Training Program Review
"Student Perception vs. Measurable Outcome"

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Overview

- **Background**
  - **What is TBMCS?**
- **Purpose**
- **Goals**
- **Methodology**
  - **Data Collection**
- **Research Questions & Results**
- **Findings**
- **Areas for Future Research**

Background
What Is TBMCS?

An Integrated Planning and Execution System Providing the JFACC Command and Control of All Air Operations To Include Theater Missile Defense

Stovepipe Systems — WCCS, CTAPS, CIS

One System Integrating All Air Resources

TBMCS

- Common Intel DB
- Common Tools
- DII/COE Compliant
- ATO
- System Wide Data Access/Distribution

Background
What Does TBMCS do?
Air Planning and Execution Cycle

Strategy Division

Strategic Planning

Combat Plans

Air Battle Planning

Combat Assessment

Reporting & Analysis

Intelligence

Mission Preparation

Mission Execution

Flying Units

Combat Operations

Purpose of Evaluation & Report

- **DODI 5000.2, The Defense Acquisition System**…the SPD shall ensure that the design and acquisition of systems will be cost effectively supported and shall ensure that these **systems are provided to the user with the necessary support infrastructure** for achieving the user's peacetime and wartime readiness requirements.

- **Air Force Instruction (AFI) 63-123**, Evolutionary Acquisition for Combat and Control Systems…the SPD **shall ensure sufficient training is complete to fulfill approved operational concepts of employment** and sufficient support in place to fix failures and sustain the system.

  – **AFI 36-2201** identifies **type-1 training** as "contract training" or "factory training" that AETC arranges for Air Force and other DOD personnel and contractors to conduct at either the contractor's location or a DOD facility.

"To determine the effectiveness of the training program"

Training Goals

- **TBMCS System Training Plan**
  - The primary objective of TBMCS training is to attain and maintain the capability to operate and administer the system.
  - A secondary objective is to develop advanced skills that facilitate increased effectiveness of the system.

- **Training Program Evaluation**
  - The primary objective is to determine the impact of training.
    - Identify "measurable learning" and "student perception" of learning.
    - Identify if any positive or negative trends exist between TBMCS 1.0.1 training vs. TBMCS 1.1.
    - Identify "where we are" and "where we should be"

Methodology

Due to the baseline changes conducted during the overall software development evolution, this study did not lend itself to a hypothesis testing approach.

Instead, an exploratory research methodology was chosen to support the System Program Director and Program Manager concerns.

TBMCS 1.0.1 Total of 812 personnel trained

TBMCS 1.1 Total of 468 personnel trained

Data Collection Method
Kirkpatrick 4-Level Evaluation

Level	Evaluation	Explanation	TBMCS Data Gathering
I	Reaction	Assesses participants' initial reactions to a course. This in-turn, offers insights into participants satisfaction with a course, a perception of value.	A questionnaire was used to gather quantitative data. A focus group was conducted to gather qualitative data.
II	Learning	Assesses the amount of information that participants learned.	A knowledge-based pre- and post-test was used to assess the amount of information learned.
III	Transfer	Assesses the amount of material that participants actually use in everyday work after taking the course.	Instructor observations and SPO focus groups were used to gather qualitative data.
IV	Business Results	Assesses the financial impact of the training course on the bottom line of the organization six months to two years after course completion.	Collecting data to identify operational readiness results is a longitudinal study not included in this report. Data is limited to cost per person.

Research Questions

1. Will students attending the 1.1 training possess a higher level of experience than those students who attended the 1.0.1 training?

2. Were more 1.1 students satisfied at the completion of training compared to those students who attended 1.0.1 training?

3. Will there be a difference in the knowledge gained between students attending 1.1 and those who attended 1.0.1 training?

4. Will users perceive the course to contain a sufficient mix of instructor vs. hands-on time?

5. Will students attending 1.1 training perceive that the course covered the key TBMCS skills specific to their work center compared to those students who attended 1.0.1 training?

