

Guide Lectures

Student Response Systems allow for students to respond to lecture material. This allows instructors to immediately identify any misunderstandings or confusion with the concepts they are presenting. Instructors can use clicker data to tailor their lectures to address student confusion or quickly cover topics students already understand.



Frequently Asked Questions about *Agile Teaching*:

How might an instructor respond if most students answer a clicker question correctly?

- Briefly review question and choices.
- Have students share reasons for choice, correct or incorrect.
- Explain why the incorrect choices are incorrect.

How might an instructor respond to mixed clicker results?

- Explain the question, the correct answer, and the incorrect answer to the students.
- Facilitate either classwide discussion or small group discussion about the question.
- Re-poll after discussion and compare before and after results.

How might an instructor respond if most students answer a clicker question incorrectly?

- Spend more class time, either immediately or in the future, on the topic at hand.
- Have students discuss the question among themselves.
- Review the topic of the question and provide some hints as to the answer.

How might instructors use a question with multiple correct answers, some of which may be more or less reasonable, for formative assessment?

- These are often used to help students develop their critical thinking skills since answering these questions requires students to evaluate the strengths and weaknesses of several possible responses.
- Instructors must decide when to tell students that the question at hand does not have a single correct answer.

When should instructors move on to the next topic?

- Moving on depends on the amount of assistance an instructor wants to provide students on the topic, how much the next topic depends on thorough understanding of the current topic, and the students' level of engagement.

What should instructors do about students who answer incorrectly when it is time to move on?

- Clicker questions with answer choices constructed intentionally to surface student misconceptions allow an instructor to determine which difficulties and misconceptions are troubling the most students. This allows instructors to respond to the difficulties and misconceptions that challenge the largest number of students in a class.
- Invite students who still have misunderstandings to office hours.
- Make questions available outside of class for further review.
- Watch for students who consistently answer clicker questions wrong.



Multi-pass learning:

Multiple visits to material in varying contexts over time. Review and reinforce previously learned material to improve retention.

- Material covered in class
- Pre-class readings and post-class homework
- Start of class review questions
- Pre-exam reviews using clicker questions

Consider when and how a question is presented.

- If a question is posed before presentation of subject material, students will draw on preexisting knowledge, apply intuition, and extrapolate from prior course material.
- If it is presented after, they will draw on whatever was just covered regardless of its relevance.
- Avoid simple factual questions or those that rely on memory recall as opposed to understanding.

Using clickers and polling questions as one method of revisiting material from previous classes.

- Use short quizzes at the beginning of class can demonstrate if the students have read the material or finished the homework for the class and also be used to review previous class material, pre-class readings, or homework. - Reveal areas of confusion which can be addressed during the class period.
- Review all material before exams using a series of clicker questions. - Create questions similar to those found on the exam.
- Running through a set of questions or question types which might be found on the exam allow students to evaluate how well they know the material and identify areas they need to focus on before the exam.
- Use a game to make reviewing material more fun.
- Use results to determine what material needs to be reviewed before exams.



Structuring class time:

Many instructors see value in structuring a class session into a sequence of activities as a way to help students maintain their attention during an entire class.

- Use clicker questions scattered throughout the presentation to maintain student attention.
- Clicker questions can be used to judge how well students understand a concept before moving onto the next one.
- Use clicker questions to set up small group discussions.

Clickers can gather information from students to determine the direction for a class session, giving all students a voice in determining what should be covered.

- Questions can determine students' background knowledge before proceeding with material, to avoid overlap or to use that knowledge in relation to the course material.
- Clicker questions allow you to quickly determine which aspects of the material the students understand and where the confusion lies.
- **Agile teaching:** the ability to shift topics depending on how the students pick up the material.

Focus your time on where the misunderstandings are rather than wasting time covering material that the students already understand.

- Find out just how familiar students are with material they think they already understand before moving on to a new topic.
- Review previous material to check for confusion.



Running a lecture:

Prepare the audience with a warm up question.

- These can be simple ice breaker questions or fun trivia related to the course material.

Allow adequate time for discussion of the results. Build in one or two minutes for presenting and polling each question and at least 2-3 minutes of discussion. Never leave a polling slide without responding to the distribution of responses.

- Include the students in the discussion of the results. Have them explain why they chose what they did.

Don't ask too many in one session but use them sparingly to highlight certain points.

- A few questions effectively discussed are better than a lot that are glossed over (three to four questions in a 50-minute lecture to highlight key points).
- Ask 2-4 questions per 50 minute class – if that doesn't fill class, there isn't sufficient discussion or sufficiently divisive questions

Use question slides when the understanding of a concept is critical to proceeding with new content.

- This can help you verify that the students understand the concept before moving on.

Use question wrap-up:

- Summarize key points or arguments students put forth, possibly adding ones they missed
- Make connections to related questions and topics, pose “what if” alternative questions for future pondering, and segue into next question
- Use before and after polls to see how students changed their minds after discussion
- Deliver mini-lecture if students’ answers reveal gap in knowledge or understanding
- Keep this section short and tied directly to students’ recent and upcoming learning activities

Avoid the “instructor-centric” classroom.

- Allow class discussion and student questions to clarify the question and any potential ambiguities
- Allow students to find error and flaws in an argument
- Tolerate silences while students ponder
- Use sound cues to identify the progress of small group discussion: noise rises as they discuss, drops when they reach a resolution, and rises again in small talk

**Getting Feedback & Assessing Teaching:**

- Clickers enable instructors to collect information on student learning from all students in a classroom quickly, easily, and simultaneously.
- The information on student learning provided by clickers can be used by instructors to modify their lesson plans during class to respond to immediate student learning needs.
- Formative assessment not only provides instructors with useful information about student learning, it also lets students know what they understand and do not understand.
- Missing a question motivates students to want to get the next one correct, so they are more engaged in the discussion.
- The use of a classroom response system can greatly increase the speed and efficiency with which instructors collect, grade, and record student performance on quizzes and tests.
- Monitor progress on a semester-long assignment such as a paper, project, or presentation.
- Ask students after the first or second assignment of the semester (a problem set, a short paper, a lab report) how long it took them to complete that assignment. This provides a sense of how difficult the assignment was – useful information to have when planning future assignments.
- Quiz students on various points made in the course syllabus throughout the semester in order to remind students of those points.

- Ask students prior to the first exam which of a set of possible study strategies is likely to be most effective in preparing for the exam.
 - Ask the kinds of questions that frequently appear on end-of-semester course evaluation forms that students complete and ask them during the semester.
 - Gather feedback on teaching styles.
-

References:

Bruff, Derek. "Teaching with classroom response ... - Google Books." Google Books. N.p., n.d. Web. 6 Dec. 2010.

http://books.google.com/books?id=1vXz3P-oF88C&pg=PA13&lpg=PA13&dq=*+Have+students+share+th#v=onepage&q&f=false

Classroom Performance System (CPS) What is CPS How Can I Use CPS"

Docstoc - Documents, Templates, Forms, Ebooks, Papers & Presentations. N.p., n.d. Web. 27 Dec. 2010.

<http://www.docstoc.com/docs/2577894/Classroom-Performance-System-%28CPS%29-What-is-CPS-How-Can-I-Use-CPS->

Technology: Clickers - UCF Faculty Center for Teaching and Learning." UCF - Faculty Center for Teaching and Learning. N.p., n.d. Web. 27 Dec. 2010.

<http://www.fctl.ucf.edu/teachingandlearningresources/technology/crs/>