

Classroom Assessment Techniques (CATs)

Overview

How do CATs improve teaching and learning?

For faculty, CATs can do the following:

- provide day-to-day feedback that can be applied immediately,
- provide useful information about what students have learned, and
- allow you to address student misconceptions or lack of understanding in a timely way.

For students, CATs can do the following:

- help develop self-assessment and learning management skills;
- increase understanding and ability to think critically about the course content;
- show your interest and caring about their success in your classroom.

CATs assess three things.

- Course-related knowledge and skills (Is the student learning/engaged with the material?),
- Student attitudes, values, and self-awareness (How is the student doing?), and
- Reactions to instruction methods (How is the faculty doing?).

Following is a partial chart of CAT exercises, indicating the kind of evaluation for which each is intended, what each is called, how each is conducted, what to do with the information you collect, and an approximation of the relative amount of time each requires.

Kind of Evaluation	Name	How It's Done	How to Use	Time Needs
Course Knowledge and Skills	One-Minute Paper*	During last few minutes of class period, ask students to use a half-sheet of paper and write "Most important thing I learned today and what I understood least."	Review before next class meeting and use to clarify, correct, or elaborate.	Low
	Muddiest Point*	Similar to One-Minute Paper but only ask students to describe what they didn't understand and what they think might help.	Same as One-Minute Paper. If many had the same problem, try another approach.	Low
	Application Cards*	After students hear about a principle or theory, ask students to write a short real-world application for what they just learned.	Share best applications from a broad range. Students learn from hearing examples.	Low to Medium

Kind of Evaluation	Name	How It's Done	How to Use	Time Needs
Attitudes, Values, and Self-Awareness	Double-Entry Journals*	Students note ideas, assertions, and arguments in course readings they find most meaningful/controversial. The second entry explains the personal significance and responds to the passage.	See if students note key points. Analyze the explanations for their choices.	Medium to High
	Learning Outcome Self-Assessment	Students self-report their progress on course learning outcomes.	Note areas where students are not progressing.	Low
Reactions to Instruction Methods	Plus/Delta	Front of page (course focus) <ul style="list-style-type: none"> • Plus - What is supporting your learning? • Delta - What is interfering with your learning? Back of page (individual focus) <ul style="list-style-type: none"> • Same questions 	Compile and share responses with students. Identify what is working, changes you plan to make, and areas you will not change.	Low
	Group Instructional Feedback Technique*	Spend part of a class session eliciting responses from your students about what is effective and what is not so effective in helping them learn. You may not be present during the session.	Facilitators meet with you to explain the data they have collected and give you a written report.	High

*Angelo, Thomas A. and K. Patricia Cross, 1993, *Classroom Assessment Techniques: A Handbook for College Teachers*, Second Edition, San Francisco: Jossey-Bass Publishers.

Step by Step Procedures

Assessing Course-Related Knowledge and Skills

One-Minute Paper (p. 148)

Purpose

- Discover how well students are the most significant parts of each class
- Requires students to evaluate and self-assess what they have just learned

Steps

1. Decide first what you want to focus on and, as a consequence, when to administer the Minute Paper. If you want to focus on students' understanding of a lecture, the last

- few minutes of class may be the best time. If your focus is on a prior homework assignment, however, the first few minutes may be more appropriate.
2. Using the two basic questions: “What was the most important thing you learned during this class?” and “What important questions remained unanswered?” as starting points, write Minute Paper prompts that fit your course and students. Try out your Minute Paper on a colleague before using in class.
 3. Plan to set aside five to ten minutes of your next class to use the technique, as well as time later to discuss the results.
 4. Before class, write one or, at the most, two Minute Paper questions on the chalkboard or show in a slide.
 5. Unless there is a good reason to know who wrote what, direct students to leave their names off papers or cards.
 6. Let the students know how much time they will have (2-5 minutes per question), what answers you want (words, phrases, short sentences), and when they can expect your feedback.

Muddiest Point (p. 154)

Purpose

- Discover where students stop understanding the material.
- Discover what teaching methods or decisions may be obstacles to student learning.

Steps

1. Determine what you want feedback on: the entire class session or one self-contained segment? A lecture, a discussion, a presentation?
2. Leave 5-10 minutes at the end of class or immediately after the discussion/lecture for this activity.
3. Pass out slips of paper or note cards or ask students to take out paper.
4. Ask students to answer the following question:
 - a. “What was the muddiest point in _____?”
 - b. You may modify language if you don’t feel students will understand “muddiest point” (ex. “What was the most confusing part of today’s lecture?”)
5. Provide additional details.
 - a. Time: 3-5 minutes
 - b. What you will do with the data: Clarify any confusing concepts or ideas, or change teaching methods or decisions to help students learn.
 - c. When students will receive feedback: As soon as possible.
6. Collect student responses.
 - a. Pass to the front of class,
 - b. Station yourself by the door and collect, or
 - c. Ask students to leave their papers in a collection box by the exit.
7. Quickly analyze student data.
 - a. Read responses.
 - b. Sort into piles.
 - c. Make conclusions.
8. Respond to student feedback during the next class meeting or as soon as possible.

Application Cards (p.236)

Purpose

- Allows faculty to know how well students understand a concept.
- Requires students to connect newly learned concepts with prior knowledge.
- Allows students to more clearly see the relevance of what they are learning.

