

LESSONS 7, 8 AND 9

TEST AND MEASUREMENT

Why test? What is the objective for administering a test? What should we test? How should be test? How often should we test? These are questions we need to answer before we ever set foot in the classroom. Failure to understand testing and tests can dramatically reduce the learning that takes place and what a student takes away from the classroom. During this block we will look at testing, tests and methodology for assessing what has been learned.

Tests are an integral part of the learning process. Tests are simply a teaching device, not an end in and of themselves. Tests do much more than simply give the professor a score for their grade book. A properly executed test prompts the student to review what they have been taught. It helps a professor keep track of what the students are learning and NOT learning. They help convey to the student what the professor believes to be important. Finally, a test should help teach a student how to communicate to others what they have learned.

I. DEFINITIONS - THERE ARE CERTAIN TERMS WE NEED TO DEFINE RIGHT AT THE BEGINNING SO THAT THERE IS NO CONFUSION AS WE CONTINUE IN THE CLASS

Many of these terms are used interchangeable, when they actually have very different meanings.

- A. _____: the collection, synthesis and interpretation of information to aid the professor in decision-making.
1. Assessment is much more than testing - it includes the full range of information professors gather in their classroom to help them understand their students as well as plan and monitor instruction.
 2. Assessment can be everything from a formal test to a pop-quiz, to seeing the look of confusion on a student's face during a lecture.
 3. Assessment takes place before, during and after class.
- B. _____: a format, systematic, usually paper-and-pencil procedure for gathering information about a student's performance.
- C. _____: the process of quantifying or assigning a number to performance.
1. The most common example of measurement is scoring a quiz, test, or assignment.
 2. Scoring produces a numerical description of performance.

3. The professor assigns a numerical grade to each assignment which represents the student's performance.
- D. _____: is the process of making judgments about what is good or desirable and what is not.
1. An example would be judging the quality of a student's essay or the value of a particular instructional activity.
 2. Evaluation occurs after assessment information has been collected, synthesized and thought about - this is when the professor is in a position to make informed judgments.
- E. _____: something objective is factual regardless of personal feeling, opinion or prejudice.
- F. _____: something subjective involves personal interpretation of the facts or how a person feels about them.
- G. _____: any test question that requires recall only.
- H. _____: any test question that demands more from the student than memory. Student must not only recall, but must also manipulate facts.

II. WHY TEST?

- A. As we said earlier, testing is an _____ of the learning process. Tests need to be integrated with the lectures, reading assignments, homework, and any other assignments given during the class.
- B. Tests serve several important purposes in education:
1. They provide _____ for assigning grades which can be used to determine and report how well the student is doing.
 2. Tests also exert _____ on when, what and how a student studies.
 3. Tests require the professor to _____ his instructional objectives and how he will reach those objectives.
- C. Tests are not an opportunity to demonstrate to the students how smart the professor is and how dumb the students are - nor are they simply an opportunity to get high scores so that the professor can be a nice guy and show how well he teaches.

- D. Tests are not some necessary evil tacked on the course for the sole reason of providing a grade.
1. This attitude destroys the educational value of a test.
 2. This attitude can actually detract from the class by diverting the student's attention and wasting his time.
- E. Tests should _____ the student.
1. I am suspect of any test that 100% of the students make 100% on.
 2. Average students should get average grades, and students should be required to spend extra effort to achieve an above average grade.
 3. I had one professor whose true/false tests were either all true or all false and all you had to was find one question you were sure of to get a perfect grade.
 4. Another professor would lecture for an hour, review the test for an hour and then give the test. In a fifteen-hour class we actually had only five hours of lecture. Also, you only had to retain the information for one hour, regurgitate it, and then forget and go on to the next set of information.
- F. Tests should prompt the student to _____ covered in class and in their reading assignment.
- G. Tests should not only require the recollection of facts, but should also require the student to _____ those facts and _____ an understanding of the material.
- H. Books are written to contain facts, and while there are many important facts we need to remember, it is more important to be able to remember where to find the information and then know what to do with the information when we have found it.
- I. Tests should encourage _____ and are an excellent means of checking a students notes. I have witnessed students never putting pen to paper until it was time to review for the test, at which time the student simply wrote down what was going to be on the test.
- J. Tests should encourage students to do their _____ and not just "college read" them.

