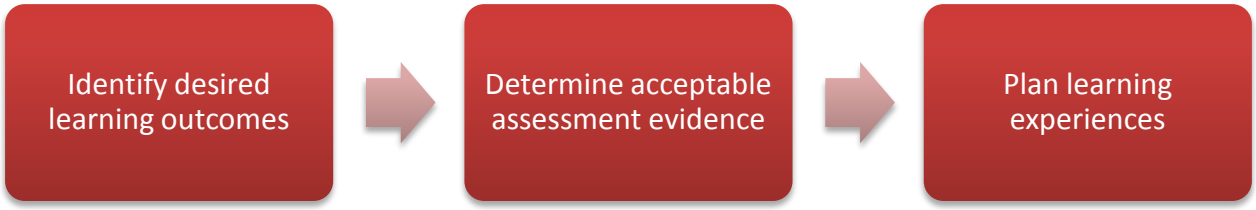
Student Learning Assessment in the Classroom: Incorporating Assessment into Course Design

This resource guide contains information on integrating assessment into the course design process, including:

Overview

Assessment is an integral component of instruction and course design. Grant Wiggins and Jay McTighe[1] demonstrate this by placing assessment at the forefront of their model for course design. The model is referred to as backward design because it:

- Begins with establishing intended learning outcomes for students,
- Moves to deciding what evidence students will provide to demonstrate attainment of each outcome,
- Concludes with developing learning experiences and activities of the course.



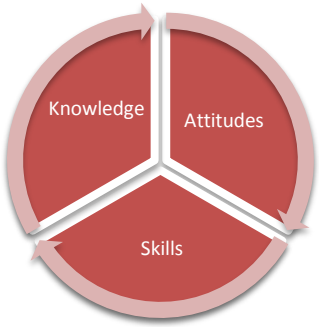
Developing Student Learning Outcomes

The first step in course design is to develop student learning outcomes for the course. Student learning outcomes are what students are expected to know or be able to do at the end of the course. A good starting point for developing course outcomes is the *approved course description.* The course approval process requires course learning outcomes be described.

[1] Wiggins, G. & McTighe, J. (1998). *Understanding by Design*. Upper Saddle River, NJ: Merrill Prentice Hall.

Effective course level student learning outcomes are:

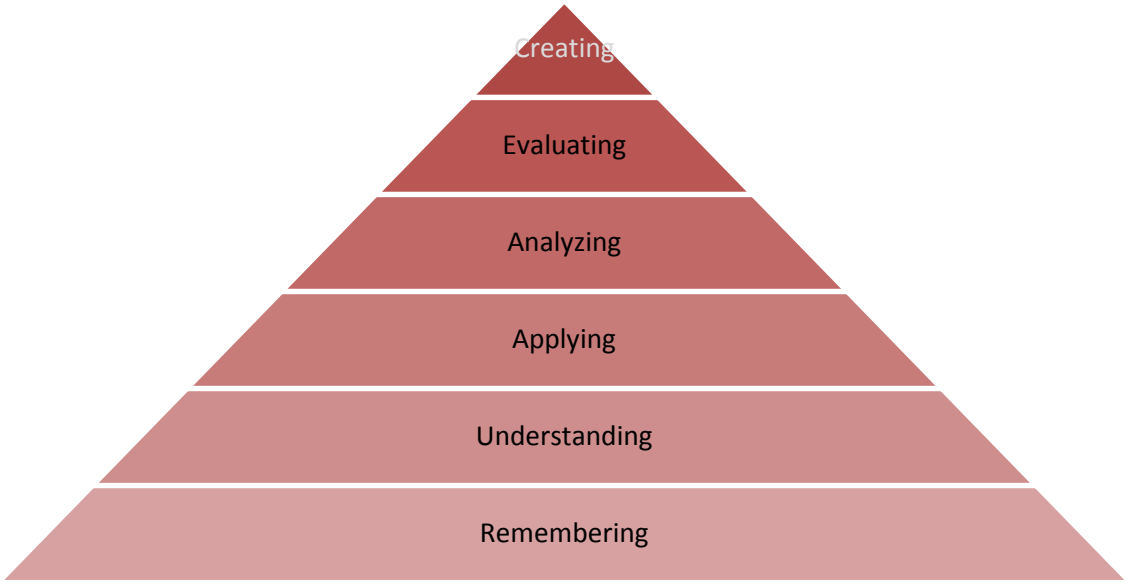
1. S*tudent-centered*: Focused on the student and what he/she will know or be able to do, rather than on what the course will cover.
2. *Observable:* Describe activity or performance in which students demonstrate the appropriate knowledge, attitude, or skill.
3. *Measurable:* Frame the performance/activity so it can be quantitatively or qualitatively measured.



