

Resource Brief



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Promoting Regulatory Excellence

Job Analysis: A Guide for Credentialing Organizations

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Resource Brief

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WHY CONDUCT A JOB ANALYSIS?

Purpose of a Job Analysis (aka Practice Analysis)

The primary purpose for conducting a job analysis is to define practice of a profession in terms of the actual tasks that new practitioners must be able to perform safely and competently at the time of licensure or certification.

The definition, or, description, of practice is typically used to form the foundation of a credentialing (licensing or certification) examination that is fair, job related, and legally defensible. The definition of practice can also provide a solid foundation for developing legislation and policies that affect regulation and educational standards. The general rule of thumb is that a job analysis should be reviewed every three to five years to maintain an accurate description of practice. Job analyses can be performed sooner if there are substantial changes in practice or technology.

Oftentimes, the terms job analysis and practice analysis are used interchangeably. Some authors use the term “practice analysis” instead of job analysis (e.g., Kane, 1997; Mehrens, 1997; Raymond, 2001, 2002, 2005) to emphasize the fact that the intent of a practice analysis is to provide an overall description of patterns of practice for some professions or occupations. The goal is to describe the practice patterns of a group of individuals working in different kinds of settings and providing a wide range of services to diverse populations of clients.

Necessity of Job Analysis

Henderson and Smith (2009) note that job analysis is required by psychometric standards and is an essential method for demonstrating job relatedness of content to be included in high-stakes examinations such as licensing and certification examinations. Whenever high-stakes examinations were challenged, job analysis was upheld as evidence of content validation.

Content Validation Strategy

Validity is the process of collecting evidence in support of the use of an examination. Establishing the validity of a licensing or certification examination is a far more complicated matter than establishing the validity of any other kind of examination. In fact, Fabrey and Hartigan (2009, p. 113) note that collecting evidence of content validity for licensing and certification examinations is rarely straightforward as the examinations are expected to indicate more than educational achievement and must ultimately be related to activities performed in practice.

Because external criterion (e.g., aptitude test scores, success on the job, other measurements taken on the same individuals) are typically unavailable to validate the content in licensing and certification examinations, credentialing organizations rely on subject matter experts and expert panels to evaluate technical and conceptual accuracy of content, hence, the name content validity. The content validation strategy establishes job relatedness of the examination and thereby provides empirical linkage of the job analysis to the examination content.

Professional and Legal Standards

The Standards for Educational and Psychological Testing (1999) and the Principles for the Validation and Use of Personnel Selection Procedures (1987) emphasize that job analysis is the primary basis for determining the content and knowledge crucial to protecting the public (Knapp and Knapp, 1995). Both the Standards and Principles are widely used as professional standards to evaluate the validity of examination programs.

A number of statutes and guidelines, as well as case law, impact licensure and certification testing. The statutes and guidelines include the federal Uniform Guidelines for Employee Selection Procedures (1978), the Civil Rights Act of 1991, and the Americans with Disabilities Act of 1990 (amended in 2008).

ASSUMPTIONS

Purpose of a Credentialing (Licensing or Certification) Examination

A credentialing organization must understand the purpose of licensing or certification examinations in order to appreciate the scope and content of a job analysis. The sole purpose of a licensing or certification examination is to identify persons who possess the minimum knowledge and experience necessary to perform tasks on the job safely. Unlike examinations used in academic settings or job settings, the results from licensing or certification examinations have tremendous impact on the qualifications of credentialed individuals, and therefore, on the consumers of the services provided by those individuals.

Public Protection

The most important aspect of job analyses performed for licensure and certification purposes is the focus on the critical competencies required to protect the public rather than on responsibilities and knowledge necessary for successful job performance (Kane, 1982). Activities related to professional development, supervision, in-service training, or business practice are usually left out of the job analysis because they are related to successful job performance rather than public protection.

Entry-Level Perspective

The job analysis typically includes a number of newly licensed or certified, entry-level practitioners to provide assistance during the establishment of content and criteria to define the profession. The inclusion of entry-level practitioners will ensure that the competencies addressed in the job analysis reflect professional situations commonly encountered by entry-level practitioners, and that examinations based on the job analysis reflect minimum competence for the credential. It should be emphasized that minimum competence for the credential corresponds to an acceptable level of competence expected from practitioners who possess the minimum qualifications to sit for the examination.

