



# Introduction to Assessment of Medical Students

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# Assessment is the most important part of educational process

- and has to answer
- Does a satisfactory performance mean that the student is a competent physician?
- Does it give importance to patient safety, quality of care, and fairness of the learning environment?
- Does it value reward appropriate student qualities and achievements?

## Learning Objectives of this session

- To enumerate what are purpose of assessments
- Understand relation between educational objectives to assessment
- Different assessment tools for different domains of learning objectives
- Understand Validity, and reliability of assessment tools
- Be able to select an appropriate tool based on purpose of assessment

What is the purpose of assessment at different times?

- Before Teaching?
- During Teaching?
- At the end of teaching?

# Why do we assess our students?



Formative



Summative





What is the difference between **Summative** and **Formative** assessment?

# What should we assess?

Depends on the Educational Objectives

✓ Educational objectives maybe

✓ Knowledge      **Cognitive Domain**

✓ Skills            **Psychomotor Domain**

✓ Attitude        **Affective Domain**

At what level would you like to assess

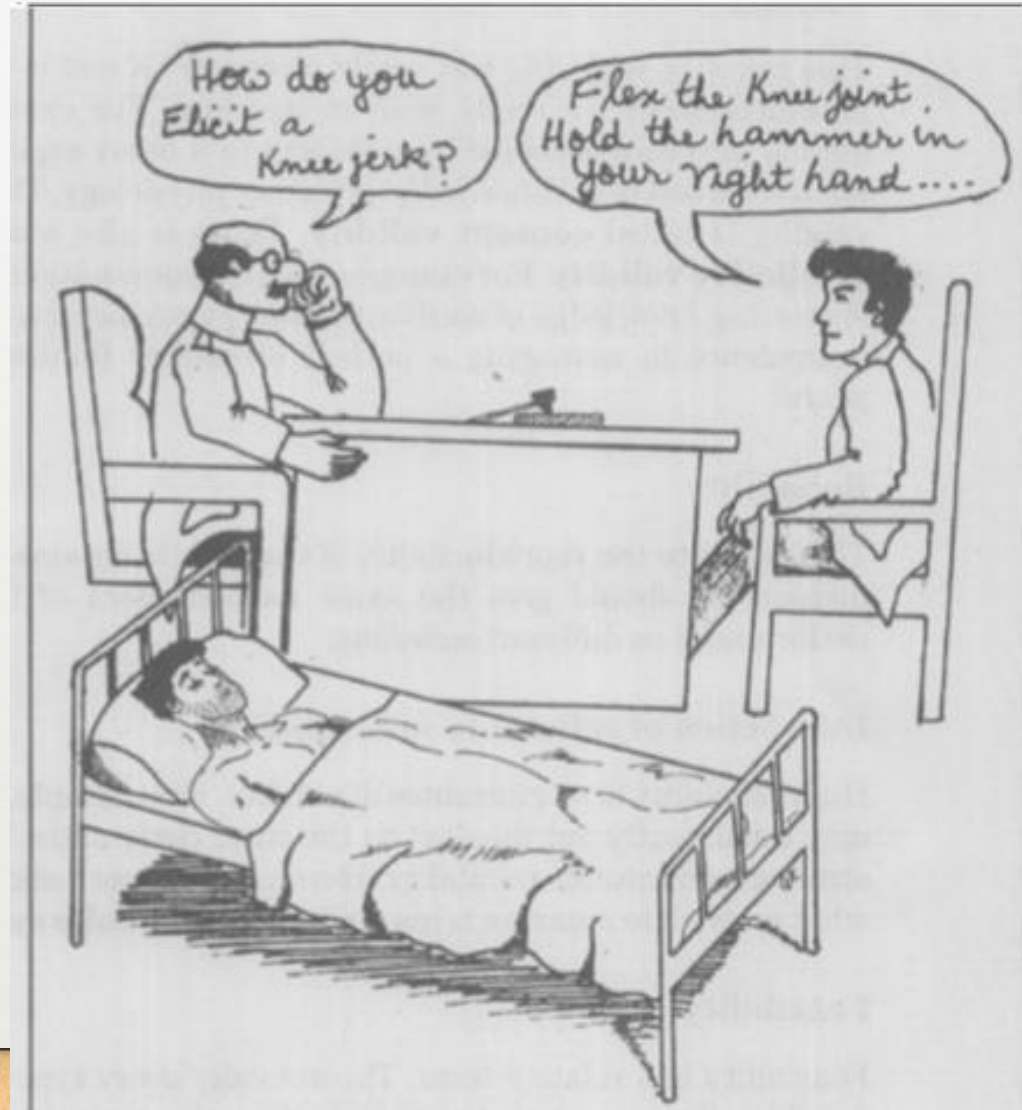
1. List common symptoms of pulmonary tuberculosis
2. Describe mode of spread of tuberculosis(TB)
3. Prescribe treatment for Multi drug Resistant Tuberculosis
4. Compare cost of treating pulmonary TB with drug regimen A and drug regimen B. Select & prescribe multi drug regime



