



Creating Educational Tests

Patrick C. Hardigan, Ph.D.
Stanley R. Cohen, Ed.D
Kathleen P. Hagen, MM



Assessment



Classroom assessment is an approach designed to help teachers find out what students are learning and how well they are learning it.

Angelo, T., & Cross, P. Classroom Assessment Techniques, A Handbook for College Teachers, 2nd Ed.



Purpose of Testing

- Communicate to students what material is important
- Motivate students to learn
- Identify areas of deficiency in need of remediation or further learning.

Susan M Case & David B. Swanson,
National Board of Medical Examiners



Purpose of Testing

- Determine final grades or make promotion decisions
- Identify areas where the course/curriculum is weak

Susan M Case & David B. Swanson,
National Board of Medical Examiners



Sampling

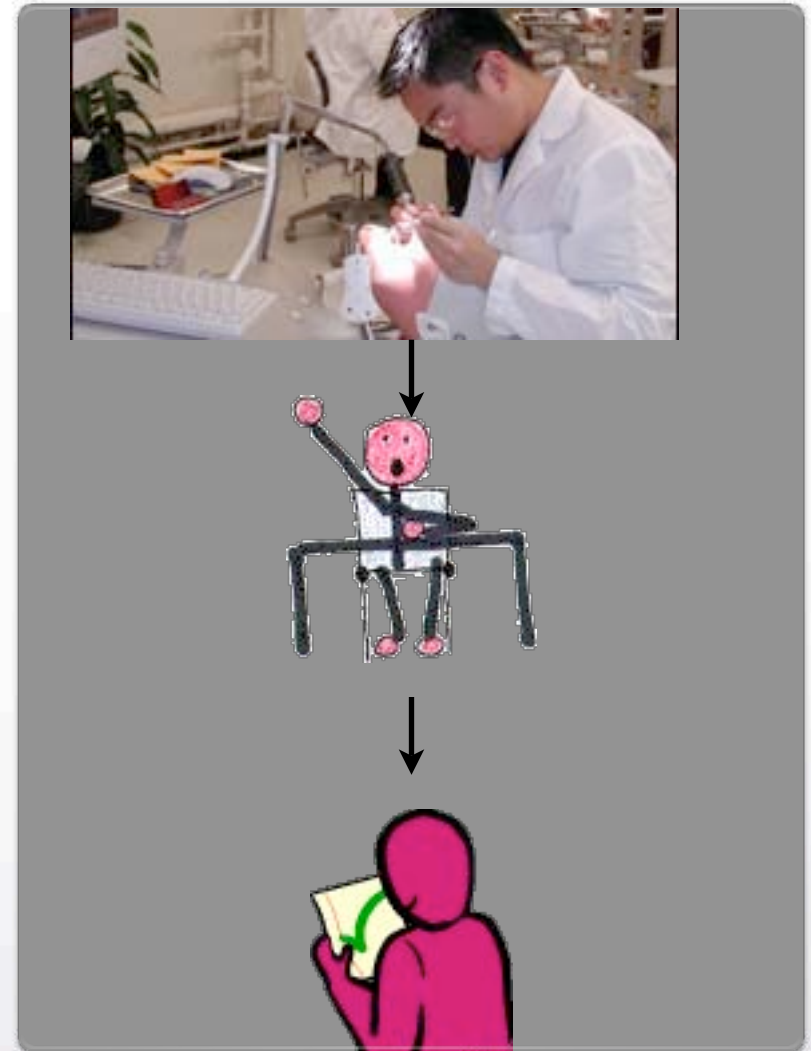
- Inferences
- Reproducible (reliable, generalizable)
- Accurate (valid)