Generalist versus Specialist Practice

Many credentialing organizations are concerned about how practice specialties are addressed in a job analysis. One strategy is to represent competencies for undifferentiated, generalist practitioners, although such persons are largely hypothetical (LaDuca, Downing, & Henzel, 1995). In addition, both frequently occurring, low-impact situations and infrequently occurring high-impact situations should be included so that the job analysis is a comprehensive evaluation of practice. The psychometrician must work very closely with subject matter experts to achieve the balance and identify differences among practitioners.

Level of Specificity

The results of a job analysis should provide sufficient detail so that a credentialing organization can update examinations, policies, regulations, and curriculum. The key to obtaining useful job analysis results is to select a job analyst who is familiar with different job analysis methods that ultimately affect the level of specificity in the tasks and knowledge best suited for the credentialing organization's purposes.

Minor revisions of policy and regulations can be accomplished by evaluating the content of broadly stated, general competencies and duties. Major changes in examination content, regulations, or curriculum can only be accomplished by evaluating the content of well-constructed tasks and knowledge that reflect precise technical concepts and terms.

CONCEPTUAL FRAMEWORKS FOR TEST SPECIFICATIONS

Frameworks for organizing test specifications can have a significant influence on the outcome of a job analysis. Raymond (2002) identified three frameworks that influence the resulting test specifications: content-oriented, process-oriented, content by process matrix.

Content-Oriented

An example of a content-oriented framework presents subject matter similar to an outline of topics in a textbook.

- Example of a content-oriented framework
Fiduciary*
- I. Certification
 - a. Applicant
 - b. Certificate holder
 - c. Ethics
 - II. Guardianship
 - a. Adjudication process
 - b. Mandatory reporting and duties
 - c. Ethics
 - III. Conservatorship
 - a. Adjudication process
 - b. Mandatory reporting and duties
 - c. Financial administration and management
 - IV. Personal representative
 - a. Adjudication process
 - b. Mandatory reporting and duties
 - c. Financial administration and management
 - d. Ethics

Process-Oriented

A process-oriented approach is organized like an outline of practice activities or performance dimensions. An example of a process-oriented framework presents topics organized by specific job functions.

- Example of a process-oriented framework
Ship pilot*
- I. Prevoyage planning
 - II. Docking and undocking
 - III. Use of anchors
 - IV. Waterway transit
 - V. Ship handling
 - VI. Navigation
 - VII. Pilot-master exchange
 - VIII. Safety

Content by Process Matrix

A content by process matrix integrates topics and practice activities into a single framework. For example, the specifications for an oncology dietitian might include the following topics and practice activities. The cells in the content-by-process matrix represent the numbers of questions given to each practice-related behavior and patient condition.

*Example of a content by process matrix
 Oncology dietitian¹*

	Outcomes			
Nutrition impact symptom	Evaluate acute side effects of treatment	Evaluate chronic and late effects of treatment	Evaluate nutrition-related quality of life issues	Evaluate pain management and side effects
Neutropenia				
Anemia				
Protein depletion				
Weight loss				
Radiation enteritis				
Taste alterations				
Neuropathy				
Treatment-related fatigue				
Xerostomia				
Fatigue				
Anorexia				
Dysgeusia				

COMMON METHODOLOGIES

There is no single best method for performing a job analysis. Some authors (Peterson & Jeanneret, 2007; Raymond & Neustel, 2006) have commented that the choice of method depends to a large extent on the purpose for which the job analysis is being performed. Credentialing organizations should be aware that some methods are not suitable for job analysis of licensed or certified professions because of the use of off-the-shelf instruments, e.g, Position Analysis Questionnaire (McCormick, Jeanneret, & Mecham, 1972; McCormick & Jeanneret, 1988), Job Element Inventory (Harvey, Friedman, Hakel & Cornelius, 1977). In off-the-shelf instruments, there is a focus on human abilities or personality traits with the intent on classifying people in jobs for traditional personnel selection purposes, e.g., job classifications, training programs, etc.

