



Technology Work Session for the South African Army; Hosted by the CSIR

Session 6: Mobility

Trends in Military Training

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Trends in Military Training

Cognitive Training

- Land Mine Detection
- Training Needs Analysis
- Instructional Strategies

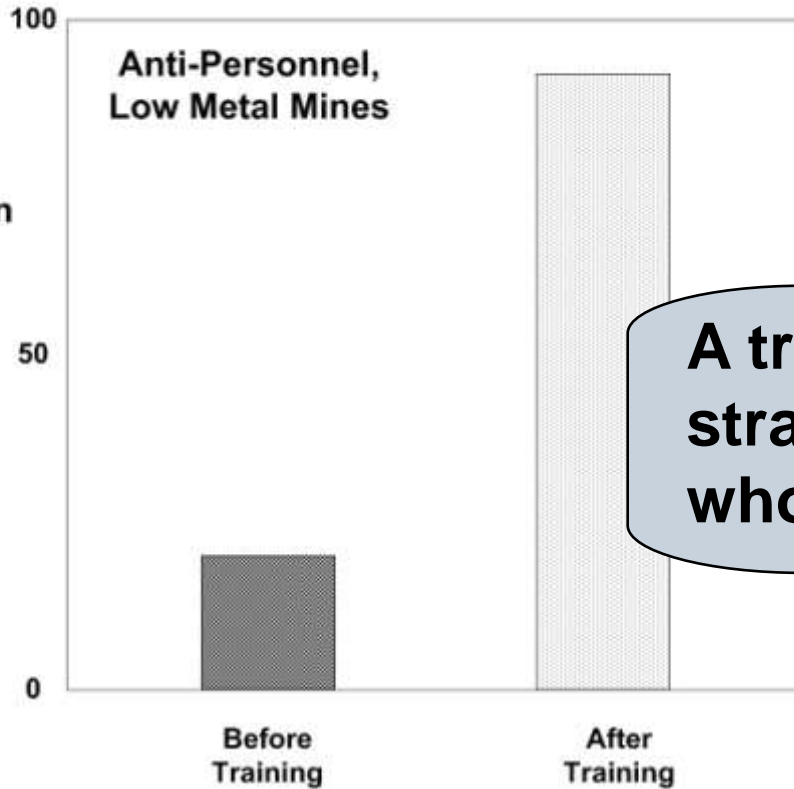
Cultural Change

Force Preparedness

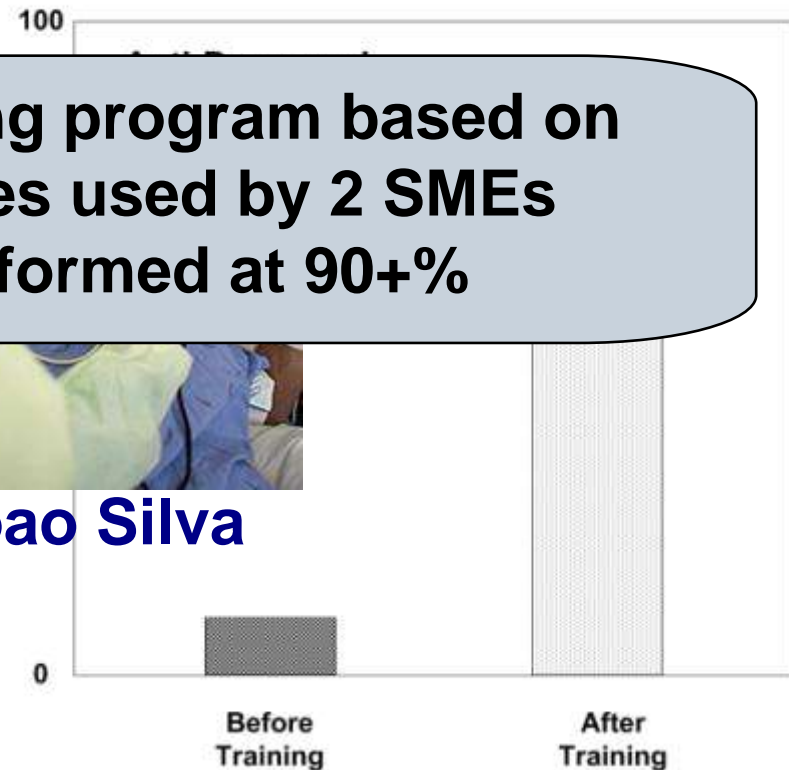
Detection Rates: Anti-Personnel Low-Metal Mines



Standard AN19/PSS-12 (old)



Advanced, Dual-Sensor PSS-14 (new)



A training program based on strategies used by 2 SMEs who performed at 90+%



Joao Silva

A more advanced device

Training Needs Analysis

Instructional System Development

- A failed program, at the wrong level of detail
- Describes observable behaviors with only superficial reference to cognition



Find the challenges



Identify the content

- Identify invariant patterns, by interview, observation or analysis



Cognitive Skill: How might we enhance it?