1. Some percentage of the questions on a test should come strictly from the reading assignments.
 2. This requires the professor to read the material and pick out two or three key points he would expect the student to see. Be careful not to pick obscure or trick ideas from the reading.
- K. Tests help the professor _____ what the students are learning or not learning.
1. If the majority of the students miss the same question, then perhaps the professor did not adequately explain the material.
 2. Something can be abundantly clear to the professor, because he knows what he is looking for. If a majority of the students miss the same question, then perhaps the professor did not write the question clearly.
 3. Tests help the professor see what subjects the students need more instruction time on and what subjects they already understand.

III. THE PROFESSOR AND TESTS

- A. Professors must understand the relationship between teaching and testing.
- B. The professor must set his _____, teach to reach those objectives and then _____ where the students are relative to those objectives.
- C. The professor should state their objectives at the beginning of the course - this allows the student to focus on what is important in both lectures and reading.
- D. The professor must then test on those objectives consistently.
1. If the professor says at the beginning of the semester “I am concerned that in this course you learn principles and how to apply them. Don’t try to memorize a bunch of facts.”
 2. The student takes him at his word and studies to learn the principles and how to apply them.
 3. The teacher then gives the first test which is ten definitions and twenty other fact type questions.
 4. The student does poorly and will study differently before the next test.

5. This leaves the student feeling frustrated and they can quickly lose interest in the class because they do not know what is expected of them.
- E. When the professor understands the relationship between _____ and _____, the relationship between _____ and _____ falls naturally into place.
1. The student who achieves a high grade has demonstrated an ability to meet the instructional objectives.
 2. Only when a test does not measure the instructional objectives does a good grade not reflect achievement.
- F. Teaching, testing and grading must all be derived from the _____ objectives.
- G. The Army uses a program called “Criterion Referenced Instruction” (CRI). The thought process behind this program is that the purpose of instruction is to teach someone to do something, and a good test tests if the person can do what they were taught to do!
1. For instance, a class is given to teach people how to make a pot of coffee, and there are ten recognizable steps in making a pot of coffee.
 2. Under most systems, if a person gets seven of the ten steps right, they achieve a grade of 70% and pass the course, even if you don’t get a pot of coffee.
 3. With CRI, the test is simply to make a pot of coffee. If you make a pot of coffee, you pass. If you do not make a pot of coffee, you receive further instruction until you can make a pot of coffee.
 4. The critical part of CRI is determining what has to be taught to achieve the desired outcome and then determining the best way to teach them.
 5. While we cannot use CRI in most Bible College applications, the methodology is still valid. Determine what we think the student needs to learn, _____ what they need to learn, and then _____ to see if they learned it.

IV. THERE ARE TWO BASIC TYPES OF TESTS - YOUR TEST AND SOMEONE ELSE’S TEST

- A. Often we are called upon to teach a course that has already been developed to include the tests to be given.

1. When using someone else's test, be careful not to teach just what is on the test.
 2. Do not study specific questions to make sure students know the answer to them.
- B. When using your own test, be careful not to simply teach what is easy to test.

V. SUBJECTIVE AND OBJECTIVE TESTS

- A. You should test subjective as well as objective knowledge.
- B. Remember, something objective _____, regardless of personal opinion, feelings or prejudice.
1. An objective question is one like "On what date did man first step foot on the moon?"
 2. Asking facts on tests is easy because there is only _____ right answer, and the answer the student gives is either right or wrong.
 3. Fact answers are easy to grade, and can even be graded by someone other than the professor.
- C. Something subjective involves _____ or how someone feels or thinks about the facts.
1. A subjective question asks the student to _____, _____ or _____ something based upon the acts they have learned in class.
 2. Examples of subjective questions are "Why is it important to pay your bills on time?" or "What did Paul mean when he said ...?"
 3. In order to answer the question, the student needs to stick to the facts, but he can arrange them however he wants to and can emphasize what he thinks is important.
 4. In answering subjective questions, the student shows us a glimpse of his personality and priorities.