6. Will students attending 1.1 training perceive that their units provided a workspace that supported a successful training environment compared to those students who attended 1.0.1?

7. Will students agree that the training objectives could be met in a distance learning environment?

Research Question #1

Will students attending the 1.1 training possess a higher level of experience than those students who attended the 1.0.1 training?
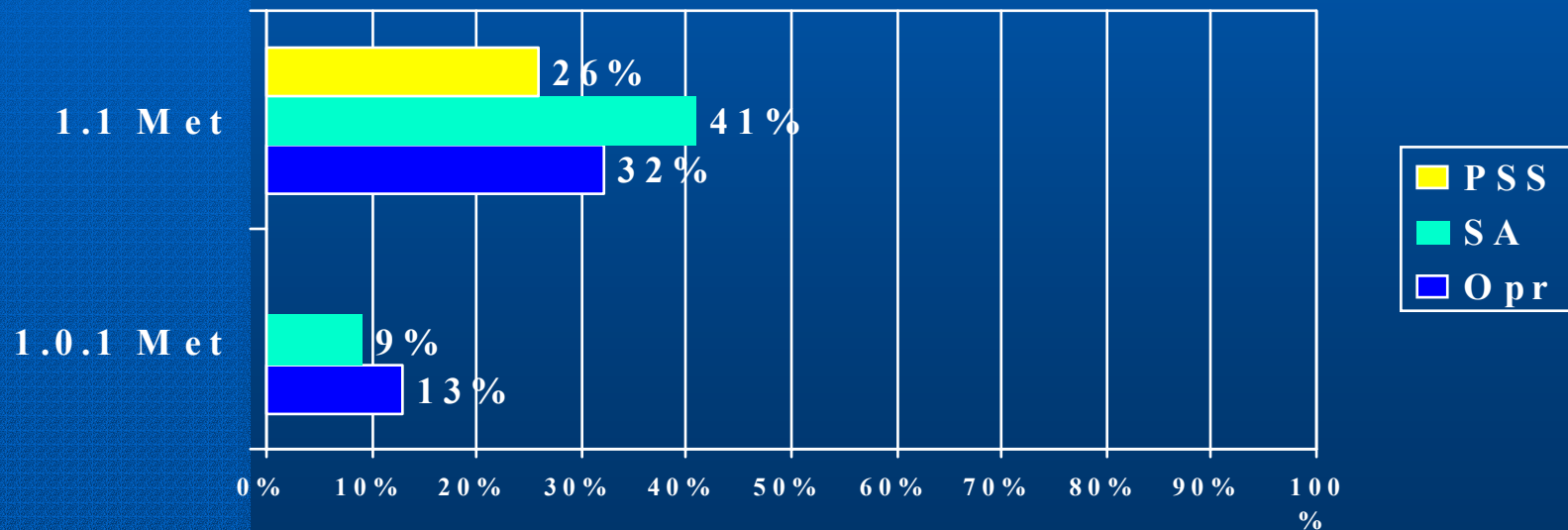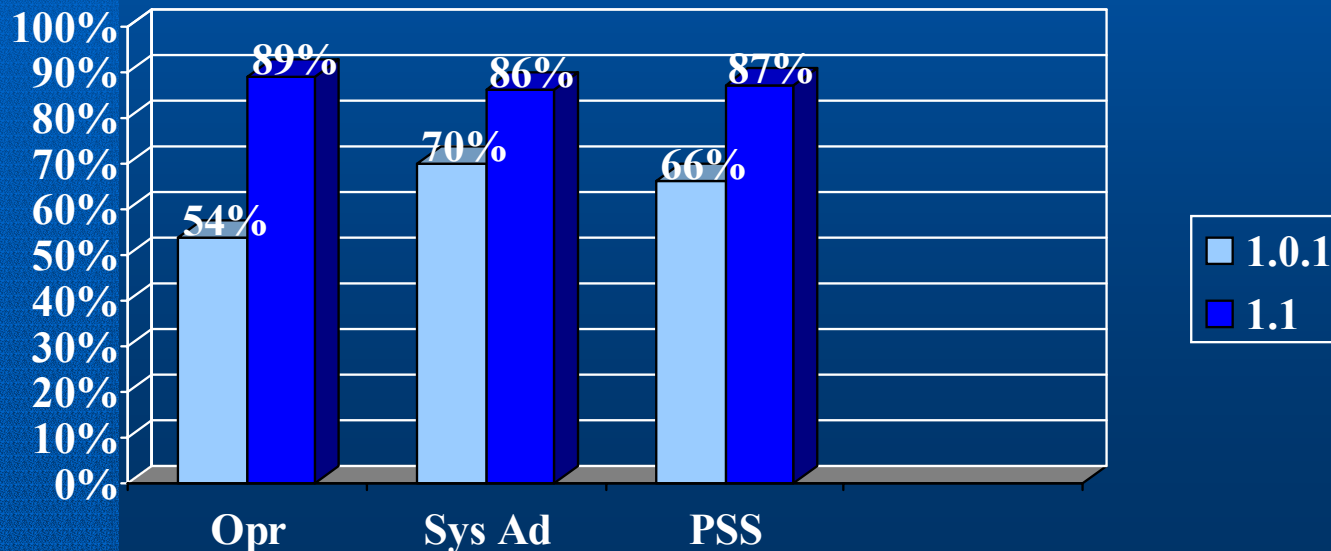