In the realm of credentialing, there are five common methodologies---task inventory, role delineation, professional practice model, table-top job analysis and multiple methods approach---to conduct job analyses. Unlike job analyses for personnel selection uses, a job analysis for credentialing purposes is analogous to conducting a research project in which an investigator continues with the data gathering process until no new tasks or knowledge are discovered. By going to this extent, some tasks or knowledge may later be found to be too specialized; however, there is less harm in discovering information that is too specialized than not discovering the information at all.

¹ In this example, there were five major content domains: Nutrition Assessment and Diagnosis, Nutrition Care Plan, Nutrition Care Interventions, Monitoring and Evaluation, and Risk Reduction. In "Monitoring and Evaluation" there were three elements: treatment changes, outcomes, and complications.

It should be noted that the success of the job analysis is somewhat dependent upon the skill of the psychometrician to research the parameters of the job and use content experts to validate the work product. Whether the psychometrician is conducting interviews, teleconferences or focus groups with content experts, it is essential to become familiar with the content so that there is framework to gather information from job analysis interviews and focus groups.

Task Inventory Approach

In the context of licensing and certification, the task inventory approach involves creating a list of tasks or job activities performed by practitioners in a particular profession (e.g., Raymond and Neustel, 2006). This approach is distinguished from its uses in personnel selection because it does not involve time-and-motion studies or management/supervision of employees.

In a task inventory, a list of tasks or job activities is identified by subject matter experts in a specific profession. Job tasks can be derived from information obtained in individual interviews, observations or focus groups of subject matter experts. The task inventory is formatted into a survey questionnaire and distributed to a representative sample of individuals. Individuals are asked to rate each task on certain scales such as frequency and importance. An advantage of the task inventory approach is its efficiency. Respondents can complete the survey questionnaire in a short amount time and the data lend themselves well to development of test specifications based on empirical methods. An example of a job task for radiological technologists is "Perform quality control tests on radiographic equipment" (Raymond and Neustel, 2006).

Role Delineation

The purpose of role delineation is to identify broad subject matter areas that include characteristics of tasks and their associated knowledge, skills, and abilities. Individuals who perform the job are asked to report their activities in different types of professional situations that define a domain of the profession. The information is synthesized into a survey questionnaire that is distributed to a representative sample of practitioners.

The data are analyzed to identify the core tasks and knowledge areas that are critical to competent performance. An example of role delineation in a medical assisting profession (American Association of Medical Assistants, 2003) lists three major roles of medical assistants: administrative, clinical and general. An example of a task within the "administrative" role is "Perform basic administrative medical assisting functions."

Professional Practice Model (PPM)

The Professional Practice Model is a framework commonly used in the health professions but could apply to other professions. In his work with the National Board of Medical Examiners, LaDuca (1994) describes two principle dimensions and their interactions: encounter frames and physician tasks. *Encounter frames* include initial encounters and encounters in the context of continued care. *Physician tasks* include history and physical examination, laboratory studies, diagnosis, evaluation of problems, patient management, and application of basic science concepts. Many data collection methods may be used in

this model; however, data is usually derived from panels of subject matter experts. An example of PPM might include an initial encounter with a patient for the first time for a nonemergency problem coupled with specific physician tasks such as taking the patient's history, performing a physical examination, ordering laboratory tests, and managing the patient's medications.

Table-Top Analysis Approach

The table-top job analysis approach (TTJA) has been used extensively in personnel selection (Department of Energy Handbook, 1994) but has been compared with data collected by traditional, field survey means by Tannenbaum and Wesley in 1993. The caveat to using this approach is to construct panels of subject matter experts who can objectively identify the domains of interest, tasks, and knowledge that accurately represent practice. The TTJA are particularly well suited for job analyses of new professions or professions with limited populations when traditional field surveys are not plausible.

Multiple Methods Approach

The multiple methods approach adopted by Prien and his colleagues (Prien and Ronan, 1971) uses many of the elements of other job analysis methods in a systematic and precise way. The purpose of the job analysis is to differentiate individuals who perform tasks in a variety of job functions. Subject matter experts provide job information through individual interviews and focus groups. Job information includes detailed descriptions of job tasks and knowledge skills, and abilities necessary to perform the tasks.