Steps

1. Identify an important—and clearly applicable—principle, theory, generalization, or procedure that your students are studying or have just studied.
2. Decide on the following details:
 - a. Number of applications to real-world concepts: 1-3
 - b. Time: 3-5 minutes
 - c. When to administer: after the lecture/discussion, beginning or ending of class
 - d. Wording of prompt:
 - i. Name the principle. (“In his *Principia*, Sir Isaac Newton set forth his Third Law, the heart of which is “To every action there is always opposed an equal reaction.”)
 - ii. Prompt the student (“Give three applications of Newton’s Third Law...”)
 - iii. Limit the prompt. (“...to everyday life around the house.”)
3. Pass out slips of paper or note cards or ask students to take out paper.
4. Announce the exercise. Let the students know the following:
 - a. Time: 3-5 minutes
 - b. What you will do with the data: Clarify any misconceptions about the material that led to incorrect applications.
 - c. When students will receive feedback: As soon as possible.
5. Remind students that the point is to come up with “fresh” applications, not to repeat applications previously discussed in class or in the text.
6. Collect student responses.
 - a. Pass to the front of class,
 - b. Station yourself by the door and collect, or
 - c. Ask students to leave their papers in a collection box by the exit.
7. Quickly analyze student data.
 - a. Read responses.
 - b. “Score” based on
 - i. accuracy of applications.
 - ii. how reasonable, useful, or creative the applications are.
 - c. Plan how to respond to applications
8. Respond to student feedback during the next class meeting or as soon as possible.

Student-Generated Test Questions (p. 240)

Purpose

- Force students to engage with the material in a meaningful way.
- Allows faculty to see what students consider important or memorable.

Steps

1. Select an important concept/theory from a reading

2. Have student develop a question designed to assess information from the reading (may do this activity at home or in class); question must make clear what the correct answer is.
3. Select 2-3 questions representative of the type of learning you expect/2-3 questions not representative of the type of learning you expect
4. Student explains reasoning for why that is a good question, explains what he/she thinks is the correct answer
5. Discuss accuracy of the content and alignment between concept and expected level of understanding (knowledge, application, comprehension, etc)
6. Make clear what types of knowledge and skills students are expected to demonstrate on the summative assessment

Assessing Student Attitudes, Values, and Self-Awareness

Double-Entry Journals (p.263)

Purpose:

- Provides detailed feedback on how students read, analyze, and respond to assigned texts.
- Gives window into what students notice and value in assigned texts.
- Gain insight into student interests, concerns, and values.

Steps

1. Select an important text or part of a text from the course readings. The text or passage should be challenging and provocative, but also relatively short and self-contained.
2. Ask students to divide a few pieces of paper in half lengthwise by drawing a line down the middle from top to bottom. Let the students know before they start that you will collect and read the notes and give feedback on them, but that you won't grade them.
3. On the left half of the divided notepaper, students should copy a few lines or short passages from the text (3 – 5 excerpts) that they find particularly meaningful.
4. On the right half of the page, students should explain why they chose each specific excerpt and then should write their reactions to those excerpts – their agreements, disagreements, questions, and the like. Suggest that they think of the Double-Entry Journal as a dialogue.

Learning Outcome Self-Assessment (p.290, modified)

Purpose:

- Track self-reported student progress in learning to where they should be.
- Reminds students of what they should be learning.
- Determine faculty progress on instruction of course outcomes.

Steps

5. Administer between the first exam and the mid-term exam. Most likely the second month of the course.
6. Prepare a Qualtrics survey or a brief document that allows student to evaluate their progress on the course learning outcomes outlined in the syllabus.
7. Collect responses.

8. Analyze responses and determine where students self-report their progress versus their ideal progress.
9. (Optional) Use survey results to guide Mid-Point Evaluations (see below).

Assessing Student Reactions to Instruction

+/ Δ (Plus/Delta) Evaluations (p. 330, modified)

Purpose: Provide fast feedback to faculty about what is and is not working.

Steps:

1. Plan to set aside five to ten minutes of your next class to use the technique, as well as time later to discuss the results.
 - a. You may also administer this evaluation electronically using either BlackBoard (through the instructor, but is non-anonymous) or Qualtrics (through OIRA and can be anonymous or confidential as you choose).
2. Pass out slips of paper or note cards or ask students to take out paper.
3. Display two questions:
 - a. What is supporting your learning?
 - b. What is interfering with your learning?
4. Ask students to write “Course” on the top of the page/notecard, and “Self” on the top of the opposite side of the page.
5. Direct students to leave their names off papers.
6. Direct students to write both questions on each side of the paper with space to respond.
7. Give students five minutes to respond to all four questions, focusing on the course on the front page and the student on the back side of the page.
8. Respond to students’ feedback during the next class meeting or as soon as possible afterward.

Group Instructional Feedback (p. 334)

Purpose: Provide a more in-depth summary of knowledge/skills learned, and the assignments and instructional tools that contributed to this.

1. Decide how you want the GIFT questions worded (see Plus/Delta), how much class time you will allow for the process, and whether you are willing to invite someone else in to conduct the assessment.
2. Review the assessment procedure and display the questions.
3. Allow students three to four minutes to write their answers, and another three or four minutes to compare their answers with other students in the group (2-3).
4. Collect (if doing on own) or ask students to share common responses. Write down responses.
5. If visiting, ask students to indicate agreement with common responses.