



Student Engagement Techniques

Reflection

Steps:

1. Have students take a few minutes to think and write down their thoughts about the lecture material just presented or a particular question or problem that has been posed.
2. Collect student papers, if you wish, and review their responses to assess their understanding and identify areas that need clarification at the beginning of the next lecture (you can also assign participation points for responses or allow students to submit them anonymously).

Value: Allows students to think through material and put it in their own words.

Brainstorming

Steps:

1. Present an open-ended question for students to discuss or solve.
2. Students can work individually, in pairs or small groups, or as a class (or combination of these).
3. Have students share ideas with class, making notes on the board.
4. Challenge their responses or have other students challenge the responses on the board.
5. At the end, correct any misconceptions, note opposing points of view, and summarize main points.

Value: Promotes critical and creative thinking and imagination.

Think – Pair – Share

Steps:

1. Pose a question.
2. Students get into pairs and discuss question, coming to some resolution.
3. Each student pair then shares conclusions with entire class (in large classes or when time is limited, call on as many pairs as time allows).

Value: Promotes critical thinking and collaborative learning.

Multiple-Choice Survey

Steps:

1. Put a multiple-choice item, preferably conceptual in nature, related to your mini-lecture on the board, a slide, or an overhead, and give four response options.
2. Survey student responses (have them raise hands, use colored cards, or use electronic response system – ‘clicker’).
3. Next have them get into pairs and take a couple of minutes to convince each other of their responses.
4. Then re-survey the students.
5. Clarify any misconceptions before proceeding.

Value: Makes students apply and discuss material while fresh in their minds, and it provides immediate feedback about student understanding.

Quick Case Study

Steps:

1. Display a very brief case on an overhead or slide (or put on a handout if lengthy).
2. Pose specific questions for students to answer based on the case. For example, “What is the problem? What is the remedy? What is the prevention?”
3. Have students write down their answers.
4. Students can work individually or in pairs or small groups.
5. If time allows, select a few students to share aloud their answers.

Value: Makes students apply material to a realistic situation, and it promotes critical and creative thinking.

Item Clarification

Steps:

1. Give students a handout that lists key terms or items for discussion.
2. Ask students to review the list and select a few items for clarification.
3. Next have students get into pairs and select a particular item for immediate clarification.

4. Call a student at random and clarify the chosen item (or, better yet, ask if another student can offer clarification).
5. Call on additional students and continue to clarify items.
6. Near the end, if time allows, ask participants if there are of your responses or those of other students they want to challenge or debate.
7. Conclude with a brief review of the items.

Value: Provides immediate feedback about student understanding, and it helps prioritize items for review or discussion.

Quick Thinks

For each of the following, use immediate material from mini-lecture, and allow students a couple of minutes to reflect before surveying their responses (have students share aloud, and you can collect written responses for participation points):

- **Correct the Error:** Present students with a statement, equation, or visual that you have intentionally made incorrect and have them correct the error. The error may be an illogical or inaccurate statement, premise, inference, prediction, or implication.
- **Complete a Sentence Stem:** Present students with a sentence starter and have them complete the sentence. The completed statement may be a definition, category, cause-and-effect relationship, rationale, controversy, etc. Try to avoid statements that ask for rote knowledge.
- **Reorder the Steps:** Present sequence items in the wrong order and have students re-order the sequence correctly. This might be a process, cycle, method, plan, technique, etc.
- **Interpretation/Paraphrase:** Let students know that you will be calling on them at random during your lecture and asking them to interpret what you've said, putting the material in their own words. When you are ready, pause for a moment to signal that you are about to call on someone. Once a student has shared, call on another student to add any missing items. You can also put items on the board or a slide or a handout – a definition, theory, statement, procedure, etc. – and have students write them in their own words.

Value: these exercises foster attentiveness, provide immediate feedback about student understanding, and promote critical thinking skills.

Minute Paper

Steps:

1. At the end of a lecture segment or the end of the lecture class, have students spend two or three minutes writing a summary of the main points.
2. Ask at least one student to share what he/she wrote.

