

Active Learning

Active learning is a process whereby students engage in activities, such as reading, writing, discussion, or problem solving that promote analysis, synthesis, and evaluation of class content. Cooperative learning, problem-based learning, and the use of case methods and simulations are some approaches that promote active learning. This section provides links to bibliographies, research summaries, articles, and other resources about active learning.

Basic Elements of Active Learning

Talking and Listening

When students talk about a topic, whether answering a teacher's question or explaining a point to another student, they organize and reinforce what they've learned. When they listen, we want to ensure that it's meaningful listening, relating what they hear to what they already know. In a lecture class, students need periodic time away from passive listening in order to absorb what they've heard. And they need reasons to listen, reasons perhaps more immediate than a good grade at the end of the semester. Did the teacher ask a question before the lecture segment that was thought-provoking enough to cause the students to search for the answer in the words that followed? Were they told beforehand that they would have to explain the points in the lecture to a fellow student?

Writing

Like talking and active listening, writing provides a means for students to process new information in their own words. It is particularly effective in large classrooms where breaking students into pairs or groups may be prohibitive. It also appeals to individuals who prefer to learn independently.

Reading

Students do a great deal of their learning through reading, but they often receive little instruction in how to read effectively. Active learning exercises such as summary and note checks can help students process what they've read and help them develop the ability to focus on important information.

Reflecting

In the all-too-typical lecture class, the lecturer stops talking at the very end of the period. Students gather up their notes and books and run for their next class. One can almost see the knowledge evaporating from their brains. They've had no time to reflect, to connect what they've just learned with what they already know, or to use the knowledge they've gained in any way. Allowing students to pause for thought, to use their new knowledge to teach each other, or to answer questions on the day's topics is one of the simplest ways to increase retention.

Planning an Active Learning Activity

When planning an active learning activity, answering the following questions will help you clarify your goals and structure.

- What are your objectives for the activity?
- Who will be interacting? Will students pair up with someone beside them or someone sitting behind/in front of them? Should they pair up with someone with a different background? Someone they don't know yet?
- When does the activity occur during the class? Beginning? Middle? End? How much time are you willing to spend on it?
- Will students write down their answers/ideas/questions or just discuss them?
- Will students turn in the responses or not? If they are asked to turn them in, should they put their names on them?
- Will you give individuals a minute or so to reflect on the answer before discussing it or will they just jump right into a discussion?
- Will you grade their responses or not?
- How will students share the paired work with the whole class? Will you call on individuals randomly or will you solicit volunteers?
- If students are responding to a question you pose, how are you going to ensure that they leave with confidence in their understanding? (Often, if various student answers are discussed without the instructor explicitly indicating which ones are "right," students become frustrated. Even with a question that has no absolute "right" answer, students want to know what the instructor's stand on the question is.)
- What preparation do you need to use the activity? What preparation do the students need in order to participate fully?

Keys to Success

- Be creative! Invent new strategies and adapt existing ones to your needs.
- Start small and be brief.
- Develop a plan for an active learning activity, try it out, collect feedback, then modify and try it again.
- Start from the first day of class and stick with it. Students will come to expect active learning and perform better.
- Be explicit with students about why you are doing this and what you know about the learning process.
- Request students vary their seating arrangements to increase their chances to work with different people. Have students occasionally pair up with the student behind them, since friends often sit side by side.
- Use questions from in class activities on tests. For example, include a short essay question that was used in a think/pair/share.
- Negotiate a signal for students to stop talking.
- Randomly call on pairs to share.

- Find a colleague or two to plan with (and perhaps teach with) while you're implementing active learning activities.
- Continue learning through workshops, reading, and practice.

The modification of traditional lectures (Penner 1984) is one way to incorporate active learning in the classroom. Research has demonstrated, for example, that if a faculty member allows students to consolidate their notes by pausing three times for two minutes each during a lecture, students will learn significantly more information (Ruhl, Hughes, and Schloss 1987). Two other simple yet effective ways to involve students during a lecture are to insert brief demonstrations or short, ungraded writing exercises followed by class discussion. Certain alternatives to the lecture format further increase student level of engagement: (1) the feedback lecture, which consists of two minilectures separated by a small-group study session built around a study guide, and (2) the guided lecture, in which students listen to a 20- to 30-minute presentation without taking notes, followed by their writing for five minutes what they remember and spending the remainder of the class period in small groups clarifying and elaborating the material.

Active Learning Techniques

K-W-L chart- This K-W-L Chart, which tracks what a student knows (K), wants to know (W), and has learned (L) about a topic, can be used before, during, and after research projects.

Quick Write- A versatile strategy used to develop writing fluency, to build the habit of reflection into a learning experience, and to informally assess student thinking. The strategy asks learners to respond in 2–10 minutes to an open-ended question or prompt posed by the teacher before, during, or after reading.

Focused Listing- Focused listing is a strategy in which students recall what they know about a subject by creating a list of terms or ideas related to it. To begin, the instructor asks students to take out a sheet of paper and begin generating a list based on a topic presented on a PowerPoint slide. Topics might relate to the day's assigned reading, to a previous day's lecture material, or to the subject of the current session.

Read, pause, Reflect- The Pause and Reflect strategy involves a continual evaluation of one's own understanding by periodically summarizing what is being read. The reading assignment is divided into logical, equal parts. Students note a main K-point, a question, and a connection for each session.

Case Studies- With case-based teaching, students develop skills in analytical thinking and reflective judgment by reading and discussing complex, real-life scenarios. The articles in this section explain how to use cases in teaching and provide case studies for the natural sciences, social sciences, and other disciplines.

