

## Pre- and Post- Testing

### What is it?

A measurement of the learning received during the class as a result of comparing what the student knew before in a pre-test and after the class experience in a post-test.

### Why use it?

To quantify the knowledge attained in the class from a group of students with diverse learning styles and educational backgrounds. More specifically, the tests indicate how the students are learning in the course. The data will target students requiring extra help and will identify teaching and learning methods that need to be changed or developed.

Reasons for using a pre-test:

- To measure a starting point or the amount of pre-existing knowledge on the course topic
- To compare with the starting point of a post-test
- To allow students to test out of course with a 100% correct score
- To inform the instructor about topics that are/are not needed to cover in the course based on student's previous knowledge
- To indicate to the student the learning level of the course topic

Reasons for using a post-test:

- To measure the learning as a result of the course experience
- To analyze the appropriateness of the learning objectives
- To recognize students who need additional help
- To target any instructional needs to improve the course

### Why not?

Most assessment instruments measure the student's ability to retain and recall known facts and does not necessary indicate an improvement in performance.

### When to test?

Pre-test must be administered when a student has some relevant knowledge on the course topic and not without any knowledge. Post-test should be administered directly at the completion of the course and also at a later date to measure application and impact of the learning.

An option to the traditional "pre-test before the class" and "post-test after the class" is the "post-then-pre test design. In this design, the learner is asked to first report present behaviors in a post-test and then, their perception of the same behavior before taking the course (a pre-test equivalent). Because the student is asked their perception of improved performance in the same reference of the post-test, some educators feel this is a more accurate measurement and the "response-shift bias" in self-reporting is minimized.

### How to write a pre- and post-test?

Each pre- and post-test question item should be written for each course learning objective. For ease in assessing the course learning, you should match the question item as close as possible to the learning objectives. Suppose your learning objective is “By the end of the course, the student will be able to recognize the components of a HPI; the question item would be to select from the answer options the components of a HPI or given a clinical vignette, select the components of a HPI.

The question items for pre-and post-tests can be multiple choice, true/false and short answer. Begin by writing 10 test items based on the learning objectives. If you cannot write a test item on the learning objective, then rewrite the learning objective.

### Checklist for pre- and post-test:

- Each test is titled with the course title, date, instructor and either pre- or post test
- Tests assess the attainment of the learning objectives
- Both tests have the same items
- The test items are in the correct sequence
- Each test item is complete with a question stem and five answer options
- The multiple-choice-question test items are numbered 1,2,3 with the answer options as A,B,C,D,E
- Avoid using negative questions (Not, except) unless it is your intent for the students to learn a negative answer
- Delete all marks that would indicate the correct answer
- Print out a test and check that all question items are complete and no question item is split between pages

### How to collect pre- and post tests and analyze?

The tests are collected and the item-by-item answer data collected and analyzed for strengths and weaknesses. From this information, the instructor may want to alter the content of the course to build upon weakness and use strengths as motivation to encourage more learning. Any student doing poorly should be identified and given additional help.

A significant increase in learning from pre- to post-test should be at least 30%. A good test item distracts the student from the correct answer with answer options, while a bad test item allows a student who does not know the answer to answer correctly. Content validity and item analysis will recognize the good and bad test items.