



Silver Cross Emergency
Medical Services System



Third Quarter SCEMSS LI CE July – September 2021

Completion of Powerpoint and Quiz is worth 3 CEUs under 071000E1221

Writing and Analyzing Exams



Introduction

- ▶ Proper instruction for our students is the goal we set for ourselves as Lead Instructors. The method we use is testing, weather it be oral, multiple guess, fill in the blanks, True/False, essay, or you let them phone a friend.



test



Introduction (CONT.)

- ▶ Gauging the amount of instruction which sinks into their heads is how we set the bar for future classes. In order to do this effectively we need tests which have been validated. How do we do that? Follow along and we will explore some ways to have well developed exams for our eager Adult Learners!

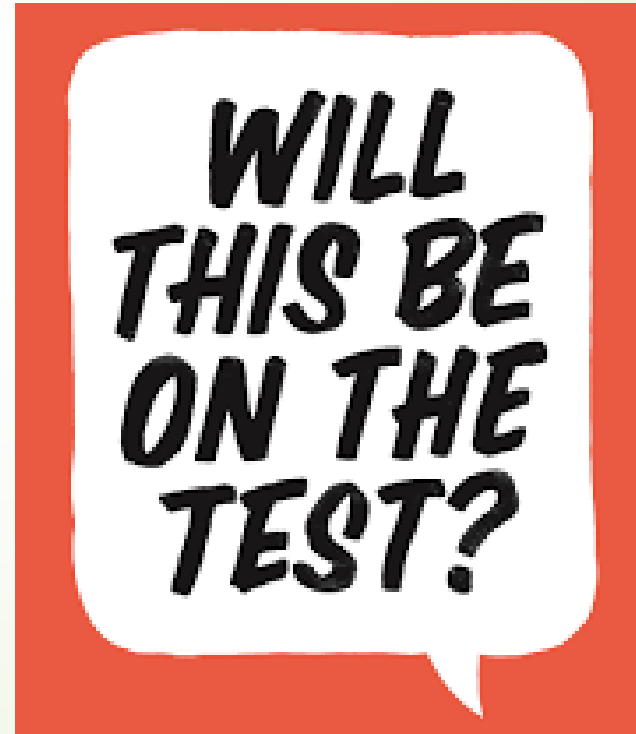
Overview

- ▶ Topic
- ▶ Test Type
 - ▶ Multiple Choice
 - ▶ Essay
 - ▶ Matching
- ▶ Post Test Item Analysis



Topic

- ▶ Topic is the easy part. It is already determined by the class schedule posted before class starts.



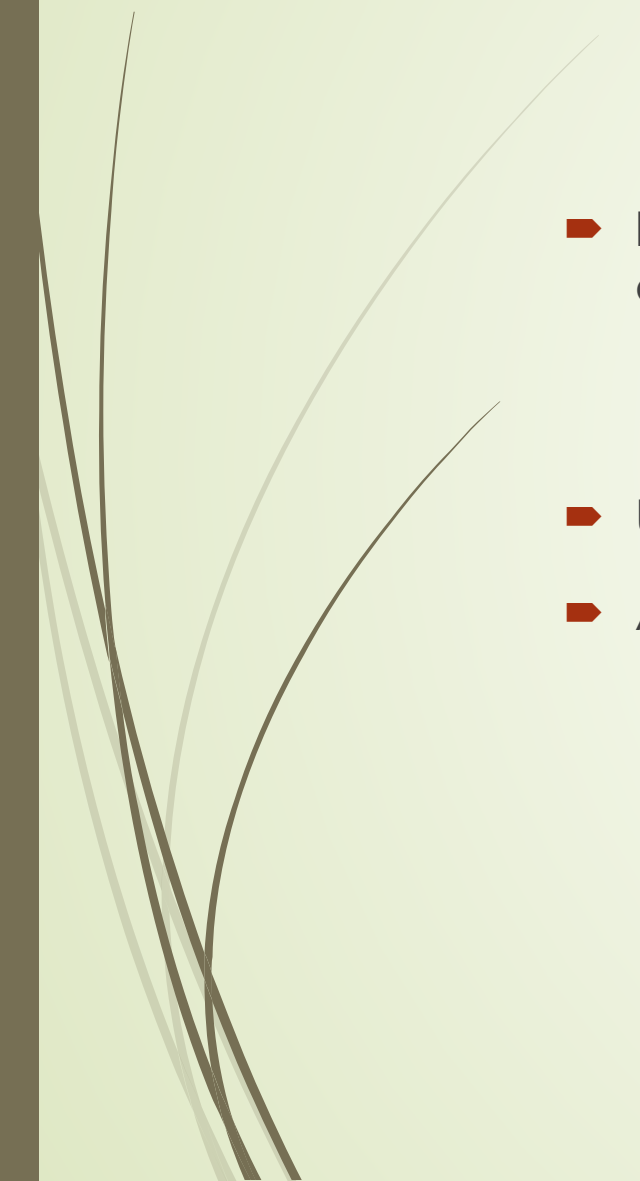


Test Type

- ▶ A multiple-choice question (MCQ) is composed of two parts: a stem that identifies the question or problem, and a set of alternatives or possible answers that contain a key that is the best answer to the question, and a number of distractors that are plausible but incorrect answers to the question. Students respond to MCQs by indicating the alternative that they believe best answers or completes the stem.



