

Brigham and Women's Hospital Center for Nursing Excellence PRE AND POST TEST GUIDELINES

Level 2 Outcomes Requirement: Pre and Post Testing *ANCC requirement*

The Brigham and Women's Provider Unit Models Level 2 Outcomes as described within "The Four Levels of Learning Evaluation." defined in 1959 by Donald L. Kirkpatrick. Kirkpatrick redefined the evaluation model with his 1998 book "Evaluating Training Programs: The Four Levels."

The idea behind the model is for an organization to have meaningful evaluation of learning in the organization. The degree of difficulty increases as you move through the levels. However, the knowledge learned regarding the effectiveness of the training program more than compensates for this.

The four levels of the model are:

- Level 1: Reaction (review of summative evaluations)
- Level 2: Learning (pre and post testing)
- Level 3: Behavior (observation)
- Level 4: Results (return on investment)

Kirkpatrick defines learning as the extent to which participants change attitudes, increase knowledge, and/or increase skill as a result of attending a program. So to measure learning we need to determine the following:

- What knowledge was learned
- What skills were developed or improved
- What attitudes were changed

Here are guidelines for evaluating learning at Level Two for all Brigham and Women's Nursing Continuing Education Applications:

- Evaluate knowledge, skills, and/or attitudes both before and after the program
- Use a paper and pencil test to measure knowledge and attitudes and use a performance test to measure skills.
- Get a 100 percent response
- Use the results of the evaluation in combination with the results of the pre and post test to take appropriate action

Other data collection methods which you might consider using include:

- interviews with and observation of training participants .
- participant self-assessments
- group and peer assessments.

Below is an example of a recommended Pre and Post test using a Likert Scale to measure knowledge gain.

PRE/POST-Test: Title of your program and Date

Your responses and comments will help us improve future educational programs; as well as assess how much knowledge you have acquired in attending this continuing education offering. Please mark your rating on each item below

Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA)

ANCC 2013 Submission Criteria	SD	D	U	A	SA
As a nurse I understand my role in Continuing Education	1	2	3	4	5
I am familiar with ANCC 2013 submission criteria	1	2	3	4	5
I know the difference between an Approved Approver and a Approved Provider of Continuing Education	1	2	3	4	5
I know the difference between ANCC awarded CE and Board of Registration awarded CE	1	2	3	4	5

Calculating the 'Learning Gain'

As part of the data collection and analysis process at this level, you may wish to calculate the 'learning gain' from training. This shows the improvement between the pre- and post-learning assessment scores. It can be calculated using the following formula:

$$\text{(Post-learning Score minus Pre-learning Score / Maximum Score minus Pre-learning Score) X 100}$$

For example, if the pre-learning score was 50, the post-learning score is 80, and the maximum score is 100, then you get the following:

$$\text{((80-50) / (100-50)) x 100 = (30 / 50) x 100 = 60\%}$$

This shows that there was a **60% learning gain**.

Guidelines for Creating Pre and Post Tests

What are pre- and post-tests?

The pre-test and post-test are designed using the learning objectives established for the module/course. Both tests consist of the same test items. However, the pre-test is given to participants before they begin the module/course as a means of measuring how much they know about the topic. At the conclusion of the module/course, the participants take the post-test that measures their ability to apply knowledge or perform a specific task. To make the test results more meaningful, it is recommended that you create variations of pre-test items for the post-test. This practice ensures that participants taking the post-test will be tested on their understanding of the materials rather than their ability to memorize answers from the pre-test.

Why have Participants take two tests?

- Planners can compare the results of the two tests and identify areas where there is a need for additional practice or information.
- Pre-test scores that don't improve during the post-test tell the nurse planner that the training content and delivery methods may need to be modified.

How do I get started?

- **Step 1.**
Look at the learning objectives and the content outline for the module/course. Identify the specific points that the trainee must know and subsequently will be tested on.
- **Step 2.**
Choose the best test item format for the learning objective you are measuring. Test items can take many forms including short answer, multiple choice items, story problems, or hands-on simulations.
For example: If the learning objective states that the trainee will be able to list the five types of evidenced based practices for knowing your patient then a short answer or multiple choice item would be better than a story problem or simulation.
- **Step 3.**
Develop test administration instructions for the participants. Provide the answers to the test items, amount of time required for the test, and any other information the needed to administer and correct the test.
- **Step 4.**
Test your test! Ask another person to review your instructions and test items.
 - Are the instructions clear?
 - Is there enough information in each test item to determine the answer?
 - Are any test items misleading or confusing?
 - How much time was needed to complete the test?
 - Revise your test items and trainer instructions based on the feedback you receive

How many test items should I write?

There is no magic number of test items that you should create. However, you should write at least one test item for each learning objective, and more if the objectives were complex or require thorough knowledge of a particular topic. Also consider the length of the session.

How much time should be allotted for a test?

Depending on the length of your program typically 10 minutes before and after can be allotted for pre and post testing and is part of the contact hours that are awarded and should be included in your content outline.

What are some tips for writing test items?

Test items should be based on information that is significant for the trainee. Start with easier questions first to minimize test anxiety. Use clear and concise language when writing test items. Avoid using negatives and double negatives in the questions. They can make the test item difficult to understand and confuse the trainee. Avoid trick questions that measure the trainee's ability to guess rather than their actual knowledge.

Multiple Choice Tips

Test items should have only one correct answer. Make sure wrong answer choices are not plausible. Each test item should be independent and not based on a previous test item. Avoid unintentional clues such as "always," "all," and "never." Don't make the correct choice longer than the incorrect choices. Trainees become "test-wise" and can guess the correct choice. Randomly place the correct response within the incorrect responses. Don't use "all of the above" or "none of the above" as choices.

Create as many responses for each test item as are plausible. Create at least 2 or as many as 5.

Fill-in-the-Blank Tips

Place blanks at or near the end of the test item. Use no more than 2 blanks per test item. Consider converting a fill-in-the-blank item to a multiple-choice item. These provide the trainee with a defined set of choices and are easier for the trainer to correct.

True/False Statement Tips

When possible, avoid True/False statements. They are the least reliable for measuring learning because trainees have a 50% chance of getting the answer correct if they guess.

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