IV. OBJECTIVE TESTS

- A. Objective tests ask questions that _____ for an answer.
- B. There are several different types of objective questions generally grouped into one of two categories - _____ questions and _____ questions.
- C. With a supply type question, the student is required to supply the fact for the answer.
 - 1. One example of a supply type question is fill in the blank. The student must supply the correct word to complete the sentence or thought.
 - 2. Another type of supply question is the short answer question. This type requires the student to supply the correct phrase or sentence to answer the question.
- D. Selection questions require the student to select the right answer from _____.
 - 1. One example of a selection question is the _____ question where the student chooses the right answer from a list of possible answers given.
 - 2. Other examples are _____ questions and _____ questions.
- E. Objective questions are by far the easiest questions to grade, but do not let this be the criteria you use to choose what type of questions you will ask on your test.

VII. SUBJECTIVE QUESTIONS

- A. Subjective questions ask the student to _____, to _____ and _____ their beliefs or _____ of a subject.
- B. The easiest type of subjective question is an essay question.
 - 1. You should include at least one or two essay questions at the end of each test or work sheet.
 - 2. This allows the student to organize his ideas and present them effectively.
 - 3. It also allows the student to show you how much he knows and _____ the material and can _____ his

ideas to others, not just how well he can memorize facts or how good he is at guessing the right answer on multiple choice.

4. Essay questions also make wonderful homework assignments.
- C. Subjective questions also allow the professor to give extra credit for apparent effort and sound thinking, which helps with the slower students.
- D. Subjective questions can also take the form of _____, _____ and _____.
1. Book reports and critiques require the student to not only read, but to glean from what they are reading and then communicate their gleanings to others.
 2. Students are required to determine what is important and discern what is right - an important ability in today's world.
 3. Examples of projects would be bus flyers, planning and executing a bus promotion or big day, developing lesson plans or Sunday School lessons, developing sermon outlines from a particular book or chapter of the Bible, etc.
- E. Another example of a subjective question would be oral _____ or _____, where a student is given a short time to think about a subject and then stand and tell others his response to the question or subject.
- F. Yet another example of a subjective question is the _____.
1. This is a type of multiple choice question that tests higher level outcomes.
 2. It gives the student some information and then asks a series of selection-type questions.
 3. To answer the question posed, the student must _____, _____, and _____ the information provided.
 4. Interpretive exercises test higher level skills because they contain all the information required to answer the question posed.
 5. If the student cannot answer the question, it is because they cannot do the _____ or _____ required by the question, not because they failed to memorize background information.

Example:

Read the following passage.

- (1) For what men say is that, if I am really just and am not also
- (2) thought Just, profit there is none, but the pain and the loss on the
- (5) other hand is unmistakable. But if, though unjust, I acquire the
- (7) reputation of justice, a heavenly life is promised to me. Since then
- appearance tyrannizes over truth and is lord of happiness, to
- appearance I must devote myself. I will describe around me a
- picture and shadow of virtue to be the vestibule and exterior of my
- house; behind which I will trail the subtle and crafty fox.

Which of the following states the major premise of this passage?

- a. For what men say (line 1)
- b. if I am really just (line1)
- c. profit there is none, but the pain and the loss (line 2)
- d. appearance tyrannizes over truth and is lord of happiness (lines 5-6)
- e. a picture and shadow of virtue to be the vestibule and exterior of my house (lines 7-8)

The student must read and comprehend what they have read in order to answer the question correctly.

- G. Subjective answers are harder to grade, but are well worth the extra effort. They require the student to think and to communicate - and that is what education is all about.
- H. Remember, facts can be found in a book, it is _____ with those facts that counts.

VIII. SUGGESTIONS FOR MAKING TESTS

- A. Do not focus on trivial knowledge or skills. Professors have been known to ask questions about a single “filler” line in a reading assignment that has little if any bearing on the class.
- B. The more questions on a test, the higher its reliability, because the professor can look at a larger sample of student performance. Be sure to provide enough questions to ensure reliability.
- C. Three basic guidelines for writing tests:
 1. _____ important objectives.

2. _____ clearly and simply.
- a. Avoid ambiguous and confusing wording and sentence structure.
 - b. Use appropriate vocabulary.
 - c. Keep questions short and to the point.
 - d. Write questions that have one correct answer.
 - e. Give information about the nature of the desired answer. For all types of test questions, students should have a clear sense of what is expected of them.
 - f. Do not provide clues to the correct answer.

3. _____ items before testing.