## Levels of knowledge

- List common symptoms of pulmonary tuberculosis (**basic: recall**)
- Describe mode of spread of tuberculosis(**understanding**)
- Prescribe treatment for Multi drug Resistant Tuberculosis
- (**applying**)
- Compare cost of treating pulmonary TB with drug regimen A and drug regimen B Select & prescribe multi drug regime (**Higher: evaluating**)

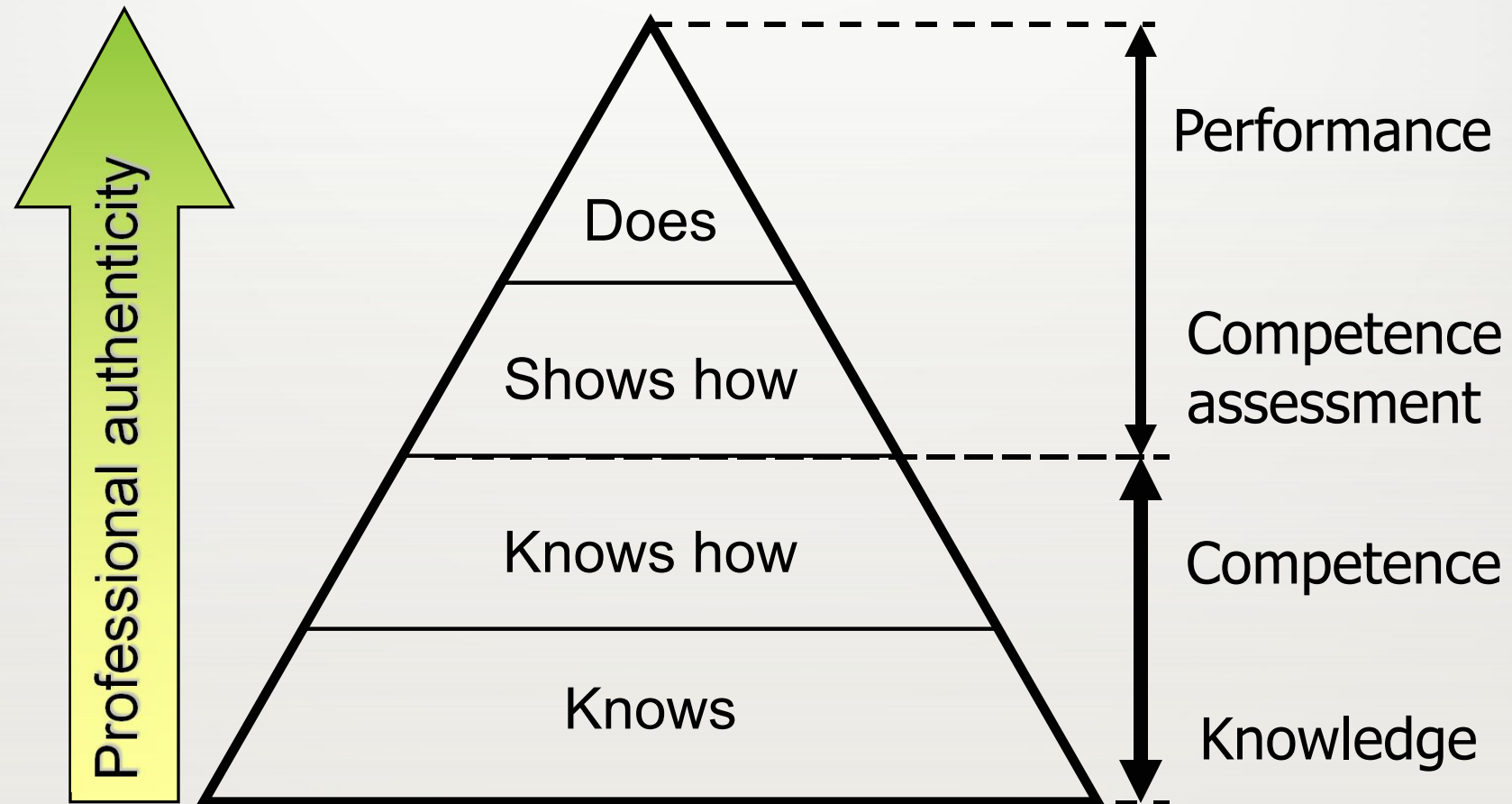
# How to assess ?



