Fundamentals of Course Design III: Assessment and Exam Design

Tuesday, February 24, 2015

Kaneb Center for Teaching and Learning
Exam Checklist

Are students prepared for the exam?
Make old exams available to students, if possible. Make clear before any test what material you consider important. Make sure students have practice with the kinds of questions/problems on the exam.

Does the exam reflect your goals for the course?
Compare material in the test to the major topics listed in your syllabus, lecture outlines, and the textbook, to make sure you’ve been consistent.

Is the exam of reasonable length?
Take the exam yourself. You should generally be able to finish in one-fourth the time it will take the students. Keep time-consuming number-crunching to a minimum.

Are the directions and the format clear and well-organized?
Ask a colleague or TA to read over the instructions to help you spot any ambiguities or misleading statements. Make sure the print is clear and that if there is space left for problems/essays, it is of suitable length.

Is it clear how much credit each question is worth?
Make sure that the value of each question is clear, so students can decide how much time to spend on each part of the exam.

Is it free of double jeopardy?
Do students need an answer from one part of the exam in order to understand or solve another?

Does it begin with questions or problems that will build, rather than undermine, student confidence?
Have compassion for students’ test anxiety and start an exam with questions that are reasonably easy for a prepared student.

Are the questions/problems interesting?
Try to include interesting applications or combinations of material that show the value of the material students are being tested on. Make sure to challenge, but not to confuse, your students.

Resource location: https://teachingcommons.stanford.edu/resources/teaching/evaluating-students/assessing-student-learning/exam-checklist
Designing Test Questions

SOURCE: http://teaching.uncc.edu/learning-resources/articles-books/best-practice/assessment-grading/designing-test-questions#sthash.PNeI9dXD.dpuf

True/False

Good for:
- Knowledge-level content
- Evaluating student understanding of popular misconceptions
- Concepts with two logical responses

Advantages:
- Can test large amounts of content
- Students can answer 3–4 questions per minute

Disadvantages:
- They are easy
- Difficult to discriminate between students who know the material and those who don't
- Students have a 50-50 chance of getting the right answer by guessing
- Need a large number of items for high reliability

Tips for Writing Good True/False Items:
- Avoid double negatives
- Avoid long/complex sentences
- Use specific determinants with caution: never, only, all, none, always, could, might, can, may, sometimes, generally, some, few
- Use only one central idea in each item
- Don't emphasize the trivial
- Use exact quantitative language
- Don't lift items straight from the book
- Make more false than true (60/40) (Students are more likely to answer true.)

Matching

Good for:
- Knowledge level, some comprehension level (if appropriately constructed)

Types:
- Terms with definitions
- Phrases with other phrases
- Causes with effects
- Parts with larger units
- Problems with solutions

Advantages:
- Maximum coverage at knowledge level in a minimum amount of space/prep time
- Valuable in content areas that have a lot of facts

Disadvantages:
- Time consuming for students
- Not good for higher levels of learning

Tips for Writing Good Matching Items:
- Need 15 items or less
• Give good directions on basis for matching
• Use items in response column more than once (reduces the effects of guessing)
• Use homogenous material in each exercise
• Make all responses plausible
• Put all items on a single page
• Put responses in some logical order (chronological, alphabetical, etc.)
• Responses should be short

### Multiple Choice

**Good for:**
- Application, synthesis, analysis, and evaluation levels

**Types:**
- Question/Right answer
- Incomplete statement
- Best answer

**Advantages:**
- Very effective
- Versatile at all levels
- Minimum of writing for student
- Guessing reduced
- Can cover broad range of content

**Disadvantages:**
- Difficult to construct good test items
- Difficult to come up with plausible distractors/alternative responses