- D. Organize the test by question type - selection before supply, essay last.
- E. Allow sufficient space for written responses, or specify the use of additional paper.
- F. Do not split multiple choice or matching questions across two pages; separate them from options in multiple choice questions.
- G. Number test questions.
- H. Provide _____ for each section of the test and _____ of each section or question.
- I. Give only a few essay questions, a whole page filled with essay questions is troublesome to grade.
- J. Keep essay questions from becoming too broad. Questions like “Discuss America’s Christian heritage.” allow the student to write just about anything and everything and be right.
- K. Use several types of objective questions, do not get in the rut of always asking just true/false or multiple choice - give the student several types of mental exercise.
- L. Ask direct questions, they are simple to write and the student cannot guess the answer easily. Questions like: “At what temperature does water boil?” or “Name the first king of Israel.”
- M. Make grading easy for yourself. Place the blanks along the edge of the test sheet like this:

- _____ 1, Who was the wisest man who ever lived? or
 _____ 2. True or false Solomon was the wisest man who ever lived.

This format allows you to insert other kinds of questions.

_____ 3. The use of (glass, steel, iron, concrete) enabled man to build skyscrapers.

Note that multiple choice questions allow you to exclude certain other right answers. Elevators would fit the last questions, but it is not an important fact you think about.

N. Ask one-answer questions that are easy to grade but require the student to think.

Factual: The boiling point of water is (higher, lower) at high altitudes than at sea level.

Thinking: You could cook an egg (faster, slower) at the top of a mountain than at the seashore.

Factual: The green, food-making substance in a leaf is called _____.

Thinking: When a leaf turns yellow in autumn, what substance in it must have disappeared?

Factual: Which of the following is not an insect: grasshopper, ant, spider, bumblebee?

Thinking: Find the relationship between the following words and cross out the one that does not fit: grasshopper, ant, spider, bumblebee.

O. Start a test with a few questions that everyone can answer - this will help nervous students feel confident.

P. Follow with harder questions.

1. Include a few that are so difficult that you only expect a few students to be able to answer them.

2. This will remind the best students that there is still much about the subject they have not learned yet and will encourage them to further study.

3. It also allows those students who dig into the subject and put effort into study to earn more credit than the intelligent student who is merely coasting along.

4. Finally, it challenges the students.

Q. Keep questions simple. Use only a few blanks in one question.

Bad Example:

Columbus sailed across the _____ Ocean with _____ ships in the year _____.

Break it up:

Columbus discovered America in the year _____. He sailed across the _____ Ocean in three ships.

R. Sometimes you can use several blanks in one sentence.

The three countries on the North American continent are _____, _____, and _____.

S. It is also appropriate to use more than one blank when you are testing poem or Bible verse memorization.

T. Keep the word not out of true/false questions, it can be confusing.

Bad Example:

_____ 1. Slate is the only stone we studied that is not used in building.

Better:

_____ 1. All stones we studied except slate are used in building.

U. Keep matching exercises short - not more than ten questions to a group. Even good students can get confused, or at least waste a lot of time, searching a long list for the right answer.

V. Avoid giving answers away.

1. Keep true/false questions about equal in length. Long questions are more likely to be true.

2. Do not use words like *never*, *all*, *none*, and *only*. They are often found in questions that are false.

3. Also, avoid words like *usually*, *most*, and *some*. They indicate that something is true.

W. For matching questions, offer more answers than questions.

1. This will keep students from using the process of elimination to figure out the last tough match-up.

2. Also, plan the questions so that students may use some of the answers more than once and some not at all.

- X. Do not let bad grammar give the answer away.

Bad Example:

The equator is (north, south, crosses) of Central America.

Better:

The equator (is north of, is south of, crosses) Central America.

Bad Example:

- | | | |
|-------|---|--------------------------------------|
| _____ | 1. The king of England | a. were school teachers. |
| _____ | 2. The first Mennonites
in America settled | b. gave William Penn land in America |
| _____ | 3. Francis Pastorius and
Christopher Dock | c. was a Quaker |
| _____ | 4. William Penn | d. Penn's woods |
| _____ | 5. Pennsylvania means | e. at Germantown. |

Most of the answers can be figured out by simply knowing sentence structure.

Better:

- | | | |
|-------|------------------------|--------------------------------------|
| _____ | 1. The king of England | a. was a school teacher. |
| _____ | 2. William Rittenhouse | b. gave William Pen land in America. |
| _____ | 3. William Penn | c. was a Quaker. |
| _____ | 4. Christopher Sower | d. operated a printing press. |
| | | e. built a paper mill. |

This question could be even better if it had an *f*, *g*, and *h*.