Experience Level 1.0.1 vs 1.1

Chart displays num of students who met or did not meet the the 1 yr experience prerequisite

Research Question #2

Were more 1.1 students satisfied at the completion of training compared to those students who attended 1.0.1 training?
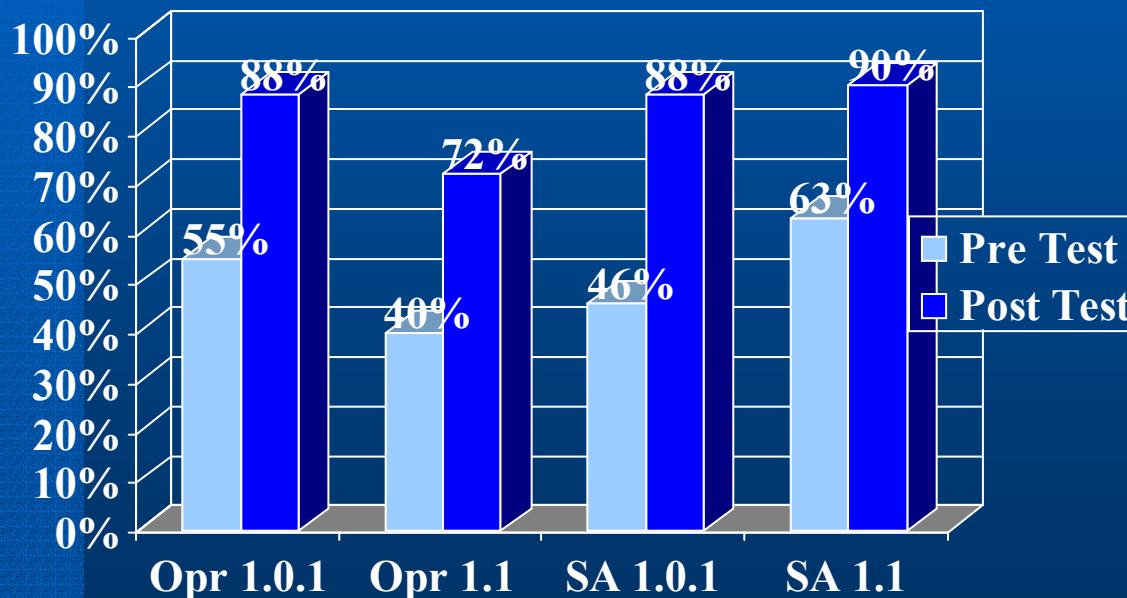
Course Satisfaction 1.1 vs. 1.0.1

