

turning knowledge into practice

Situated assessment: Getting the right measures and the measurement right

Robert Hubal

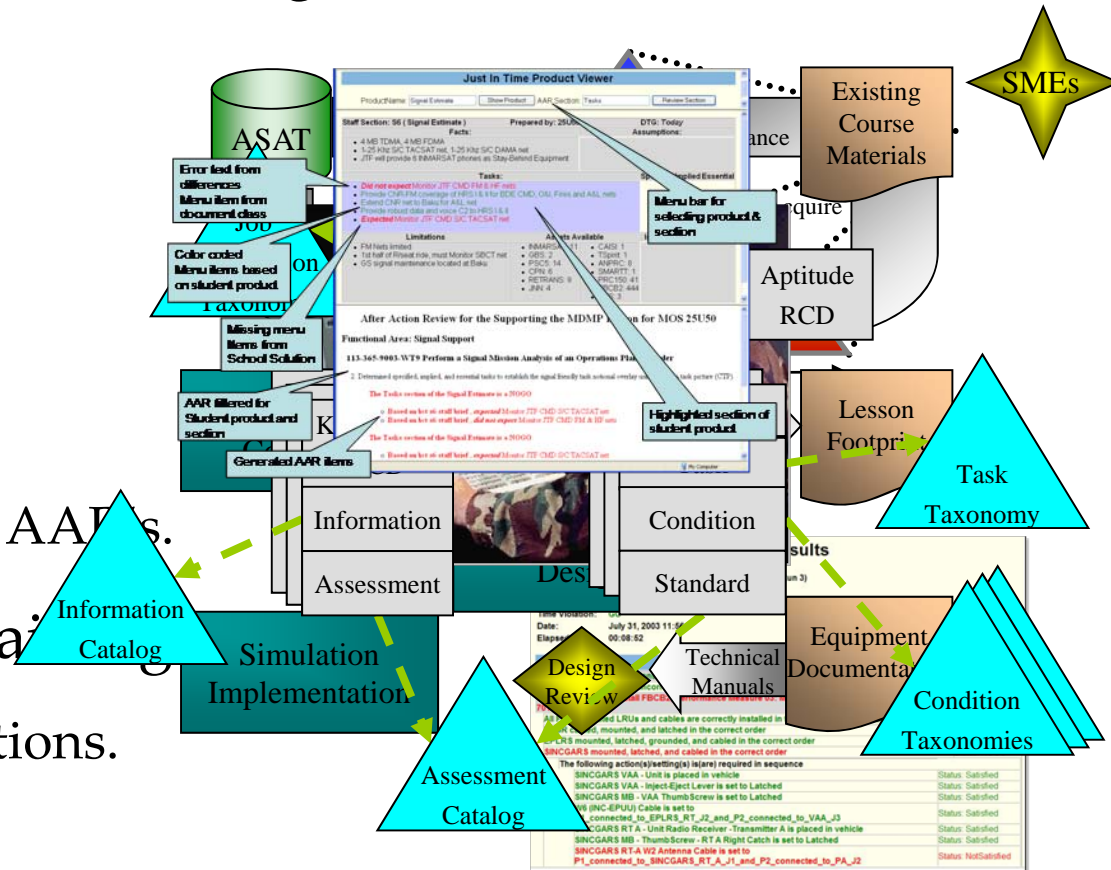
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What we're serious about

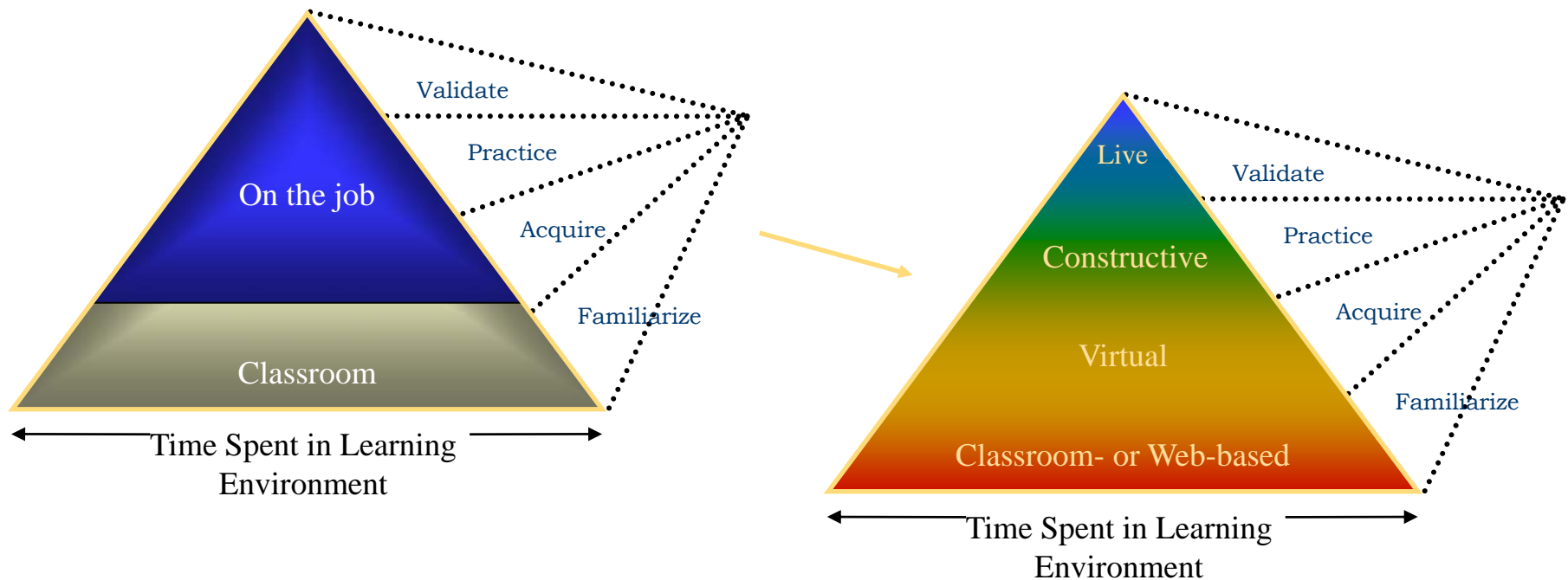
- Unstructured experiential learning is not the solution.

