1   AIM

- Advanced

- Instructional

- Methods

2

3   Objectives?

- Training Objectives>>>>Learning Objectives>>>Operational Objectives

- Point Of Aim: What is our intended target? Where's the bullseye?

- Is it the right target??   How do we know?

- Do we know the best way to get there or can we start there and work backwards. (Pre-mortem, Deconstructing and Reverse Engineering)

- Are we following the data and the research?

  - Example: What have we learned from the "Naive shooter study" (Lewinski et.al, 2015)? If we have learned something, did we apply it into our training development?

- WAI/WAD in the Human Organizational Performance world (HOP)

4   Information Processing Approach

-

- We are information processing beings, acting and reacting to external and internal stimuli

-

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- (A. Johnson et al., 2016)

5   Jay McTighe & Dr. Grant Wiggins "UbD"

- 1. Plan Backward from Authentic Performance:

- -Designing curriculum "backwards" with the end in mind

- -Helps us identify the big question of WHY are we doing what we are doing

- -Knowing Vs. Understanding : Transfer is the goal

- 2. Feedback is Key to Successful Learning and Performance:

- -Specific, understandable & timely

- 3. Empathize with Learner:

- -Helps to avoid the "Expert Blind Spot", what is obvious to us is not to the learner

-

6 RDAT

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- Research Derived Actionable Tools

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- "...there is a knowledge gap between what is known and what is acted upon. There is growing interest in addressing this gap, and a simple starting point is the need to communicate research findings appropriately to audiences that are in a position to act."

- (Hampshaw et al., 2018)

7

8 THIS IS

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- My work at utilizing the most current research and seminal studies in applying strategies to optimize Long term learning, retention and transfer into the Police Training experience

-

- Principles are not specific to LEO training

9 Key Concept

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- APPLICATION

10 Learning Vs. Performance

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- Dr. Robert Bjork UCLA

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15 Dr. Robert A. Bjork & Dr. Daniel Druckman, (1994)

- "Organizations do not need to stumble again and again in the face of constant change. They can learn about proven training techniques. They can hire trainers who have developed the skills for getting results. They can make a commitment to training rather than endlessly searching for the 'perfect hire.' Individual skills may not be innate, but the ability of humans to learn and change is. If organizations can learn to take full advantage of that universal ability, change will be their ally rather than their foe"

16 Myths

-
-
  - Performance = Learning
  - Q: How do we measure performance?
  - Q: How do we measure learning?
  - Q: Define Learning?
  -

17 Myths

- We can feel how we learn best
  -
    - This effects how we design our trainings
  -
    - This also effects how we design our own study & practice schedules
-

18 Myths

-
- Current (traditional) curricula designs optimize our ability to learn, retain, recall and transfer skills into real world application

19 Application

- How do we take what the research has given us and apply it into our learning and instruction?

-
  - Identify your Operational Objectives...not training objectives.

  -

  - Identify your parameters, mandates, challenges, scheduling flexibility...find out what boundaries you must work within, then start building.

20

  - Yeah But...

21

22 **GIVEN: Legit Gripes...for the Record**

  -

  -

  - It's challenging

  - Cost, Time, Facilities

  - Lack of support up and down the chain

  - Why? What we're doing is working...isn't it?

  - Mandates: Agency, State, Federal, POST etc...

  - Tradition?   *

23 **Tradition?**

  - Are your programs rooted in anachronisms?

  - What parts of that system still serve us well?

24 INSTRUCTORS

- Not enough
- Set in ways
- Apathy/Frustration
- More work
- Part-time
- Non-believers
- Integrating skill issues
- Misapplication of science
- Untrained/Competency *

25 INSTRUCTORS

- Self-Driven
- Autonomous
- Team driven
- Committed to improvement
- Growth mindset regardless of challenges
- Expertise in their domain???
- True Professionals! *

26

- SO WHAT?

-
  - LET'S DO WHAT WE CAN
  - WITH WHAT WE HAVE
  - AND FOCUS ON GROWTH

27 Understanding the Basics

- Learning Vs. Performance
  -
    - How we think we learn best, is not how we learn best
    - Blocked or Massed vs. Interleaved
    - Meta-analysis...preferred blocked/massed.   (Bjork & Bjork)
  -
- Optimizing LTL, retention, recall and transfer through strategies that are empirically supported.

