

What You Should Know About Creating High-Stakes Examinations

Introduction

High-stakes examinations, as the name suggests, are vitally important to the careers of the people who take them. Certification and licensure are necessary for some individuals to work in their chosen professions, and they provide the means for these individuals to market their expertise to consumers — the public or the employers seeking skilled professionals.

A well-designed and executed examination provides a solid foundation for a certification or licensure program, and a well-established examination creates an ecosystem of activity. The benefits include:

- a brand identity that promotes the idea of protecting the public and other stakeholders,
- confidence among certificants and licensees in the program's quality and fairness and the value of the credential in the marketplace,
- buy-in, recognition, and support from professional, legislative, and regulatory bodies, and
- an added revenue stream as candidates pay fees to take the examination or maintain their certified status.

This guide outlines many of the steps necessary for developing a credible examination. It is intended to help companies and organizations that are contemplating initiating a certification program to determine if they have the necessary support and resources for such an undertaking.

Key Terms

Content validity is the extent to which the content of the examination contains a balanced and adequate sample of questions representative of the knowledge and skills an individual needs for successful and competent job performance.

Reliability means that the scores individuals earn by taking the examination are dependable measures of their abilities and that pass/fail decisions correctly separate the proficient from the nonproficient. Scores must be consistent regardless of when an individual was tested or which version of an examination was used.

Defensibility means that the examination is likely to withstand legal challenges from failing candidates who claim the examination is flawed. The sponsoring company or organization can help to fend off such challenges by demonstrating that the examination was developed using a rational, thorough, and fair process; has adequate documentation of content validity; and has reliable results, with a passing standard that is viewed by the profession as reasonable.

Psychometrician refers to someone with training in the field of measurement and evaluation, as well as extensive experience in assessing people's abilities. The psychometrician is key to a quality high-stakes examination. He or she has the expertise to manage the development process so that each examination possesses the three hallmarks of a credible assessment instrument: validity, reliability, and legal defensibility.

Job/Task Analysis

The initial step in creating a high-stakes examination is a job/task analysis (JTA), also called a role delineation study. A JTA helps ensure that scores earned by candidates on an examination are interpreted by identifying the abilities needed for successful job performance. JTAs generally are conducted in two phases. First, subject-matter experts (SMEs) define the primary knowledge and skills required of the certified professional. Second, a representative sample of practitioners reviews and validates the information to verify the accuracy of the SMEs' view of the profession.

SMEs should be thoroughly knowledgeable about the profession and provide a cross section of practice settings, geographical regions, ethnic backgrounds, and genders. The panel outlines the major performance domains — the principal areas of responsibility — involved in the profession, identifies the specific responsibilities or tasks associated with each domain, and lists the knowledge and skills associated with the successful performance of each task.

The panel then validates the domains, tasks, and knowledge and skill statements associated with competent performance by rating them according to their importance, criticality (the degree to which inability to perform the task would cause harm), and frequency of performance. Finally, panelists review the rating data. They may revise the preliminary test content outline for the examination and recommend the proportion of test items to be included in each section of the examination.

A survey of practicing professionals is used to validate the competencies outlined by the SMEs. Developing an appropriate sample of survey participants is critical to the JTA. The selected sample should represent experienced and entry-level practitioners, as well as a variety of organizational settings and geographical regions. The sample should be large enough to maximize the ability to interpret the survey results definitively and make reasonable generalizations, especially regarding the differences in practice that may exist among respondents who represent various geographical regions, industry classifications, levels of education, and experience.

Surveys are conducted through the mail or via email, and the results are analyzed to determine how professionals in the field rate the competencies needed for successful job performance. Examination specifications, or blueprints, are created from these ratings, with more questions devoted to more important areas. Some of the skills that must be tested might not be appropriate for a traditional multiple-choice examination, so a simulation or practical examination may be developed to assess these decision-making skills.

Examination Development

Once the JTA is completed, an examination must be built to assess a candidate's abilities in the necessary job skills and knowledge. Through multiple-choice questions, candidates recall facts, apply specific knowledge to a given problem or situation, or reach an appropriate conclusion by analyzing or evaluating information.

A development committee workshop usually is held to write test questions, or items. Items should be written by people who have a significant level of experience in the profession and represent different areas of expertise, geographical regions, and organizational settings. During the workshop, participants practice writing and reviewing items. Each item is reviewed and classified by at least three experts in a specialty area, in conjunction with the entire development committee. Items should reflect the knowledge level of minimally competent professionals. Multiple-choice items should be written so that the correct answer is defensible and that incorrect answers are plausible but clearly not the best choice.

After editing for grammar and consistency and to eliminate any bias, the items are sent back to the committee for technical review. Items approved by the committee are placed into a field test that is administered to a sample of professionals in the field (or field tested as experimental items on the examination for existing tests). After the field test, some items may be rewritten or discarded if they are found to be confusing or not useful in determining competence. The development process should generate enough items to fill multiple versions of the test, which prevents candidates from seeing the same questions if they take the test more than once.

Once these items have been generated, they are stored in an item bank, a secure database that also contains background information on how each item was developed and its record of validation and use. This information provides the foundation for the quality and defensibility of the examination.

Follow-up workshops are usually held to assemble the examination, with questions being chosen from the item bank. The examination is assembled according to the blueprint established by the JTA, and the passing point, or cut score, is determined. A credentialing examination must have a defensible passing score that is based on the minimum competence required to perform proficiently in the profession or job. A criterion-referenced approach — considered by the testing profession to be the most defensible approach for setting passing points — relies on the pooled judgments of content experts who review each item on the examination to estimate the probability that a “minimally acceptable” candidate will answer it correctly.

Scoring, Equating, and Data Analysis

After each administration of the examination, candidate scores and statistics must be analyzed to determine if the test is functioning properly, as well as to improve its overall quality. An item analysis shows how well each question performs and indicates if a question is too easy or too difficult, if a question’s difficulty changes through time, and if a question distinguishes effectively between knowledgeable and unknowledgeable candidates. Summary statistics of a test administration show the range and distribution of scores.

As each new examination version is assembled, the content and difficulty level of the examination may change, so the new version must be equated to maintain a constant standard of difficulty. When different versions of a test are used, either simultaneously or over time, equating ensures that the scores of candidates taking the new version convey the same level of proficiency as the same scores on the other versions do.

Combining examination score statistics with candidate demographic information can yield useful information, such as whether issues regarding bias could arise, or how individuals who take an examination multiple times fare versus first-time candidates.

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Please contact us with questions about the information contained in this document or for more information about the examination process and Scantron’s capabilities.

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