Classroom Assessment Techniques (CATs)

CATs for assessing course-related knowledge and skills

Name	Description	Time Required
Application Cards	After teaching about an important theory, principle, or procedure, ask students to write down at least one real-world application for what they have just learned to determine how well they can transfer their learning.	Prep: Low In class time: Low
Background Knowledge Probe	Before introducing an important new concept, subject, or topic, students respond to questions that will probe their existing knowledge of that concept, subject, or topic.	Prep: Medium In class time: Low
Concept Maps	Students produce diagrams or drawings that show and name the connections between major concepts and other concepts, facts, or principles that they have learned. Very useful in courses requiring conceptual learning.	Prep: Medium In class time: Medium
Defining Features Matrix	Students categorize concepts according to the presence (+) or absence (-) of important defining features, thereby providing data on their analytic reading and thinking skills. This CAT is best suited for courses that require students to distinguish between closely related or seemingly similar items or concepts.	Prep: Medium In class time: Low
Directed Paraphrasing	Students are directed to paraphrase part of a lesson for a specific audience and purpose using their own words. This CAT is particularly useful for assessing the students' understanding of important topics or concepts that they will be later expected to explain to others.	Prep: Medium In class time: Low
Documented Problem Solutions	Students keep track of the steps they take in solving a problem to "show and tell" how they worked it out. This CAT not only assesses how students solve problems but also how well they understand and can describe their problem-solving methods.	Prep: Low In class time: Medium
Focused Listing	In a given time period, students write down as many ideas that are closely related to a single important term, name, or concept. Works well in classes of any size and is useful in courses in which a large amount of new information is regularly introduced.	Prep: Low In class time: Medium

www.cmu.edu/teaching/
eberly-ctr@andrew.cmu.edu
412.268.2896

Carnegie Mellon University

Minute Paper	During the last few minutes of the class period, ask students to answer on a half-sheet of paper: "What is the most important point you learned today?" and "What point remains least clear to you?" The purpose is to elicit data about students' comprehension of a particular class session.	Prep: Low In class time: Low
Misconception/ Preconception Check	Students respond to a questionnaire that elicits information about students' ideas and beliefs that may hinder or block further learning.	Prep: Medium In class time: Low
Muddiest Point	Ask students to jot down a quick response to one question: "What was the muddiest point in the _____?" the focus could be a lecture, discussion, homework, or media.	Prep: Low In class time: Low
One-Sentence Summary	Students are challenged to answer the questions "Who does what to whom, when, where, how, and why?" on a given topic in a single sentence. This CAT enables instructors to find out how concisely, completely, and creatively students can summarize a large amount of information on a given topic.	Prep: Medium In class time: Low
Problem Recognition Tasks	Students are presented with a few examples of common problem types. Their task is to recognize and identify the particular type of problem each example represents. This CAT also works with identifying principles underlying the problems.	Prep: Medium In class time: Low

www.cmu.edu/teaching/
eberly-ctr@andrew.cmu.edu
412.268.2896

Carnegie Mellon University

CATs for assessing learner reactions to instruction

Name	Description	Time Required
Assignment Assessments	Students provide feedback on the learning value of their assignments, whether homework, papers, or projects. This CAT prompts students to think about their assignments as learning tools, and is best suited to students in intermediate and advanced classes, as well as adult learners.	Prep: Low In class time: Low
Group Instructional Feedback Technique (GIFT)	Students answer the following three questions in groups: (1) What do students think is helping them learn? (2) What is hindering their learning? (3) What specific suggestions do they have for improving their learning? Ideally the instructor is not present and someone else facilitates. *NOTE: The Eberly Center provides this in the form of the Early Course Feedback Focus Group (ECF).*	Prep: Medium In class time: Med-High
Group-Work Evaluation	Students fill out simple questionnaires that collect feedback on their reactions to cooperative learning and study groups. This CAT is most helpful in classes where students regularly work in small groups, such as courses taught by the case method.	Prep: Medium In class time: Low
Instructor-designed Feedback Forms	Students answer specific questions posed by the instructor in easy to answer formats (e.g. multiple-choice, Likert scale, short fill-in answer).	Prep: Medium In class time: Low-Medium
Reading Rating Sheets	Students answer questions in response to their assigned course readings. These questions help instructors find out how interesting, motivating, clear, and useful the assigned readings are from the students' point of view. This CAT is useful when instructors have choice in assigning readings, and when students have difficult or resist the readings.	Prep: Low In class time: Low

www.cmu.edu/teaching/
eberly-ctr@andrew.cmu.edu
412.268.2896

Carnegie Mellon University

CATs for assessing learner values and self-awareness

Name	Description	Time Required
Classroom Opinion Polls	Student anonymously answer questions to help the instructor discover student opinions about course-related issues or material. This CAT can be used to help students prepare to discuss a controversial issue or to assess their opinions after they have studied the material.	Prep: Low In class time: Low
Course-Related Self-Confidence Surveys	Students fill out a few simple questions aimed at getting a rough measure of the students' self-confidence in relation to a specific skill or ability. This CAT can be introduced before the skills are introduced and later revisited after significant progress has been made.	Prep: Medium In class time: Low
Interest/Knowledge/ Skills Checklists	Instructors create checklists of topics covered in their courses and skills strengthened by or required for succeeding in those courses. Students rate their interest in the various topics and assess their levels of skills or knowledge in those topics. This CAT is especially useful for courses with flexible syllabi but also helps students assess their preparation.	Prep: Medium In class time: Low
Process Analysis	Students keep a log of the steps they take when approaching a particular assignment, as well as the conclusions they draw about their approaches. This is especially useful when students do the same type of assignment multiple times throughout the course (e.g. lab reports, problem sets, reading	Prep: Medium In class time: Low

References

Angelo, Thomas A. and K. Patricia Cross. 1993. *Classroom Assessment Techniques*, 2nd edition. Jossey-Bass.

Goldstein, Gary S. 2007. "Using Classroom Assessment Techniques in an Introductory Statistics Class." *College Teaching,* Vol 55(2): 77-82.

www.cmu.edu/teaching/
eberly-ctr@andrew.cmu.edu
412.268.2896

Carnegie Mellon University