Competency Assessment/Course Development

Objective is to understand the levels of learning, how to assess competencies and tools to accomplish reliability and validity in course delivery

Bloom's Taxonomy

1. Knowledge- recall of specifics, methods, processes, patterns and structure or setting
2. Comprehension- "refers to a type of understanding or apprehension such that the individual knows what is being communicated and can make use of the material or idea being communicated without necessarily relating it to other material or seeing its fullest implications."
3. Application - refers to the "use of abstractions in particular and concrete situations."
4. Analysis- represents the "breakdown of a communication into its constituent elements or parts such that the relative hierarchy of ideas is made clear and/or the relations between ideas expressed are made explicit."
5. Evaluation- engenders "judgments about the value of material and methods for given purposes."
6. Synthesis- involves the "putting together of elements and parts so as to form a whole."

When developing course content and objectives, instructors should have in mind which level students are expected to obtain. This level is reflected in the written objectives found in the syllabi *(refer to Blooms list of action verbs to identify taxonomy level).* As a graduate program, most objectives should fall somewhere between 3-5 with some exceptions (introductory courses or capstone type courses). Generally levels 1- 3 would be consider *"Lower Level"* and levels 4- 6 *"Higher Level"* learning.

Teaching and Learning Methods

With Bloom's taxonomy in mind, CAHME looks at courses and syllabi for consistency between objectives and teaching and learning methods. IT IS GOOD PRACTICE TO DO THIS IN YOUR COURSE REGARDLESS OF CAHME.

Level	Teaching and Learning Method	Definition
LOWER	Readings	Students complete assigned readings in textbook , articles, websites, etc.
	Lecture no media	Professor does most of the talking, without any media support
	Lectures with media	Professor does most of the talking, with some sort of media support (e.g. PowerPoint, overheads, video, whiteboards, etc.). Students participate via discussion that is primarily characterized by students asking clarifying questions, etc.
	Guest Speakers	Individual/panel of experts from the field present to student
	Online discussions	Students actively engage in an online discussion, either synchronous or asynchronous, with the professor and with each other. Students can stimulate or respond to discussion.
	Class Discussions	Students actively engage in open discussion with the professor and with each other. Students can stimulate or respond to discussion.

	Web-based modules	Interactive learning via CD/DVD/Internet that is more than searching for information or reading websites
HIGHER	In-class Presentations	Students formally deliver information to the rest of the class in a well-prepared format that required analysis and preparation
	Cases	Students actively engage in analyzing a case study to determine causes, implications, strategies etc. Case analysis is either shared with the class through open and interactive discussion or debate, or students prepare a written case analysis for review and feedback.
	Team activities	Three or more students collaborate as a group to complete one deliverable
	Simulation exercises	Interactive learning in which students' actions significantly affect how the learning unfolds and the subsequent outcomes of the learning. Simulations may or may not be computer based (e.g. tabletop simulations).
	External Field Experiences	Students are placed in non-academic applied or real-world work settings and allowed to learn from the work experience, including externships and internships. Learning outcomes are shared in the academic environment and evaluated.
	Strategic/Consulting Projects	Students actively engage in completing an actual consulting project for a health organization. Alternatively, students complete an assignment that stimulates a realistic project in a health organization.
	Reflective learning	Students complete structured process (e.g. journaling, one minute response, assessment instruments, weekly reports) to review, understand, analyze, and evaluate their own learning and/or performance. The evaluation should be based on pre-selected criteria. In addition, the assessment could include a comparison of their performance assessment with their peers and/or experts in the field.

Assessment Methods

The next question is how do we assess that the learning methods employed are effective and at the level of the objectives. Again, keep in mind Bloom's taxonomy and the desired level of attainment. So if the instructor's objective is at a higher level, the assessment should be of a higher level method. ANOTHER GOOD PRACTICE REGARDLESS OF CAHME.

level	Assessment Method	Definition
LOWER	Pre/Post knowledge or skill testing	Any formal comparative assessment of the students knowledge or skills both before and after a learning intervention
	Exams	
	Midterm, Final, Other	Any formal exam (including essay, short answer, multiple choice etc) to evaluate student learning
	Papers/reports	Student generated written work that is part of the learning process or is the final documentation of learning, including research reports, mid-term and or final papers
HIGHER	Observation Checklists	Faculty or student-generated observational assessment of skills or behaviors; could be completed by self, peers, faculty, or other experts

		etc.
	Case review and feedback	Utilization of a predetermined set of variables/criteria to evaluate case analysis work, and to provide effective suggestions/recommendations for improvement
	Project review and feedback	Utilization of a predetermined set of variables/criteria to evaluate case analysis work, and to provide effective suggestions/recommendations for improvement
	Team effectiveness assessment	Criterion-based observational feedback of student behavior (and possibly work products) in team projects
	Journals	Collection of reflective writings, either structured or free form, about a topic
	Experiential Report/Portfolios	Collection of evidence, prepared by the student and evaluated by the faculty member, to demonstrate mastery, comprehension, application, and synthesis against a standardized assessment rubric
	Reflective Modeling	Standardized techniques to facilitate awareness and evaluation of one.s behavior and to generate plans for improvement, including self, peer, faculty, preceptor or other expert assessment
	Class participation	Active monitoring, assessment, and feedback focused on the frequency, consistency, and quality of the student.s participation during face to face and online discussions
	Strategic or Consulting Projects	Students actively engage in completing an actual consulting project for a health organization. Alternatively, students complete an assignment that simulates a realistic project in a health organization

Reliability and Validity

With any assessment and especially with the grade sensitive student population that we serve, instructors need to be cognizant that the assessments have validity. Validity in this context is that the assessment is a valid measure of higher order learning. Reliability relates to the ability to ensure that you are consistent in your measure across students and graders. Given that many of our assessment methods are higher order in nature, this can sometimes be difficult to obtain. There are some tools/techniques that we can employ.