# How should we assess?

- Depends on the Domain
- Depends on the level of knowledge, attitude or skills that should be tested

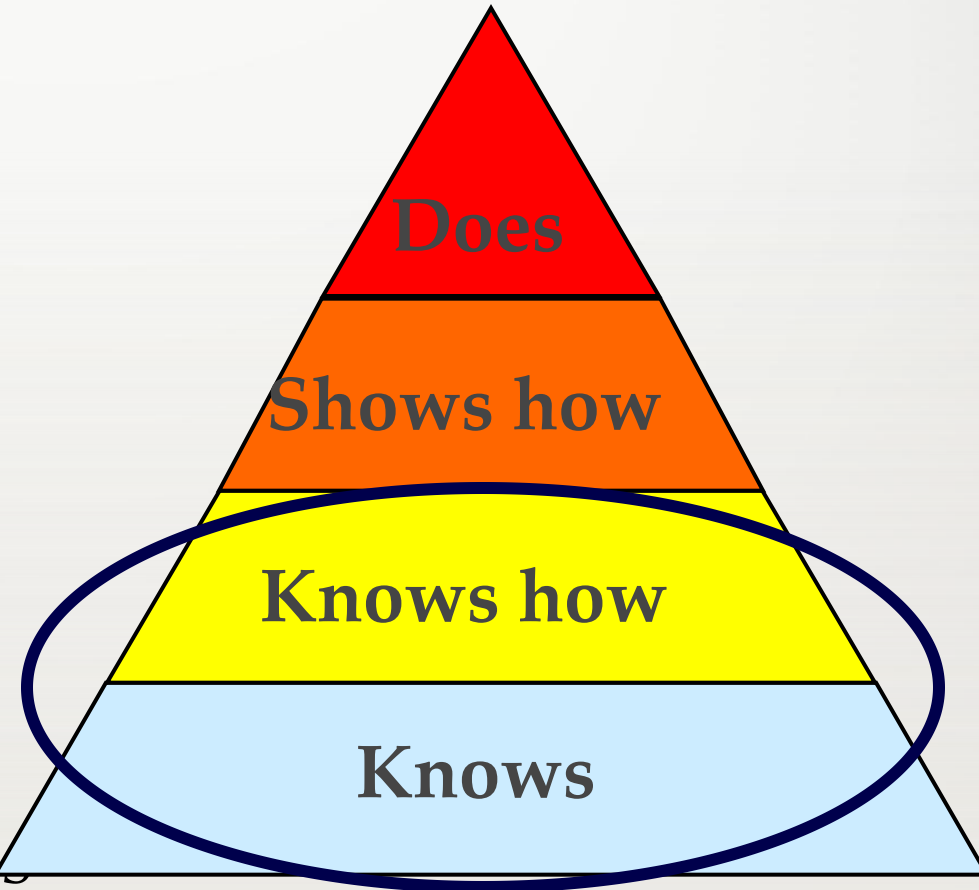
# Millers pyramid Provides Framework for Assessment of Clinical Competence



Miller GE. The assessment of clinical skills/competence/performance.  
Academic Medicine (Supplement) 1990; 65: S63-S7.

