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## More Multiple-choice Item Writing Do's And Don'ts

Robert B. Frary  
Virginia Polytechnic Institute and State University

Kehoe(1995) gave a few suggestions for item-writing, but only to a limited extent, due to its coverage of other aspects of test development. What follows here is a fairly comprehensive list of recommendations for writing multiple choice items. Some of these are backed up by psychometric research; i.e., it has been found that, generally, the resulting scores are more accurate indicators of each student's knowledge when the recommendations are followed than when they are violated. Other recommendations result from logical deduction.

### Content

1. Do ask questions that require more than knowledge of facts. For example, a question might require selection of the best answer when all of the options contain elements of correctness. Such questions tend to be more difficult and discriminating than questions that merely ask for a fact. Justifying the "bestness" of the keyed option may be as challenging to the instructor as the item was to the students, but, after all, isn't challenging students and responding to their challenges a big part of what being a teacher is all about?
2. Don't offer superfluous information as an introduction to a question, for example, "*The presence and association of the male seems to have profound effects on female physiology in domestic animals. Research has shown that in cattle presence of a bull has the following effect:*" This approach probably represents an unconscious effort to continue teaching while testing and is not likely to be appreciated by the students, who would prefer direct questions and less to read. The stem just quoted could be condensed to "Research has shown that the presence of a bull has which of the following effects on cows?" (17 words versus 30).

### Structure

3. Don't ask a question that begins, "*Which of the following is true [or false]?*" followed by a collection of unrelated options. Each test question should focus on some specific aspect of the course. Therefore, it's OK to use items that begin, "Which of the following is true [or false] concerning X?" followed by options all pertaining to X. However, this construction should be used sparingly if there is a tendency to resort to trivial reasons for falseness or an opposite

above would not hold. However, there are three not-too-common item-writing/test-preparation errors that represent nothing less than negligence. They are now mentioned to encourage careful preparation and proofreading of tests:

**Typos.** These are more likely to appear in distractors than in the stem and the correct answer, which get more scrutiny from the test preparer. Students easily become aware of this tendency if it is present.

**Grammatical inconsistency** between stem and options. Almost always, the stem and the correct answer are grammatically consistent, but distractors, often produced as afterthoughts, may not mesh properly with the stem. Again, students quickly learn to take advantage of this foible.

**Overlapping distractors.** For example: *Due to budget cutbacks, the university library now subscribes to fewer than \_?\_ periodicals.* 1) 25,000 2) 20,000 3) 15,000 4) 10,000

Perhaps surprisingly, not all students "catch on" to items like this, but many do. Worse yet, the instructor might indicate option 2 as the correct answer.

Finally, we consider an item-writing foible reported by Smith (1982). What option would you select among the following (stem omitted)?

- 1) Abraham Lincoln 3) Stephen A. Douglas
- 2) Robert E. Lee 4) Andrew Jackson

The testwise but ignorant student will select Lincoln because it represents the intersection of two categories of prominent nineteenth century people, namely, presidents and men associated with the Civil War.

Try this one:

- 1) before breakfast 3) on a full stomach
- 2) with meals 4) before going to bed

Three options have to do with eating, and two with the time of day. Only one relates to both. Unfortunately, some item writers consciously or unconsciously construct items of this type with the intersection invariably the correct answer.

This article was adapted from *Testing Memo 10: Some Multiple-choice Item Writing Do's And Don'ts*, Office of Measurement and Research Services, Virginia Polytechnic Institute and State University, Blacksburg, VA 24060

### Further Reading

Airasian, P. (1994). *Classroom Assessment*, Second Edition, NY: McGraw-Hill.

Brown, F. (1983). *Principles of Educational and Psychological Testing*, Third edition, NY: Holt Rinehart, Winston. Chapter 11.

Cangelosi, J. (1990). *Designing Tests for Evaluating Student Achievement*. NY: Longman.

Grunlund, N (1993). *How to make achievement tests and assessments*, 5th edition, NY: Allen and Bacon.

Haladyna, T.M. & Downing, S.M. (1989). Validity of a Taxonomy of Multiple-Choice Item-Writing Rules. *Applied Measurement in Education*, 2 (1), 51-78.

Kehoe, J (1995). Writing Multiple-Choice Test Items. *Practical Assessment, Research and Evaluation*, 4(4). [Available online <http://pareonline.net/getvn.asp?v=4&n=4>].

Roid, G.H. & Haladyna, T.M. (1980). The emergence of an item writing technology. *Review of Educational Research*, 49, 252-279.

