Classroom Assessment Techniques (CATs; Angelo & Cross, 1993)

Assessing Prior Knowledge, Recall, and Understanding

1. Background Knowledge Probe: Short, simple questionnaires prepared by instructors for use at the beginning of a course, at the start of a new unit or lesson, or prior to introducing an important new topic. This may require students to write short answers, to choose the correct responses to multiple-choice questions, or both.

2. Focused Listing: Technique where students are asked to list several ideas that are closely related to a single term, name, or concept from a particular lesson or class session.

3. Misconception/Preconception Check: Technique to uncover students' prior knowledge or beliefs that may hinder or block further learning. Students are asked to list several points related to the topic in question.

4. Empty Outlines: The instructor provides students with an empty or partially completed outline of a class presentation or homework assignment and directs them to fill in the blank spaces.

5. Memory Matrix: The memory matrix is a two-dimensional diagram, a rectangle divided into rows and columns used to organize information into categories and illustrate relationships. The rows and column headings are given, but the cells within are left empty.

6. Minute Paper: The instructor asks students to submit comments related to the following two questions: "What was the most important thing you learned from this lesson?" and "What important question remains unanswered?" Students then submit their responses by e-mail or in a threaded discussion.

7. Muddiest Point: The instructor asks students to submit responses to the question: "What was the muddiest point in _____?" The focus of the Muddiest Point assessment might be a lecture, tutorial, discussion, homework assignment, etc.

Assessing Skill in Analysis and Critical Thinking

8. Categorizing Grid: Students are presented with a grid containing two or three important categories--superordinate concepts they have been studying--along with a scrambled list of subordinate terms, images, equations, or other items that belong in one or another of those categories. Learners are then asked to sort the subordinate terms into the correct categories on the grid.

9. Defining Features Matrix: This assessment technique requires students to categorize concepts according to the presence (+) or absence (-) of important defining features, thereby providing data on their analytic reading and thinking skills.
10. Pro and Con Grid: Students are asked to jot down lists of pros and cons, costs and benefits, or advantages and disadvantages of an issue of concern. This assessment forces students to go beyond their first reactions, to search for at least two sides to the issue in question, and to weigh the value of competing claims.

11. Content, Form, and Function Outlines: This technique is also called "What, How, and Why Outlines." To respond to it, the student carefully analyzes the "what" (content), "how" (form), and "why" (function) of a particular message. That message may be a poem, a newspaper story, a critical essay, a billboard, a magazine advertisement, or a television commercial. The student writes brief notes answering the "what, how and why" questions in an outline format that be quickly read and assessed.

12. Analytic Memos: This technique is basically a simulation exercise. It requires students to write a one- or two-page analysis of a specific problem or issue. The person for whom the memo is being written is usually identified as an employer, a client, or a stakeholder who needs the student's analysis to inform decision making.

Assessing Skill in Synthesis and Creative Thinking

13. One-Sentence Summary: This technique challenges students to answer the questions "Who does what to whom, when, where, how, and why?" about a given topic, and then to synthesize those answers into a single informative, grammatical, and long summary sentence.

14. Word Journal: The Word Journal prompts a two-part response. First, the student summarizes a short text in a single word. Second, the student writes a paragraph or two explaining why he or she chose that particular word to summarize the text. The completed response to the Word Journal is an abstract or a synopsis of the focus text.

15. Approximate Analogies: To respond to the Approximate Analogies assessment technique, students complete the second half of an analogy—A is to B as X is to Y—for which their instructor has supplied the first half (A is to B). Consequently, the student can respond to this technique in as few as two words. For assessment purposes, student responses need not always display the rigor required of analogies in formal logic or mathematics; that's why these are called "approximate analogies."

16. Concept Maps: Concept Maps are drawings or diagrams showing the mental connections that students make between a major concept the instructor focuses on and other concepts they have learned. To prompt students to make Concept Maps, they might be asked to sketch the important features of the geography around major concepts such as democracy, racism, art, or free trade.

17. Invented Dialogues: By inventing dialogues, students synthesize their knowledge of issues, personalities, and historical periods into the form of a carefully structured, illustrative conversation. There are two levels of "invention" possible with this technique. On the first level, students can create Invented Dialogues by carefully selecting and weaving together actual quotes form primary sources. On a second, more challenging level, they may invent reasonable quotes that fit the character of the speakers and the content.
18. Annotated Portfolios: Annotated Portfolios contain a very limited number of examples of creative work, supplemented by the students' own commentary on the significance of those examples with respect to the course content or goals.

