

Practical Ideas on Test and Item Construction

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Test Planning

- Purpose
- Table of specifications
- Efficiency

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Table of Specifications

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## Specific Test Item Formats

- Selected response items
  - multiple choice
  - true/false
  - etc.
- Constructed response
  - short answer
  - essay

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## Item quality matters

- Items that can be answered correctly without mastering the objective inflate students' scores (and therefore reduce validity)
- Items that cannot be answered correctly by students who have mastered the objective deflate scores (and therefore reduce validity)

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## Guidelines for Constructing Multiple Choice Items

- Stem presents problem (usually with a verb)
- Load the stem, keep the alternatives light
- Clarity and conciseness
- One correct (or clearly best), three or four other alternatives

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### Guidelines (cont.)

- Avoid internal clues
  - grammar 
  - length of alternatives
  - specific determiners
  - other items
- Use 'all' and 'none of the above' rarely 
- Put correct alternative in each position equally often

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### Example: Alternatives overloaded, stem lacking

- The main
  - problem with multiple choice questions is that they don't test communication skills
  - advantage of multiple choice items is that they are quick and easy to write



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### Example: Internal clues

- Teachers should wait several seconds after asking the class a question because:
  - in order to let students write the question down
  - students need time to think
  - ...
  - ...



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### Example: Internal clues

- A square is:
  - a quadrilateral
  - a circle
  - a phlistogon
  - all of the above



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### Some Strategies for Writing MC Items

- premise--> conclusion
- premise + premise --> conclusion
- analogy
- classification
- context dependent

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### Premise--> Conclusion

Let  $S$  equal the standard deviation of a set of scores. If 2 is added to each score, what will the 'new' standard deviation be?

- $S + 2$
- $S$  (i.e., no change)
- $S + \text{the square root of } 2$
- the answer depends on whether  $S$  is positive or negative

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### Analogy

Editor is to newspaper as \_\_\_\_\_ is to TV.

- a. news director
- b. business manager
- c. associate producer
- d. assignment editor

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### Classification

The tibia is a:

- a. ligament
- b. tendon
- c. soft organ
- d. bone

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### Advantages of Selection Items

- Content coverage
- Scoring ease
- Versatility

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**Selection and Construction:**  
**Similarities**

- Can measure most educational outcomes
- Involve subjectivity (Construction in writing and Selection in scoring)

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**Selection and Construction:**  
**Differences**

Selection	Construction
<ul style="list-style-type: none"><li>• choose answer</li><li>• time goes to reading and thinking</li><li>• task and basis for scoring clear</li></ul>	<ul style="list-style-type: none"><li>• plan and express answer</li><li>• time goes to writing and thinking</li><li>• task and basis for scoring less clear</li></ul>

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**Selection and Construction:**  
**Differences (cont.)**

Selection	Construction
<ul style="list-style-type: none"><li>• many specific questions</li><li>• easy to score, hard to prepare</li><li>• quality depends most on test author</li><li>• guessing</li></ul>	<ul style="list-style-type: none"><li>• few general questions</li><li>• easy to prepare, hard to score</li><li>• quality depends most on test scorer</li><li>• bluffing</li></ul>

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Essay Items:

**Construction**

- Some degree of novelty
- Determinate
- Define the task well, but leave room for student interpretation
- Sample widely but leave enough time to answer

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Essay Items:

**Construction (cont.)**

- Avoid choice among questions
- Try answering the questions
- Specify time or points

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Essay Items: Scoring

- Analytical or holistic
- Question by question
- Mask students' identities
- Identify what will be scored
- Get independent scoring on at least a sample

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## References

- Jacobs, L. C., & Chase, C. I. (1992)  
*Developing and using tests effectively: A guide for faculty*. San Francisco: Jossey Bass.
- Evaluation and Exam Service (1996)  
*Preparing and evaluating essay test questions*. Iowa City: Self (see <http://www.uiowa.edu/~examserv>)

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