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JTAs: Building a Bridge from Job Role to Credentialing Exam

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Slide 2

Are you constructing a solid bridge from job role to exam blueprint and content?

Purpose of this discussion is to present key concepts and considerations in defining the content domain (job task analysis) for a credentialing test.

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Purpose, Construct, and Ability

A high quality test should…
- address the **PURPOSE** of the credentialing program,
- measure the **INTENDED CONSTRUCT**, and
- produce scores that lead to a valid interpretation of an examinee's **ABILITY** in the given construct.

| JOB ROLE | TEST CONSTRUCT (Domain – Tasks/KSAs) | TEST BLUEPRINT |

Content-Related Validity Evidence

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Test Development Process

Validity

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What is a Domain Analysis?

» In credentialing, it is a systematic method used to identify the tasks, responsibilities, and corresponding knowledge, skills, and/or abilities (KSAs) necessary for successful performance in a job or domain of practice.

» Often referred to as "Job Analysis," "Job Task Analysis," or "Practice Analysis"

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Why analyze the domain?

» Results of the JTA form the basis for what is measured in exam (i.e., the test domain or construct)
  - Differs from a curriculum domain
» Provides information to be translated into the test blueprint
  - Test objectives, targeted cognitive level, and content weighting
» Provides content-related validity evidence in support of score interpretation and use
» Industry best practices, standards, and legal considerations

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Industry best practices

» "The validity of inferences for certification examination scores rests primarily and solidly on the adequacy and defensibility of the methods used to define the content domain operationally, delineate clearly the construct to be measured, and successfully implement procedures to systematically and adequately sample the content domain" (Downing, 2006).

» The outputs of job analysis provide a foundation for credentialing examinations that are "fair, job related, and legally defensible" (Chinn & Hertz, 2010, p.1).

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Industry Standards

» "The content domain to be covered by a credentialing test should be defined clearly and justified in terms of importance of the content for credential-worth performance in an occupation or profession. A rationale and evidence should be provided to support a claim that the knowledge or skills being assessed are required for credential-worthy performance in an occupation and are consistent with the purpose for which the licensing or certification program was instituted."
Standard 11.13, AERA, APA, & NCME (2014)

» "The certification program must establish specifications that describe what the examination is intended to measure as well as the design of the examination and requirements for its standardization and use, consistent with the stated objectives of the certification program."
NCCA Standard 15

» "A certification scheme shall contain the following elements: scope of certification; job and task description; required competence; abilities (when applicable); prerequisites (when applicable); code of conduct (when applicable). "
ANSI PCAC 17024 Standard 8.2

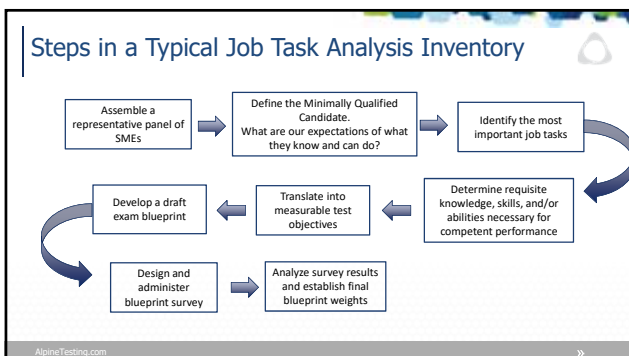AlpineTesting.com September 12, 2018 » 8

Legal Defensibility

» Legal concerns stem from:
  · High stakes use of exams (employment decisions such as hiring, firing, raises, promotions)
  · Inappropriate uses of exams
  · Bias /discrimination
» Equal Employment Opportunity Commission (EEOC) Guidelines
  · "A description of the method used to analyze the job should be provided (essential). The work behavior(s), the associated tasks, and, if the behavior results in a work product, the work products should be completely described (essential). Measures of criticality and/or importance of the work behavior(s) and the method of determining these measures should be provided (essential)." (Standard 1607.15.C.).

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Job Task Analysis Methodology

» Primary method used in credentialing is a Job Task Inventory
  · Panel of SMEs define the tasks and/or competencies, and corresponding knowledge, skills, and/or abilities necessary for performance by a minimally qualified candidate (MQC) in a job role.
  · Followed by a survey from the broader target population
» Outcomes
  · Clearly defined content domain that aligns with the target audience and definition of an MQC
  · Exam blueprint that aligns with the domain

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Steps in a Typical Job Task Analysis Inventory

Assemble a representative panel of SMEs → Define the Minimally Qualified Candidate. What are our expectations of what they know and can do? → Identify the most important job tasks → Determine requisite knowledge, skills, and/or abilities necessary for competent performance → Translate into measurable test objectives → Develop a draft exam blueprint → Design and administer blueprint survey → Analyze survey results and establish final blueprint weights

