

5 | How do I measure Student Learning?

Assessment is not always the same thing as evaluation. It's a way to provide feedback.

1. Assessment FOR Learning fosters the journey of learning

It is separate from testing and evaluation: it is initially **judgment free** because it aims to establish a learning baseline and encourage honest answers to determine students' prior knowledge. (See more at *Formative Assessment* below.)

2. Assessment AS Learning creates conditions where the assessment tool itself leads to learning achieved through metacognition and recognition of learning gains.

- **Metacognition** - assessing how I learn best: What does this assigned task require me to do? How should I begin? What do I do when I study? How could I adjust my habits to learn better?
- **Recognition of own learning gains** - what have I experienced here? What have I learned from this experience? How will I move forward from here?

3. Assessment OF Learning creates proof or evidence of learning for others (usually called Evaluation. It is for accreditors/governing bodies, parents, employers, public, etc.) (See Summative Assessment below.)

- Traditionally achieved through grades, credits, certifications, etc.
- Requires common standards and criteria, established targets, qualitative or (usually) 'quantitative' evidence

Formative Assessment and Feedback

Formative assessment, assessment is the informal gathering of data for feedback to students and instructor. No marks or grades are attached to assessment methods. Formative assessment has a huge impact on student learning, and research has shown that frequent and varied formative assessment benefits students, and instructors, greatly.

The following are some examples of formative assessment techniques:

Method	Description	How To Use
Ticket-Out-The-Door	During last few minutes of class, students write response to a question or two about class concepts. Hand in as exit class.	Review/read all before next class and use to clarify, correct or elaborate more for students.
One Minute Paper	During the last few minute of class, students write response to “Most important thing I learned today” and “What I understood the least today”.	Review/read all before next class and use to clarify, correct or elaborate more for students.
Muddiest Point	Similar to One-Minute Paper – but only ask students to describe what they didn’t understand during class and what they think might help them.	Same as One-Minute Paper but if many students have same problem, reteach concept another way.
Student-Generated Test Questions	Divide the class into groups and assign each group a topic on which they are to each write a question and answer for next test.	Use as many of the questions as possible on next test.
Memory Matrix	Students fill in cells of a two-dimensional diagram with instructor-provided labels such as a comparison chart outlining similarities and differences in two columns against a variety of concepts in the discipline.	Tally the number of correct and incorrect responses. Look for patterns amongst the incorrect responses. Address in class.
K-W-L Chart	Label three charts K (What I KNOW Already), W (What I WANT to Know) and L (What I have LEARNED). Complete the first two before a unit/topic and the last one at end.	Discuss with students perceptions of what they thought they knew, what they have come to know etc.
Directed Paraphrasing	Ask students to write a layperson’s “translation” of something they have just learned (geared for a non-expert audience) to assess their ability to	Categorize student responses according to characteristics you feel are important. Address in class.

	comprehend/transfer concepts.	
One Sentence Summary	Students summarize knowledge of a topic by constructing a single sentence to cover the core concept. The purpose is to require students to select only the defining features of an idea.	Evaluate the quality of each summary in brief fashion. Note if students have identified the core concepts of the class topic. Share with students.
Prior Knowledge Survey	Short survey you give students at beginning of course or any new unit/topic on concepts to be studied.	Review immediately and make adjustments to classes based on what class knows/doesn't know.
Think-Pair-Share	Give the class a question. Allow everyone to think on own for a few minutes jotting down some thoughts. Then ask students to pair up with a peer and discuss thoughts for another few minutes. Can do groups of 4 as well. Ask to share with whole class.	Use when you want to have a better discussion by a greater number of students. By thinking alone first and with small groups of peers, shared responses should be richer and more varied.
Application Cards	After teaching a theory, principle or procedure, ask students to write down at least one real-world application for what they have just learned to determine if they can see the transfer of their recent learning.	Quickly read through once and categorize them according to quality. Pick out a broad range of examples to share with the class the next day.
Classroom Opinion Polls	Using 'clickers', or online polling questions, ask students a variety of questions about a topic and seek their anonymous opinion	Often polling devices can present immediate results back to the class to provide discussion and next steps.
Weekly Report	Written by students each week in which they address three questions: What did I learn this week? What questions remain unclear? And What questions would you ask your students if you were the instructor to find out if they understood the material?	Read at end of each week, categorize responses and share with class. Follow up on unclear questions with class or small group of students.
Concept Mapping	Ask students to construct a concept map showing big picture and connections of all that they have learned prior to a mid-term or final exam or assignment. Ensure they	Have groups of students complete and share with whole class or with another group. Ask

