Article Review

Smith, J. E. & Merchant, S. (1990). "Using Competency Exams for Evaluating Training" *Training &
 Development Journal* (Aug 1990), pp. 65-71.

The GtG Team selected this article because fifteen years after this article was published – and
the authors found competency exams to be a "widely accepted approach now in practice" (p. 65) –
competency assessments/evaluations are routinely used in both the workplace and academia.

The article begins, "Evaluating training is a critical aspect of the training process" (p. 65).
Unlike the traditional flow of the ISD Model, the GtG Team believes evaluation is a critical
component of the Analysis, Design, Development, Implementation, and even Evaluation, phases. The
GtG Team also believes the evaluation process is, within itself, its own ISD process made up of mini-
components.

Competency exams, given to learners at the end of a training session, "attempt to measure how
well knowledge and skills are transferred in training" (p. 65).

According to the authors, competency exams have a number of benefits:

- The exams can be either written or practical application.

- Learners are required to demonstrate their assimilation of new knowledge and
 skills.

- The exams immediately indicate need for retraining.

- Learners' motivation increases because a "testing hurdle" is required to
 complete the training. Trainees who know they will be tested "are more likely
 to attend sessions, actively participate, concentrate, and study course materials
 ... [and] are made accountable for their learning" (p. 65).

- Trainers are accountable for the quality of instruction because competency
 exams provide feedback on training methods.

The GtG Team believes the best way to determine the testing method is to look at the job/task
analysis of the learner. If the job requires repetitive actions (*e.g.,* a factory worker on an assembly line
or administrative data entry operator), learners should be evaluated using a hands-on tool. If the
training material is "principle-based,"meaning it will affect the worker's decision making, a traditional
pencil-and-paper or similar test might be more appropriate.

The bulk of the subject article deals with Content Validity, which the authors believe is a major
issue in competency exams. The authors assert that exam developers must answer the same question
about each evaluation tool: "Does the exam adequately measure a trainee's performance on a job-
relevant body of trained knowledge, skills, and behaviors?" (p. 66) The authors support using subject-
matter experts to verify content validity and that the content of exams matches objectives, training,
and actual job task(s). The authors propose that experts should perform all statistical analyses on

competency exams, especially on data related to test item construction.

The article's thesis is that "Content Validity is demonstrated by performing a series of [seven] systematic steps, beginning with a thorough examination of job and training content and ending with the administration of an exam and analysis of the results" (p. 66), as follows:

1.   Develop learning objectives.

2.   Outline exam content areas.

3.   Establish exam format.

4.   Construct exam items: written and hands-on.

    Written questions must be

    a.   "definite, precise, and objective" (p. 67);

    b.   at a reading level suitable to the test-takers;

    c.   tests of data comprehension, rather than memorization;

    d.   geared to reducing test anxiety -- the authors suggest beginning a test with "a few easy, yet relevant, questions" (p. 67);

    e.   stated so they do not provide clues to answer for other items;

    f.   independent, such that answering one question does not require having previously answered another question;

    g.   straight-forward, because "trick" questions make test-takers defensive;

    h.   clear and objective;

    i.   relevant, rather than trivial, fostering problem-solving, reasoning, and inference.

    Hands-on, practical testing should

    a.   use samples or simulations from actual work, "recreating certain aspects of a job under controlled conditions" (p. 67);

    b.   replicate conditions and challenges experienced both in training and at the work site;

    c.   contain a sufficient sampling and number of exercises so the exam is a true test of changed behavior;

    d.   be scored objectively according to established criteria and procedures;

    e.   contain no interdependent items;

    f.   be formative, or test-driven, prior to delivery and revised accordingly.

5.   Evaluate content validity by asking if

      a.   all exam questions and activities are job-related;

      b.   knowledge and skills being tested are addressed in training;

      c.   individual test items are a fair representation of the entire training and mirror the entire exam's content;

      d.   the test contains enough items to ensure the reliability of the results, because reliability determines confidence level in a test instrument, and length of the test is "[t]he primary reliability issue" in competency exams (p. 69);

      e.   instructions and test items are well written and understandable to test-takers, since readability is a tremendously important consideration;

      f.   the exam has been sufficiently pre-tested for "content, clarity, completion time, and coverage?" (p. 69)[1];

      g.   the exam has 'face validity', arising from test-takers' "favorable reactions" when they consider it "fair and correct" (p. 69);

      h.   the exam will be given and graded under standardized conditions.

6.   Exam administration: Providing a "positive test environment" will "increase the likelihood of reliable results" (p. 70).

7.   Analysis and feedback: "The job of training, test building, and content validation is an ongoing process" (p. 70).

The authors write about additional important points regarding competency exams:

• The difficulty level of individual questions is "the most useful statistic" in analyzing test results.

• Test-takers must be prepared for the exam in the form of continuous feedback during training.

• A policy must be in place to address re-testing or other options for those who fail the exam.

• Competency exams used to determine promotions or upgraded job classifications can violate equal opportunity mandates unless the exams are absolutely non-biased.

---

[1] The authors propose that trained employees should be used to test the exam, and more time should be allowed for new-hires. The authors also suggest that a test's author(s) step away from it for a period of time to allow the authors a chance to view the exam from a new perspective.

After reading the subject article, the GtG Team posed several additional questions for consideration in light of instructional – especially evaluation – models published today:

1.   What concessions are made for learning and physical disabilities in workplace competency exam test-takers?

2.   What steps are being taken to ensure linguistic and cultural biases are avoided in workplace competency exams?

3.   The authors believe awareness of impending summative competency tests enhances learners' motivation. Is this an example of pedagogical method used in adult learning?

4.   What effect does test anxiety have on learners' motivation during training?

5.   How can standardized competency exams meet the needs of individual learners – a requirement in adult education?

Each of these questions would provide the basis for an interesting longitudinal study on the topic of "Using Competency Exams for Evaluating Training."