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Using the Retrospective Post-then-Pre Design

What is the retrospective post-then-pre design?

The retrospective post-then-pre design is a popular way to assess learners' self-reported changes in knowledge, awareness, skills, confidence, attitudes or behaviors. It takes less time, is less intrusive and, for self-reported change, avoids pretest sensitivity and response shift bias that result from pretest overestimation or underestimation (Howard, 1980; Rockwell & Kohn, 1989; Pratt et al, 2000; Lam & Bengo, 2003). In the traditional pre-post design, learners answer questions before an educational program, engage in the lesson, activity or course, then answer the same questions again after finishing the program. In the retrospective post-then-pre design, both before and after information is collected at the same time. After the educational program, learners are asked:

1. To rate their current knowledge, skill, attitude, behavior **Now** or **After** as a result of the program.
2. Then, to reflect back and rate that same knowledge, skill, attitude, behavior **Before** participating in the program.

Why use the retrospective post-then-pre design?

The post-then-pre was proposed in the late 1970's as a way to control response shift bias in the traditional pre-post design (Howard, 1980). Response shift occurs when a participant uses a different frame of understanding about a question between the pre and post periods. It can create a problem when assessing self-reported change (Rockwell & Kohn, 1989). Participants may not accurately assess their pre-program knowledge or behaviors. Then, at the end of the program, their new understanding of the program content may affect their response on the post self-assessment. They are actually responding based on two different frames of reference.

An Example. A community educator teaching communication skills to young couples, wants to evaluate the results and administers a pretest to each person enrolled in the program. One question reads "I share my interests with my spouse" and the respondents are to answer on a four-point scale (Always, Often, Seldom, Never). One respondent indicates he "Often" shares his interests with his spouse. During the course, he realizes that sharing interests involves more than he realized and that he actually does not share his interests very often. Thus, on the course posttest, he responds to the same item with "Seldom". It appears that the program had a negative effect on behavior whereas the participant's frame of reference on the pretest and posttest had changed. This difference is called response shift and can cause misleading or inaccurate results.

Strengths of the Post-then-Pre Design

- **Response shift bias.** Extensive research has shown that response shift can mask program effectiveness; the retrospective design reduces or eliminates response shift bias (Howard et al, 1979; Howard, 1980).
- **Validity.** Compared with results from the traditional pre- and post design, results from the retrospective design are more congruent with interview data collected from program participants and leaders (Howard et al, 1981).
- **Versatility.** The retrospective method has been used to evaluate many types of programs for different audiences in varied settings and appears to reduce response shift bias across contexts.
- **Convenience.** Responding to both measures at the same time is less burdensome and intrusive for learners. Collecting responses for both measures at the same time gives you before and after data for each learner. Data will only be missing if a learner skips questions or fails to complete the questionnaire.

Limitations of the Post-Then-Pre Design

- **Recall period.** How accurately learners remember over time can vary by audience. Some researchers argue that memories and ability to label them may be biased even within short time frames, and that accuracy continues to decrease with time (Nisbett & Wilson, 1977).
- **Self-reports.** Self-reporting is vulnerable to bias. As a self-report method, the retrospective post-then-pre design is susceptible to (1) Social desirability – learners answer as they think the evaluator wants; and (2) Accuracy - everyone's self-assessments can fluctuate greatly and may not provide a reliable measure of knowledge, skill, attitudes, or behavior.
- **Cultural context.** Answering retrospective post-then-pre questions may be difficult or inappropriate for certain learners. Methods and administration may vary to accommodate the individual audience's culture, language skills, literacy level, age or stage of life.
- **Need for best practice.** More research is needed on effective practice. Little is known about the best way to design a retrospective post-then-pre question considering audience and educational setting.

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