	label relationships between items.	them to explain relationships and understandings of the concepts.
ConceptTests	Instructor presents one or more questions during class involving key concepts, along with several possible answers (multiple choice). Students indicate (by show of hands, or poll/clicker voting) which answer they think is correct. If most of the class has not identified correct answer, students are given a short time to persuade their neighbor(s) that their answer is correct. The question is asked a second time to gauge class mastery.	Often lasts a few minutes but uncovers misunderstandings, and great conversation amongst students. Share answer after second voting session to see how the class responses changed or didn't change.
Instructor Meetings	Instructor meets informally with students either in class or after class to answer questions, inquire about conceptual understanding or provide feedback on student learning.	Design specific questions to help guide the meeting and address concepts and understandings you want to know more about.
Question-And-Answer / Class Discussion	Instructor creates a series of questions to pose to the class or smaller groups for discussion. Students may prepare through homework or in class with responses.	Provide feedback to students on how well they engaged in discussion. Ensure all students had a chance to participate and follow up next class with areas for clarification.

Summative Assessment and Grading

Evaluation, sometimes called summative assessment, the assessment of learning (with a purpose of reporting and making decisions) that involves a formal gathering of data for feedback to students and instructors. Evaluation results in the giving of grades, marks, levels, etc. that provides a value to the learning that has been demonstrated.

Strategies for Fair Grading

Each department or faculty may have specific guidelines surrounding marks, assignments, grading practices, grading scales, norm or criterion referenced evaluation and communication of marks/grades to students. Ensure that you have checked your department and university policies to ensure that your expectations of students are congruent with the system wide policies.

Once you are familiar with your departments grading policies there are a few ways that you can keep grading fair; one is to institute rubrics for written assignments. Rubrics layout the expectations for an assignment and allow an instructor to tell the students how they will be graded for an assignment based on what the student includes in their paper. Not only does this let the student know what is expected but it also allows the faculty member to control any subjective bias they may have. With specific outcomes required to achieve specific grades laid out beforehand, students are not guessing at what they need to do to get a certain grade and faculty are able to follow a prescribed formula to come up with a final grade.

Other strategies you may want to try: blind grading where you collect all papers and hide the cover pages so you are unaware of whose paper you are marking; marking everyone's first question, then move on to everyone's second question, etc. This way you can maintain a singular thought pattern and maintain a clear picture of what you are looking for in an answer, this also helps you avoid getting to the end of your marking and the final few assignments you mark get short-changed with comments as you just want to get done.

What are Rubrics?

A rubric is a scoring tool that explicitly represents the performance expectations for an assignment or piece of work. It divides the assigned work into component parts and provides clear descriptions of the characteristics of the work associated with each component, at varying levels of mastery. Rubrics can be used for a wide array of assignments: papers, projects, oral presentations, artistic performances, group projects, etc. Rubrics can be used as scoring or grading guides, to provide formative feedback to support and guide ongoing learning efforts, or both.

Using a rubric provides several advantages to both instructors and students. Grading according to an explicit and descriptive set of criteria that is designed to reflect the weighted importance of the objectives of the assignment helps ensure that the instructor's grading standards don't change over time. Furthermore, rubrics can reduce the time spent grading by reducing uncertainty and by allowing instructors to refer to the rubric description associated with a score rather than having to write long comments.

Used formatively, rubrics can help instructors get a clearer picture of the strengths and weaknesses of their class. By recording the component scores and tallying up the number of students scoring below an acceptable level on each component, instructors can identify those skills or concepts that need more instructional time and student effort.

Grading rubrics are also valuable to students. When rubrics are given to students with the assignment description, they can help students monitor and assess their progress as they work

toward clearly indicated goals. When assignments are scored and returned with the rubric, students can more easily recognize the strengths and weaknesses of their work and direct their efforts accordingly.

Testing

When designing tests the primary objectives of the course are what need to be forefront in your mind and you should design your test based on all components (videos, lectures, labs, and readings) of the course. Tests can also be used to provide an opportunity for more learning to take place; students can think about what they learned in a new way.

