

Job/Practice Analysis and Test Specifications

Question: *We know that a practice analysis should be performed to identify the subject matter that should be included in our examinations, but the results generate a multitude of statistical data. What is the best way to use the results of the practice analysis in constructing the test specifications?*

Answer: There is no one correct way to use the results of a practice analysis to determine test specifications. What is important is to use a rational and defensible process to construct the test specifications that is facilitated by an experienced psychometrician. A Job or Practice Analysis Advisory Committee consisting of subject matter experts (SMEs) should be involved in the entire process. Their role is to review all data generated from the practice analysis and use it along with their expert judgment to develop the test specifications.

Practice analysis usually takes one of two forms, and the form of the analysis influences how the data are analyzed and interpreted. One form consists only of data from content experts' judgments about the criticality (e.g., significance, importance, etc.) of performing tasks. The other form collects similar judgments about tasks and the related knowledge, skills, and abilities (KSAs).

When the practice analysis is task based, the empirical data analysis provides evidence for the content areas of the examination plan and the relative importance (e.g., number of items) of each subject matter area. If more than one rating is obtained for each task, the mean ratings may be multiplied to derive an overall critical value (Kane, Kingsbury, Colton, & Estes, 1989), or separate decision rules can be established for each rating scale. Once the critical values have been computed, or the decision rules determined, the Practice Analysis Advisory Committee reviews the results and establishes the content areas to be tested and the item distribution across the content areas of the exam. Tasks with small critical values, or those that don't meet all decision rules are eliminated from the examination content areas. Examinations should be based only on tasks critical to effective performance. The final test will only sample each content area, thus it is important to carefully define each area based on the most critical tasks. To ensure job-relatedness of the resulting examination, SMEs must link every item on the test to a specific task that appears on the test specifications.

Sometimes it is desirable to include both tasks and KSAs in a practice analysis. The procedure for determining the subject matter areas and establishing relative weights of content areas is similar. However, including KSAs requires an additional step, linking the KSAs to the tasks. Under this model item writers develop and link test items directly to the KSAs, instead of tasks. This additional step is sometimes desirable based on the content of the examination. For example, test specifications for veterinarians may include both the activities (tasks) needed to diagnose a disease and the diseases (KSAs) specific to a particular species.

The final process for defensible test specifications is the development of the structure for the examination by determining the major and sub-content areas and test weights. The linkage between tasks and/or KSAs and the test specifications is paramount in establishing the defensibility of the test specification and the resulting examination. This final step is typically done by using both the empirical results of the job analysis and the expert judgments of the SMEs participating on the Practice Analysis Advisory committee. A technical report is prepared which documents the complete practice analysis process and the decisions made by the Advisory committee. It should be emphasized that that none of these activities should be performed except under the guidance of a trained psychometrician. The Practice Analysis Advisory Committee should not make the leap from the practice analysis to the test specifications unless a psychometrician carefully guides the group. Although the SME's have the knowledge and skill sets, their expertise has to be channeled carefully such that the final product is professionally sound and legally defensible.