The information is synthesized into a survey questionnaire that is sent to a representative sample of individuals. In a typical survey questionnaire, individuals are asked to rate the relative importance of job tasks and their associated knowledge, skills, and abilities. The advantage of the multiple methods approach is that the job content provides sufficient detail to construct examination questions. Only in recent years has the advantage of obtaining knowledge, skill and ability statements been recognized as a valuable tool in examination development (Raymond, 2005; Wang, Schnipke & Witt, 2005)

An example of a job task for a land surveyor is "Perform topographical survey to produce a graphical terrain representation." An example of a knowledge statement is "Knowledge of elements of topographical maps to determine physical features."

SOCIAL AND POLITICAL CONSIDERATIONS

Social and political considerations can greatly impact the outcome of a job analysis and interfere with a credentialing organization's commitment to the job analysis process. The most important thing for a credentialing organization to remember is that a job analysis is an *empirical* study of practice whose sole intent is to define a profession in terms of actual tasks that can be performed at the time of licensure or certification. An empirical study should not be based upon the results of a survey sent to a professional organization's membership, the recommendations of one or two advisory panels, or the results of previous job analyses.

Resistance to Change

There are also considerations that relate to how the concept of a job analysis will be received by board members and licensees or certificants. First, it is important to determine how the results of a job analysis will be used by a credentialing organization. The results of a job analysis may significantly impact training requirements and educational curriculum such that training organizations and schools will need time to implement any changes.

Second, the credentialing organization must be prepared to address the findings of the job analysis. The job analysis might identify job tasks that are not currently in statute. The organization may have to prepare legislation to change statutes and licensure/certification policies.

Third, if the credentialing organization has adverse relations with its constituents, there is the possibility that respondents who completed the job analysis survey questionnaire may not be representative of the profession. Thus, unless strategies are discussed to mitigate the situation, the best-planned efforts are doomed to fail if target population does not want to participate in interviews or focus groups, or complete the survey questionnaire.

Existing Statutes and Regulations

Some professions have highly restrictive or highly specific state statutes and regulations that can impede how quickly the results of a job analysis can be implemented. And, many state governments have a regulatory process that can take two to three years to change the content of statutes and regulations.

Educational Curriculum

Because a particular subject matter is taught in educational settings, it does not follow that it should be included in a job analysis for a credentialing examination. A job analysis of licensed practice should be more than a master curriculum outlined in an educational catalogue. Persons seeking a license must *apply* their training and education to actual tasks of the job and be able to perform those tasks in a manner that protects the public health, safety, and welfare.

There may also be differences in the scope and quality of different educational curricula. Some programs are well rounded but have an outdated core of classes. Other programs overemphasize specific aspects of the profession to the exclusion of others. Still other programs have a satisfactory core of classes but have loosely constructed criteria for training and practical experience.

Economic Cost

Most credentialing organizations underestimate the cost of a job analysis because they do not fully understand its intent, purpose, and effect on licensed or certified practice. A job analysis could cost up to \$150,000 to carry out the project, including individual interviews of subject matter experts and focus groups. Additional costs will need to be factored if the primary method used to administer the job analysis survey involves mailing

surveys. Separate from the costs of conducting the job analysis are the costs associated with the time that the credentialing organization's staff must devote to implement the project.

The cost is somewhat dependent upon the complexity of the profession and the number of practice issues, such as subspecialty practices, that can affect the number of personnel and the number of hours required to complete the job analysis. Generally speaking, job analyses of professions that require advanced degrees and prelicensure/certification internships will cost more than professions that require vocational training.

While the cost can be a major factor in the decision to conduct a job analysis, some face-to-face contact is necessary to produce a quality job analysis of professions whose job activities are not easily discernable or involve complex decision-making. It should be recognized that face-to-face interviews with subject matter experts at their worksites may yield insights that could not have been obtained in teleconferences and by e-mail. And, if used judiciously, face-to-face focus groups are an efficient way to evaluate the accuracy of the tasks and knowledge and determine the particulars of the test specifications.