Multiple Choice General Strategy

- ▶ Instruct students to select the “best answer” rather than the “correct answer”
 - ▶ By doing this, you acknowledge the fact that the distractors may have an element of truth to them
 - ▶ Use familiar language.
 - ▶ Avoid giving verbal association clues from the stem in the key.
 - ▶ If the key uses words that are very similar to words found in the stem, students are more likely to pick it as the correct answer.
- 



Multiple Choice General Strategy

- ▶ Avoid trick questions.
 - ▶ Questions should be designed so that students who know the material can find the correct answer.
- ▶ Avoid negative wording.
 - ▶ Students often fail to observe negative wording and it can confuse them.



Designing stems for Multiple Choice

- ▶ Express the full problem in the stem.
 - ▶ When creating the item, ask yourself if the students would be able to answer the question without looking at the options.
- ▶ Put all relevant material in the stem.
 - ▶ Do not repeat in each of the alternatives information that can be included in the stem.
- ▶ Eliminate excessive wording and irrelevant information from the stem.
 - ▶ Irrelevant information in the stem confuses students and leads them to waste time

Designing alternatives for Multiple Choice

- ▶ Limit the number of alternatives.
 - ▶ 3-5
- ▶ Make sure there is only one best answer.
 - ▶ Avoid having two or more options that are correct, but where one is “more” correct than the others.
- ▶ Make the distractors appealing and plausible.
 - ▶ If the distractors are farfetched, students will too easily locate the correct answer, even if they have little knowledge.

Essay

► Four Types

► Expository

- Provides a clear focused explanation

► Descriptive

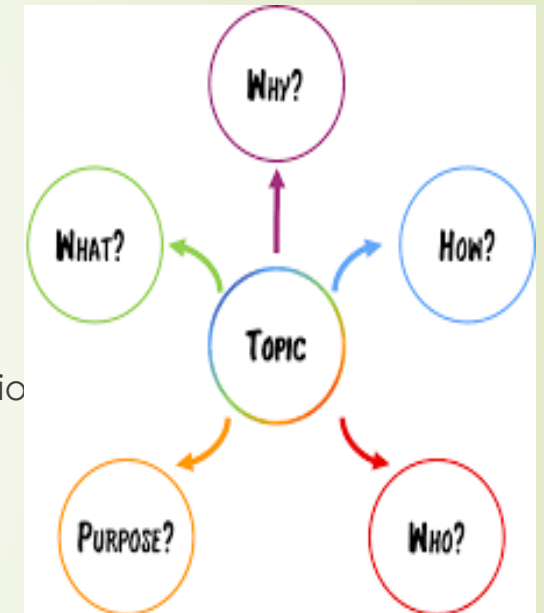
- Describes person, place, idea, event, object, experience, emotion

► Narrative

- Tells a story about a personal experience

► Argumentative

- Persuade readers to understand and support a point of view



Essay Question

- ▶ Two types of questions

- ▶ Restricted Response

- ▶ Limit what the student will discuss

- ▶ “State the main differences between the colors red and blue”

- ▶ Extended Response

- ▶ Allows student to select what is included in the answer

- ▶ “Which color is dominant, red or violet? Explain your answer.”





Skills Tested in Essay

- ▶ Essay questions test a variety of student skills
 - ▶ The ability to select the right material to best answer the question
 - ▶ Effective material organizational skills
 - ▶ How ideas relate and interact in a specific context
 - ▶ Sentence and paragraph structure and effective construction

Essay Question Construction

- ▶ Start with the end in mind
 - ▶ What answer are you looking for
- ▶ Decide response type
 - ▶ Restricted
 - ▶ Extended
- ▶ Be cognizant of time constraint
 - ▶ Limit number and scope of essay questions





Essay Question Construction

- ▶ Make the question engaging to students
 - ▶ Helps motivate student thought process
- ▶ State value of the question in relation to total test score
 - ▶ How many points is it worth
- ▶ If essay is part of a larger test, place it at the end