Legend:
- 1.0.1
- 1.1

Data:
- Opr: 54% (1.0.1), 89% (1.1)
- Sys Ad: 70% (1.0.1), 86% (1.1)
- PSS: 66% (1.0.1), 87% (1.1)

Research Question #3

Is there a difference in knowledge gain between students attending 1.1 and those who attended 1.0.1 training?
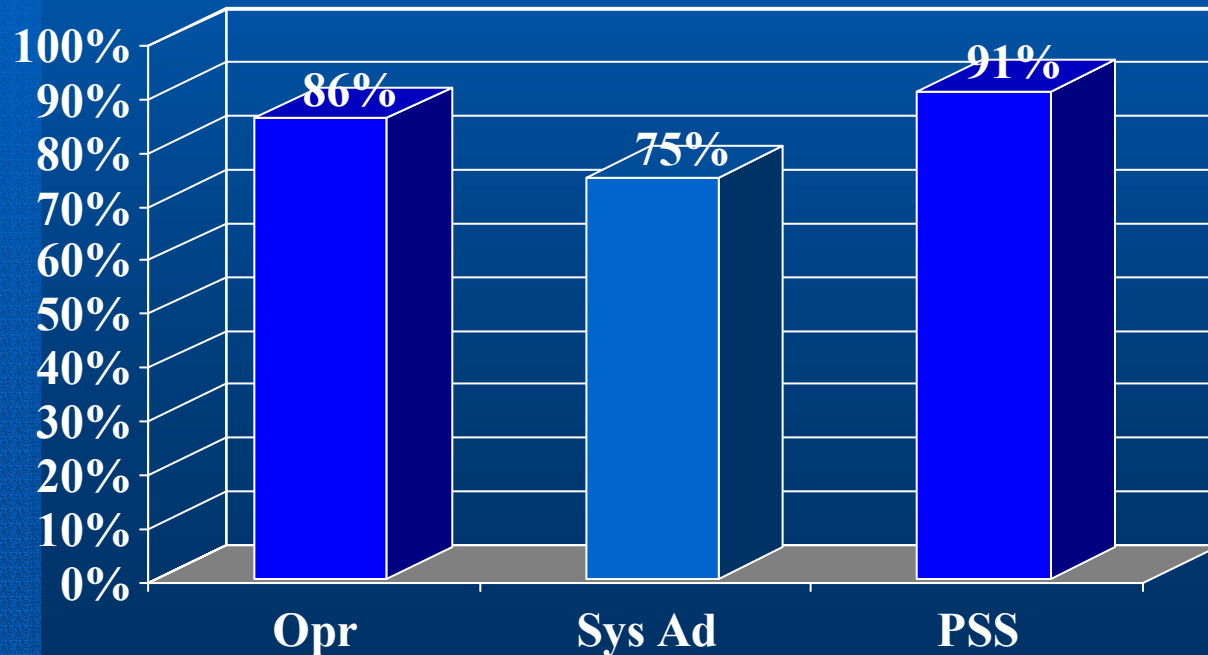
Pre & Post Test Differences