Think-Pair-Share- 1) Think. The teacher provokes students' thinking with a question or prompt or observation. The students should take a few moments (probably not minutes) just to THINK

about the question. **2) Pair.** Using designated partners PAIR up to talk about the answer each came up with. They compare their mental or written notes and identify the answers they think are best, most convincing, or most unique. **3) Share.** After students talk in pairs for a few moments (again, usually not minutes), the teacher calls for pairs to SHARE their thinking with the rest of the class. She can do this by going around in round-robin fashion, calling on each pair; or she can take answers as they are called out (or as hands are raised). Often, the teacher will record these responses on the board.

Graphic Organizers- Help your students classify ideas and communicate more effectively. Use graphic organizers to structure writing projects, to help in problem solving, decision making, studying, planning research and brainstorming.

SQ3R_ survey, question, read, recite, and review. The first step **Survey** or [skim](#) advises that one should glance through a chapter in order to identify headings, sub-headings and other outstanding features in the text. This is in order to identify ideas and formulate questions about the content of the chapter. Formulate **questions** about the content of the reading. Use the background work done with "S" and "Q" in order to begin **reading** actively. Using key phrases, one is meant to identify major points and answers to questions from the "Q" step for each section. This may be done either in an oral (**recite**) or written format. It is important that an adherent to this method use her own words in order to evoke the active listening quality of this study method. This method instructs the diligent student to immediately **review** all sections pertaining to any key words forgotten.

Think Aloud- The think-aloud strategy asks students to say out loud what they are thinking about when reading, solving math problems, or simply responding to questions posed by teachers or other students. Effective teachers think out loud on a regular basis to model this process for students. In this way, they demonstrate practical ways of approaching difficult problems while bringing to the surface the complex thinking processes that underlie reading comprehension, mathematical problem solving, and other cognitively demanding tasks.

Problem-Based learning*- Students engage complex, challenging problems and collaboratively work toward their resolution. PBL is about students connecting disciplinary knowledge to real-world problems.

Clickers- Audience response systems (clickers) are hand-held devices that allow students in the classroom to instantly provide feedback, answer questions, and vote in response to questions posed. Clickers, or student response systems, are a technology used to promote active learning. Most research on the benefits of using clickers in the classroom has shown that students become engaged and enjoy using them.

Summarizing techniques- Don't Look Back helps convince students that this process works and gives them the confidence to rely on their memory and their comprehension of material studied. Use this strategy frequently in class on reading assignments that include themes and concepts you want students to be able to identify and recall.

Opening(Warm-up) Questions- Beginning your lesson plans with a five-minute warm up or ice breaker can serve to focus your students on the topic, open up creative thinking, and help them to apply the learning in new ways. The feedback you get from students also gives you an instant reading on where their heads are.

Developing Questions- The goal of classroom questioning is not to determine whether students have learned something (as would be the case in [tests, quizzes, and exams](#)), but rather to guide students to help them learn necessary information and material. Questions should be used to *teach* students rather than to just test students! Bloom's taxonomy contains six levels, which are arranged in hierarchical form, moving from the lowest level of cognition (thinking) to the highest level of cognition (or from the least complex to the most complex): Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation

QAR- QAR is a reading strategy for deepening comprehension and a classroom tool for having meaningful text-based discussions in which students direct the focus. Questions are categorized into four types - Right There, Think and Search, Author and Me, and On My Own. Using text from either the core curriculum or supplemental materials, students develop all four types of questions, then pose their questions to their peers, who in turn answer the questions and identify their type.

Cooperative Learning*- Cooperative learning is a successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement. Students work through the assignment until all group members successfully understand and complete it.

Note Check- The note check is a strategy in which the instructor asks students to partner with someone near by and compare their notes, focusing on summarizing key information and locating misconceptions. Students can also generate questions or solve a problem posed by the instructor. The exercise can be completed in as little as two or three minutes.

Manipulatives- Manipulatives are multisensory tools that help students learn more by experiencing hands-on situations: building and creating, taking apart, combining shapes, sorting and classifying. They also provide students another form of communication, allowing them to build a model or represent their ideas concretely.

Entrance/Exit Tickets- Pre and post lesson questions/slips of paper or notecards, Provide students with notecards, or mini-slips of paper at the beginning or end of class that poses an open-ended question about information related to in class content.

3-2-1- At the end of lesson or a reading have students take out a sheet of paper and write down 3 things they learned from day's topics, 2 things they found interesting, and 1 question they still have. You can choose to collect the information or have a class discuss at the beginning of the next day's course. For more information on 3-2-1 go to: <http://www.readingquest.org/strat/321.html>

What It Is and What It Is Not- Give students a list of related vocabulary terms, topics, or concepts. Have them fill out a chart similar to this [one](#). It is important that students fill out the portion on describing what "what it is not" because this help them to develop cognitive associates of what something is, and what it is not.

I Have...Who Has..- Pass out the index cards to students (make sure you know which student has the starting card for lesson). Ask starting student to read their card "I have...who has... next student will answer and this routine will continue until you get back to the card of the student who started the lesson. Here is an example of how it will go.

Example of I Have...Who has:

Starting student: " I have George Washington, who has the branch of government that makes the laws?"

Next Student: "I have the Legislative Branch, who has the form of government we have in the U.S.?"

Next Student: "I have representative democracy. Who has the principle of government used by the Supreme Court?"

Next Student: "I have judicial review. Who has the first president of the U.S.?"

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