**Tips for Writing Good Multiple-Choice Items:**
- Stem should present single, clearly formulated problem
- Stem should be in simple, understood language; delete extraneous words
- Avoid "all of the above"—can answer based on partial knowledge (if one is incorrect or two are correct, but unsure of the third...)
- Avoid "none of the above"
- Make all distractors plausible/homogenous
- Don't overlap response alternatives (decreases discrimination between students who know the material and those who don't)
- Don't use double negatives
- Present alternatives in logical or numerical order
- Place correct answer at random
- Make each item independent of others on test
- Way to judge a good stem: students who know the content should be able to answer before reading the alternatives
- List alternatives on separate lines, indent, separate by blank line, and use letters vs. numbers for alternative answers
- Need more than 3 alternatives, 4 is best
Short Answer

Good for:
• Application, synthesis, analysis, and evaluation levels

Advantages:
• Easy to construct
• Good for "who," what," where," "when" content
• Minimizes guessing
• Encourages more intensive study; student must know the answer vs. recognizing the answer

Disadvantages:
• May overemphasize memorization of facts
• Take care: questions may have more than one correct answer
• Scoring is laborious

Tips for Writing Good Short Answer Items:
• When using with definitions: supply term, not the definition (for a better judge of student knowledge)
• For numbers, indicate the degree of precision/units expected
• Use direct questions, not an incomplete statement
• If you do use incomplete statements, don't use more than 2 blanks within an item
• Arrange blanks to make scoring easy
• Try to phrase question so there is only one answer possible

Essay

Good for:
• Application, synthesis, and evaluation levels

Types:
• Extended response: synthesis and evaluation levels; a lot of freedom in answers
• Restricted response: more consistent scoring, outlines parameters of responses

Advantages:
• Students less likely to guess
• Easy to construct
• Stimulates more study
• Allows students to demonstrate ability to organize knowledge, express opinions, show originality

Disadvantages:
• Can limit amount of material tested, therefore has decreased validity
• Subjective, potentially unreliable scoring
• Time consuming to score

Tips for Writing Good Essay Items:
• Provide reasonable time limits for thinking and writing
• Avoid letting them answer a choice of questions (You won't get a good idea of the broadness of student achievement when they only answer a set of questions.)
• Give definitive task to student (e.g., compare, analyze, evaluate, etc.)
• Use checklist point system to score with a model answer: write outline, determine how many points to assign to each part
• Score one question at a time; all at the same time
Oral Exams

Good for:
- Knowledge, synthesis, evaluation levels

Advantages:
- Useful as an instructional tool; allows students to learn at the same time as testing
- Allows teacher to give clues to facilitate learning
- Useful to test speech and foreign language competencies

Disadvantages:
- Time consuming to give and take
- Could have poor student performance because they haven't had much practice with it
- Provides no written record without checklists

Student Portfolios

Good for:
- Knowledge, application, synthesis, evaluation levels

Advantages:
- Can assess compatible skills: writing, documentation, critical thinking, problem solving
- Can allow student to present totality of learning
- Students become active participants in the evaluation process

Disadvantages:
- Can be difficult and time consuming to grade

Performance

Good for:
- Application of knowledge, skills, abilities

Advantages:
- Measures some skills and abilities not possible to measure in other ways

Disadvantages:
- Cannot be used in some fields of study
- Difficult to construct
- Difficult to grade
- Time-consuming to give and take

Thought-Provoking Question Stems

- What is a new example of ____?
- How could ____ be used to ____?
- What would happen if ____?
- What are the implications of ____?
- What are the strengths and weaknesses of ____?
- What is ____ analogous to?
- What do we already know about ____?
- How does ____ affect ____?
- How does ____ tie in with what we learned before?
• Explain why ____.
• Explain how ____.
• What is the meaning of ____?
• Why is ____ important?
• What is the difference between ____ and ____?
• How are ____ and ____ similar?
• How does ____ apply to everyday life?
• What is the counterargument for ____?
• What is the best ____ and why?
• What are some possible solutions to the problem of ____?
• Compare ____ and ____ with regard to ____.
• What do you think causes ____? Why?
• Do you agree or disagree with this statement: ____? What evidence is there to support your answer?
• How do you think ____ would see the issue of ____?