11. Use only correct grammar in the stem and alternatives.
12. Make all alternatives grammatically consistent with the stem.
13. The length, explicitness and technical information in each alternatives should be parallel so as not to give away the correct answer.
14. Use 4 or 5 alternatives in each item.
15. Avoid repeating words between the stem and key. It can be done, however, to make distractors more attractive.
16. Avoid wording directly from a reading passage or use of stereotyped phrasing in the key.
17. Alternatives should not overlap in meaning or be synonymous with one another.
18. Avoid terms such as "always" or "never," as they generally signal incorrect choices.
19. To test understanding of a term or concept, present the term in the stem followed by definitions or descriptions in the alternatives.
20. Avoid items based on personal opinions unless the opinion is qualified by evidence or a reference to the source of the opinion (e.g., According to the author of this passage, . . . ).
21. Do not use "none of the above" as a last option when the correct answer is simply the best answer among the choices offered.
22. Try to avoid "all of the above" as a last option. If an examinee can eliminate any of the other choices, this choice can be automatically eliminated as well.

## TRUE-FALSE TEST ITEMS

A true-false item can be written in one of three forms: simple, complex, or compound. Answers can consist of only two choices (simple), more than two choices (complex), or two choices plus a conditional completion response (compound). An example of each type of true-false item follows:

### Sample True-False Item: Simple

*The acquisition of morality is a developmental process.*      *True    False*

### Sample True-False Item: Complex

*The acquisition of morality is a developmental process.*      *True    False    Opinion*

### Sample True-False Item: Compound

*The acquisition of morality is a developmental process.*

*If this statement is false, what makes it false?*      *True    False*

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## Advantages in Using True-False Items

True-False items can provide ...

- the widest sampling of content or objectives per unit of testing time.
- scoring efficiency and accuracy.
- versatility in measuring all levels of cognitive ability.
- highly reliable test scores.
- an objective measurement of student achievement or ability.

## Limitations in Using True-False Items

True-false items ...

*heat is applied to the container.*

4. Include enough background information and qualifications so that the ability to respond correctly to the item does not depend on some special, uncommon knowledge.

Undesirable: *The second principle of education is that the individual gathers knowledge.*

Desirable: *According to John Dewey, the second principle of education is that the individual gathers knowledge.*

5. Avoid lifting statements from the text, lecture or other materials so that memory alone will not permit a correct answer.

Undesirable: *For every action there is an opposite and equal reaction.*

Desirable: *If you were to stand in a canoe and throw a life jacket forward to another canoe, chances are your canoe would jerk backward.*

6. Avoid using negatively stated item statements.

Undesirable: *The Supreme Court is not composed of nine justices.*

Desirable: *The Supreme is composed of nine justices.*

7. Avoid the use of unfamiliar vocabulary.

Undesirable: *According to some politicians, the raison d'etre for capital punishment is retribution.*

Desirable: *According to some politicians, justification for the existence of capital punishment is retribution.*

8. Avoid the use of specific determiners which would permit a test-wise but unprepared examinee to respond correctly. Specific determiners refer to sweeping terms like "all,"

3. \_\_\_ Ammonia C. NaCl  
 4. \_\_\_ Sulfuric Acid D. H<sub>2</sub>O  
 E. H<sub>2</sub>HCl

3. Arrange the list of responses in some systematic order if possible (e.g., chronological, alphabetical).

*Directions: On the line to the left of each definition in Column I, write the letter of the defense mechanism in Column II that is described. Use each defense mechanism only once.*

Column I		Undesirable	Desirable
		Column II	
	Hunting for reasons		
___ 1.	to support one's beliefs.	a. Rationalization	Denial of reality
	Accepting the values and norms of others as one's own even		
___ 2.	when they are contrary to previously held values.	b. Identification	b. Identification
	Attributing to others one's own		
___ 3.	unacceptable impulses, thoughts and desires.	c. Projection	c. Introjection
	Ignoring disagreeable		
___ 4.	situations, topics, sights.	d. Introjection	d. Projection
		e. Denial of Reality	e. Rationalization

Avoid grammatical or other clues to the correct response.

Undesirable: *Directions: Match the following in order to complete*

### Sample Matching Test Item

*Directions: On the line to the left of each factual statement, write the letter of the principle which best explains the statement's occurrence. Each principle may be used more than once.*

#### ***Factual Statements***

- 1. Fossils of primates first appear in the Cenozoic rock strata, while trilobite remains are found in the Proterozoic rocks.*
- 2. The Arctic and Antarctic regions are sparsely populated.*
- 3. Plants have no nervous system.*
- 4. Large coal beds exist in Alaska.*

#### ***Principles***

- a. There have been profound changes in the climate on earth.*
- b. Coordination and integration of action is generally slower in plants than in animals.*
- c. There is an increasing complexity of structure and functions from lower to higher forms of life.*
- d. All life comes from life and produces its own kind of living organisms.*
- e. Light is a limiting factor to life.*

### Advantages in Using Matching Items

#### **Matching items**

- require short periods of reading and response time, allowing you to cover more content.
- provide objective measurement of student achievement or ability.
- provide highly reliable test scores.
- provide scoring efficiency and accuracy.

### Limitations in Using Matching Items

#### **Matching items**