Transforming Small Arms Maintenance Training Through Virtual Task Trainers

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Our new soldiers coming in are not familiar with weapons. That may be good from a society point of view, but not from an Army point of View.

General William S. Wallace,
Commanding General US Army Training and Doctrine Command
Agenda

- Environment
- Current Methods of Training
- Virtual Task Trainers
- Case Studies
- Summary
Environmental Factors

- High Operational Tempo
- Immediate Fielding of Equipment
- Reduced Residency Time
- Soldiers Tasked with New Duties
- Systems & Weapons used in harsh environments beyond their planned retirement
## Methods of Hard Skills Training

<table>
<thead>
<tr>
<th>Method</th>
<th>Low cost</th>
<th>Easy to create and update</th>
<th>Anytime, anywhere access</th>
<th>High learning effectiveness</th>
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</thead>
<tbody>
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<td>Interactive 3D Simulations</td>
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</tbody>
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- ✔️: Advantage
- ✗: Disadvantage
- ✗: Advantage
Learning Theory

Memory and Learning

- 10% of what we read
- 20% of what we hear
- 30% of what we see
- 50% of what we see & hear
- 70% of what we discuss
- 80% of what we experience
- 95% of what we teach

"conventional" learning

active learning

Source: Airbus / Journal for Civil Aviation Training (Issue 1 / 2006)
Virtual Task Trainer

- Virtual 3D equipment simulations to:
  - Familiarize
  - Acquire
  - Practice
  - Test and Validate

- ROI: Train 60% Faster
Benefits of Virtual Task Trainers

- Let students learn from their mistakes, **safely**
- Let training take place **without the expense** of equipment
- Train **more efficiently**
- **Reduce wear and tear** on equipment
- Enable **task-based, on-the-job training**
Supporting the Lifelong Learning Continuum

Source: VERTEX Solutions, Inc. 2002
Weapons Virtual Task Trainer for the US Army National Guard

- **Challenge:**
  - Difficult for instructors to demonstrate assembly and disassembly procedures

- **Objective:**
  - Improve classroom and self-paced study of individual arms

- **Results:**
  - Increased knowledge of maintenance and assembly/disassembly procedures of small arms
M224 Mortar Virtual Task Trainer for the US Marine Corps

- **Challenge:**
  - Inability for “dummy” weapon trainers to show operation of internal parts
  - High breakage rates

- **Objective:**
  - Effectively train students on equipment internals and interactions
  - Reduce breakage and associated costs

- **Results:**
  - Improved training, including internals
  - Reduced equipment replacement costs
Summary

- Virtual task trainers offer numerous benefits:
  - Lets training take place even if there is no equipment available
  - More effective for task-based learning objectives
  - Operationally deployable
  - Very suitable for training on internal components
Thank You. Questions?

- For more information:
  - Email Troy Welch: twelch@ngrain.com
  - Go to www.ngrain.com for case studies