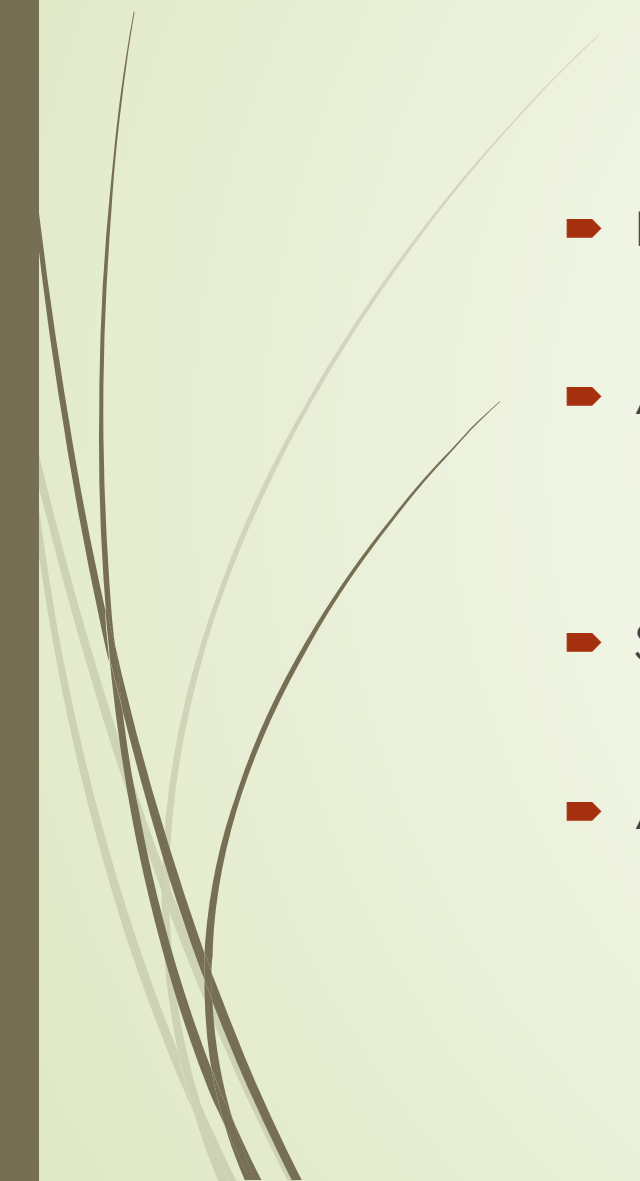
Ways of Scoring Essay Question

- ▶ Holistic Scoring
 - ▶ Evaluate the answer as a whole
- ▶ Analytic Scoring
 - ▶ Award points for inclusion of required pieces of information





Scoring Essay Question

- ▶ Prepare Rubric in advance
 - ▶ Avoid looking at names
 - ▶ Helps avoid preconceived notions about student and their abilities
 - ▶ Score one item at a time
 - ▶ Avoid interruptions when scoring specific questions
 - ▶ Maintains consistency if all are graded at the same time
- 



Scoring Essay Question

- ▶ If the essay results in an award or scholarship, obtain 2 or more independent readers
- ▶ Beware of negative influences which may affect score
 - ▶ Handwriting
 - ▶ Style
 - ▶ Length
- ▶ Review border line scores a second time before final grade is assigned



Matching Questions Overview

- ▶ The matching test item format provides a way for learners to connect a word, sentence or phrase in one column to a corresponding word, sentence or phrase in a second column. The items in the first column are called *premises* and the answers in the second column are the *responses*. By convention, the items in Column A are numbered and the items in Column B are labeled with capital letters.

When to use Matching

- ▶ Terms and Definitions
- ▶ Objects or Pictures and Labels
- ▶ Symbols and Proper Names
- ▶ Causes and Effects
- ▶ Scenarios and Responses
- ▶ Principles and Scenarios to which they apply



How to construct

- ▶ Clear direction
 - ▶ How to match
 - ▶ “Drag each word and drop in corresponding definition. Do not reuse any item”
 - ▶ Use same content for each set of match
 - ▶ Word/Definition





How to construct

- ▶ Plausible answers
 - ▶ No tricks
- ▶ No hints/Clues
- ▶ No more than six parts per question
- ▶ Each premise should have only one answer to match to


Pros and Cons

- ▶ The matching test item format allows you to cover more content in one question than you can with multiple choice.
- ▶ A disadvantage is the tendency to use this format for the simple recall of information.





Pros and Cons

- ▶ Adult learners often require practice and testing of higher-order thinking skills, such as problem solving.
 - ▶ When using matching test items in an assessment, you'll need to identify the specifics of how they will be scored. Some prefer to give partial credit when some—but not all—of the responses are correct.
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Item Analysis

- Item analysis is a process which examines student responses to individual test items in order to assess the quality of those items and of the test as a whole.





