Writing Multiple Choice Items

This presentation is based on one given by Kelli Samonte, JMU CARS, Summer 2012. The mistakes herein are Kathy’s, not Kelli’s.
Creating Assessment Instruments

1. Determine Objectives
2. Write Items
3. Pilot
4. Revise
5. Test Blueprint
Learning Objectives

• *Lead* the assessment process
  – Clear goals/objectives make it easier to *create instruments*, analyze data, and report results
• Serve as guides for students in learning
• Communicate the intentions of the course to faculty, future students, administrators, parents
Example Objectives

• After completing this workshop, participants will be able to:
  – Identify the four steps in creating multiple choice exams
  – Identify the different parts of a multiple choice item
  – Distinguish between good and bad multiple choice items
  – Create effective multiple choice items
Test Blueprint

• A test blueprint is a table of specifications that weights each objective according to how important it is or how much time is spent covering that objective.
Developing a Test Blueprint

• List objectives in a table
• Choose number of total test items (test length)
• Designate number of items per objective
  – Consider proportion of total test
  – Base on importance of objectives
    • Should relate to amount of class time spent teaching the objective
  – Often assign one point per item
<table>
<thead>
<tr>
<th>C1 Information Literacy Objective</th>
<th>Items</th>
<th># of Items</th>
<th>% of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Recognize that information is available in a variety of forms including but not limited to text, images and visual media</td>
<td>1048, 172, 173, 209,1005,104, 1056</td>
<td>7</td>
<td>18%</td>
</tr>
<tr>
<td>2: Determine when information is needed and find it effectively using a variety of reference sources</td>
<td>1,6,8,109,110, 111,205, 1003,211,120, 156,159,160,162, 1009,1016,1017</td>
<td>17</td>
<td>46%</td>
</tr>
<tr>
<td>3: Evaluate the quality of information</td>
<td>40,43,131,221, 1037</td>
<td>5</td>
<td>14%</td>
</tr>
<tr>
<td>4: Use information effectively for a purpose</td>
<td>229, 1050,1053,53</td>
<td>4</td>
<td>11%</td>
</tr>
<tr>
<td>5: Employ appropriate technologies to create an information-based product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6: Use information ethically and legally</td>
<td>129,157,228,1001</td>
<td>4</td>
<td>11%</td>
</tr>
</tbody>
</table>
Multiple-Choice Item Terminology

• Multiple choice items have a **stem**, **options**, **correct answer**, and **distractors**

• For the bread, cereal, rice and pasta group, the food pyramid recommends (**stem**)
  - a. 2-3 daily servings (**distractor**)
  - b. 3-5 daily servings (**distractor**)
  - c. 4-6 daily servings (**distractor**)
  - d. 6-11 daily servings (**correct answer**)
Basic Style and Format Tips

• Avoid excess words – be succinct!
• Use specific, appropriate vocabulary
• Avoid bias (age, ethnicity, gender, disabilities)
• Write stems and options in third person
• Underline and **bold** negative or other important words
• **Have others review your items!**
• **Proofread, proofread, proofread!**
Tips for Writing the Stem

• Keep the stem as short as possible
• Place the main idea of the question in the stem, not the item options
• Don’t provide clues to correct answer in stem (e.g., grammatical clues)
• Don’t use negative stems too frequently
• Avoid “double-barreled” items
Tips for Writing Response Options

• Develop as many effective options as possible, but three are sufficient (Rodriguez, 2005)
• Vary the location of the correct answer when feasible, or put options in logical order (e.g. chronological, numerical)
• Keep options independent
• Keep options similar - format & length
More Tips for Writing the Options

• Use “all of the above” and “none of the above” sparingly!

• Don’t use “always” or “never”

• Don’t give clues to the right answer

• Make distractors plausible
multiple choice question:
which of the below makes you confused?

[1] all of the above
[2] those above the below
[3] those below the below
Practice
What is wrong with this stem?

True or False:

Pablo Picasso is considered a founder of the impression and cubist movements?
Revised

• Break this item into two parts

  True or False: Picasso was a founder of modern impressionism.

True or False: Picasso was a founder of the cubist movement.
How can this item be revised?

During what age period is thumb-sucking likely to produce the greatest psychological trauma?

A. Infancy  
B. Preschool period  
C. Before Adolescence  
D. During Adolescence  
E. After Adolescence
During what age period is thumb-sucking likely to produce the greatest psychological trauma?

A. Birth to 2 years old
B. 2 years to 5 years old
C. 5 years to 12 years old
D. 12 years to 20 years old
E. 20 years of age or older
Another One. . .

Albert Einstein was a:

A. Anthropologist
B. Astronomer
C. Chemist
D. Mathematician
Who was Albert Einstein?
A. An anthropologist
B. An astronomer
C. A chemist
D. A mathematician
And another. . .

World War II was:
A. The result of the failure of the League of Nations
B. Horrible
C. Fought in Europe, Asia and Africa
D. Fought during the period of 1939-1945
In which of these time periods was World War II fought?
A. 1914-1917
B. 1929-1934
C. 1939-1945
D. 1951-1955
E. 1961-1969
Your Turn

• Choose an objective
• Select content from this objective for which you would like to generate an item
• Create item stem
• Create response option with correct answer
• Create distractors