Demonstration, drill & practice

- Problem; how do you demonstrate a cognitive skill?



Experience leads to expertise if there is:

- Clear, meaningful information
- Regular, consistent experience & reliable feedback

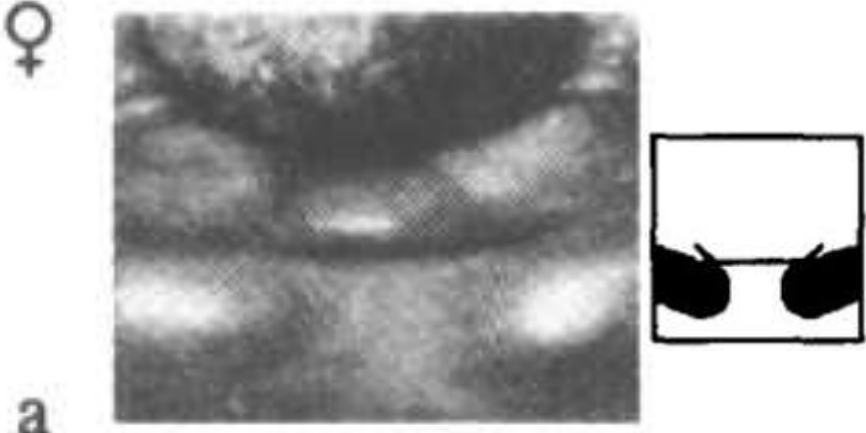
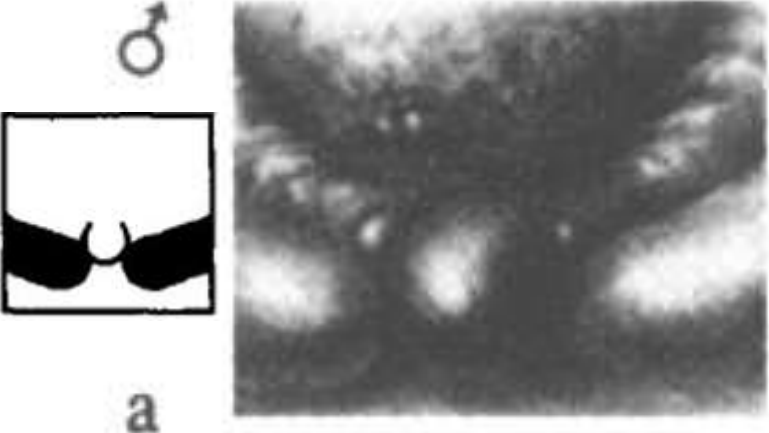


