

Student Assessment

What do you want to know?

What do you want your students to know?

Two Broad Categories



Course Knowledge and
Skills

Attitudes, Values, and
Self-Awareness

How do I know my students learned something?



Summative

- a midterm exam
- a final project
- a paper
- a senior recital

Formative

- Identify strengths and weaknesses
- targeted
- actionable

Classroom Assessment Techniques (CATs)



- **“Real-time feedback”**
- Help students become better **monitors of their own learning**
- Encourages the idea that **teaching/learning is an ongoing process** of inquiry, experimentation, and reflection
- Provide information about student learning with **less work** than traditional assignments (tests, papers, etc.)
- Demonstrates that the instructor cares about learning

Types of CATs

Course Knowledge and Skills

Knowledge Recall:

Minute Paper
Muddiest Point

Analysis and Critical Thinking:

Analytical Memo

Synthesis and Creative Thinking:

Concept Maps

Problem Solving:

What's the principle?

Attitudes, Values, and Self-Awareness

Student Awareness of Attitudes:

Self-confidence surveys
Opinion Polls

Awareness as Learners:

Autobiographies

Learning Behaviors:

Learning logs

Learner Reactions:

Evaluations

A Scenario

You've just covered the ionic equilibria and pH titration.

What should you consider before you choose an assessment method?

Example CAT: Statement Correction

Class: Gen Chem I



I don't want to eat any chemicals so I buy all organic food.

Discuss with your partner what concepts are mentioned in this statement and evaluate their accuracy.

Concerns about CATs

- **CLASS SIZE**

- Time consuming?
- When do I assess, both within the class section and in the semester?
- How often am I going to assess?
- How much do students retain?
- What technologies are available/accessible/appropriate?
- What action do I take in response to a formative assessment?
 - “Closing the loop”: Making sure that the assessment gives you an actionable outcome
 - Communication with students. Letting them know that you are adjusting your teaching in response to the formative assessments
- Getting student buy-in, engaging appropriately with the assessment
- “Metacognition”: Getting students to understand why the formative assessment works

ABCD Q1:

When should you assess student learning?

- A. Everyday of lecture
- B. Every week
- C. When you and/or the students want to know if they have learned a concept outlined in the learning goals of the course
- D. A few times a semester using midterms, finals, and quizzes

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Some tips...

- Don't make classroom assessment a chore.
- If a CAT doesn't appeal to your professional judgment, then don't use it.
- Try the CAT activity out on yourself.
- Allow for more time than you think.
- **Close the loop.** Give the students feedback on the results – the information is useful to you and them

Assessing Attitudes

- Students' experiences in learning significantly influence their performance.
- Students' enjoy the course more if they think you care about their learning and experiences.

What does attitude mean?

- Attitude toward the topic
- How they study
- Confidence
- Motivation/what do you want to get out of the course?

Examples

- Give one or two examples of specific things your instructor does that helps you to learn organic chemistry
- one or two examples of specific things your instructor does that makes it more difficult for you to learn organic chemistry
- Suggest one or two specific, practical changes your instructor can make that would help you improve your learning in class

Choosing a CAT for your Teachable Tidbit!



How to get started...

1. Think about a **clearly defined topic** of your active learning tidbit
2. What is the most important **learning gain** that you have targeted with your teachable tidbit?
3. Do you want your students to synthesize the material in a **specific way**?
4. Play around with some different questions or statements that you would want your students to answer and check that they are at a **learning level** that you expect them to have for an exam.

Marilyne's website gold:



<https://sites.google.com/site/marilynestains/educational-resources-for-chemistry-professors>

Tidbit Breakout: Choose a CAT

Keeping in mind:

- Learning Objective
- Class size
- Ability
- Actionable Assessment

Tidbit Report Out

Process Analysis – explain the way they obtained their answer

Minute Paper –

What's the principle? –

(interlude to remind about timing the assessment)