3. Collect the papers for review (but not for a grade).
4. You can also use the minute paper to have students to write down questions they have about the lecture, indicate points they don't understand, or share feedback about your delivery, use of slides, etc.

Value: provides immediate feedback about student understanding, helps prioritize items for review or discussion, and allows students to put material into their own words.

Strip Sequence

Steps:

1. Take a multi-step process and divide it into separate steps and rearrange them.
2. Provide students with the out of order steps (list on the an overhead, provide strips of paper).
3. Ask students (individually or in groups) to take the steps and put them into the correct order (step 1, step 2, etc.).
4. Review the correct order (specially to clarify misconceptions) with the whole class.

Value: gives students a chance to test their understanding, breaks complicated processes into multiple steps for further review.

Concept Mapping

Steps:

1. Provide student small groups with a list of terms relative to their course work (either from a previous class or a reading). Terms may be provided as a list or given as a stack of cards.
2. Ask students to arrange the cards in a meaningful pattern (e.g. food web—how are organisms linked).
3. If time allows, ask one group to share concept map with the whole class. Alternatively, ask one group to pair with another group and explain their pattern.

Value: promotes integration of ideas, provides immediate feedback about student understanding.

Decision Making

Steps:

1. Provide students with a problem that they need to work on. For example, "Imagine you are the director of the antibiotic discovery unit in a major pharmaceutical company, and you are asked for a five-year plan to develop new antibiotics. You are told that the plan will be funded only if you can convince your managers that you will be able to develop the five new drugs with entirely new modes of action. Can you do it? What is your plan and how will you defend it?" (*Handelsman et al. 2006*)

2. Ask students to work in groups (2-4 students) to develop a plan based on what they have learned in class.
3. Have groups share their ideas with the class and make notes on the board.
4. Ask other students in the class to comment on each group's proposal and suggest changes.

Value: promotes integration of ideas, critical, creative thinking, provides immediate feedback about student understanding.

Matrix

Steps:

1. Students should create a table with information to compare (i.e. pros/con, two different processes)

Learning activity	Value of activity	Limitation of activity	When would you use this in class
Matrix			
Minute paper, etc.			

2. Ask students to work in groups (2-4 students) to fill out the table.
3. Have groups share their ideas with the class and make notes on the board.

Value: promotes integration of ideas, allows students to easily compare ideas and reduce complexity.

Plus/Delta (+/Δ)

Steps:

1. At the end of class ask students to take a sheet of paper and divide it into two columns.
2. In column 1 (+) students write down what was very positive about the class, an activity, or instructional materials. In column 2 (Δ) students write what they would like to change for the future.
3. Collect student responses.
4. Read student responses and make changes for next class accordingly.
5. In the next class share some of the highlights with students and make changes as necessary.

Value: provides immediate feedback to the instructor, allows for quick changes even in the middle of a term.

Resources

Books and articles

Angelo, Thomas A., and K. Patricia Cross. 1993. *Classroom Assessment Techniques: A Handbook for College Teachers*. 2nd Edition. San Francisco: Jossey-Bass.

Barkley, Elizabeth F. 2010. *Student Engagement Techniques: A Handbook for College Faculty*. San Francisco: Jossey-Bass.

Davis, Barbara G. 1993. *Tools for Teaching*. 1st Edition. San Francisco: Jossey Bass. [see Chapter 16, "Supplements and Alternatives to Lecturing: Encouraging Student Participation," pp. 131-139]

Handelsman, J., S. Miller, and C. Pfund. 2006 *Scientific Teaching*. New York: W.H. Freeman.

Nilson, Linda B. 2010. *Teaching at Its Best: A Research-Based Resource for College Instructors*. 3rd Edition. San Francisco: Jossey-Bass. [see Chapter 12, "Making the Lecture a Learning Experience," esp. pp. 117-122]

McClanahan, E.B., and L.L. McClanahan. 2002. *Active Learning in a Non-Majors Biology Class: Lessons Learned*. *College Teaching* 50(3): 92-96.