It may be necessary to conduct the job analysis survey exclusively in an Internet/online format; however, Raymond (2005) points out that the potential utility of Internet/online formats should be evaluated for each project. In one case, the intended respondents had minimal formal education and were not familiar with Internet-based surveys. In another case, intended participants for a nationally based job analysis were "field based" and did not have regular access to computers during the work day.

In both cases, the initial response rates were dismal because use of computers and the Internet disrupted their work day such that they would have to complete the questionnaire after their work day was over. It was necessary to adjunct the online results with questionnaires distributed by conventional mail to minimize the perceived burden of completing the questionnaire. Specific safeguards were in place, e.g., assigning ID numbers to the questionnaires and cross-checking the names with the names associated with a master list of e-mail addresses and usernames, to prevent duplicate data from respondents in the dataset.

As more and more practitioners become familiar with computer-based techniques for survey questionnaires, there are several strategies, in addition to the suggestions discussed above, for administration of Internet-based questionnaires. Raymond (2005, p. 37) cites the following strategies:

1. Plan for communication with individuals in the sample, e.g., conventional mail. If e-mail addresses are not current, the e-mail containing individual usernames and passwords is likely to be rejected as "spam."
2. Format the questionnaire so that it appears the same on different browsers and screen resolutions.
3. Provide detailed instructions for accessing the questionnaires.

4. Present a welcome screen that provides an overview of the questionnaire so that respondents are fully informed as to procedures to stop and restart the questionnaire process.
5. Start with simple, noninvasive questions.
6. Provide instructions regarding key actions required to respond and navigate the questionnaire, e.g., radio buttons, checkboxes, etc.
7. Consider the physical position of column headings that can scroll out of view.
8. Allow respondents to react to questions as they would on a paper questionnaire so that they are discouraged from skipping or providing multiple responses.
9. Utilize continuous scrolling rather than a design with a single question per screen.
10. Utilize a progress bar to inform respondents of their location in the questionnaire.
11. Use simple designs rather than excessive graphics, motion, pop-up boxes and color.

Some suggestions for implementing the strategies include contacting intended recipients by postcard and establishing an updated database of e-mail addresses to avoid rejection by the online survey site as a virus or as "spam," and, providing an e-mail address of a contact person as well as a toll-free telephone number.

Competing or Overlapping Scopes of Practice

The difficulty of conducting a job analysis is compounded when related professions have scopes of practice that overlap within a profession. The psychometrician conducting the job analysis must define the characteristics of the profession and determine how it differs from related professions. The psychometrician will then have to establish common terminology, concepts, and contexts for that profession.

For example, licensed clinical social workers and marriage, family, and child counselors conduct psychotherapy. But the social worker conducts psychotherapy in the context of "person-in-situation" and the marriage, family, and child counselor conducts psychotherapy in the context of "relationships." During interviews and focus groups, the analyst should be consistent in the interpretation of "therapy" in the context of a specific profession so that the terms and concepts in the survey questionnaire are not misinterpreted.

STEPS IN A TYPICAL JOB ANALYSIS

Below are the steps typically undertaken by a consultant performing a job analysis.

- Step 1. *Perform literature review.* The purpose of the literature review is to gain background information prior to interviews and developing the preliminary list of task and knowledge. The literature review includes review of current laws and regulations, reference books and documents,

journal articles, existing test specifications, and other relevant publications to develop an understanding of the profession and a conceptual framework for the job analysis.

- Step 2. *Gather data from interviews of practitioners.* The interviews can be face-to-face or by telephone. Each interview should build in the information obtained in other interviews so that the full breadth and depth of information about practice is collected.
- Step 3. *Develop a framework, and list of tasks and knowledge.* The preliminary list of tasks and knowledge are developed from interview information and relevant background research. Great care must be taken to phrase the tasks and knowledge at the same level of specificity.
- Step 4. *Conduct a focus group to validate the tasks and knowledge.* The content experts can ensure that the tasks and knowledge are technically correct and accurately represent practice. The tasks and knowledge should be mutually exclusive, cover all aspects of practice, and be universally understood across practice settings. The focus group conducted in a face-to-face format is recommended to validate the tasks and knowledge.
- Step 5. *Develop content, format and layout of survey questionnaire.* In the survey questionnaire, rater instructions, demographics and rating scales are critical to obtaining the desired data. The demographics, e.g., geographic region of practice, practice settings, education, etc., are helpful in interpreting the results and gathering validity support for the examination.