28 Two Truths in the LEO Culture:

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- We hate the way things are.
-
- But more importantly...
-
- We can't stand change

29 Application

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- "…perhaps most crucial is, however, the Human Factor. Different viewpoints on proposed national curricula are of course important, but on the other side, they cause serious delay in implementation. A better approach would be to start the implementation once agreed upon by the respective societies, and sharpen the curricula using careful and timely evaluation"
  -
    - J. Borleffs, (2011), Medical Teacher, Implementation of simulation in surgical practice: Minimally invasive surgery has taken the lead: The Dutch experience.
-

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31

- Operational Objective #1
-
- Optimize Long Term Learning & Retention

32 Desirable Difficulties Vs. Illusions of Learning

- Retrieval Fluency: Feeling that information is easy to recall because it flows in review
-
  - Highlighting text
  - Study guides
  - Notes
  - These are all somewhat helpful in studying information however it is very common for us to re-read all of the above and and the fluency of the review feels like we are learning. The Fluency Effect

- (Bjork, Dunlosky, & Kornell, 2012)

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38 **Block and Silo**
Can we undo what we have done?

- What is it?

- Block or Massed Practice

- Practicing a single skill over and over. Repetition is the key element. Variance is minimized.

- Examples in sports: Driving range, foul shots, slap-shots from the point

- Examples in LEO Training: draw stroke, head shots, DT repetitive drills

-

-

39 **SILO Training**

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- Compartmentalized

-

- Organized

-

- Safely separated from interference

-

- Examples: FA, DT, Communication, EMS…trained without integration.

40 The Deadly Assumption

-

- When the time comes, we will be able to pull it all together irrespective of the spacial and temporal challenges

- Considering all of the other human factors

- In times of crisis

-

41 Untrained Superheroes

- With Unrealistic Expectations of Superhuman, Superhero-like Performance

-

- Without Superhuman ways to accomplish them.

42

43 INTERLEAVING

- Mixes, or interleaves, practice on several skills together

- Example

- Blocked: AAAAAAAABBBBBBBBBCCCCCCCCCDDDD

- Interleaved: ABCADBCACADBACBACACBDCCAABDBCA

-

- 7 Weeks:

- ABABCD BACDAB ABCDBA BACDAB CDCDC DACDC DCBAC

44 CONTEXTUAL INTERFERENCE EFFECT

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- "The effect on learning of the degree of functional interference in a practice situation when several tasks must be learned and are practiced together"

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- (Magill and Hall, 1990)

45

46 SPACING

- Spaced or Distributed Practice: Much more effective at long-term learning & retention

  -

  - Slower acquisition than massed

  -

  - Feels less productive to the learner

  -

  - Lower performance scores given after practice

-
  - Greater long-term learning and performance over time, forces the learner to recall what was previously learned, reinforcing the connection to the material

  -

  - Key is to "Do a little, a lot". (Chad Lyman C4C Concepts)

47 SPACING vs MASSED

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- Massed Practice: Continual practice without rest or interruption:

  -

  - Higher performance on immediate testing

  -

  - Feels like learning has occurred

  -

  - Performance drops significantly over a short time period

48

49 Direct Instruction

- Didactic: manner of instruction in which information is presented directly from instructor to learner.

-

- (We're doing it right now)

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- Obvious Limitations?

-

- Can we do more to enhance our Direct Instructional Time?

50 Priming

- /prime/ present participle Priming

-

- Prior to Direct Instruction

- Make (something) ready for use

- Exposure to an earlier stimulus that can influence the response to a later stimulus. Simply put, it's Pre-exposure

51 Methods of Priming:

- Classroom Discussion

- Strategic use of discretionary time (Vid: 15 min morning)

- Pre-Testing (M/C & T/F questions) (1)

- As contextual Interference during other educational or physical blocks

- Getting our moodle on! LMS uses: Definitions, Videos, Research, Articles, Interviews, Webinars

52

53 Boosting

- /boost/ present participle boosting

-

- -Help or encourage (something) to increase or improve, push from below, assist or amplify.
- -Post Direct Instruction
- -Needs to be continual to be effective*

54 Major shortfall in most traditional Academy structure…

-
- We teach it
- We test it
- We rarely revisit it
- "One and Done"
-

55 Methods of Boosting:

- Retrieval Practice (testing effect)
- Table-top scenarios & Group work
- Video Review & Critique
- Q&A Forums
- Learner Presentations (short)
- moodle/LMS   (Any learning management system)
- Synchronous & Asynchronous Individual & Group work

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58

- Priming
- Priming & Integration
- Direct Instruction
- Boosting
- +Boosting + Prac/Apps
- Direct Application Skill Integration (SBT/RBT/Hi-Fi)
- Boosting + Integration

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60   moodlin' !!