Differentiation

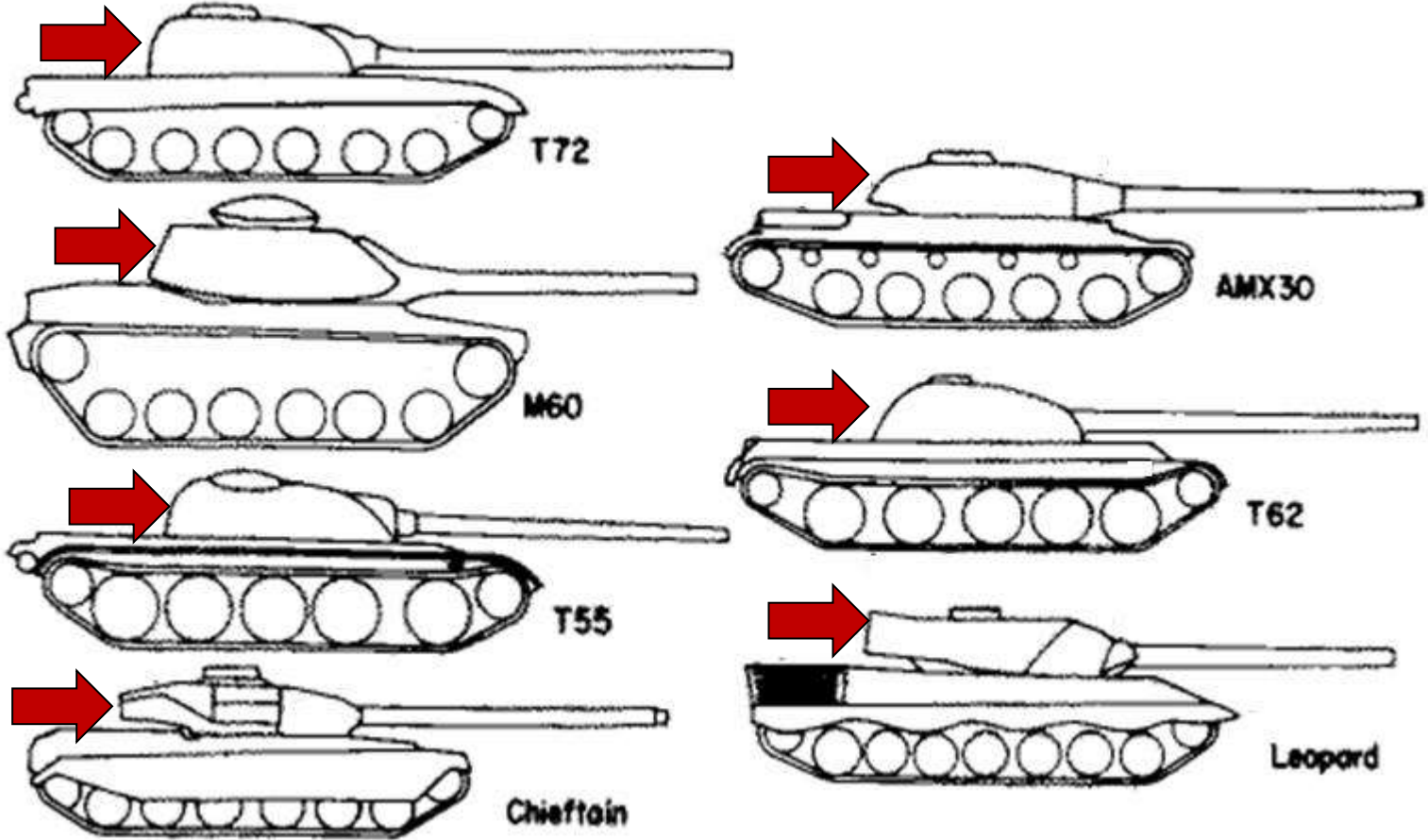
- Obscure information, poor feedback (chicken sexing)



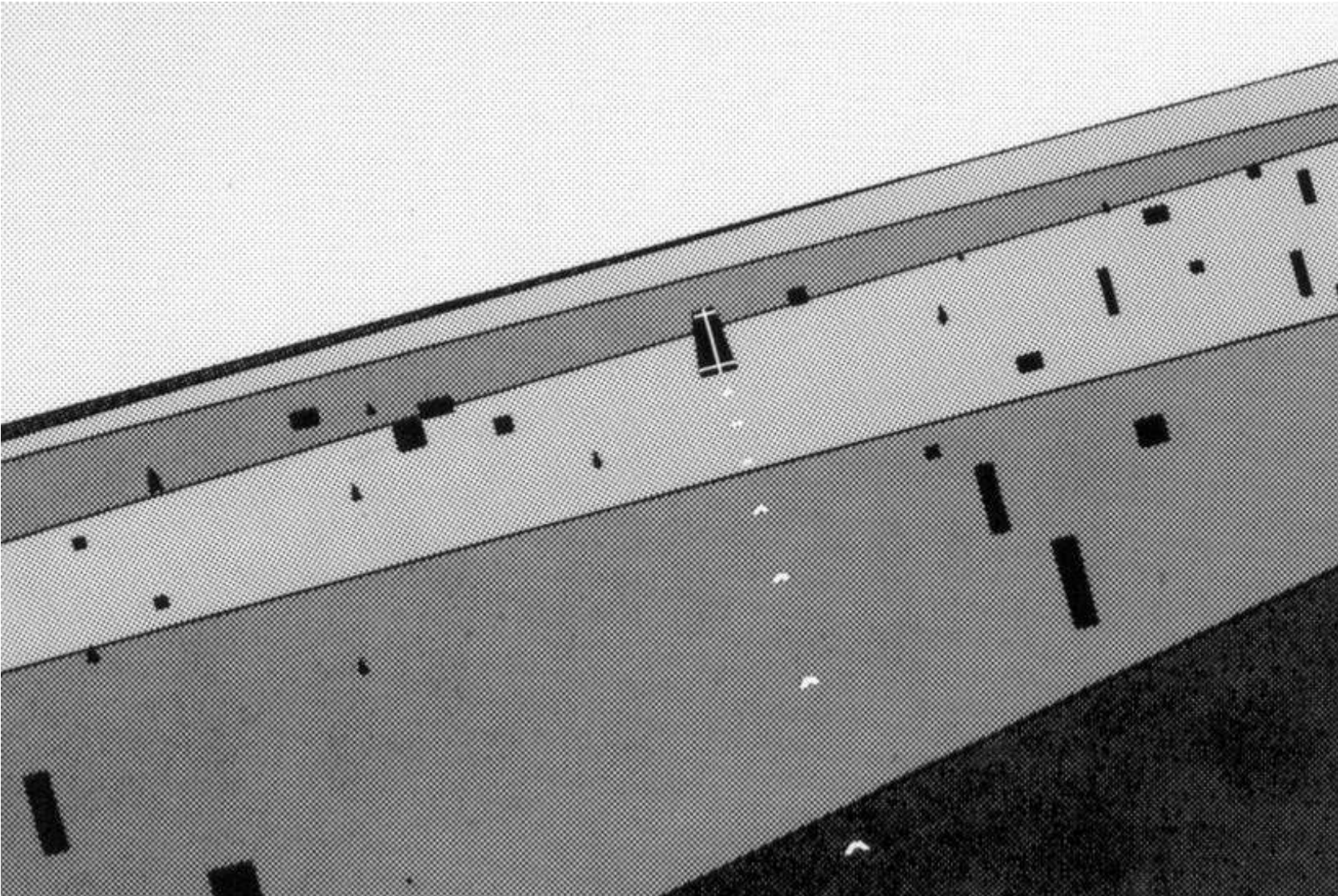
Cognitive Skill: How does it develop?



