

Interactive Classroom Assessment Techniques (iCATs)

The following list of CATs organized into ten categories by Angelo and Cross (1993) provide a basic structure that can be adapted into interactive Classroom Assessment Techniques (iCATs) delivered in class using student response systems or clickers:

Techniques for Assessing Course-Related Knowledge and Skills

- I. Assessing Prior Knowledge, Recall, and Understanding – Students recognize prior knowledge and content.*
 1. Background Knowledge Probe – Students determine prior knowledge or experience by asking general questions.
 2. Focused Listing – Students identify main idea or most important point.
 3. Misconception/Preconception Check – Students determine prior knowledge or experience that may interfere with acquisition of new knowledge.
 4. Empty Outlines – Students complete an idea or concept from limited or partial information.
 5. Memory Matrix – Students recall information by filling in blanks.
 6. Minute Paper – Students illustrate two points: 1) Most important ideas learned; and 2) Questions that remain unanswered.
 7. Muddiest Point – Students identify ideas or points that are still unclear to insure students acquire intended information. This is often combined with the most important ideas learned from the minute paper.
- II. Assessing Skill in Analysis and Critical Thinking – Students understand the process or the “how-to” perform a procedure .*
 8. Categorizing Grid – Students organize concepts into a structure such as subordinate elements or larger concepts.
 9. Defining Features Matrix – Students categorize the presence or absence of important or relevant information.
 10. Pro and Con Grid – Students illustrate positive/negative or advantages/disadvantages of an issue, idea, or method.
 11. Content, Form, and Function Outlines – Students examine content, form, and function of an idea or method.
 12. Analytic Memos - Students analyze specific problem or issue to clarify thoughts or decisions.
- III. Assessing Skill in Synthesis and Creative Thinking – Students form original thoughts or content from the synthesis of new information.*
 13. One-Sentence Summary – Students create a concise summary of information in a brief statement.
 14. Word Journal – Students summarize an idea in a single word combined with a rationale for choosing the word.
 15. Approximate Analogies – Students complete second half of an analogy such as *a* is to *b* as *x* is to *y*.
 16. Concept Maps – Students diagram connections and important concepts representing content of lesson.
 17. Invented Dialogues - Students structure a dialogue that captures the essence of lesson.
 18. Annotated Portfolios – Students construct examples that represent content of lesson.

IV. *Assessing Skill in Problem Solving – Students determine aspect of a problem or idea and techniques necessary to the solution.*

- 19. Problem Recognition Tasks – Students distinguish particular difficulties or issues associated with a problem or task.
- 20. What's the Principle? – Students identify general principles to solve specific situations or problems.
- 21. Documented Problem Solutions – Students describe steps or procedures taken to solve a problem.
- 22. Audio- and Videotaped Protocols – Students capture problem solving process and activities associated with the solution.

V. *Assessing Skill in Application and Performance – Students apply new information and learned principles.*

- 23. Directed Paraphrasing: – Students explain concepts or ideas from lesson demonstrating ability to translate highly specialized information.
- 24. Application Cards – Students generate examples of important principles, ideas, or procedures.
- 25. Student-Generated Test Questions – Students compose questions and model answers for critical information.
- 26. Human Tableau or Class Modeling – Students transform concepts by physically modeling a process or idea.
- 27. Paper or Project Prospectus – Students develop brief plan to outline the structure to complete an assignment or process.

Techniques for Assessing Learner Attitudes, Values, and Self-Awareness

VI. *Assessing Students' Awareness of their Attitudes and Values – Students examine attitudes, values, beliefs, and opinions as well as self-awareness.*

- 28. Classroom Opinion Polls – Students compare and contrast ideas, beliefs, experience with others to discover levels of similarities and differences.
- 29. Double-Entry Journals – Students compose ideas and reactions to significant ideas or process and explain the personal significance.
- 30. Profiles of Admirable Individuals – Students formulate a description of the characteristics or significant point of a person or process related to the lesson.
- 31. Everyday Ethical Dilemma – Students illustrate ideas or solutions to a particular situation or problem that poses a structural or ethical dilemma.
- 32. Course-related Self-Confidence Surveys – Students answer questions measuring self-confidence in relation to information or process related to the lesson.

VII. *Assessing Students' Self-Awareness as Learners – Students explore personal goals, interest, and style of learning.*

- 33. Focused Autobiographical Sketches – Students describe successful learning experience related to the lesson.
- 34. Interest/Knowledge/Skills Checklists – Students evaluate interest in various aspects of the lesson and indicate personal level of skill or knowledge in each aspect listed on a checklist.
- 35. Goal Ranking and Matching – Students prioritize list 3 to 5 goals and rank relative importance.
- 36. Self-Assessment Ways of Learning – Students describe general approach to learning or preferred learning styles.

VIII. *Assessing Course-Related Learning and Study Skills, Strategies, and Behaviors – Students describe personal study and learning behaviors.*

37. Productive Study-Time Logs – Students indicate the time spent studying and indicate when the most beneficial times occur.

38. Punctuated Lectures – Students reflect on listening and attention at various intervals during lesson, then examine what helped or hindered their attention.

39. Process Analysis – Students illustrate the process or approach to completing a task or assignment.

40. Diagnostic Learning Logs – Students identify and diagnose difficulties or distractions to learning material, then create possible solutions those issues.

Techniques for Assessing Learner Reactions to Instruction

IX. *Assessing Learner Reactions to Teachers and Teaching – Students produce constructive feedback about lesson to improve teaching.*

41. Chain Notes – Students respond to a question about the level of engagement and involvement at a particular point in the lesson.

42. Electronic Survey Feedback – Students respond to a question or short series of questions about the effectiveness of the course.

43. Teacher-Designed Feedback Forms – Students evaluate specific aspects and effectiveness of a particular class session.

44. Group Instructional Feedback Technique – Students assess the lesson in relation to three questions: 1) What works? 2) What doesn't? 3) What could be done to improve the lesson?

45. Classroom Assessment Quality Circles – Students judge the organization, ideas, assignments, or other aspects of a lesson in a formative, on-going interaction at regular intervals.

X. *Assessing Learner Reactions to Class Activities, Assignments, and Materials – Students estimate the value of activities, assignments, or other material related to the lesson.*

46. RSQC2 (Recall, Summarize, Question, Connect and Comment) – Students recall and summarize meaningful points from lesson.

47. Group-Work Evaluation – Students evaluate group function to improve the process working together.

48. Reading Rating Sheets – Students rate the effectiveness of a reading, assignment, or activity.

49. Assignment Assessments – Students appraise the value of an assignment to their learning.

50. Exam Evaluations – Students rate the value of learning occurring during the process of taking an exam or test as well as the overall fairness, appropriateness, and usefulness of the questions.

Angelo, T. A., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers*. San Francisco: Jossey-Bass Publishers.