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90   **Scenario Based Training**

- SRPA

- From 16 hrs to…

- 120 hrs

- Plus paperwork

- Does NOT include online and in-class

91

- Operational Objective #2

-

- Instructor Efficacy

-

-

- "A good teacher will be prepared but not pre-planned."

Decision Making

- -SHADOWBOX/John Schmitt

-

- -Decision Making Scenarios

- -Critical Decision Points

- -Decision Thresholds (timed)

- Operational Objective #2

-

- Skill Transfer

92 TRANSFER

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- "You don't know anything until you hit the street!"

93 TRANSFER

- The ability to APPLY what we have learned into real world settings.

-

- Issues caused by "Silo" in the Block & Silo.

- We have wrongly assumed that the connection will be made.

- We need to train the connective tissue, not just the skill or subject.

- Focusing on SBT so the learner is training what to look for, where to look for it and when to look for it.

- Mindful Feedback strategies must be practiced by Instructors/Mentors

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- "The ability to transfer is arguably the long-term aim of all education. You truly understand and excel when you can take what you have learned in one way or context and use it in another, on your own."

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-            –-McTighe and Wiggins (Understanding By Design UbD)

95

- The Key Element to Learning Transfer

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- Strategically Designed and Scheduled Scenario Based Training

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98 **CONNECTIVE TISSUE**

99 **Great ingredients do not make great chili unless we focus on how to put them together.**

100

101 **Scenario Based Training**

-

- HOW OFTEN?

- HOW MUCH?

- DESIGN & DELIVERY?

- FEEDBACK?

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106 **Feedback During Motor Skill Acquisition: Are we mindful about how we structure this?**

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- Intrinsic Feedback (Inherent Feedback)

  -

  - Closed Loop: Time for adjustment during task (Eg. Catching a fly ball)

  -

  - Open Loop: Dynamic and changing, no time for feedback (Swing a bat)

  -

  - Changes as competency improves

107 **Feedback (Motor skills)**

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- Augmented Feedback (Extrinsic Feedback)

  -

  - Knowledge of Performance (KP): (Kinematics) regarding movement and movement patterns

  -

  - Knowledge of Results (KR): After movement, (usually verbal) regarding success on expected outcome

108

109 **Feedback Specificity**
Finding the Balance

- Augmented and positive in early stages, then decreasing and delayed.

- Augmented, early positive and frequent feedback may show positive results but leads to Guidance issues.

- Decreased feedback, Delayed & Intermittent feedback, Feedback Summaries all add desirable difficulties and lower performance during acquisition phase however, when training wheels are removed, the learners perform better.

  - GPS Effect (guidance)

110

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- "Frequent and immediate feedback, which benefits practice performance, can undermine learning as assessed on transfer tasks"

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- (Goodman, 1998; Schmidt, 1991)

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113

114 **ATTENTION**

- Information Processing Beings...

- Key to Great Performance

- How much do we have?

- How do make up for it?

115 Selective Attention

- Task Switching

- Task Stacking

- Performing Tasks at the level of Automaticity

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118 Focus of Attention for Optimal Performance in times of Crisis:

- External

- Narrow

119 ATTENTION

-
  - Think Box vs. Play Box

  - or

  - Training Vs. Trusting mindset

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- Sensation, Attention, Perception, Cognition, Decision (action) Memory... Feedback

120

121 HUMAN ERROR

- Information Processing and the Degree of Conscious Control of Actions

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- Skill based level

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- Rule based level

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- Knowledge based level

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- (Rasmussen, J. Reason)

- Understanding the nature of human error is critical not only in the design of our training modules but also in the ability to give optimal effective feedback

122 Skill Based Processing/Error

- Smooth Execution

- Highly Practiced skills

- Automaticity

- Routine Tasks

- Little if any conscious monitoring

-
  - Driving Example: Steering, Braking, Accelerating
  - Q: Give an example in your domain?

123 Rule Based Processing/Error

- Intermediate Cognitive Control

-

- Pre-packaged units of behavior when appropriate rule is applied

-

- Between Skill and Knowledge Based

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- Driving Example: Changing Lanes, Passing a vehicle in traffic
- Q: Give an example in your domain?

-

124 Knowledge Based Processing/Error

- Completely Conscious level
- Complex and Novel Tasks
- High degree of Mental Effort
- Attention Focused on Problem Solving
- Likely Slow Response

- Driving Example: Complex Parallel parking in high traffic, Roundabout, Congested highway traffic navigation for new driver

- Q: Give an example in your domain?