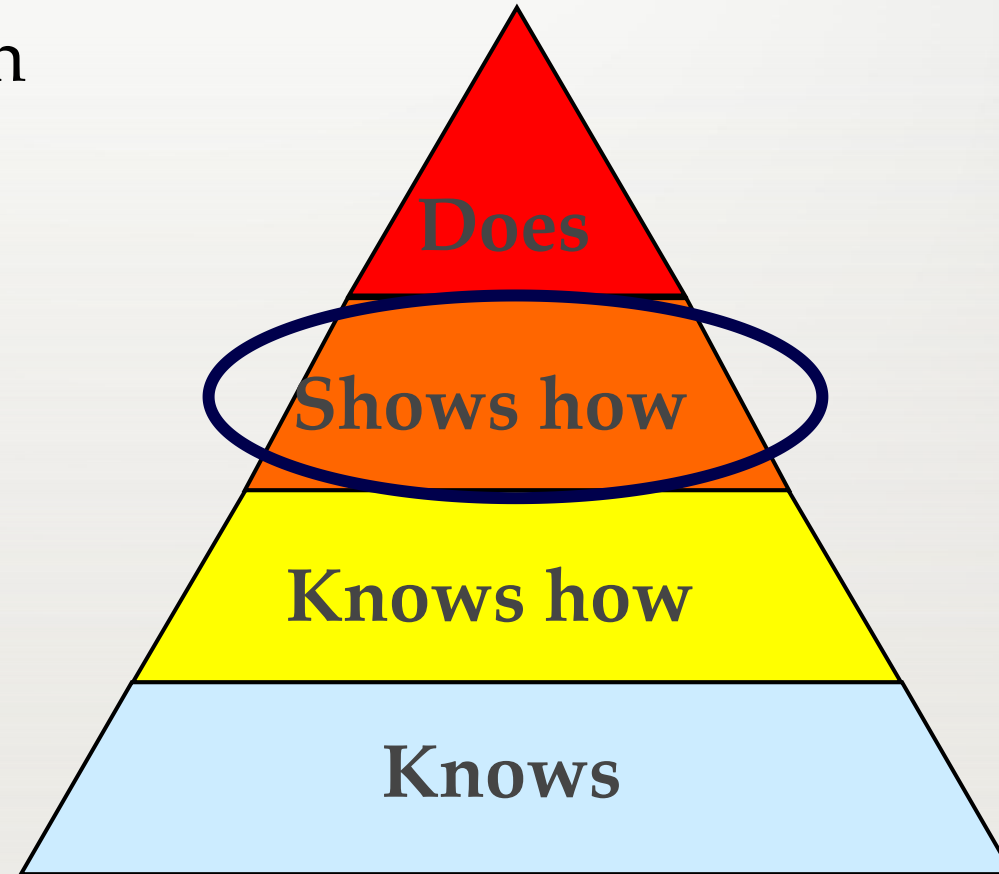
# Assessment Methods

- MCQ (multiple choice )
- Essay (long & short)
- Short Answer Questions
- Newer formats:
  - modified essay questions (MEQs)
  - patient management problems (PMPs)