Cognitive Training: Distinctive Features



Cognitive Training: Directing Attention



Cognitive Skill: How does it develop?

Demonstration, drill & practice

- Problem; how do you demonstrate a cognitive skill?



Experience leads to expertise only with

- Clear, meaningful information
- Regular, consistent experience & reliable feedback



Differentiation & Abstraction

- Differentiate distinctive features (contrast, highlight, point to)
- Isolate the common structure (abstract, summarize)



Beyond Perceiving

A plan is a cognitive product

Stability of the situation & resource limitations play a major role in determining the type of plan

- Differentiation: How should a plan for an offensive mission differ from one for a defensive mission?
- Abstraction: What is the structure (pattern) of a good plan given the existing constraints ?

Trends in Military Training: Cognitive Training Summary

Training Needs Analysis

- Identify the challenges
- Identify the invariant patterns

Instructional Methods

- Differentiate: contrast, highlight or point to distinctive features
- Abstract: describing the common structure or remove contextual details to isolate it

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Cultural Change

Force Preparedness

Thank You

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Cultural Change: Knowledge Management

US 5th Fleet

- Knowledge sharing tools

Quasi-expert synthesis of information

Information current & widely available

Lower information sharing barriers

More focus on contingency planning

Supportive, intelligent command support



Force Preparedness: Problem-Based Learning

[Alien Rescue](#)

The screenshot displays the 'Alien Rescue' website interface. At the top left, the title 'Alien Rescue' is prominently displayed in white text on a black background, with a small starburst graphic above the letter 'A'. To the right of the title is a green button labeled 'Tour Alien Rescue'. Below the title is a green navigation bar containing a vertical list of menu items: 'About Alien Rescue', 'Classroom Use', 'Research', 'Contact Us', and 'Current Users', each accompanied by a right-pointing arrow icon. The main content area features a breadcrumb trail 'Home > Tour Alien Rescue' and a heading 'Tour Alien Rescue'. Below the heading is a video player showing a 3D rendering of a yellow planet with rings (resembling Saturn) and a satellite or probe with gold thermal blankets in space. The video player includes standard playback controls at the bottom. At the very bottom of the page is a green footer bar with the following navigation links: 'HOME', 'TOUR ALIEN RESCUE', 'CONTACT US', 'SITE MAP', and 'CREDITS/AWARDS'.

Force Preparedness: Practice-Based Learning



Trends in Military Training

Cognitive Training

- Land Mine Detection
- Training Needs Analysis
- Instructional Strategies

Cultural Change

- The US 5th Fleet; Knowledge Management

Force Preparedness

- Problem-Based Learning; Alien Rescue
- Practice-Based Learning; Carrier Flight-Deck Crew

Thank You

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