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127 Automaticity & Cognitive Control

- Skills vs Habits

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- Understanding the complex and "rich interplay between automatic and cognitive control processes that we propose is the hallmark of skill, in contrast to habit, and what accounts for its flexibility"

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- (Pacherie & Mylopoulos, 2020)

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128 Skills & Habits

- The Psychological view

- Habits: Automatic, inflexible, stimulus driven

- Skills: Goal-directed, highly flexible with some degree of automaticity…suggests that skills involve a particular form of interplay between automatic and cognitive control processes.

-

- Habits & Skills share some of the same characteristics: Speed, accuracy & efficiency

— Wrapping up!!!

- Butterfly Effect !
- Tradition & Training and Long-term Learning Objectives
- Interleaving Vs. Blocked
- Priming
- Instructor Efficacy
- Boosting
- Spacing
- Transfer and Chili!

130 Dr. Joan Vickers

- Behavior Training
-
- Vs.
-
- Decision Training

131 Behavior Training Characteristics (Vickers, 2002)

- The learner is not encouraged to provide input into their training program
- An assumption that the best way to train is a mindless state, where automaticity is the ultimate objective
- Simple to complex progressions

- Blocked, massed or highly repetitive drills of the same skills

- High levels of feedback

- Emphasis on perfection

- Work is increased, cognition is reduced

132 Decision Training Characteristics

- Equal attention given to cognitive and motor skills

- Drills performed in random and variable format

- Hard first instruction: The complexity of the skills and context presented early.

- Feedback is deliberately delayed and reduced as skill level develops (Bandwidth)

- Socratic questioning testing the learner's level of cognitive understanding along with physical competency.

- Increases Intrinsic motivation, independent thoughts and they become part of the training process

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135 Problem-Solving Skill

136 Problem-Solving Skill

- Knowledge Lean Problems

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  - Well defined

  - General reasoning skills

  - Relatively simple

-

137 Tower Of Hanoi
Knowledge Lean Problem

138 Problem-Solving Skill

- Knowledge Rich Problems

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  - Demands skill specific knowledge

  - Complex Tasks

  - Ill defined

  - Draws upon the problem solver's knowledge about a specific domain

139 The Problem Space

- Initial State

- Goal State

- Path Constraints

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  - Simple Example: Tower of Hanoi, Initial State and Goal State are identified, path constraints are the rules given.

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-
- Problem space ABC, Initial state A, Goal State C, Pathway constraints: must be in same order at C, cannot put a larger ring above a smaller one during operation, 7 moves max.

141 Problem Solving
Understanding & Search

- Understanding: Generating the problem space from information that is provided about the problem and inferences that are derived from that information. (A mental representation of the problem to be solved) [i.e. What game are we playing?]

- Search: to determine a solution path within the problem space.

  - Means-ends analysis: Attempt to find & apply the optimal solution to reach goal state

  - Hill climbing approach: Steps towards goal state are taken if they improve some evaluation function

142 Implications: Problem Space Hypothesis

- What does this mean for Training?

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- What does this mean for scenario-based training development?

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- What does this mean for scenario-based training delivery, expectations and feedback?

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145 SCHEMAS

- This is what helps us identify the Game (Problem Space)

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- 3 Predominant Categories

- Place

- Events

- People

-

- Predictive and Constructive and sometimes...wrong

146 Schemas

- Brain Blueprints

- Mental Models

- Expert Vs. Novices: Vickers

  - Knowing where to look, when to look and what to look for

  - Knowing what to disregard...just as important. (Stoics and dilligaf)

  -

  - Are we really focusing on this in our training?

147 Schemas and Context Cues

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- Training that is aimed at this...Info processing beings...

-

- Are we looking at the when, how & what information we are presenting in our scenario design and role player actions/inactions?

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- Intuition

- "The Gift of Fear" (Gavin de Becker, 1999)

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149

150 Dr. Gary Klein

- Recognition Primed Decision Making (RPD)

  - Insights

    - Connections

    - Contradictions

    - Creative Desperation

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      - "Seeing What Others Don't"

151 Murphy's Law

- What can go wrong, will go wrong

- It isn't true

- Building better blueprints

- Connecting the dots: Experience vs Novice

- Motor skills and connective tissue

- Where, what and when to look

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152 AIM LMS

- https://ttb.moodlecloud.com/

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153 Need to wrap it up with questions or an exercise...something good

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