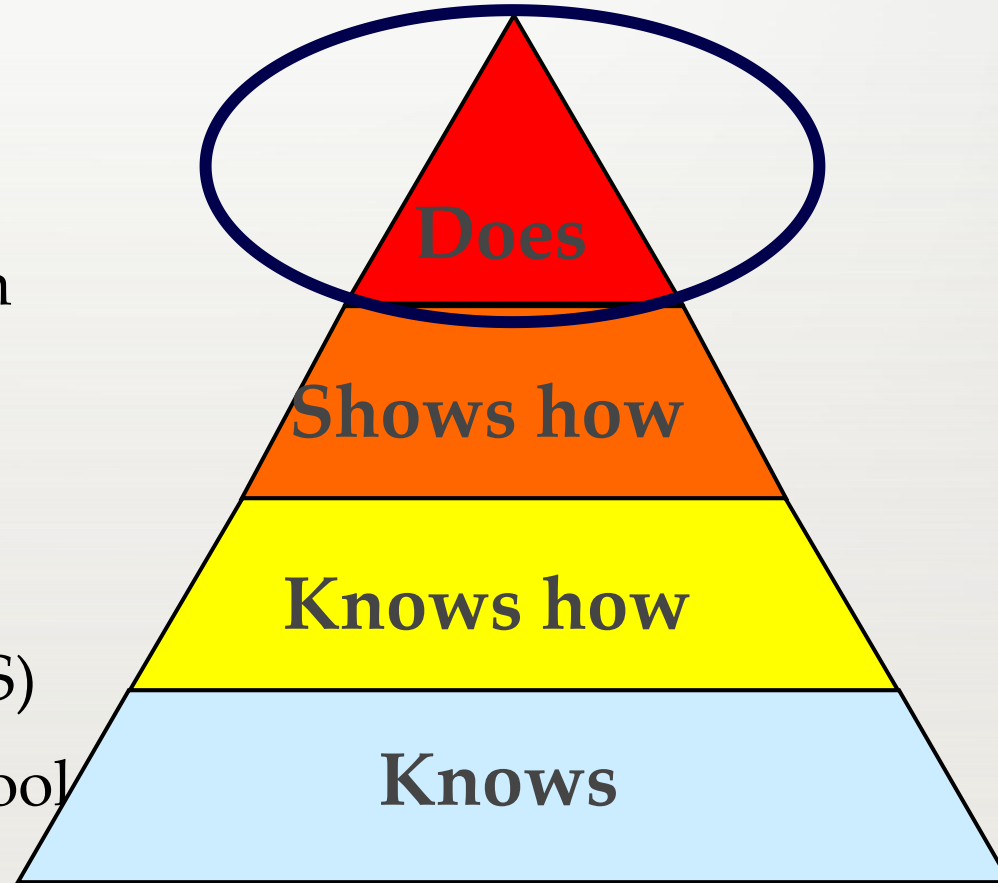
# Performance Assessment Methods

- Long Case Examination
- Short Case
- Objective Structured Clinical examination (OSCE)



# Performance Assessment Methods

- Workplace-based assessment
  - CEX (clinical evaluation exercise)
  - Mini-CEX
  - Direct observation of procedural skills (DOPS)
  - Mini-peer assessment tool (mPAT)