The rating scale(s) should be designed to elicit judgments relevant to the goal of the job analysis. Different rating scales can yield information about the importance of job activities to practice and when competence in the job activity was obtained (before or after licensure/certification).

The content of the survey may include both tasks and knowledge statements if their numbers are limited. For lengthy task lists, the tasks can be included in the survey, and the knowledge linked to the tasks after the data analysis when the test specifications are constructed.

- Step 6. *Develop sampling methodology.* Strategies to achieve desired response rate may differ according to the characteristics of the respondent population and is heavily dependent upon the diversity of practice settings involved in practice.

For example, the respondents to be sampled for a new specialty certification program may be created from relevant groups within an existing population. Or, the respondents may be a stratified random sample that represents diverse practice settings.

The ultimate goal is to obtain a representative sample of adequate size so that the results can be generalized to the respondent population.

Response rates can be enhanced by one or more “reminder” postcards or e-mails.

- Step 7. Determine logistics of survey administration. Determine the delivery method, whether by mail-out questionnaires with return postage, or online. Several factors may influence the choice of delivery method such as familiarity with computers and likelihood of online response. Conventional means, e.g., postcard, may be necessary to identify accurate e-mail addresses and/or mailing addresses. For example, intended respondents may perform most of their job activities at an offsite location in the field and may not have access to a computer.
- Step 8. Pretest/pilot test. Conduct a pretest/pilot test of the instrument with a small group of subject matter experts. Solicit feedback regarding the cover page instructions, explanation as to the purpose of the survey, clarity of instructions and technical accuracy of the tasks and/or knowledge.
- Step 9. Administer survey. Coordinate mail-out distribution or online delivery of the survey with client organization.
- Step 10. Analyze survey data and prepare preliminary test specifications. Make arrangements for data entry (if mail-out), establish a method to determine content domain weights, create preliminary test specifications.
- Step 11. Conduct a focus group to validate test specifications. The purpose of the focus group is to validate the test specifications, link the tasks and knowledge, and determine the weights for content domains based on respondent ratings. The final test specifications are designed to provide both consistency of context (tasks) and content (knowledge base) in test questions. The focus group conducted in a face-to-face format is recommended to produce the test specifications.

SUMMARY

A job analysis is dependent upon many considerations and should be undertaken with a clear understanding of the intended use of the results and test specifications. There are several job analysis methodologies; however, the methodology chosen should be suited to the purpose of the job analysis. There are a number of assumptions that significantly affect the results of the job analysis including philosophy of the job analysis methodology, conceptual framework for tasks and knowledge, and level of specificity of tasks and knowledge. There are also social and political factors that can affect the results of the job analysis, most notably, resistance to change and existing statutes and regulations. When planning a job analysis, a credentialing organization should be aware that a job analysis is a research study that must be carried out in a systematic way.

COMMONLY ASKED QUESTIONS AND ANSWERS

Question **What topics should be covered in a job analysis?**

Answer A job analysis of a licensed profession should include only those subject matter areas that pertain to the protection of the public health, safety, and welfare rather than those that ensure an individual's business success. What is important in a job analysis is what a minimally competent individual is observed doing rather than general business and recordkeeping skills or general communication skills. Thus, all of the activities included in the job analysis should be observable and have an impact on public health, safety and welfare.

Question **Our national organization has already performed a task analysis of our profession. Can't we save some time and use this as the basis of our credentialing organization's job analysis?**

Answer A task analysis performed by professional organizations may be limited in scope and includes broad job duties that are either not observable or not testable. The scope may cover a range of duties that can exceed minimum competence or entry-level practice. These analyses usually do not include a broad range of licensed persons. Thus, the results of these analyses do not provide sufficient detail which can be used as the basis of examination questions.