Make sure your students know what kind of exam questions you will be asking and as old exams may be available to some students; it may be in your best interest to provide an old exam to everyone. If your exam is based more on rote memorization and not a deeper understanding of the material your students will prepare accordingly and deeper learning may not occur.

Be prepared for the amount of marking your exam will require. While essay questions allow students more of an opportunity to organize their thoughts and show a deeper learning, they also require more time to grade so if you have deadlines to meet with your course grades be prepared.

Exam Checklist

Here are some things to think about as your exam date approaches:

- Are your students prepared?
- Have your students been exposed to similar styles of questions that they will have on the exam? Throughout the term, ensure you have exposed your students to many question types.
- Have they seen a practice exam?
- Does the exam reflect the goals for the course?
- Have the students covered everything that they will see on the exam?
- Will the students realistically be able to complete the exam in the allotted time?
- Are your instructions clear and concise? Students will waste time trying to understand a question if you have unclear instructions.
- How much is each question worth?
- If a student were to have to choose due to time constraints would be they be able to choose the question that is worth the most value to their final mark.
- Does the structure of the questions themselves allow the students to build confidence? Easier questions at the beginning of a test can help with test anxiety.

Making the Most of Multiple-Choice Questions: Getting Beyond Remembering

David DiBattista's article is fully accessed at

<http://apps.medialab.uwindsor.ca/ctl/CELT/fscommand/CELT21.pdf>

Several strategies are presented in this article for generating multiple-choice questions that can effectively assess students' ability to understand, apply, analyze, and evaluate information. Below is a brief summary of one of those ideas:

Multiple-choice questions are widely used in higher education and have some important advantages over constructed-response test questions. It seems, however, that many teachers underestimate the value of multiple-choice questions, believing them to be useful only for assessing how well students can memorize information, but not for assessing higher-order cognitive skills.

Consider a **typical question** from multiple-choice test bank accompanying an introductory psychology textbook:

In classical conditioning, what name is given to a stimulus that elicits a particular response even in the absence of any prior training?

- A. conditioned stimulus
- B. unconditioned stimulus*
- C. activational stimulus
- D. discriminative stimulus

This question asks students to do nothing more than remember a fact – namely, that an unconditioned stimulus elicits a particular response without any prior training. Students do not have to know anything at all about the details of classical conditioning or how it works...Indeed, students who cram the night before the test might very well memorize the definition for unconditioned stimulus, answer correctly, and then promptly forget the information immediately afterward. Unfortunately, low-level items like Question 1 are often encountered in test banks, but the good news is that we can use this item as a starting point to generate a question that requires students to have learned something important about classical conditioning.

Question Revised

Right after a rat smells menthol, it is always given Drug X, which reliably induces substantial water intake. Eventually, the rat drinks water whenever it smells menthol, even when it is not injected with Drug X. In this situation, what is the role of Drug X?

- A. conditioned stimulus
- B. unconditioned stimulus*
- C. activational stimulus
- D. discriminative stimulus

Notice that the four alternatives that are provided have not changed at all, and the correct

answer is still alternative B. However, the revised question requires students to have an understanding of the concepts underlying classical conditioning, and furthermore to be able to classify the role of Drug X in this research setting that they are seeing for the first time.

Grading Assignments

Two weeks from the time the assignment was submitted is suggested as a reasonable “turnaround” time for marking or providing feedback on assignments.

With reference to student retention and engagement, withdrawal from a course, is often related to a student’s perception of how they are doing. Best practices in teaching often require that students receive *some formative* feedback three (3) weeks into a course. It need not be a cumbersome process, e.g., quiz asking students to list the five (5) main principles of a particular approach. Reasons for withdrawal from a course are varied and it is incumbent upon instructors to be aware of student behaviours or course outcomes that may present as warning signs. Informal (and formal) methods of checking the status of such students is important. Preventing unnecessary withdrawals and understanding the reasons for course/program withdrawals is important for VIU evaluation processes.

Extensions on assignments, within the confines of the end of term dates, are up to the instructor to negotiate. You should outline your extension policy on the course outline. [We suggest that medical or family emergency is the only acceptable reasons for extension. A note from a doctor MAY be required as per policy. Other reasons may result in a penalty for late submission.]