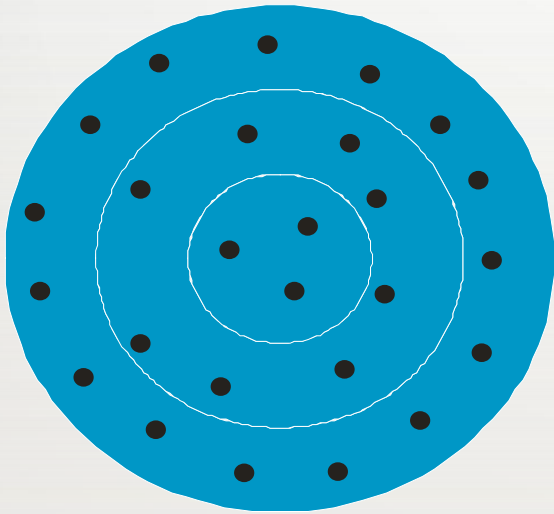


# Five criteria can be used to evaluate Assessment method

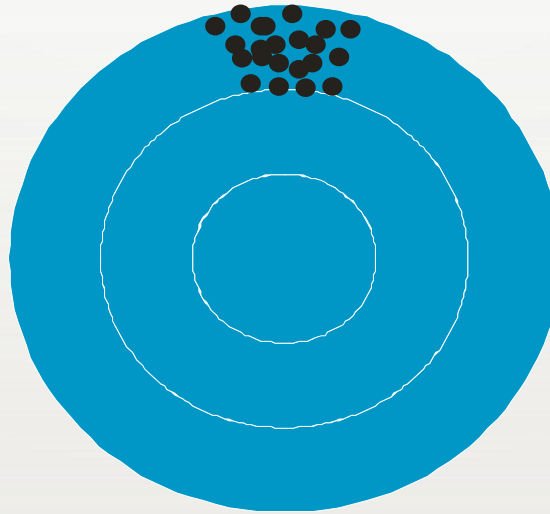
- Reliability,
- Validity,
- Educational impact
- Cost effectiveness
- Acceptability



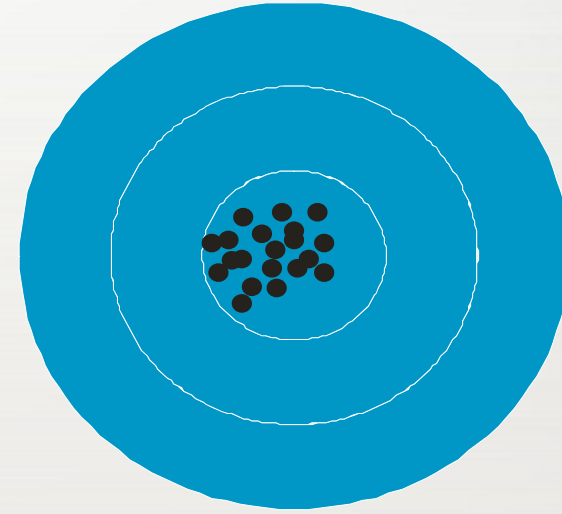
# Reliability & Validity



**Not valid**  
**Not reliable**



**Reliable**  
**Not valid**



**Both Reliable**  
**and valid**

# Reliability

- Would the score/student ranking be reproduced if tested again?
- Would the score/student ranking be reproduced by different examiners?

# Factors that lower reliability

- Variation in method of assessment
- Variation in content
- Range of marks is limited (too easy or too difficult exam)
- Test conditions are inadequate (venue, interruptions)
- Scoring is subjective/inadequate training of examiners

# Validity

- Does the assessment measure what it supposed to measure?
- Can it be used to determine if a student meets required level of proficiency?
- Validity is a matter of degree – *does not exist on an all or none basis*

# Factors affecting validity

- Are the outcomes well defined ?
- Does exam blueprint adequately represent the objectives of the course?
- Does exam content match outcomes being assessed?
- What was the expertise of paper-setters?

# Factors affecting validity

- How many experts were involved in setting the paper?
- Are students familiar with the format?
- Did all students take the exam in similar conditions/similar exam?
- How were the pass/fail criteria defined ?



# Educational Impact

- Assessment drives learning
- What are implications of Assessment As Learning tool?

