

Use Of A Specification Table To Assure Cognitive Mastery in A M4 Clinical Clerkship

W. Christopher Croley, M.D.
Viva Siddall, M.S.
Michael Ault, M.D.
Thomas Corbridge, M.D.

Northwestern University Feinberg School of Medicine, Chicago, IL

Context:

During the development of a mandatory, 4 week, M4 critical care medicine clerkship, five educational modalities (written tests, problem-based learning discussions, lectures, simulation, and bedside teaching) were used as a framework to achieve criterion-referenced course objectives.¹

Need:

Of these, written tests were used to obtain participant's readiness (pre-test) and summative (post-test) information. The test questions were constructed utilizing the first three levels of Bloom's Taxonomy (knowledge, comprehension, and application) to identify the learner's mastery level based on course objectives.

Action:

A specification table (two way chart) was used as a guide in the development of a test question bank (Table).² By first defining the specification table, we were able to assure a representative sample of instructionally relevant topics in pre-established domains and equivalent pre/post test comparisons. Upon completion, an expert team of critical care medicine physicians (anesthesiology, pulmonary medicine) reviewed the questions for accuracy. Currently, the validation phase of written test development is being completed which includes administering the exams to a group of critical care physicians, first year residents, and M4 students at other institutions.

Impact:

By utilizing a specification table, team review, and a validation technique among both peers and experts, a written examination can be developed for senior medical students that reflects necessary cognitive mastery.

References:

1. Shrock, SA, & Coscarelli, WCC. *Criterion-Referenced Test Development: Technical and Legal Guidelines for Corporate Training*. USA: International Society for Performance Improvement, 1996.
2. Linn, RL, & Gronlund, NE. *Measurement and Assessment in Teaching*, 8th ed. Upper Saddle River, NJ: Prentice-Hall, 2000.

Content Area	I. Knowledge (Recall)	II. Comprehension (Restate own words)	III. Application (Apply new situation)
1. Formulas	6	6	6
2. Theory (Respiratory, Circulation)	6	6	6
3. Pharmacology	6	6	6
4. Definitions (Respiratory, circulation, procedures)	6	6	6
5. Other (Ethics, communication, leadership, etc)	6	6	6
Total Questions	30	30	30