How to Incorporate Active Learning

What is Active Learning?

- Active learning is a lot of things and is hard to define. A simple definition is any instructional method that engages students in the learning process and requires students to do meaningful learning activities, while thinking about what they are doing. In order for learning to happen, active and strong connections must be made in the brain.

Overall Tips:

1) **Be explicit up front.** Students generally do not expect to be active participants. To ease that shock, let them know why you are using active learning and the benefits of being engaged.
2) **Be open.** Get into the habit of explaining the justification for your activities. Show them or tell them how an exercise or activity will be helping for their learning, for an exam, and even for their lives outside of the classroom.
3) **Vary your methods.** All of your students will be different and will most likely have different preferences. Using a variety of strategies and activities will meet those different needs and will keep students on their toes.
4) **Ask for feedback.** A part of being open and using a variety of techniques is talking about what works and what does not work with your group of students. It is important to ask for their input along the way so you understand their needs and help them learn.
5) **Do not forget to lecture.** Only doing activities will not be as effective. You still know a lot about the content and students will benefit from listening to you. Starting off with an overview of the topic, mini-lecturing when they are struggling, and summarizing at the end will help them learn.

Ways to be More Effective with Active Learning:

- Create a comfortable learning environment by building rapport with students.
- Learn students’ names and use them regularly.
- Show interest and enthusiasm for content and learning.
- Make eye contact often.
- Act confident and comfortable, yet approachable.
- Avoid pressuring or demeaning behavior.
- Watch for non-verbal cues of confusion/understanding.
- Avoid leading or yes/no questions.
- Ask open-ended questions.
- Encourage students to think out loud and share with peers.
- Allow students time to think (~12 seconds).
- Allow students to do most of the talking.
- Give praise for contribution and attempts at answering.
- Have students create their own guide, steps, rules, etc. for the content.
- Help students identify areas of improvement or need.
- Encourage testimony of successful skills for learning.
- Hold students accountable by calling on them often.
- Focus on learning how to learn subject matter.
- Request input and feedback consistently.
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Techniques to Use and Adapt:

**Assigned Discussion Leader:** Ask a student to present on a topic or review material for the group and then lead the discussion for the group. This technique works best when every student in the group is given an assignment to be the “expert” on.

**Brainstorming:** Introduce a topic or problem and then ask for student input. Give students a minute to write down their ideas, and then record them on the board. For example, “What are possible safety (environmental, quality control) problems we might encounter with the process unit we just designed?” could be a brainstorm topic.

**Case Studies:** Use real-life stories that describe what happened to a community, family, school, industry or individual to prompt students to integrate their classroom knowledge with their knowledge of real-world situations, actions, and consequences.

**Clarification Pauses:** This is a simple technique aimed at fostering “active listening”. Throughout a mini-lecture, particularly after stating an important point or defining a key concept, stop, let it sink in, and then (after waiting a bit!) ask if anyone needs to have it clarified. Or, ask students to review their notes and ask questions on what they’ve written so far.

**Critical Debates:** Students take the side of an issue that is in opposition to their personal views, then argue that side of the issue. This method helps students develop critical thinking skills and challenges assumptions.

**Jigsaw Discussion:** In this technique, a general topic is divided into smaller, interrelated pieces. Each student is assigned to read and become an expert on a different topic. After each person has become an expert on their piece of the puzzle, they teach the other team members about that puzzle piece. Finally, after each person has finished teaching, the puzzle has been reassembled and everyone in the team knows something important about every piece of the puzzle.

**Learning Cell:** Students develop questions individually, then quiz each other based on these questions. Compile and keep their questions for future use for practice quizzes. Encourage students to create questions based on notes, books, lecture, etc.

**Note-Taking Pairs:** Students combine information from their individual notes to create an improved partner version. Have the students discuss any inaccuracies, conflicts, or areas they were missing or need to improve. Point out that this method should help improve their own note-taking skills. Help explain and simplify notes when needed.

**Peer Review:** Students are asked to complete an individual homework assignment or short paper. Each student then takes their partner’s work and depending on the nature of the assignment gives critical feedback, corrects mistakes in problem-solving or grammar, and so forth.

**Round Robin:** Generate ideas by speaking in order, moving from one student to the next. Use this to ensure that all students participate. This can also be used when you want every student to respond to a question. It also encourage students to hear and learn from everyone in the group.

**Self-Assessment:** Students receive a quiz or a checklist of ideas to determine their understanding of the subject. Concept inventories or similar tools may be used at the beginning of the semester or the chapter for students to help students identify their misconceptions.
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**Think-Pair-Share:** Have students first work on a given problem individually, then compare their answers with a partner and synthesize a joint solution to share with the group.

**Turn to Your Partner:** Group members work with a partner on an assignment or discussion topic. This technique works best when you want students to quickly collaborate and share thoughts.

**Write-Pair-Share:** Same as think-pair-share, but the student must develop a written response on their own before sharing. This format works well for problem solving. In the pair step, partners can write a joint solution on the board to share with the large group.

**Writing Activities such as the “Minute Paper”:** At an appropriate point in the mini-lecture, ask the students to take out a blank sheet of paper. Then, ask the topic or question you want students to address; for example, “Today, we discussed conductive heat transfer. List as many of the principal features of this process as you can remember. You have two minutes – go!”

Remember...

[Image: The Learning Pyramid]

List Your Own Active Learning Techniques:

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To learn more go to:
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http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Prince_AL.pdf
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