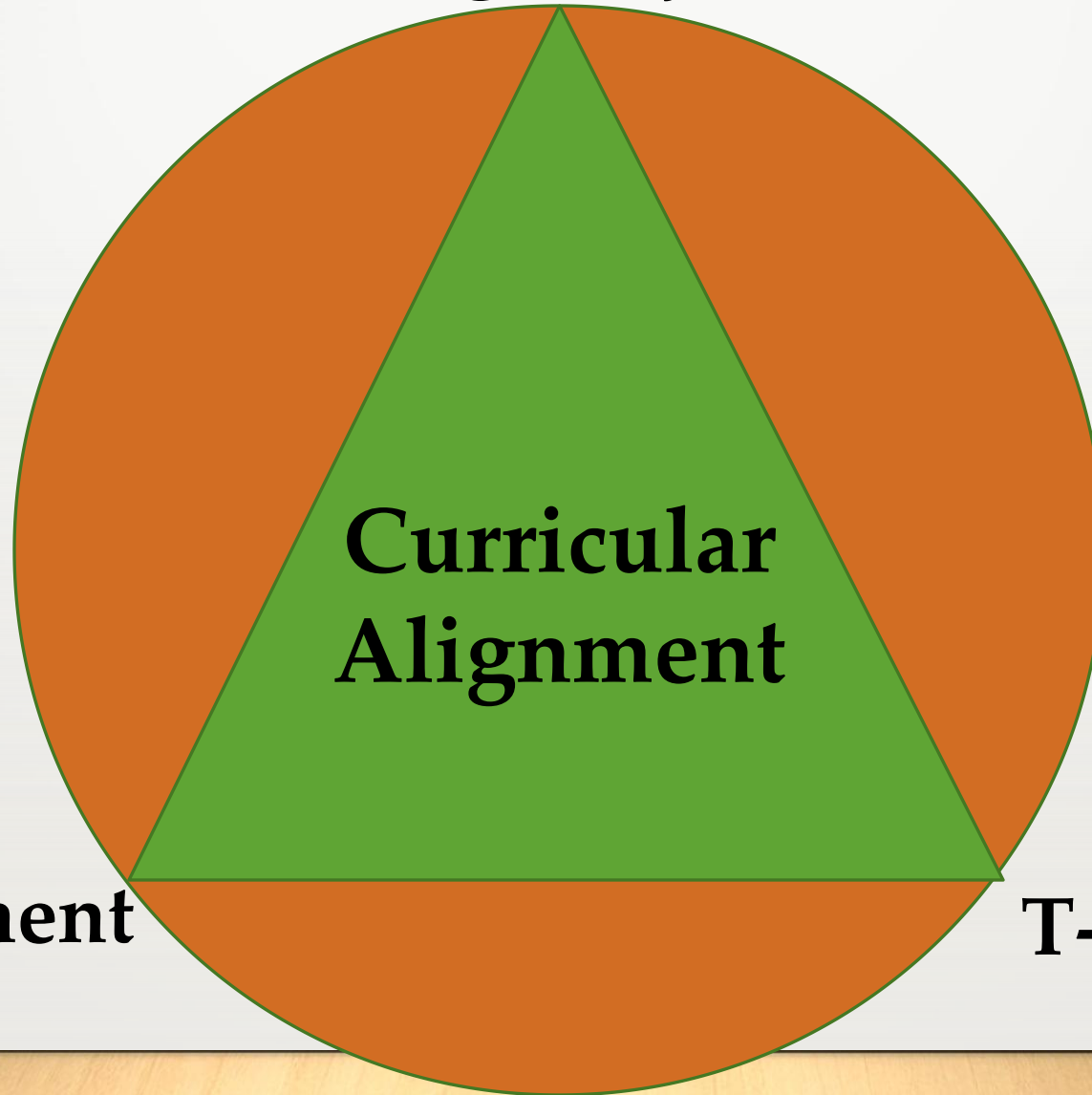
To change curricula or instructional methods without changing examinations will achieve nothing!

Changing the examination system without changing the curriculum had a huge impact upon the nature of learning