Rubrics

A rubric can be defined as a descriptive guideline, a scoring guide or specific pre-established performance criteria in which each level of performance is described to contrast it with the performance at other levels. Rubrics help establish expectations to students on assessments as well as provide a discrete guideline to the instructor/grader on the assessment to reduce variability and improve reliability across graders. There are two approaches to creating rubrics: 1. Holistic; 2. Analytic. Holistic rubrics focus on a single object or behavior. Analytic rubrics focus on multiple outcomes of a particular assessment. Examples are listed below:

Holistic Rubric

Rating	Detailed Description of Performance at Each level
Inadequate	The essay has at least one serious weakness. It may be unfocused, underdeveloped, or rambling. Problems with the use of language seriously interfere with the reader's ability to understand what is being communicated.
Developing Competence	The essay may be somewhat unfocused, underdeveloped, or rambling, but it does have some coherence. Problems with the use of language occasionally interfere with the reader's ability to understand what is being communicated.
Acceptable	The essay is generally focused and contains some development of ideas, but the discussion may be simplistic or repetitive. The language lacks syntactic complexity and may contain occasional grammatical errors, but the reader is able to understand what is being communicated.
Sophisticated	The essay is focused and clearly organized, and it shows depth of development. The language is precise and shows syntactic variety, and ideas are clearly communicated to the reader.

*Source: Allen (2004), p. 139.

Analytic Rubric

	Below Expectations	Meets Expectations	Exceeds Expectations
Range of relevant materials	The paper cites only web sites, has too few primary sources, or frequently cites sources only marginally related to the topic	The paper cites Reasonably relevant Web sites, journals, and books, although too few sources are used or key materials that should have been cited are missing.	The paper cites a rich array of relevant web sites, journals, and books, including classic materials related to the topic.
Citations	The paper fails to cite sources using a consistent, formal, citation style.	Most of the citations follow a consistent, formal style, although occasionally citations contain minor errors or provide incomplete information.	All citations are complete, accurate, and consistently conform to a formal style.

Use of Sources	Cited materials are poorly integrated into the paper and connections between sources are not noted.	Cited materials generally are integrated into the paper, but some important connections between sources are not explored.	Cited materials are well-integrated into the paper and connections between sources are explicitly discussed.
Plagiarism	The student fails to cite sources when using other's ideas or fails to include necessary quotation marks or page numbers for direct quotations.	The source of information is generally clear, but occasionally may be ambiguous. Quotations are properly indicated.	The source of all ideas is carefully documented and quotations are properly indicated.

*Source: Allen {2004), p. 139.

Developing Rubrics

1. Determine learning outcome that you wish to assess
2. Define the ratings and descriptors for the scale (ie. 1 – Beginning; 2 – Basic; 3 – Proficient; etc)
3. Define the descriptions of what student performance would look at each level. Use of Bloom's action words can be helpful in this exercise. If there are specific criteria that you are looking for identify it here, for example: Calculate variances; cite one peer reviewed article; etc.

Inter-rater Reliability

Similar to observational studies that rely on multiple observers to rate targets, instructors should be concerned when TAs or multiple people are grading a particular assessment. Research studies employ several different statistics to ensure inter-rater reliability. While these methods could certainly be employed, this level of rigor is generally not required for general assessments. Some good practices to keep in mind:

> Depending upon the size of the course, graders should select a sample of one or more assessments, independently grade the same assessment and meet collectively to review results
> Identify areas of disagreement between graders and come to consensus of final result
> Utilize rubrics as best as possible to keep grading on focus and eliminate potential biases.

Resources

Center for Instructional Technology and Training - http://citt.ufl.edu/

National Center for Healthcare Leadership – Competency Integration for Health Management Education
http://www.nchl.org/documents/ctrl_hyperlink/doccopy5755_uid892012228502.pdf

Bloom's Taxonomy of Educational Objectives: The Classification of Educational Goals

Illustrative Verbs- Cognitive Domain

1.0 Knowledge (of): *specifics - facts, terms; ways and means of dealing with specifics-conventions, trends, sequences, classifications, categories, criteria, and methods; universals and abstractions - principles, generalizations, theories, and structures.*
Describe - Determine- Define- Identify- Match - Recall- Specify - State

2.0 Comprehension: *translation; interpretation; and extrapolation.*
Clarify- Discuss- Distinguish between
Determine consequences- Draw conclusions- Explain
Express- Interpret - Predict
Respond to - Provide examples of

3.0 Application:
Act/take action Advocate/support/promote Appeal to
Apply principles/theorems/abstractions Calculate Categorize
Champion Classify Challenge
Commit Conduct Consult
Deploy Demonstrate Encourage
Facilitate Implement Increase/decrease
Inquire Insure Manage
Maintain/sustain Obtain/procure Participate in
Predict effects Provide/give Pursue
Reinforce Select/choose Seek/pursue
Implement Set Solicit

4.0 Analysis (of): *elements; relationships; and organizational principles*
Break down Challenge Check inconsistencies
Delve into Describe interrelationships Differentiate between/among Distinguish between/among
Discriminate
Identify relationships among Infer Interpret
Investigate Look into

5.0 Evaluation: *judgments in terms of internal evidence and external criteria*
Assess Apply standards Appraise
Benchmark Compare Evaluate
Indicate Monitor Trace/track
Weigh

6.0 Synthesis: *production of a unique communication or plan; derivation of a set of abstract relations*

Adapt Align/realign Design
Build Create Develop
Derive Discover Establish
Formulate Generalize Illustrate
Improve upon Integrate Make
Perceive Plan Prepare
Propose Shape Tell
Write