Sampling

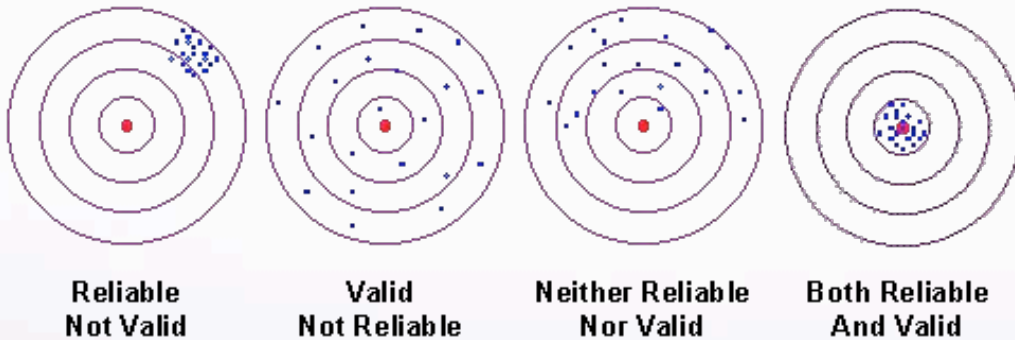


- Potential concepts
- Concepts taught
- Items on exam





Psychometrics



➔ High-stakes tests

✓ reliable/valid

➔ Low-stakes tests

✓ student learning



Cognitive Domain

- The cognitive domain involves knowledge and the development of intellectual skills
- Six major categories



Affective Domain

- This domain includes the manner in which we deal with things emotionally
- Five major categories



Psychomotor Domain

- The psychomotor domain includes physical movement, coordination, and use of the motor-skill areas.
- Six major categories



Writing Objectives



Learn by doing



What is a Learning Objective?

A learning objective is a statement of the observable and measurable actions a learner must perform and the standards to which he/she must perform them in order to demonstrate his/her successful completion of training.



Tips for Writing Learning Objectives



State objectives in terms of the changes, the observable behaviors expected in the student.



Tips for Writing Learning Objectives



- ★ Do not phrase the objectives in terms of what the teacher must do.



Tips for Writing Learning Objectives



State objectives so that they can be understood by both faculty and students.




Tips for Writing Learning Objectives



Limit each statement of an objective to one objective only.



Tips for Writing Learning Objectives

-  Group specific objectives under appropriate general objectives.



Tips for Writing Learning Objectives



Make statements of objectives fairly broad for a course, more specific for a unit or other segment, quite specific for a day's work.



Tips for Writing Learning Objectives



Limit the total number of objectives to a reasonable, attainable number.



Tips for Writing Learning Objectives

- State objectives in terms of action
- use verb form.



Tips for Writing Learning Objectives

- Eliminate from statements of objectives statements concerning subject matter to be taught or means of achieving the objective.



Tips for Writing Learning Objectives



Avoid the use of the following:

to learn

to know

to understand

to appreciate

to recognize






Basic Structure of Objectives

-  **CONDITION**
-  **ACTION**
-  **STANDARD**



Examples of Conditions

-  Given a patient's history
-  Given an x-ray
-  Given modeling clay



Examples of Actions



- ★ See the verb list in your handout. The verb determines the level of the question.



Examples of Standards

- Two out of three times
- After the first attempt
- Every time
- Exactly
- In less than 10 minutes



Example One



Given three pictures of a periodontal abscess, the student can identify the appropriate treatment in at least two cases.



What is the Condition?



Given three pictures of a periodontal abscess, the student can identify the appropriate treatment in at least two cases.



What is the Action?



Given three pictures of a periodontal abscess, the student can identify the appropriate treatment in at least two cases.



What is the Standard?



Given three pictures of a periodontal abscess, the student can identify the appropriate treatment in at least two cases.



What Level is this Objective?



Given three pictures of a periodontal abscess, the student can identify the appropriate treatment in at least two cases.



KNOWLEDGE



Example Two



Given a list of antibiotics designed for both aerobic and anaerobic infections, the student can correctly identify clindamycin and metronidazole as drugs of choice.



What is the Condition?



Given a list of antibiotics designed for both aerobic and anaerobic infections, the student can correctly identify clindamycin and metronidazole as drugs of choice.



