

# Test Construction—What to Do and What Not to Do

## Completion Tests

### Do

1. Use the completion test to measure lower-order mental skills.
2. Limit the length of the response to a single word or short phrase.
3. Use terms that will have the same meaning to all students—ones that all students can define and understand.
4. Explicitly state and qualify the questions so that a single response is correct.
5. Make the sentence structure as simple as possible.
6. Write a comprehensive set of directions.
7. Have all students use a prepared answer sheet—do not have students “make their own.”
8. Construct the answer sheet so that it is easy to score.
9. Give equal weight to all responses.
10. If possible, use questions rather than incomplete statements.
11. For multiple response items, have blanks of equal lengths.
12. Ask only for important information.
13. Tell the students in advance that they will be given a completion test.

### Don't

1. Over-mutilate sentences by leaving too many blanks.
2. Have the answers to a multiple-response item interdependent—if you can't give one answer, you can't give any.
3. Ask for non-essentials.
4. Penalize for guessing.
5. Use items that have more than one correct answer.
6. Use questions designed to measure higher-level mental processes.
7. Pull questions verbatim from the textbook or lecture notes.

### Examples:

\_\_\_\_\_ 1. The first President of the United States was?

1. A President who was ineffective was \_\_\_\_\_ whose Vice-President was \_\_\_\_\_.

## Multiple Choice Tests

### Do

1. Use multiple-choice test to measure some higher-level mental processes.
2. Include enough items to sample the material adequately.
3. Use a Table or Chart of Specifications to ensure adequate sampling.
4. Establish a frame of reference for answering the item in the stem.
5. Express the problem in the stem.
6. Write concise, unambiguous, and grammatically correct items.
7. Include in the stem all the words that would otherwise need to appear in each alternative answer.
8. Adhere to any logical ordering of the alternatives that might exist.
9. Provide about the same number of keyed responses in each choice positions on the total test (the same number of A, B, C, D possibilities).
10. Control the difficulty of the items by the homogeneity of the responses.
11. Make every foil appealing to the student who does not know the correct answer—a foil is also called a distracter.

### Don't

1. Use multiple choice tests to measure writing skills, creativity, important synthesis objectives or evaluative objectives.
2. Have conflicting frames of reference embedded in the same item.
3. Have grammatical errors in the item.
4. Be ambiguous.
5. Provide superfluous information in the item.
6. Have long keyed responses (key answer) and short distracters or the reverse.
7. Have definite patterns in the rotation of the responses among the choice positions.
8. Use unnecessary, technical terminology.
9. Include poor foils in an item.
10. Use "none of the above" or "all of the above" in questions for which the directions were to "choose the best answer."

Example: Choose the Best Answer for each of the following.

- \_\_\_\_\_ 1. The first President of the United States was
- a. George Bush
  - b. Thomas Jefferson
  - c. Your Teacher
  - d. George Washington, who chopped down a cherry tree
  - e. None of the above

## True/False Tests

### Do

1. Include enough items to sample the material adequately.
2. Use a table of specifications to ensure adequate sampling.
3. Establish a frame of reference for answering the items.
4. Write concise, unambiguous, and grammatically correct statements.
5. Use questions that are important in the area being tested.
6. Have approximately the same number of *true* and *false* statements.

### Don't

1. Use questions that are somewhat true and somewhat false.
2. Use unnecessary words or phrases.
3. Have more than one theme in the question.
4. Have irrelevant clues.
5. Have a pattern in the order of the responses.
6. Use negative statements.
7. Use the qualifying terms, *all*, *some*, *none*, *few*, or *many*.
8. Pull statements directly from the textbook or class notes.

Example: Write the word *true* or *false* in the blank beside each statement.

1. The first President of the United States, George Washington, was always honest and hard working, and he had wooden teeth.