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Assemble a Panel

» Who are the participants?
  · Key program stakeholders, as necessary
  · SMEs
    - Panel should represent relevant geographical regions, job contexts, practice settings/role differences, years of work experience, and other demographic variables (e.g., ethnic diversity, gender)
    - Level of experience: Old school, New School, School
    - Typically already certified or licensed in the job role/profession
» How many participants should there be? It depends!
  · There is no one size fits all...representation is more important than quantity
  · Really large panels can make focused discussions/collaborations difficult
  · Smaller panels may fail to adequately represent diversity in the job role and subsequently in the domain

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Identify Tasks and Knowledge, Skills, and/or Abilities

» Typically 2-3 days for in-person meeting
» Define the MQC
» Identify important tasks
  · Everyone needs to know how to do these high level things.
» Identify KSAs
  · What does someone need to know to do the job task?
  · At what level does someone need to know these things?
» Translate the job tasks into measurable exam objectives
  · How can we measure that someone knows how to perform the job task?

Determine Cognitive Complexity

» Cognitive complexity identifies the level of cognitive processing required by the MQC
» Example of a hierarchy ranging from remembering facts to evaluating and creating information (Anderson et al, 2001)

Remember *Associate-Level*	Understand/ Apply *Professional-Level*	Analyze/ Evaluate *Advanced Professional-Level*	Create *Expert-Level*

Administer a Blueprint Survey

» Design a survey
  · Purpose
  · Clear concise instructions
  · Thorough definition of the program and MQC
  · Select level of the domain to survey (Task, KSA)
  · Select survey scales (e.g., frequency, importance, criticality)
» Identify a representative sample
» Develop and execute communication plan
» Administer
» Analysis

Blueprint Survey Outcomes

Sample blueprint

Domain	Cognitive Complexity	Weight	Number of items
1		50%	10
1.01	U/A	15%	3
1.02	A/E	10%	2
1.03	R	15%	3
1.04	U/A	10%	2
2		15%	3
2.01	R	10%	2
2.02	U/A	5%	1
3		35%	7
3.01	R	10%	2
3.02	R	5%	1
3.03	A/E	20%	4
	Total	100%	20

Translate results into blueprint weights

» Determine weighting of scales (e.g., 2 x Criticality)
» Combine scales (e.g., multiplicative model[1])
» Determine number of items (or other amount of content) for each task/objective

[1]Kane et al (1989)

Document the Job Task Analysis Study

» Panel qualifications and representation
» Rationale for selected methodology
» Procedures
» Outcomes
  · Draft Blueprint
  · KSAs
  · Cognitive level
  · Survey results
  · Final Blueprint with weightings
  · Methodology for how weightings and final blueprint were created

Variations in process

» Test development often requires us to be highly adaptable; applying our psychometric knowledge in less than ideal circumstances.
  · Challenges recruiting SMEs
  · Limited resources
  · Identifying survey population/sample and low response rates
  · Quickly changing content
» In person vs. virtual
» Impact study to determine whether a job analysis needs to be updated
» Job Task Review (JTR)

Accreditation Considerations: Frequent Stumbling Blocks

» SMEs not sufficiently representative of the credentialed population

» Insufficient linkage between the findings of the JTA and…
  · the examination blueprint
  · the content of the examination

» Lack of evidence-based rationale for the length of the recertification period
  · Also informs frequency of JTAs/Reviews

Balasa & Fidler (2016)

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Representative SMEs

» Both JTA Panels & Survey Sample

» Requires knowledge of profession and stakeholder groups

» May be driven/constrained by policy considerations

» JTA survey helps to meet this expectation

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SME groups involved in examination development activities should be broadly representative of the diversity of…

» Practice type
» Gender
» Age
» Regions (or countries, if the assessment is to be used internationally)
» Ethnicity
» Years of experience

(ICE, 2011, p. 11)

» Think critically about other important groups
» Include these in data collection and documentation

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Establish Clear Linkages

» Document and provide a rational for…
  · Determining blueprint content/weights based on JTA results
  · Verifying that
    - Each item aligns to a blueprint elements
    - Items on a form collectively meet the blueprint requirements

| JOB ROLE | TEST CONSTRUCT (Domain – Tasks/KSAs) | TEST BLUEPRINT | TEST CONTENT |

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Collect evidence to determine length of the recertification period/frequency of JTAs

» Already asking SMEs to talk about the necessary KSAs for the job

» Add additional question to determine how frequently those KSAs change in a meaningful way

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QUESTIONS?

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