What is the Action?



Given a list of antibiotics designed for both aerobic and anaerobic infections, the student can correctly identify clindamycin and metronidazole as drugs of choice.



What is the Standard?



Given a list of antibiotics designed for both aerobic and anaerobic infections, the student can correctly identify clindamycin and metronidazole as drugs of choice.



What Level is this Objective?



Given a list of antibiotics designed for both aerobic and anaerobic infections, the student can correctly identify clindamycin and metronidazole as drugs of choice.



Example Three



Given a patient with valvular heart disease, the student can correctly describe why prophylaxis with antibiotics is critical.



What is the Condition?



Given a patient with valvular heart disease, the student can correctly describe why prophylaxis with antibiotics is critical.



What is the Action?



Given a patient with valvular heart disease, the student can correctly describe why prophylaxis with antibiotics is critical.



What is the Standard?



Given a patient with valvular heart disease, the student can correctly describe why prophylaxis with antibiotics is critical.



What Level is this Objective?



Given a patient with valvular heart disease, the student can correctly describe why prophylaxis with antibiotics is critical.



Example Four



Given a patient with valvular heart disease, the student can correctly state the amount of amoxicillin or ampicillin to prescribe one hour before a dental procedure.



What is the Condition?



Given a patient with valvular heart disease, the student can correctly state the amount of amoxicillin or ampicillin to prescribe one hour before a dental procedure.



What is the Action?



Given a patient with valvular heart disease, the student can correctly state the amount of amoxicillin or ampicillin to prescribe one hour before a dental procedure.



What is the Standard?



Given a patient with valvular heart disease, the student can correctly state the amount of amoxicillin or ampicillin to prescribe one hour before a dental procedure.



What Level is this Objective?



Given a patient with valvular heart disease, the student can correctly state the amount of amoxicillin or ampicillin to prescribe one hour before a dental procedure.



Example 5



Given lab culture results showing staphylococci, streptococci, and enterococci, the student can correctly identify which two are effectively treated with clindamycin.



What is the Condition?



Given lab culture results showing staphylococci, streptococci, and enterococci, the student can correctly identify which two are effectively treated with clindamycin.



What is the Action?



Given lab culture results showing staphylococci, streptococci, and enterococci, the student can correctly identify which two are effectively treated with clindamycin.



What is the Standard?



Given lab culture results showing staphylococci, streptococci, and enterococci, the student can correctly identify which two are effectively treated with clindamycin.



What Level is this Objective?



Given lab culture results showing staphylococci, streptococci, and enterococci, the student can correctly identify which two are effectively treated with clindamycin.



YOUR TURN





What You Need

- The verb list from your handouts
- The content paper on dental anatomy
- Two or three blank sheets of paper (included in your handouts)
- A pen or pencil



Format for this Exercise

- Team up with 3 other people (so, 4 people in a group)
- Using the information from the content paper, write 1 learning objective at each level with your team
- In 20 minutes, be prepared to share your learning objectives with the whole group
- Save your learning objectives – they'll be used later



QUESTIONS ?





Miscellaneous

- Match teaching with testing
- Test specification grid
- Bloom's Taxonomy Alternative
- Recall/Beyond Recall



THE FAR SIDE

by Gary Larson



© 1990 FarWorks, Inc. Dist. by Universal Press Syndicate

THE FAR SIDE ©1990 FarWorks, Inc. Dist. by UNIVERSAL PRESS SYNDICATE. All rights reserved.



Learning Styles

- How students learn affects their test taking
- The MBTI Personality Type is Helpful Here



Learning Styles

- 16 personality types
- Four main subdivisions
 - Thinkers
 - Feelers
 - Intuitives
 - Sensors



Learning Styles

- Thinkers
 - Logic and objective analysis
- Feelers
 - Values and person-centered concerns



Learning Styles

- Sensors
 - Focuses on the present and information gained through the senses
- Intuitives
 - Focuses on the future and possibilities