Tips for developing outcomes include:

1. Limit the number of outcomes for a course – strive for 4-8 key outcomes.
2. Focus on outcomes that are fundamental to the discipline.
3. As appropriate, align course outcomes to institutional and program outcomes. For instance:
   - NJCU University-Wide Student Learning Goal: Students will demonstrate the ability to think critically to evaluate and solve problems.
   - A possible program outcome for Psychology: Students will use skeptical inquiry, and, when possible, the scientific approach to solve problems related to behavior and mental processes.
   - A possible course outcome for a Research Methods course: Students will write a research study proposal that appropriately and effectively employs the scientific method in its design.
4. Emphasize higher level, more complex, cognitive skills (see summary of Bloom's Taxonomy below).

Bloom's Taxonomy of the cognitive domain is commonly employed in developing student learning outcomes. Bloom's taxonomy categorizes cognitive skills into levels, as displayed in the pyramid below. More basic, lower level, cognitive activities are at the base of the pyramid – remembering and understanding. The most complex skills are at the top – evaluating and creating.



Bloom's Taxonomy helps construct outcomes that are observable and rigorous. The chart below describes the levels and provides sample verbs for "students will be able to…" statements. (Note that

the meaning of the verbs may be context-dependent. Thus, classifications in the chart represent typical levels.)

Level	Cognitive processing involved	Sample verbs
Remembering	Recalling or remembering facts or terms.	Define, Identify, List, Match, Name, Recite, Recognize, Select
Understanding	Explaining or describing information, often without relating it to anything else.	Describe, Discuss, Distinguish, Explain, Give examples, Paraphrase, Restate, Summarize
Applying	Using knowledge to new situations or to new problems.	Apply, Compute, Construct, Demonstrate, Employ, Manipulate, Prepare, Produce, Solve, Use
Analyzing	Breaking information into component parts in order to analyze relationships between parts, or to recognize organizing principles.	Analyze, Categorize, Classify, Contrast, Deduce, Differentiate, Distinguish, Infer, Test
Evaluating	Judging the value of something based on articulated criteria or logic.	Appraise, Assess, Conclude, Criticize, Defend, Evaluate, Judge, Justify, Recommend, Support
Creating	Combining different ideas in the service of creating something original or integrating ideas into a solution.	Assemble, Combine, Compose, Create, Design, Devise, Plan, Produce, Propose, Rearrange, Reconstruct, Reorganize, Revise

Determining Assessment Evidence

After student learning outcomes are developed, the course design process focuses on determining the types of evidence that will be necessary for students to demonstrate mastery of the outcomes. These are typically the assignments or other activities used to determine grades. Examples include:

- Case studies
- Concept maps
- Essays
- Journals
- Problems and problem sets
- Oral presentations
- Research papers
- Projects
- Performances/exhibitions
- Class discussion (face-to-face, online)
- Evaluation of peer performances
- Critiques
- Objective tests
- Open-ended tests
- Practica/internships
- Capstones
- Portfolios
- Field work

These types of assessments are *summative assessments*, which are assessments of learning. Summative assessments are used to determine whether learning outcomes have been attained and are typically conducted at the end of a unit or course.

When considering the assessment evidence needed, completing an outcome-by-assessment matrix may be useful (see below). As much as possible, it is desirable to have each outcome assessed by more than one measure and each measure address more than one outcome.

	Assessment 1 Problem set #1	Assessment 2 Problem set #2	Assessment #3 Exam	Assessment #4 Case Study	Assessment #5 Research paper
Outcome 1	X		X	X	
Outcome 2		X			X
Outcome 3		X		X	
Outcome 4	X	X			X
Outcome 5			X	X	

Scoring Assessments

Part of developing assessments involves determining how to review and score them. Using rubrics – guides that articulate expectations for assignments and provide guidelines for scoring – have a number of benefits. Consult the Assessment Website for more information on rubrics.