Question **Are job analyses conducted differently for occupational licensure or certification than those for other purposes?**

Answer Yes. Job analyses, practice analyses, or occupational analyses, are designed to capture the tasks performed and competencies required at the time a person enters into the profession. This "entry level" perspective affects the decision of who to interview in terms of experience---for licensure and certification a goodly proportion of the interviewees should have been licensed five years or less. The results from the job analysis are not intended to be used to identify complexities that would predict success in practice. The tasks and knowledge identified, particularly those within licensed professions, should be those related to the protection of the public health, safety, and welfare. Performance of the tasks and knowledge does not guarantee success on the job. Rather, analyses conducted for licensing and certification purposes relate to minimum competence for the credential.

Question We have been told that our job analysis is obsolete and that we should have a new one performed for our examination program to be considered content valid. What kind of standards should we apply to evaluate the quality of a job analysis?

Answer The basis for the construction of a content valid examination is the job analysis. A job analysis is a comprehensive survey of job tasks and knowledge required to perform the tasks.

First, the list of tasks and knowledge that are developed by conducting interviews and/or focus groups should be comprehensive. The development of the list should continue until no new or additional information can be obtained. Second, the level of specificity should be consistent for all tasks and knowledge. Furthermore, the statements should provide sufficient detail so that they are useful during the construction of examination questions.

Tasks and knowledge that are broad and stated in a few words are not adequate for constructing new examination questions because the subject matter experts must depend upon their personal experience to determine the context of the task or knowledge.

There are a number of criteria in the professional literature and in case law that job analyses should adhere to for results suitable to produce examinations that are content valid:

- a. The knowledge tested must be important and are not peripheral to effective performance of job tasks;
- b. Subject matter areas of practice should be accurately weighted to reflect the relative importance of the attributes that they purport to test;
- c. The level of difficulty should match minimal competence for the credential; and,
- d. Job analysis interviews should cover the full spectrum of tasks performed.

Question What is the role of educators in the job analysis process?

Answer Educators may be included but their role should be minimized. Educators may promote inclusion of specific academic subject matter rather than subject matter appropriate for licensing or certification purposes. However, in the context of a focus group of content experts, educators can provide valuable insights into the competencies (tasks and knowledge) necessary for practice.

Question **What is the role of board members and professional associations?**

Answer A job analysis is not performed as a reaction to individual opinions, sentiments, or the whims of special interest groups. Therefore, the direct role of board members and professional associations should be minimized. A job analysis is an objective study of practice that should be free of influences from individuals or special interest groups. If a job analysis is done properly, the concerns of these groups should be addressed.

Question **Who should be interviewed for the job analysis? How many people should be interviewed to make sure that all the information is covered?**

Answer Practitioners from a broad range of practice settings, geographic locations, and levels of experience can be interviewed. The purpose of the interviews is to provide the basis of the list of tasks and knowledge to be included on the survey questionnaire.

Interviewees should be assured that the information obtained from the interviews is not the sole source of data for the job analysis. Typically, data is obtained from a survey questionnaire and panels of subject matter experts, who are representative of the profession. Even if the primary source of information is established by a focus group, a few practitioners should be interviewed to provide background information and insights into the profession,

The number of subject matter experts to be interviewed depends upon the complexity of the profession and the issues involved in practice. For technical level professions, 10-15 interviews are usually sufficient. For those professions that require advanced degrees and supervised training programs, 20-30 interviews may be needed. The number of subspecialties or work settings may necessitate additional interviews.

Question **What should we consider in the design of the rating scales for the questionnaire?**

Answer A credentialing organization should assist in the design of rating scales that answer questions of interest. Typically, job analyses ask respondents to rate how frequently they perform a task in current practice or how important a task or knowledge is to current practice. However, other rating scales can be used.

For example, a credentialing organization can determine the difficulty of acquiring a task or knowledge. A credentialing organization can also determine if proficiency in a task was obtained before or after licensure/certification, or how much supervision may be needed to perform a task safely.

Question We think that too many rating scales may scare people from answering the questionnaire. Can't we eliminate some of them?

Answer While the length of the questionnaire may be of some concern, a credentialing organization should try to ensure that all aspects of practice are included in the survey questionnaire. Survey research shows a direct relationship between the amount of time required to complete, rate of return, and length of the survey.