- G.E. Miller



# Learning Objectives



**Assessment**

**T-L Methods**

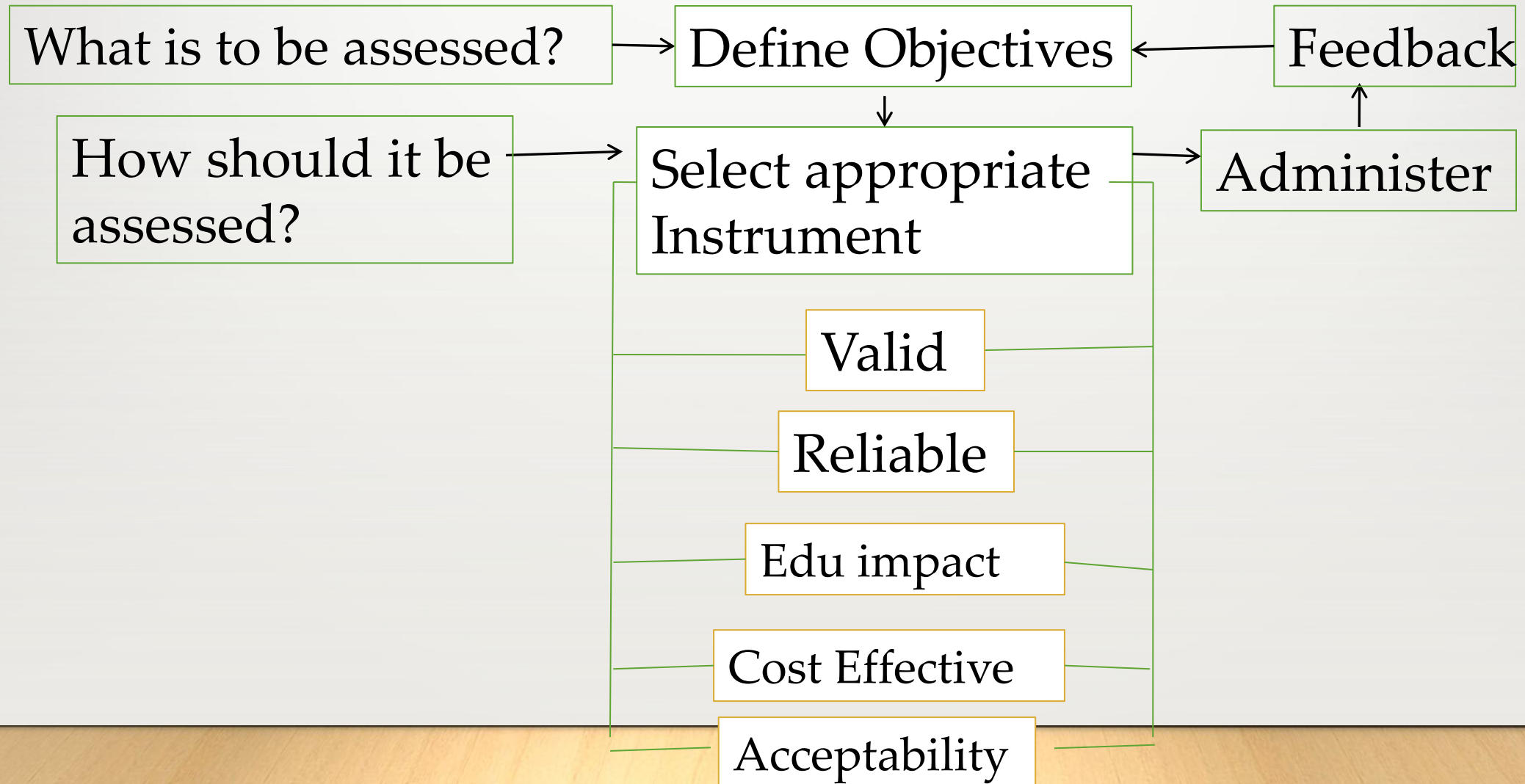
# Effective assessment

- ✓ Based on clearly defined, measurable, learning outcomes/objectives
- ✓ Representative sampling
- ✓ Uses variety of assessment methods
- ✓ Uniform test and procedures for all
- ✓ Clearly defined criteria in judging and grading successful performance
- ✓ Feasible
- ✓ Timely feedback

# Selecting appropriate Assessment method

- Five criteria can be used to evaluate Assessment method
  - reliability,
  - validity,
  - educational impact,
  - cost effectiveness,
  - acceptability

# Strategy for Assessment



"Students can, with difficulty, escape from the effects of poor teaching, they cannot escape the effects of poor assessment".

What are the strengths and weaknesses of the following forms of assessment?

Comment in terms of five criteria

Essay type

Short essays

Short answers

MCQs

Modified Essay