Item Analysis Results

- ▶ Item Difficulty

- ▶ When an item is one that every student either gets wrong or correct, it decreases an exam's reliability.

- ▶ Item Discrimination

- ▶ Does the exam question discriminate between students who understand the material and those who do not?
- ▶ Exam questions should suss out the varying degrees of knowledge students have on the material, reflected by the percentage correct on exam questions.



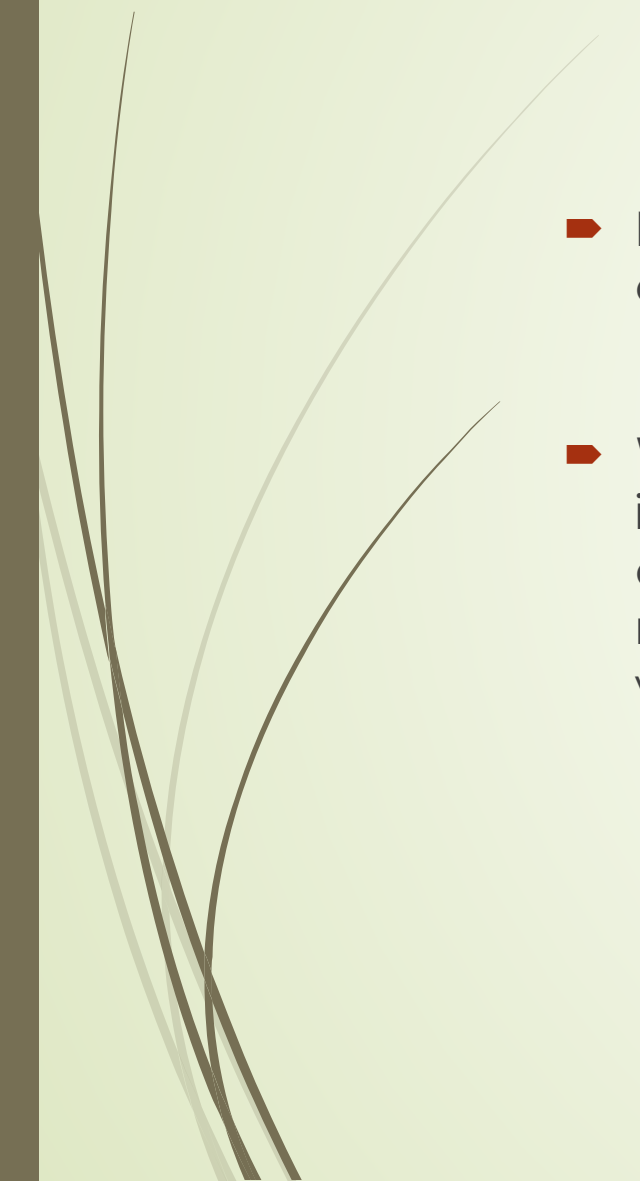
Item Analysis Results

- ▶ Item Distractors

- ▶ Do exam questions effectively distract test takers from the correct answer?
- ▶ When distractors are ineffective and obviously incorrect as opposed to being more disguised, then they become ineffective in assessing student knowledge.
- ▶ An effective distractor will attract test takers with a lower overall score than those with a higher overall score.




How does Item Analysis help?

- ▶ Not only can item analysis drive exam design, but it can also inform course content and curriculum.
 - ▶ When it comes to item difficulty, it's important to note whether errors indicate a misunderstanding of the question or of the concept the item addresses. When a large number of students answer an item incorrectly, it's notable. It may be a matter of fine-tuning a question for clarity; is the wording of the question confusing?
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How does Item Analysis help?

- ▶ Are the answers clear?
 - ▶ Could be that the material may have to be reviewed in class, possibly with a different learning approach.
 - ▶ If the majority of students selected the same incorrect multiple-choice answer, then that provides insight into student learning needs and opportunities.
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Item Analysis Final Result

- ▶ Once you have the results, determine if it was a failure to study, or faulty instructional methods; which caused the shortcoming. If you determine that the error was on the part of the student, question stands. However, if the instruction or test design is found to be at fault you must address the issue on your end.



Work Cited

- ▶ <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/developing-assignments/assignment-design/designing-multiple-choice-questions>
- ▶ <https://www.thoughtco.com/creating-scoring-essay-tests-8439>
- ▶ https://theelearningcoach.com/elearning_design/writing-matching-test-items/
- ▶ <https://www.turnitin.com/blog/what-is-item-analysis-and-other-important-exam-design-principles>