**Assessing Skill in Problem Solving**

19. Problem Recognition Tasks: Students are presented with a few examples of common problem types. They are then tasked to recognize and identify the particular type of problem each example represents. This enables the instructor to assess how well students can recognize various problem types, which is the first step in matching problem type to solution method.

20. What’s the Principle? After students figure out what type of problem they are dealing with, they often must then decide what principle or principles to apply in order to solve the problem. This technique focuses on that second step in problem solving. It provides students with a few problems and asks them to state the principle that best applies to each problem—the general principle that is used to solve the problem.

21. Documented Problem Solutions: This technique prompts students to keep track of the steps they take in solving a problem—to "show and tell" how they worked it out. By analyzing these detailed protocols—in which each solution step is briefly explained in writing—instructors can gain valuable information on their students' problem-solving skills.

22. Audio- and Videotapes: Students are recorded talking and working through the process of solving a problem. This technique may provide the instructor and other students with an inside view of the problem-solving process.

**Assessing Skill in Application and Performance**

23. Directed Paraphrasing: In many fields, particularly in the professions and the service sector, success depends on one's ability to translate highly specialized information into language that clients or customers will understand. With this assessment technique, students are directed to paraphrase part of a lesson for a specific audience and purpose, using their own words.

24. Application Cards: After students have heard or read about an important principle, generalization, theory, or procedure, the instructor has them submit at least one possible, real-world application for what they have just learned.

25. Student-Generated Test Questions: Students are asked to submit test questions and model answers. This technique helps students to find out how well they understand the course material for which they are writing the test questions.

26. Human Tableau or Class Modeling: Groups of students are recorded creating "living" scenes or model process to show what they know. For example, students might pose as the figures in a painting, reenact a Druid ritual at Stonehenge, or model the operation of the fuel system in an automobile engine.
27. Paper or Project Prospectus: In this context, a prospectus is a brief, structured first-draft plan for a term paper or term project. The Paper Prospectus prompts students to think through elements of the assignment, such as the topic, purpose, intended audience, major questions to be answered, basic organization, and time and resources required. The Project Prospectus, on the other hand, may focus on the tasks to be accomplished, skills to be improved, and products to be developed.

Assessing Students’ Awareness of Their Attitudes and Values

28. Class Opinion Polls: This technique can be used to prepare students to discuss a controversial issue or to assess their opinions after they have studied the material. Polling can also be used as a pre- and post-assessment device, to determine whether and how students' opinions have changed in response to class discussions and assignments.

29. Double-Entry Journals: Students begin Double-Entry Journals by noting the ideas, assertions, and arguments in their assigned course readings that they find most meaningful and/or most controversial. These notes on the text are the first half of the Double-Entry Journal. The second entry in the Double-Entry Journal explains the personal significance of the passage selected and responds to that passage. In this way, students engage in a dialogue with the text, exploring their reactions to the reading.

30. Profiles of Admirable Individuals: This technique requires that students write a brief, focused profile of an individual—in a field related to the course—whose values, skills, or actions they greatly admire.

31. Everyday Ethical Dilemmas: Students are presented with an abbreviated case study that poses an ethical problem related to the discipline or profession they are studying. Students respond briefly (and sometimes anonymously) to these cases, and the instructor analyzes the responses in order to understand the students' values.

32. Course-Related Self-Confidence Survey: A Course-Related Self-Confidence Survey consists of a few simple questions aimed at getting a rough measure of the students' self-confidence in relation to a specific skill or ability.

Assessing Students’ Self-Awareness as Learners

33. Focused Autobiographical Sketches: Students are directed to write a one- or two-page autobiographical sketch focused on a single successful learning experience in their past—an experience relevant to learning in the particular course in which the assessment technique is used.

34. Interest/Knowledge/Skills Checklist: Course-specific Interest/Knowledge/Skills Checklists are brief, instructor-made versions of the commercial interest and skills inventories long used by guidance and career counselors. 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 skill or knowledge in those topics, by indicating the appropriate responses on the checklist.
35. Goal Ranking and Matching: At the beginning of a course, students are asked to list a few learning goals they hope to achieve through the course and to rank the relative importance of those goals. Students can also be asked to estimate the relative difficulty of achieving their learning goals.

36. Self-Assessment of Ways of Learning: This technique prompts students to describe their general approaches to learning, or their learning styles, by comparing themselves with several different profiles and choosing those that, in their opinion, most closely resemble them.

