Combat Hunter Curriculum Design

Applying HSI principles to Military Curricula Design: A Combat Hunter Use-Case

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Applying HSI Principles to Military Curricula Design
HSI* Principles?

Focus on the human element

- Human-centered design focus
- Top-down, rather than bottom-up
- Quantification of people variables
- Multidimensional views of design
- Integration of people, systems, and technology
- Considers cognitive, physical, and sensory system facets

*AKA Human Factors Integration (HFI), Army’s Manpower and Personnel Integration (MANPRINT), Navy’s Hardware/Manpower Integration (HARDMAN), USAF’s Integrated Manpower, Personnel, and Comprehensive Training & Safety (IMPACT), etc.

“dramatic organizational benefits are *most likely* to be achieved through focus on people”

(Booher, 2003, p. 2)
HSI* Principles?

In practice, is usually...

• Operational systems focus
• Applied to the highest system level
• Applied to a technology system
  — Emphasizes human–machine interfaces
  — Emphasizes systems affordability
  — Emphasizes tradeoffs (e.g., manpower vs. design vs. materiel)

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HSI* Principles?

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Could do a better job, especially to meet Training Transformation Implementation goals, e.g., “Prepare forces for new warfighting concepts and capabilities,” or “Achieve unity of effort in training across Services, agencies, and organizations.”

DoD Training Transformation Implementation Plan FY2006-FY2011

*AKA Human Factors Integration (HFI), Army’s MANPRINT, Navy’s HARDMAN, USAF’s IMPACT, etc.
HSI* Principles?

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**SYSTEM**

- Manpower
- Personnel
- Training
- Human Factors
- System Safety
- Survivability
- Health Hazards

**Joint Aptitudes**
(Joint Doctrine, Education and Training; UJTL)

**Service Aptitudes**
(Service Task Lists)

**Warfighter’s Career**
(Duty Area Standards)

**Task Training**
(Individual Training Standards)

**Training Instance**
(POI)
HSI* Principles?

- Human-centered design focus on the curriculum
- Top-down, design of the curriculum
- Quantification of the overall task performance
- Multidimensional views of design
- Integration of people, systems, and technology
- Considers cognitive, physical, and sensory system facets

*AKA Human Factors Integration (HFI), Army’s Manpower and Personnel Integration (MANPRINT), Navy’s Hardware/Manpower Integration (HARDMAN), USAF’s Integrated Manpower, Personnel, and Comprehensive Training & Safety (IMPACT), etc.
HSI + ISD = Curriculum Design

Functional Task

Training Instance

Basic

Post-Basic

Pre-Deployment

Inter-Deployment

Strategic

Operational

Tactical

Manpower (Staff)

Personnel (Staff Aptitude)

Training (Staff Training)

HFE (Human Factors, Macro/Micro)

Operational Performance (Effectiveness)

Efficiency (Time)

Materiel (Training Systems/LVC)

Concurrency (Ongoing Analysis)
Our Process (Roughly!)

- A: Analyze
- D: Design
- D: Develop
- I: Implement
- E: Evaluate

Baseline

Needs & Requirements

Optimize Status Quo

Training Transformation Needs & Requirements

Analysis: Id Targets for Improvement

Acquire, integrate, or develop solutions to improve key gaps (R&D)

Trade-Off Analysis & Optimization Plan

Optimize Training Transformation
Combat Hunter
(Curriculum HSI Example)
**Goal of Combat Hunter**

**WHAT?** = Give our warfighters/law enforcers the ability to make decisions (and act) *left-of bang*

The Combat Hunter  
*Proactive*

**Typical tactics**  
*Reactive*

**WHAT ELSE?** = Give warfighters/law enforcers the ability to analyze situations *left-of-the-next-bang*: To track down insurgents and fugitives, find terrorist and criminal networks, and prevent future threats
Limits of Combat Hunter

• Limited access to the training
• Limited course throughput
• Insufficient support for train-the-trainer
• Insufficient take-home materials
• Lacking performance measures
• Limited understanding of skills by leadership
Border Hunter Endeavor
Border Hunter Exercise/Study

Border Hunter Details

• One-off, “graduate level” version of Combat Hunter
• Requested by US Northern Command
• Conducted by Joint Task Force North (JTF–N)
• Researched by US Joint Forces Command (USJFCOM)

Research Goals

1. Capture the course content and package it for greater deployability
2. Assess the instructional outcomes of the course
3. Explicitly articulate the linkages between the course content and underlying scientific principles
5–25 April 2010
@ Ft. Bliss, TX
Instructors