No significant difference

Research Question #4

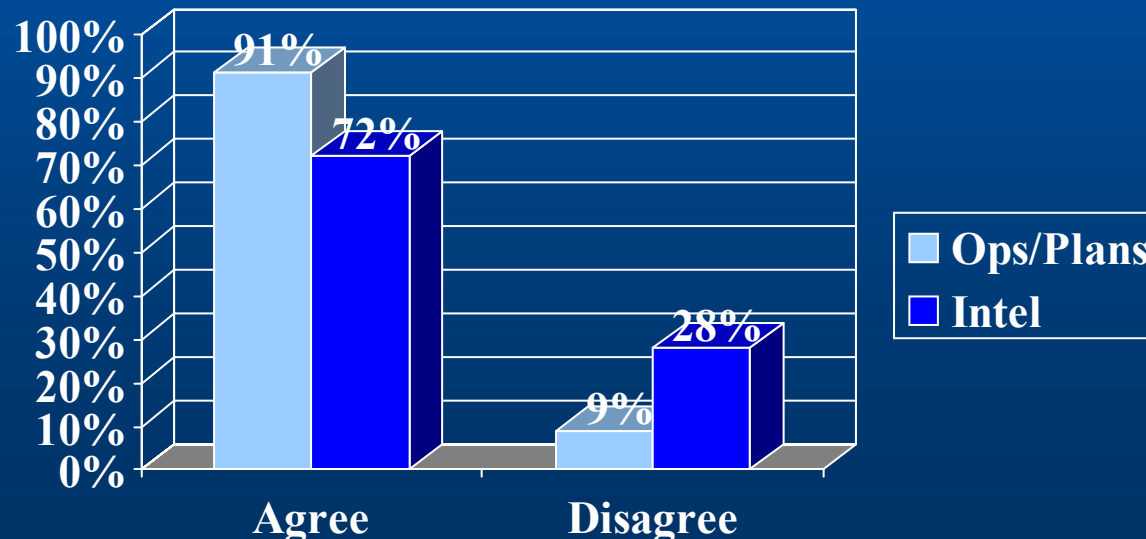Will users perceive the course to contain a sufficient mix of instructor vs. hands-on time?

Instruction vs. Hands-on Mix
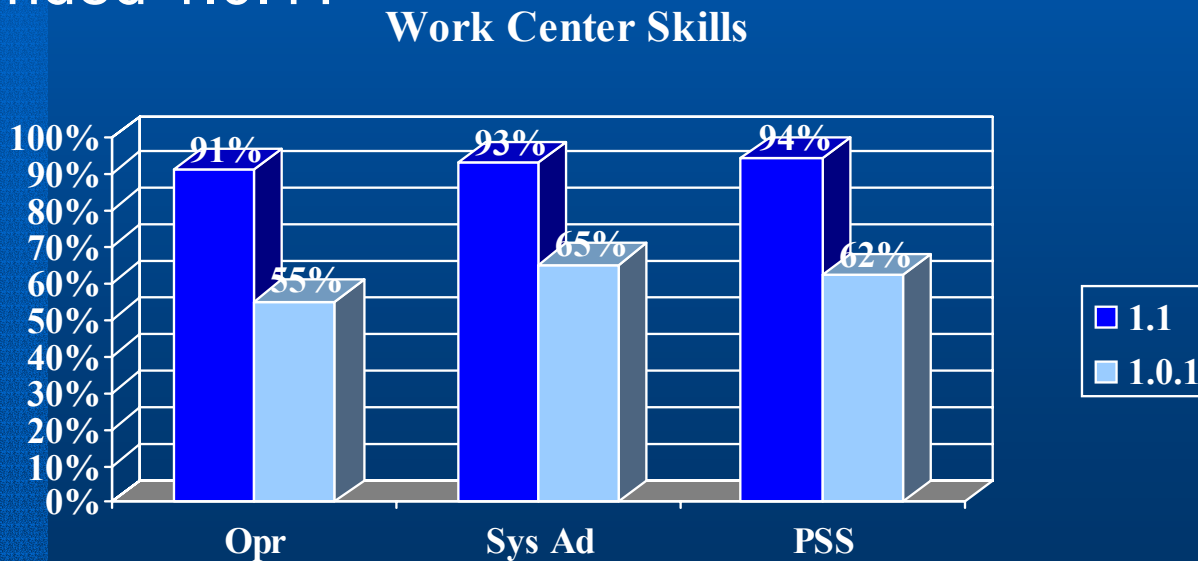
Research Question #4, cont.

Will *intelligence and ops/plans users* perceive the course to contain a sufficient mix of instructor vs. hands-on time?