Assessing Course-Related Learning and Study Skills, Strategies, and Behaviors

37. Productive Study-Time Logs: Productive Study-Time Logs are simply records that students keep on how much time they spend studying for a particular class, when they study, and how productively they study at various times of the day or night.

38. Punctuated Lectures: This technique requires students to go through five steps: listen, stop, reflect, write, and give feedback. Students begin by listening/viewing a lecture or demonstration. Then, after a portion of the presentation has been completed (stopped), the students are asked to reflect on the presentation. They then write down any insights they have gained. Finally, they submit feedback to the instructor in the form of short notes.

39. Process Analysis: This technique focuses students' attention on the process--on how they do their academic work. Process Analysis requires that students keep records of the actual steps they take in carrying out a representative assignment and asks them to comment on the conclusions they draw about their approaches to that assignment.

40. Diagnostic Learning Logs: Diagnostic Learning Logs are essentially limited, tightly focused versions of the academic journals many instructors already use. In these logs, students keep records of each class or assignment. When responding to class sessions, students write one list of the main points covered that they understood and a second list of points that were unclear. For assignments, students record problems encountered or errors made, as well as excellent and successful responses. At regular intervals, the students reflect on, analyze, and summarize the information they have collected on their own learning. They then diagnose their strengths and weaknesses as learners and generate possible remedies for problems.

Assessing Learner Reactions to Teacher and Teaching

41. Chain Notes: After a lecture/presentation, students submit written responses in a public forum to one question about the class. The responses are to be short and to the point.

42. Electronic Mail Feedback: The instructor poses a question to the class, via e-mail, about his or her teaching, and invites student responses. Students respond to the e-mail question with a personal message sent to the instructor's e-mail account.

43. Teacher-Designed Feedback Forms: Instructors can design their own course evaluation forms. These forms would be in addition to the standard course evaluations that are sent to the administration. Instructors can collect the specific information they need by preparing short, simple, course-specific evaluation forms. These
feedback forms can contain anywhere from three to seven questions in multiple-choice, Likert-scale, or short fill-in answer formats.

44. Group Instructional Feedback Technique: This technique centers on getting student responses to three questions related to their learning in the class. These three questions basically ask, "What works? What doesn't? What can be done to improve it?" In an ideal administration of the Group Instructional Feedback Technique (GIFT), someone other than the instructor polls the students on these questions determines which are the most frequent responses, summarizes them, and then reports back to the instructor. This feedback is a GIFT in two senses: First, it is already at least partially summarized and analyzed by the time it reaches the instructor. And second, it allows the instructor to see his or her course through the eyes of a detached but sympathetic observer. If no outside "information gatherer" is available, instructors can collect useful data form their own classes by giving students more responsibility in the process and adopting a few safeguards.

45. Classroom Assessment Quality Circles: The focus of this technique is on involving groups of students in structured and ongoing assessment of course materials, activities, and assignments. Course Assessment Quality Circles have two complementary purposes. The first is to provide a vehicle for regularly collecting thoughtful responses from students on their assessments of class sessions, readings, exams, and major assignments. The second purpose is to offer students a structured, positive way to become more actively involved in their own learning.

Assessing Learner Reactions to Class Activities, Assignments, and Materials

46. RSQC2 (Recall, Summarize, Question, Connect, and Comment): This technique is best used at regular intervals. Students submit to the instructor their recall, understanding, and evaluations of a class session. The students may also include any questions or comments they have about the session.

47. Group-Work Evaluations: Group-Work Evaluation forms are simple questionnaires used to collect feedback on students' reactions to cooperative/collaborative learning (where students work in structured groups toward an agreed-upon learning goal) and study groups.

48. Reading Rating Sheets: Reading Rating Sheets are short, simple assessment forms that students fill out in response to their assigned course readings. The sheets are useful assessments in courses where there are several different assigned readings and instructors have some choice in assigning readings. It is a good technique to use when students seem to be having trouble with particular readings or to be resisting them.

49. Assignment Assessments: Course assignments, from daily homework to term papers, provide students with the practice that allows them to learn and apply material presented in a course. Assignment Assessments ask students to consider the value of these assignments to them as learners.

50. Exam Evaluations: Students view tests and examinations as critical indicators of instructor expectations; as a result, faculty can use tests and exams to direct student learning. All too often, however, the learning function of testing is overlooked. This technique allows instructors to examine both what students think they are learning from exams and tests and students' evaluations of the fairness, appropriateness, usefulness, and quality of tests or exams. The evaluations provide instructors with specific student reactions to tests and exams, so that they can make the exams more effective as learning and assessment devices.