David Scott-Donelan + 5

Greg Williams + 8
43 Soldiers/Law Enforcement agents as trainees

Trainees
22 Soldiers as role-players (+30 pros)
13 researchers in attendance
2 (two-man) video crews + 1 director of videography
Conceptual Research Design

Skills Taxonomy
- HIGHER-ORDER SKILLS
  - Metacognition
  - OPS Competence
  - Schema
  - Processes
  - Framework
  - Vocabulary
- LOWER-ORDER SKILLS
  - Kirkpatrick's Levels of Evaluation

Study 1
- 1 Reactions
- 2 Learning
- 3 Transfer
- 4 Impact

Study 2

Study 3

Kirkpatrick's Levels of Evaluation: 1 Reactions, 2 Learning, 3 Transfer, 4 Impact.
Actual Research Design

Study 1: Field Study
43 Trainees
- Demographics survey
- Cognitive attributes battery
- Declarative knowledge
- Photo vignettes
- Situated judgment
- Perceptual aptitude
- Level of awareness (HR)
- Behavioral observation
- Reactions surveys

22 Role-Players
- Demographics survey
- Declarative knowledge
- Photo vignettes
- Reactions surveys

14 Instructors (6 & 9)
- Cognitive attributes battery
- CTA / Interviews

Study 2: Longitudinal
12 Trainees
- Declarative knowledge
- Photo vignettes
- Conceptual knowledge essay
- Reactions surveys

Repeated measures (3) over a period of 2+ months
(April 2010 – July 2010)

Study 3: Impact
40 Non-Trainees
- Demographics survey
- Declarative knowledge
- Photo vignettes
- Conceptual knowledge essay

Control = Non-peers
Experimental = Peers

Repeated measures (2) over a period of 2 months
(May 2010 – July 2010)
Actual Research Design

**Study 1: Field Study**

- Very **positive reactions** from trainees and role-players;
- **evidence of learning** in both groups
- Development of **expert mental model**

**Study 2: Longitudinal**

- Slight trend, but **non-significant knowledge decay** over time, Continued **positive regard** for the training; report of **use of skills** on the job

**Study 3: Impact**

- Experimental group shows greater knowledge of Border Hunter content than Control group; **evidence of informal organizational transfer of knowledge**
Research Findings

Border Hunter Training Technical Report

This integrated technical report includes sections on course content and execution, experimentation, results, and recommendations.

Includes results from the Field Study (Study 1), Longitudinal Study (Study 2), and Organizational Transfer Study (Study 3).
Deliverables – POI

“CODIAC” Program of Instruction

The team developed high-level POI for *Combat Observation and Decision-Making in Irregular and Ambiguous Conflicts* (CODIAC) that includes a detailed syllabus and nine instructional units, based upon observation and analysis of the Border Hunter instruction.

156 pages long
Deliverables – Resources

CODIAC POI Resource DVD

Supplementary materials are provided for the POI on an accompanying resource DVD. This DVD includes edited video clips obtained during the Border Hunter instruction and associated with specific modules in the POI.

135 total resources, including 77 videos
Deliverables – Pocket Guide

CODIAC Student “Pocket Guide”

Key CODIAC instructional points are provided in a cargo-pouch friendly “pocket guide.” Content and organization of the student pocket guide corresponds with the CODIAC POI.

104 pages long
Next Steps
Our Process (Next Steps)

A Analyze
D Design
D Develop
I Implement
E Evaluate

Baseline

Needs & Requirements

Optimize Status Quo

Training Transformation Needs & Requirements

Analysis: Id Targets for Improvement
Acquire, integrate, or develop solutions to improve key gaps (R&D)

Trade-Off Analysis & Optimization Plan

Optimize Training Transformation
Next Steps (FY11)

Optimize Status Quo

- Measure 10-day course against 20-day outcomes
- Analyze USMC POI vs. CODIAC POI

Training Transformation Needs & Requirements

- Analyze range of CODIAC skills, beyond those identified in CH/BH
- Determine current Warfighter CODIAC needs across ROMO/Cycle
- Analyze current training to id gaps in CODIAC training
- Analyze current training technologies to id available tools
Questions or Comments?

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“We must transform not only the capabilities at our disposal, but also the way we think, the way we train, the way we exercise, and the way we fight.”
– (then) Secretary Rumsfeld, 2006