- Training analysis.
- Systematic design.
- Develop to standards.
- Usability.
- Assessment / analysis of AAPs.
- Individual, collective training
- Can control initial conditions.
- Graduated complexity.



Conception of approach

- Cost-effective learning.
- Situated assessment.



Our simulation work

- Interactive 3D environments, generally not immersive.
- Learning by doing.
- Address 'imperfect conceptual models'.
- Variety of intended audiences.
- Some intended as classroom adjuncts, some as standalone systems.



Comparison of assessment approaches

Role-playing or hands-on

Advantages

Behavior is realistic, situations are relevant, close to situated learning.

Disadvantages

Available time, equipment, co-workers are limited; roles often poorly understood; no variability in situations.



Questionnaires or surveys

Advantages

Easy to implement; can vary situations presented; can be used in any setting.

Disadvantages

Behavior does not reflect realistic activities; requires demonstration of knowledge rather than skills.



Simulation or distributed

Advantages

Numerous situations can be presented, actions are tracked and can be replayed; simulation of variable conditions.

Disadvantages

Start-up costs, requires decent hardware to allow use in any setting or for collaborations with co-workers.



Imperfect conceptual models

- Differences from traditional simulation training:
 - Goal is to cause student to fail to succeed, and in turn have student reflect.
 - Presents faults or adverse situations needing to be addressed that are not obvious.
 - Requires complex behaviors of simulated entities to demonstrate imperfect conceptual models.
 - Involves dynamic performance measures of critical tasks.

Analyses of student performance

- Ongoing and after-the-fact.
- Categorical – Actions might be correct, incorrect, don't care:
 - Incorrect actions placed into pre-defined categories.
 - What happened – Performance measures.
 - Why it happened – Performance measure criteria.
 - How it happened – Student actions.
- Based on student actions and simulation state, decide whether and how to intervene:
 - Intervention based on error category and frequency of errors.
 - Direct support – dialog boxes, cueing, tutoring
 - Internal support – change in lesson sequencing, reduction of task complexity.
- Evaluate overall progress through training course as well as through individual lessons.

The screenshot displays an 'AAR Results' report for a 'Final F8002 System Equipment Practice (Run 1)'. The report is organized into several sections: a header with student and lesson information, a 'Performance Measures' table, and a 'Student Actions' table. The 'Performance Measures' table lists various tasks with their status (e.g., 'Not Done', 'Not Started', 'Not Evaluated') and associated criteria. The 'Student Actions' table lists specific actions taken by the student, such as 'Perform all connections correctly', with their status and the performance measure they relate to.

Performance Measures	Status	Criteria
Task: Perform all connections correctly.	Not Done	Perform all connections correctly.
Performance Measure 01: Successful connection attempts	Not Done	Perform all connections correctly.
Task: PWR cable connected, and locked in the correct order	Not Done	Perform all connections correctly.
Performance Measure 02: Electrical system components installed	Not Done	Perform all connections correctly.
Task: The following anthropometric data required to sequence	Not Done	Perform all connections correctly.
Performance Measure 03: Anthropometric data required to sequence	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 04: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 05: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 06: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 07: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 08: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 09: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 10: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 11: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 12: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 13: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 14: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 15: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 16: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 17: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 18: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 19: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 20: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 21: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 22: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 23: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 24: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 25: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 26: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 27: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 28: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 29: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 30: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 31: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 32: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 33: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 34: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 35: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 36: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 37: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 38: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 39: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 40: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 41: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 42: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 43: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 44: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 45: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 46: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 47: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 48: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 49: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.
Performance Measure 50: PWR cable in use	Not Done	Perform all connections correctly.
Task: PWR cable in use	Not Done	Perform all connections correctly.