Planning Learning Experiences

Subsequent to determining outcomes and assessments, course design involves planning learning experiences for the semester. This includes considering topics to include and how to sequence them, methods for presenting and discussing information, ways to engage students with the concepts, readings and other preparations students will need to do before class sessions, etc. The Center for Teaching and Learning has multiple resources and tips for planning learning experiences.

Formative Assessment

The summative assessments described above are used for determining students' grades. In addition to these types of assessments, using *formative assessment* throughout the course can be valuable. Formative assessment is assessment for learning, and is used to facilitate learning throughout the course. This is ongoing assessment that provides feedback to students about their current performance and how they can improve. Formative assessment can also be used to modify instruction during the semester as necessary. Some examples of formative assessments include[2]:

Technique	Description	Use of data	Assesses	Time required
One-minute paper	Near the end of class, ask students to write a brief response to: (a) What was the most important thing you learned from today's class? (b) What is the most important question that remains for you?	Collect responses and review. Make note of common misconceptions, issues, and questions. Start next class with feedback to students.	Remembering, understanding	Prep: Low In class: Low Analysis: Low
Muddiest point	Ask students to write a brief response to: "The muddiest point in *Concept X* was _____" This can be done with	Collect responses and review. Make note of areas needing further discussion and address as appropriate (in class, by providing	Remembering, understanding	Prep: Low In class: Low Analysis: Low

[2] Adapted from Angelo, T. A., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers.* San Francisco, CA: Jossey-Bass.

Technique	Description	Use of data	Assesses	Time required
	reference to a class discussion or lecture, a homework assignment, a reading, etc.	additional reference materials or notes, etc.)		
Directed paraphrasing	Ask students to paraphrase part of a concept in two or three sentences. Students should paraphrase for an audience of laypersons.	Collect responses and review. Categorize based on important characteristics; seek patterns. Formulate and provide feedback to students.	Applying	Prep: Low In class: Med Analysis: Med
Application cards	At the end of a class dealing with a principle or theory, ask students to write a brief real-world application of the principle.	Collect responses and review. Categorize based on quality. Select examples in each category that represent important concepts. Share with students in next class.	Applying	Prep: Low In class: Low Analysis: Med
Student generated test questions	At the end of class, ask students to generate one question for an upcoming test. You may wish to give some parameters such a topic or cognitive level.	Select some questions to use for discussion in the class. This provides an opportunity to review material and also to discuss test taking strategies.	Applying	Prep: Med In class: High Analysis: High
Defining features matrix	Gives students a matrix with various features. For 1-3 key concepts from the class, have students indicate whether the feature is present (+) or absent (-) n that concept This is good for understanding differences in related concepts such as learning theories in psychology.	Provide students individual feedback through a score matrix. Also, keep a running total of the class responses. Examine for patterns; discuss common misconceptions in next class.	Analyzing	Prep: Med In class: Low Analysis: Low
Word journal	Students (a) summarize a short text with one word and then (b) write a paragraph describing why they chose the word they did.	Categorize word and explanations. Select three or four that represent different approaches. Discuss with class	Creating, evaluating	Prep: Med In class: High Analysis: High

Technique	Description	Use of data	Assesses	Time required
One-sentence summary	Ask students to write a summary of an important course topic in the format: Who did what to/for whom, when where, how, and why. E.g., A grand jury is a panel of individuals that (who) decides if someone should be charged with a crime (does what to whom) in cases when the offense might be a felony carrying prison time (when) in federal courts and most state courts (where) by listening to arguments by attorneys (how) so common sense and community perspectives are part of the criminal justice system (why).	Collect responses and review. The emphasis of the activity is on students' ability to focus on the main points of a topic and to synthesize. Thus, categorize responses based on demonstration of essential concepts as well as relationships. Share representative examples in the next class.	Creating, evaluating	Prep: Low In class: Med Analysis: Med

Additional information

If you have questions or require additional information, please contact the Assessment Office: 108C Hepburn Hall, x3042, sgerber@njcu.edu.