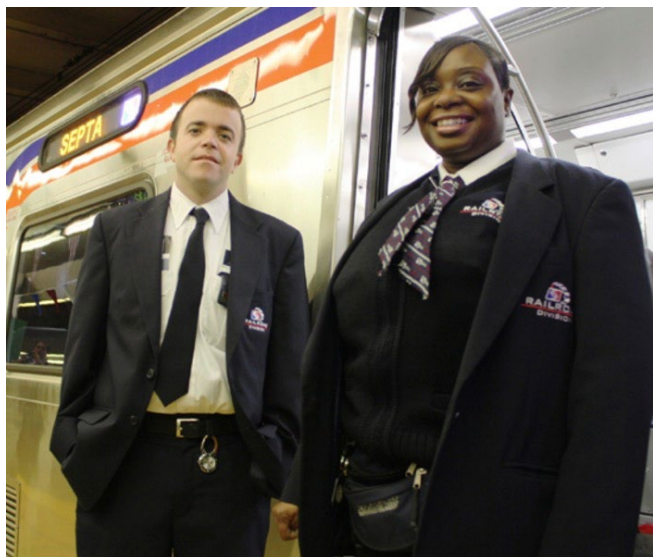
Assessments

Timing:

- Before Training and During
- After Training

Types of Assessments:

- Constructed
- Selected
- Performance



Grace Kuka
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Hands-on Learning Activity Template		
Topic:		
Hands on Learning Objective(s):		
Courseware Reference:		
Preparation:		
Tools, Equipment and Materials Required (including PPEs):		
Instructional Method		
<input type="checkbox"/> Role Play	<input type="checkbox"/> Demonstration	<input type="checkbox"/> Critical Incident
<input type="checkbox"/> Drills	<input type="checkbox"/> Simulations	<input type="checkbox"/> Case Study
Application Feedback Level		
<input type="checkbox"/> Full Class	<input type="checkbox"/> Small Group	<input type="checkbox"/> Individual
<p>The Instructor will perform the following task lists and then ask participants to perform the tasks. Task Steps:</p> <ol style="list-style-type: none">1.2.3.4.5.6.7.8.9.10.		
Maximum Time Allowed:		
Other Notes:		

Takeaways: Lesson Plan and Assessment

Hands-on Learning Assessment Form Template			
Participant Name			
Date of Assessment			
Topic:			
Hands on Learning Objective(s):			
Courseware Reference:			
Task Steps		S	U
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
Comments:			





Let's Practice!

PPE Tabletop Activity

- Choose 1 instructor per table
- 2 minutes to prepare
- Instruct table peers how to put on and take off gloves
- Use templates as needed





Q&A



THANK YOU!