## Matching Tests

### Do

1. Use a Table or Chart of Specifications to ensure adequate sampling.
2. Establish a frame of reference for answering the item in the premise.
3. Establish general orientation in the introductory statement.
4. Be clear and concise.
5. Use correct grammar.
6. Adhere to a logical ordering of alternatives if one exists.
7. Control the difficulty of the item by homogeneous alternatives.
8. Have homogenous premises and homogeneous alternatives.
9. Inform the students if an alternative may be used more than once.

### Don't

1. Expect to measure higher-level mental processes.
2. Have errors of grammar in premises or alternatives.
3. Provide superfluous information.
4. Have a pattern between the order of appearance of the premises and the answers.
5. Use unnecessary, technical terminology.
6. Have more than twelve alternatives.
7. Have an equal number of premises and alternatives.
8. Have students "turn the page" for premises and alternatives.

## Essay Tests

### Do

1. Use essay tests to measure higher-level thinking only.
2. Relate the questions directly to the objectives or learning outcomes.
  - a. Restricted response calls for strict limits on the answer. The question details the number of reasons or bits of supporting evidence the students should supply.
  - b. Extended response questions have limits of time or number of words. They call of overall ability to organize and integrate ideas.
3. Formulate a clear task.
4. Provide ample time for answering. Suggest a time limit.
5. Provide a rubric for scoring.

### Don't

1. Permit students a choice of questions. Exception: If the essay is a test of writing skills—only then are choices acceptable.
2. Write the essay question without writing the acceptable answer.
3. Construct the rubric for scoring after students have answered the essay question.

## Essay Test

### Scoring

1. Evaluate in terms of learner outcomes.
2. Score restricted response answers by a point method. Use a model answer as a key.
3. Score extended response answers by the rating method. Use a set of criteria (a rubric or checklist).
  - Suggested Criteria:
    - Completeness of plan
    - Clarity and accuracy with which each step is described.
    - Adequacy of support or justification for each step.
    - Degree to which parts are integrated.
4. Evaluate all students' answers to one question before going to the next. This procedure helps offset the halo effect.
5. Evaluate answers without knowing the identity of the student.
6. Try to have two persons grade each paper.

Criterion	Desired Responses
Clarity	The student answers in understandable English without rambling, failing to finish, or confusing thoughts.
Accuracy	The student's answer contains no factual errors and is based on accurate information.
Appropriateness	The student answers the question that was asked.
Specificity	The student clearly identifies who and what.
Support	The student gives reasons, facts, or examples to support statements, or explains the criteria or assumptions on which opinions are based.
Complexity	The student's answer shows awareness that there are multiple ways of understanding the problem which must be considered before a valid judgment can be reached.
Originality	The student draws upon current knowledge and past experiences to create or discover ideas that are new to the student.

## Some types of thought questions and sample stems

Comparing	Describe the similarities and differences between— Compare the following two methods of—
Relating cause and effect	What are the major causes of— What would be the most likely effect of—
Justifying	Which of the following alternative would you favor and why? Explain why you agree or disagree with the following statement.
Summarizing	State the main points included in— Briefly summarize the contents of—
Generalizing	Formulate several valid generalizations from the following data. State a set of principles that can explain the following events.
Inferring	In light of the facts presented, what is most likely to happen? When? How would (?) be likely to react to the following issue?
Classifying	Group the following items according to— What do the following items have in common?
Creating	List as many ways as you can think of for— Make up a story describing what would happen if— Write a list of questions that should be answered before—
Applying	Using the principles of (?) as a s guide, describe a solution for the following situations.  Describe a situation that illustrates the principle of—
Analyzing	Describe the reasoning errors in the following paragraph. List and describe the main characteristics of— Describe the relationship between the following parts of—
Synthesizing	Describe a plan for proving that— Write a well-organized report that shows— Write a set of specifications for building a—
Evaluating	Criticize or defend each of the following statements. Describe the strengths and weaknesses of the following— Using the criteria developed in class, write a critical evaluation of—