- Y. When giving multiple choice questions, be careful about using “none of the above” or “all of the above” as the last possible choice.

1. When you offer “none of the above” it is often the correct answer.
2. Offer “none of the above” sometimes when it is not the correct answer.

- Z. When giving multiple choice questions, offer some wrong possibilities that look almost right. Make all choices plausible.

Bad Example:

The first king of Israel was: a) Herod b) Saul c) Peter d) John the Baptist

Better:

The first king of Israel was: a) Samuel b) Saul c) David d) Rehoboam

- AA. Sometimes one question can give away the answer to another question.
1. Remove one question or the other.
 2. If you feel you must keep both questions, separate them by at least half a dozen other questions so the student has time to forget one question before they come to the next one.
- BB. Use modified true/false questions. If the question is true, the student writes true in the blank. If the question is not true, the student makes it true by correcting the underlined word in the space provided. Underline a word in every statement whether it is true or false.
- Example:*
- _____ 1. Samuel was the first king of Israel.
- _____ 2. Peter denied Christ three times.
- CC. When writing essay questions, limit the area to be covered and test the most important material.
- DD. Answer the essay question yourself at the time you construct the question.
- EE. _____: Test questions should reflect important _____ and _____ emphasized during instruction, should be stated briefly and clearly, and should be self-contained.

IX. PREPARATION FOR THE TEST

- A. _____ plenty of advanced notice for tests. This allows the students to prepare and also provides a degree of relief from stress, as they know it is coming.
- B. _____ the students what will be expected of them on the test.
- C. _____ for the test, but do not simply give them the test in advance.
- D. I like to have a couple of sheep and goat questions on every test. These are questions which have not been specifically addressed in class, but are easily answerable if the student has done their reading assignment and paid attention in class.

X. GRADING TESTS

- A. Grading should be mostly _____ and _____.
1. It is hard to believe how easily we are swayed towards leniency for the student who smiles often, participates in class, and is just generally a nice person.
 2. On the other hand, we can be very critical towards the student who “rubs” us the wrong way.
 3. We must be very careful not to allow personality to influence us.
- B. Be careful not to grade an answer simply by how long it is. Read the answer and underline or check mark each important idea.
- C. When grading essay questions, it is best to grade the first question on all the papers, then the second, etc. This allows you to remain consistent in your grading system.
- D. It is also wise to grade all the essays in one sitting to maintain consistency in your grading pattern.
- E. Remember why the test as given - and grade accordingly. Nobody likes to be the bad guy, but if the student does not know the material, or cannot communicate their answer, it is only fair to them and to others to give them the grade they earned.

XI. TESTING FOREIGN STUDENTS

- A. There are certain _____ we must deal with when teaching foreign students - things like language, customs, etc.
- B. Most of these can be overcome if we simply _____.
- C. Many students speak English, so we assume they comprehend English. This is often not the case. They either have studied “English” English instead of “American” English or they can speak better than they can comprehend.
- D. While language can appear to be an almost insurmountable barrier, some simple preparations can minimize its impact.
1. Take extra time preparing the test to insure that the vocabulary and usage is clear.

2. Have a national who is not a student read the test and tell you what they think you are asking for with each question. Rework any question that he has trouble with.
 3. Read the test to the students at the start of the testing period, if you see looks of confusion or they express doubt, restate the question without giving the answer away.
 4. Consider giving oral examinations to individual students who you believe know the material but are struggling with the language.
 5. Allow students to answer essay questions or write essays and term papers in their native language. You can either have them translated or have a national assistant to grade them with your review.
 6. When grading essays and term papers, allow for bad grammar and sentence structure due to unfamiliarity with English.
- E. We often use idioms or slang that we do not realize are even in our vocabulary, but they can be very confusing or even insulting to the foreign student. Be very careful about _____.

XII. SUGGESTED READING

- A. *Assessment in the Classroom: A Concise Approach*, Peter W. Airasian, (McGraw-Hill, Boston, 2000)
- B. *Handbook for Creative Teaching*, David L. Martin, (Rod and Staff Publishers, Inc., Crockett, Kentucky, 1986)
- C. *Test Construction: A Programmed Guide*, Lowell A. Schoer, (Allyn and Bacon, Boston, 1970)