**Ops/Plans vs Intel Instructor Material Mix**

Research Question #5

Will students attending 1.1 training perceive that the course covered the key TBMCS skills specific to their work center compared to those students who attended 1.0.1?

Work Center Skills

Research Question #6

Will students attending 1.1 training perceive that their units provided a workspace that supported a successful training environment compared to those students who attended 1.0.1?

Comfortable Work Space

Chart legend: 1.0.1, 1.1

Values shown: 1.0.1 = 58%, 1.1 = 93%
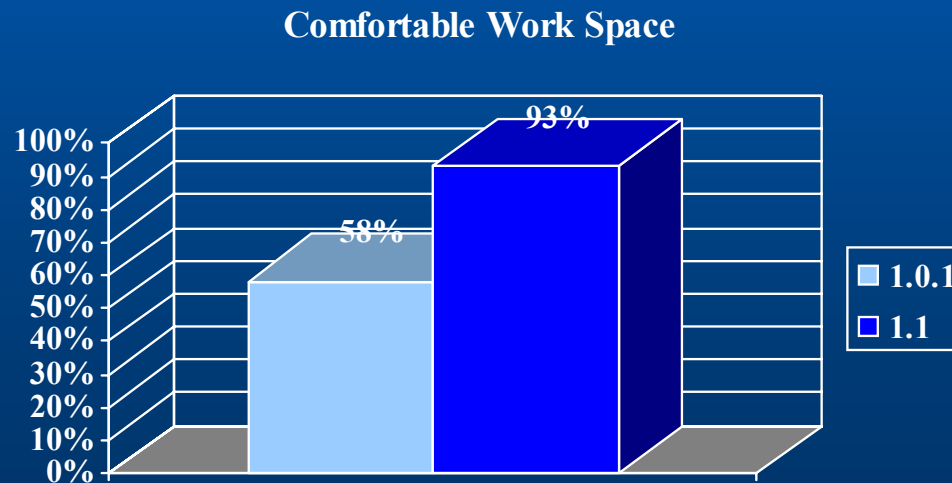
Research Question #7

Will students agree that the training objectives could be met in a distance learning environment?

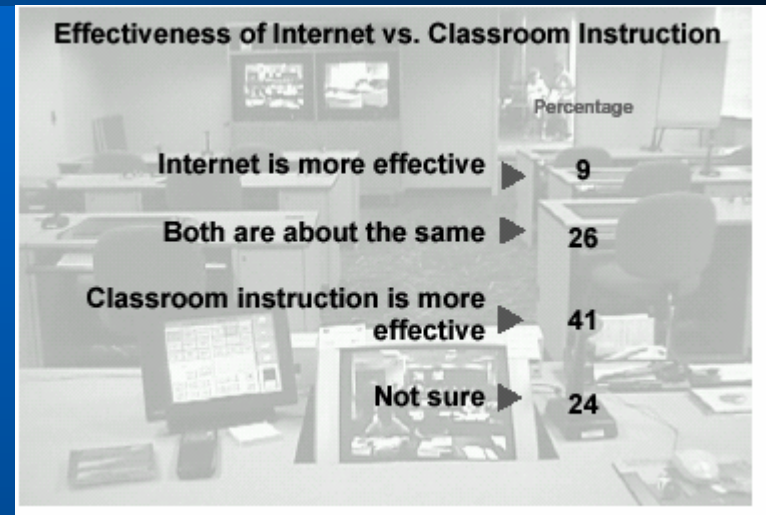**Can Training Objectives be Met Via DL?**
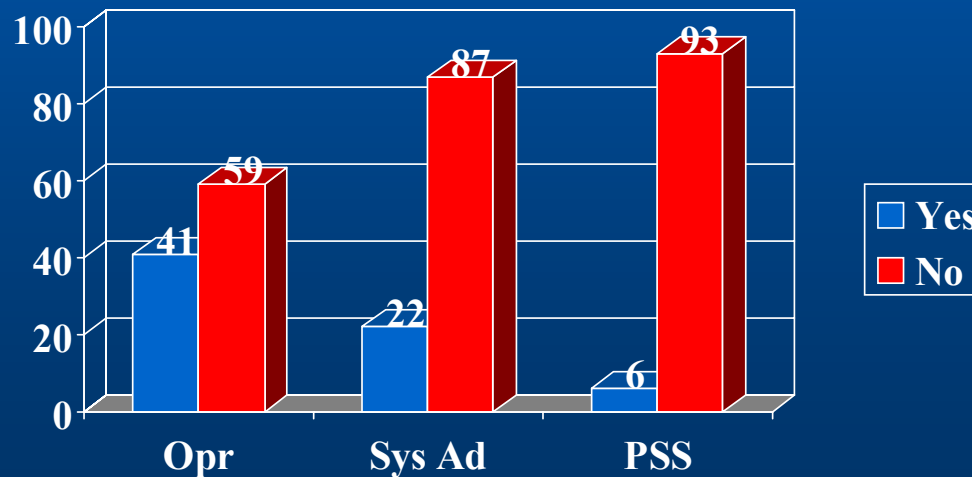
Findings

