DESCRIPTION OF SEVERAL COMMON METHODS FOR ASSESSING EXPECTED LEARNING OUTCOMES

"Muddiest Point" Activity

"Muddiest Point" exercises are active learning techniques typically conducted at the end of a topic, chapter or class period. In a "Muddiest Point" exercise, students are anonymously asked to report what idea, topic, etc. about the previous lesson was confusing or unclear. Faculty members collect all "Muddiest Point" responses and later read and analyze them to see what areas of the lesson or assignments students are unclear about.

It is important to provide follow-up and feedback regarding student responses. Here are some ways to do that:

- Start off the next lecture by clarifying confusing topics
- Re-teach larger sections of material as necessary
- Provide simple explanations, etc. on a course website

One Minute Papers (which are similar to "Muddiest Points")

In this activity, at the end of a lesson/class period/chapter, faculty members ask their students to write down:

1. What they believe to be the most important/significant concept from a certain lesson; AND/OR
2. List their major questions related to a lesson/lecture/chapter

These papers allow faculty to assess general learning. These papers are not graded and often done anonymously. They also allow faculty to judge whether the students are focusing on the appropriate major points, or if they are getting caught up in the little details.

Minute papers can be debriefed by:

1. Providing written feedback on students' minute papers (if ***not*** done anonymously)
2. Writing frequently listed major points on the board
3. Discussing answers to students' questions with the class

Non-Graded Quizzes

Non-graded quizzes can provide great feedback on student learning. These are non-threatening and non-punitive, so students tend to like them. Non-graded quizzes can be given in a variety of formats (paper & pencil, questions in a PowerPoint presentation, etc.). Be sure to provide students with the correct answers to the quiz items, so they can learn from their mistakes!

Student-Generated Exam Questions

In this assessment activity, students (either alone, in pairs, or in groups) are asked to generate potential exam questions. This helps you assess student learning as well as their expectations for an upcoming exam.

Having students create potential exam questions helps you assess:

1. If students can identify key concepts;
2. What your students see as fair or reasonable exam questions; and
3. How well the students can answer these potential exam questions

Be sure to discuss the answers to each question with the class. Also discuss with the class which questions are too easy or too hard and which questions are reasonable and similar to those that they will actually see on the upcoming exam.

Application Cards

This activity assists faculty in determining if students can ***apply*** the knowledge from the course, which is often tricky. After students have heard or read about an important concept, theory, or procedure, pass out note cards to each student or to small groups of students. Ask them to record two or three different ways to apply the new information to a real-world situation.

Ideas for debriefing this activity:

1. Call on individual students or small groups of students to share their ideas; discuss their responses and list the applications on the board
2. Collect all responses, read through them, and share some of the best responses either immediately or at the start of the next class session

Reaction Papers

Reaction papers require students to write down their reactions (thoughts, feelings, attitudes, etc.) to course material or topics. Although reaction papers can be formal graded assignments, they can also be used solely for the purposes of assessing student learning. In this case, faculty members ask their students to take a few minutes of class time and write down their reaction to a fact, opinion, skill, procedure, attitude, critique, etc. that was addressed in the course. By reviewing student responses, faculty can gain knowledge regarding their students understanding of these concepts. It can also give faculty insight into students' attitudes and ways of thinking about class material, which can often be a challenge to assess.

Polling the Class

- Personal Response Systems (PRS) provide students with remote "clickers" to use in voting on true/false or multiple choice questions (similar to "Ask the Audience" on *Who Wants to be a Millionaire*)
- These polls provide instructors with instant information/feedback regarding student learning
- A graph depicting students' answers can be projected on a screen in the classroom so that students can see the classes' response
- This data can also be downloaded so instructors can review individual student's responses

Ways to debrief PRS questions if there seems to be confusion include:

1. Having students turn to the person next to them, discuss the question, and then vote again
2. Ask for several volunteers to explain their answer to the class, then have the class re-vote

If you don't have either the access or the desire to use this technology, you have other options!

- Have students vote on an answer with a "thumbs up" or "thumbs down"
- Pass out cards with A, B, C, or D printed on them and have students use the cards to vote on answers

While you can't project graphs of how students respond to your questions using these methods, you can still get a good idea of how well the class understands the topic/concept.

Active Learning Techniques

Active learning techniques get the students engaged in the learning process. In these activities, faculty members ask students to think, discuss, share their ideas, etc. The way that students participate in these active learning techniques can provide assessment feedback on how well the students truly understand a topic. Here are some common Active Learning Techniques that can be used to assess student learning:

- **Think-pair-share.** In a think-pair-share, faculty members pose a question to the class and then allow a couple of minutes for each individual student to ***think*** it through. Next, each student turns to the student next to him/her to discuss the question/answer as a ***pair***. Finally, the faculty member will ask student pairs *to* ***share*** their response with the class.
    - Assessment data from this technique can be gathered by listening to student pairs' responses to gauge how well they understand the concept.

Active Learning Techniques *Continued*

- **Concept mapping.** Concept mapping is a technique that helps the students to organize the lecture and/or recognize the relationships between ideas by creating a visual map of the connections. This technique may be useful to draw together all of the concepts and interrelationships used in solving the lengthy problems inherent in engineering.

    - Assessment data from the activity can be gathered by looking at concept maps that students/classes create, and checking for evidence of how well students understand the topics.

- **Pause procedure.** This active learning technique consists of several 2-3 minute pauses spaced at logical breaks in the material in which the students talk to each other and compare lecture notes (looking for key points or clarifying definitions) with no interaction from you. If the students have a discrepancy or need further clarification, they can ask you; otherwise, you take a hands-off approach and let them learn form each other.

    - Assessment data from this technique is gathered by rotating through the classroom and listening to the students as they engage in this activity. It is also gathered through the questions that students request the faculty member to clarify.

Expected Learning Outcomes Statements Survey

This is one way to directly assess how well students feel that they have mastered the expected learning outcomes for the course. In this method, faculty members have students complete a brief survey at the end of the class that asks students to rate how well they have learned each outcome. The simplest way to do this is to list each stated expected learning outcome and have students indicate on a scale how well they feel they have mastered each outcome.

For example (using the course from the sample syllabus) students would be asked:

I am able to describe developmentally appropriate guidance practices.

1=strongly disagree 2=disagree 3=neutral 4=agree 5 =strongly agree

I am able to explain the theoretical foundations related to methods used in the field of guidance.

1=strongly disagree 2=disagree 3=neutral 4=agree 5 =strongly agree