Carefully designed survey questionnaires consider several factors that will permit logical assignment of a metric (number) to a task and/or knowledge:

- a) Tasks and/or knowledge of the same conceptual "size";
- b) Rating scales assigned to tasks and/or knowledge have equal sized intervals (distances) between numeric anchors, e.g., 1, 2, 3, 4, 5;
- c) Arithmetic operations can be applied to the ratings and produce meaningful results.

Ultimately, it is the psychometrician's job to ensure that the tasks are of the same conceptual "size," the tasks cover all aspects of practice, and the rating scales have equal intervals. By doing so, there will be validity evidence to substantiate the inclusion of critical tasks in the test specifications.

Question Who should receive the questionnaire? We could ensure a high response rate by sending the questionnaire to people we know would fill it out.

Answer When the results appear to be tied to specific individuals or groups of individuals, the results may be biased in favor of those individuals or groups or their special interests.

The strength of a psychometrically sound survey is the sampling strategy used to distribute the questionnaire. If the credential resides with a state licensing organization, the questionnaire should be sent statewide to all counties. If the credential resides with a national or international organization the questionnaire should be sent to whatever subgroups of practitioners are representative of the professional community. Every effort should be made to send the questionnaire to a balanced mix of practitioners from diverse geographic areas, experience levels, and practice specialties. Statistical tables can be useful to determine the number of individuals to be included in the sample.

Because the results of a job analysis focus on entry-level practice, half of the survey questionnaires should be sent to individuals who have been licensed or certified for five years or less. The other half of the questionnaires can be sent to more experienced individuals, e.g., 6 or more years.

Question The scope of practice is specified in detail in our regulations. However, the results from a job analysis identified activities that are not mentioned in the regulations but are being performed by practitioners. What are the implications of the findings for examination development?

Answer When the scope of practice is written in great detail in the regulations, it becomes very problematic to incorporate changes in actual practice in examinations. It may be that some recent aspects of practice cannot be tested until the regulations are changed. Moreover, practitioners may be performing services outside their accepted scope of practice. A long term solution to the problem may be to change the regulations so they are stated in a more general way to make provisions for the future.

Question We have completed a job analysis and used the results to develop test specifications for developing the examination. Doesn't our examination meet validity requirements?

Answer Not necessarily. Credentialing organizations must do more than conduct a job analysis and develop test specifications. It is important to understand that an examination in and of itself does not possess validity. Validity of an examination refers to the interpretation of test scores resulting from the use of an examination. Thus, if an examination tests job-related competencies established by the results of the job analysis, substantial evidence exists in support of the use of the examination.

Question How are test specifications established for credentialing examinations?

Answer The results from the job analysis will identify the importance of the tasks and competencies for practice. Therefore, the most important tasks and competencies should serve as the foundation for the examinations. Technical standards indicate that it is appropriate to use only the most important job activities when developing examinations. Because licensing or certification examinations measure only a limited set of job tasks in the time allowed for the examination, only the most important ones should be measured.

Evidence of the validity of licensing or certification examinations is established by linking the questions directly to the tasks or competencies that have been found to be important to practice. Therefore, if the job analysis defines the content domains of practice and the test questions sample the content domains, the examination can be used with great confidence to determine credentialing status.

Question After we had a job analysis performed by a consultant, the test specifications do not appear to reflect the percentages of job activities performed in practice. Many of the content domains are not considered subject matter areas by themselves and the phrasing of the tasks and knowledge is inaccurate. Even the weights don't make sense, it will be impossible to write examination questions from these specifications. What happened and what is our recourse?

Answer

It depends on the methodology used by the consultant and the consultant's understanding of the profession. When the list of tasks and knowledge was created, each task and knowledge should have been of equivalent size and level of specificity. The conceptual "size" means that the statements represent about the same amount of work or similar amount of a knowledge, skill or ability. Unless the statements are of equal size, results from analysis of the ratings will be misleading.

If the consultant did not fully research the parameters of the job and conceptualize how the task and knowledge were to be used as a tool for examination development, you may wish to convene a focus group of subject matter experts from a variety of practice settings to remediate the findings of the job analysis. Although not ideal, use of content experts in a "table-top job analysis" is an acceptable and valid method of identifying competencies required for a profession.

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