Incomplete (INC) grades should be formally contracted for as per the calendar description and proof of the need for such action can be required of the student. An INC grade AUTOMATICALLY converts to an F if it is not changed by the end of the following term. To prevent this, the instructor MUST submit a change form (withdrawal form) to the Registration Center. If this is not done, a grade of “F” (Grade Point 00) will be assigned.

Grading Group Work

Adapted from Eberley Center, Carnegie Mellon

<https://www.cmu.edu/teaching/designteach/design/instructionalstrategies/groupprojects/assess.html>

All of the principles of assessment that apply to individual work apply to group work as well. Assessing group work has added challenges, however.

First, depending on the objectives of the assignment, the instructor might want to assess the team’s final product (e.g., design, report, presentation), their group processes (e.g., ability to

meet deadlines, contribute fairly, communicate effectively), or both. Second, group performance must be translated into individual grades – which raises issues of fairness and equity.

Assess individual, as well as group, learning and performance.

Diligent students can be profoundly demotivated by group projects if they feel that their own success is dependent on team members who don't do their share. One way to counteract the motivational hazards of group projects is to assess individual students' learning and performance in addition to the group's output. This strategy gives diligent students a greater sense of fairness and control and discourages free ridership.

Individual learning and performance can be assessed in any number of ways. Some instructors add an individual component to group projects (e.g., a short essay, journal entries); some combine a group project with an individual test or quiz. Both group and individual performance are then reflected in the total project grade (e.g., some faculty members make the group grade worth 50% and the individual grade worth 50%; others split it 80%/20%. There's no perfect breakdown, but the grading scheme should (a) reflect your goals for student learning and (b) seek to motivate the kind of work you want to see.)

Assess process as well as product.

If developing teamwork skills is one of your learning objectives for the course, it's important to assess students' progress toward that goal. In other words, you should assess process (how students work) as well as product (the work they produce).

Process can be assessed according to a number of dimensions, such as the ability to generate a range of ideas, listen respectfully to disparate perspectives, distribute work fairly, resolve differences, and communicate effectively. Since instructors don't always have a direct window into the dynamics of student groups, they often rely on teams to self-report via:

- team evaluations: each member of the team evaluates the dynamics of the team as a whole.
- peer evaluations: each team member evaluates the contributions of his/her teammates.
- self-evaluations: each team member documents and evaluates his own contributions to the team.

Make your assessment criteria and grading scheme clear.

It's always important to articulate your performance criteria so students understand your expectations and standards. This is especially true if you are emphasizing skills that are not usually assessed, such as the ability to resolve conflict, delegate tasks, etc. Criteria for evaluating

both product and process can be communicated by giving students a group work rubric before they begin their work and then using it to provide meaningful feedback during and at the end of the project.

It's also important to think about how you will weigh the various components of group projects in your grading scheme. Some questions to consider include:

- What percentage of the student's total project grade will be based on the group's performance vs. individual components?
- What percentage will be based on assessments of product vs. assessments of process?
- How much weight will you give to peer evaluations or self-evaluations?
- Will feedback from external clients also be incorporated into your assessment of the group's work?

Should you mark class participation?

It is tempting to include a class participation mark as a means of encouraging dialogue. There are two problems with this that merit serious consideration: first, can you and will you evaluate participation fairly, and, second, does a mark (i.e. a threat) promote the kind of active engagement you are seeking? Students often pay more attention to how you mark them than to the course content, so if you are marking class participation—in your head - or as a subjective impression of who contributes, they will resent it and even suspect you of favoritism.



Consequently, if you wish to mark class participation, you need to have an explicit rubric (e.g. 1 point for each question asked in class, 2 points for each correct answer, etc), and to have clear written records of who did what in each class. In other words, you will be spending a significant amount of class time noting who is talking and assigning marks to it.

The second point is perhaps even more important: what kind of classroom atmosphere do you want to promote? Do you want an engaged community of learners who are not afraid to contribute and who are thinking about the course material and what is interesting about it? It is difficult to achieve this when students feel coerced into something that they are not comfortable doing. They may be distracted by the pressure and the tension, and so actually become less engaged with the material. And, of course, the students who are really uncomfortable will not participate anyway, and will therefore be penalized to no effect.