- **Student Perception**
  - **Kirkpatrick Level I – Smile Indicator**
    - **Significant Increase in student satisfaction between 1.1 and 1.0.1**
    - **Kudos to MTT training team**

- **Measurable Learning**
  - **Kirkpatrick Level II – Pre & Post Test**
    - **Maintained Average Gain from 1.0.1 to 1.1**
      - **No significant difference phenomenon**

- **Learning Transfer**
  - **Kirkpatrick Level III – Observations & Focus Groups**
    - **Students more motivated to train**
    - **Students still inexperienced in AOC and TBMCS**
    - **Unable to find out how students perform on the job**

- **ROI**
  - **Kirkpatrick Level IV – Cost to train**
    - **TBMCS 1.0.1 = $8,000 per person**
    - **TBMCS 1.1 = $11,000 per person**

Student Perception or Measurable Learning?

- **Student Perception**
  - **Preference is MTTs**
- **Barriers to Change**
  - **Attitude**
  - **Policy and Management**
    - **Change agent**
    - **Enforcement**
    - **Lack of CONOPS**
    - **Accountability**
  - **Changing Roles of Presentation Media, Instructors, and Students**

Effectiveness of Internet vs. Classroom Instruction

	Percentage
Internet is more effective	9
Both are about the same	26
Classroom instruction is more effective	41
Not sure	24

Army Research Institute – May 02 (Wisher, Sable, Moses)

Reasons to Change

- **No significant difference**
- **Training requirements continue to rise, budget continues to drop**
- **Geographically dispersed users world wide**
  - **50% of the budget is spent on mobile training team costs**
- **High ops tempo for user base**
  - **Need anytime, anywhere, anyplace training**
- **National Level DOD policy**
  - **Executive Order 13111 Jan 99**
    - **Requires DOD to provide "anytime, anywhere, anyplace" learning**
  - **DOD Strategic Plan for ADL Apr 99**
  - **Joint Vision 2010**
    - **Provide anytime, anywhere learning to maintain military readiness**
  - **DOD Advanced Distributed Learning Initiative**
    - **Implements Sec of Def ADL initiative**

Areas for Future Research

**Proof of Concept: Virtual University for "Operator"
    Difference Training**

**To determine the economic feasibility and
effectiveness of delivering TBMCS
operator type 1 difference training
electronically using live delivery
technology**

Concept approved/funded started effort 27 May

Project Description

Conduct demonstration to ascertain:

a) if joint type 1 delta training requirements can be met via synchronous means

b) if the current DOD infrastructure can support synchronous voice over IP technology, and

c) if there is a cost/time savings in conducting a virtual course vs. mobile training teams.

Summary

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