

Active Learning Strategies and Role of the Teacher

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Abstract

Active learning is a multi-directional learning experience in which learning occurs, teacher-to-student, student-to-teacher and student-to-student involving activity-based learning experiences: input, process and output. This is an umbrella term that refers to several models of instruction that focus the responsibility of learning on learners. It engages students in two aspects – doing things and thinking about the things they are doing. There are four basic activities through which all students learn, and specific active learning strategies use one or more of these elements talking and listening, writing, reading and reflecting. It aims to enhance the student learning, increase retention among students, improve higher level thinking skills, increase percentage of academic achievement etc., by employing numbers of teaching strategies including group discussions, problem solving, case studies, role plays, journal writing, and structured learning groups. The benefits to using such activities are many. They include improved critical thinking skills, increased retention and transfer of new information, increased motivation, and improved interpersonal skills. Some examples of active learning strategies in small and large classes and with all level of students are given below.

KEYWORDS: Active learning, learner, strategy, group activity, academic achievement.

Active Learning is a multi-directional learning experience in which learning occurs, teacher-to-student, student-to-teacher and student-to-student. It involves activity-based learning experiences: input, process and output. These activity-based experiences take many shapes; those are whole class involvement, teams, small groups, trios, pairs, individuals. Activity-based experiences take many forms talking, writing, reading, discussing, debating, acting, role-playing, journaling, conferring, interviewing, building, creating, and the list continues.

The term "cooperative learning" covers the subset of active learning activities which students do as groups of three or more, rather than alone or in pairs; generally, cooperative learning techniques employ more formally structured groups of students assigned complex tasks, such as multiple-step exercises, research projects, or presentations. Cooperative learning is to be distinguished from another now well-defined term of art, "collaborative learning", which refers to those classroom strategies which have the instructor and the students placed on an equal footing working together in, for example, designing assignments, choosing texts, and presenting material to the class. Clearly, collaborative learning is a more radical departure from tradition than merely utilizing techniques aimed at enhancing student retention of material presented by the instructor; we will limit our examples to the "less radical" active and cooperative learning techniques. "Techniques of active

learning", then, are those activities which an instructor incorporates into the classroom to foster active learning.

It is an educational process where students become vigorously engaged in assimilating the material being taught rather than absorbing it passively in a lecture format. For example, active learning within a business context might include performing more academic activities like reading, writing, analysis and evaluation, as well as participating in discussion and problem solving groups.

Good students may create meaning from passive methods, but weak students do not. Both types of student improve their learning enormously when they are required to use it.

Basic Elements.

There are four basic activities through which all students learn, and specific active learning strategies use one or more of these elements.

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.

OBJECTIVES.

- ◆ To enhance the student learning greatly.
- ◆ To increase retention among students.
- ◆ To improve student – faculty interaction.
- ◆ To develop communication skill.

- ◇ To improve higher level thinking skills.
- ◇ To increase percentage of academic achievement.
- ◇ To stimulate lifetime habits of thinking to stimulate students to think about HOW as well as WHAT they are learning and to increasingly take responsibility for their own education."

Active Vs. Passive Learning.

ACTIVE LEARNING	PASSIVE LEARNING
<p>The Student</p> <ul style="list-style-type: none"> ➤ The instructor strives to create "a learning environment in which the student can learn to restructure the new information and their prior knowledge into new knowledge about the content and to practice using it" (TPE p.425)* ➤ students activities during class time; <ul style="list-style-type: none"> in my classes, examples are * the Daily In-class Quizzes * the Modified Socratic Method ➤ students are expected to look up definitions and vocabulary before and after class ➤ the instructor provides examples and illustrations of geologic concepts, processes and features <ul style="list-style-type: none"> *visual aids, demonstrations, etc., integrated into class presentations ➤ the instructor explains concepts, principles and methods for geologic interpretation <ul style="list-style-type: none"> students practice applying these skills to geologic interpretation. ➤ "facts and concepts must be tested and used to be learned" (TPE p. 425)* ➤ "students develop skills in constructing and using knowledge with the instructor's guidance" (TPE p. 425)* ➤ "various active learning methods, including lecturing" (TPE, p. 425)* 	<p>The Student</p> <ul style="list-style-type: none"> ➤ "students are assumed to enter the course with minds like empty vessels or sponges to be filled with knowledge" (TPE p.424)* ➤ "traditional class": lecturing instructor verbalizing information to passive note-taking students ➤ mostly verbal lectures ➤ instructor is "verbal" textbook ➤ instructor reads definitions to the class ➤ student is an "empty" vessel <ul style="list-style-type: none"> to be filled with knowledge ➤ student is passive "tape recorder" ➤ on exams, students regurgitate what the instructor tells them
<p>The instructor (after TPE p. 426*)</p> <ul style="list-style-type: none"> ➤ is current in knowledge of content and attempts to master the content 	<p>The instructor (after TPE p. 426*)</p> <ul style="list-style-type: none"> ➤ there is a general expectation that the instructor will have total

<ul style="list-style-type: none"> ➤ develops, learns and employs pedagogical content knowledge (has thought about HOW to teach each topic) ➤ sets explicit standards for learning and classroom environment ➤ facilitates and guides (but does not provide all of the answers or examples) ➤ is a coach and a facilitator (not a verbal textbook or an answer machine) ➤ "mentoring means turning students into lifelong learners and, for the students majoring in the discipline, it means [turning] them into apprentices on the way to becoming colleagues" ➤ learns how to teach ➤ reflects more on their teaching 	<p>mastery of the discipline and that any such expert can teach</p> <ul style="list-style-type: none"> ➤ the instructor only needs to know their discipline -- they do not have to know how to teach
<p>Students are expected to</p> <ul style="list-style-type: none"> ➤ "care deeply about their own education" ➤ "learn to monitor and discuss their own learning" ➤ collaborate with "other students to discover and construct a framework of knowledge that can be applied to new situations" ➤ (after The Two Paradigms of Education and the Peer Review of Teaching 	<p>Students are expected to</p> <ul style="list-style-type: none"> ➤ "record and absorb knowledge" (after TPE p. 426*)
<p>Such teaching is considered to be complex and professors cannot simply compile their course notes over a year or two and then repeat the course year after year with little or no effort. Such teaching is dynamic and the continual revisions to teaching and delivery methods, visual aids, demonstrations, etc. are endless.</p>	<p>Such teaching is considered to be a routine activity (after TPE p. 426) where professors can compile their course notes over a year or two and then repeat the course - year after year with little or no effort.</p>
<p>Comparison of amount learned The Student</p> <ul style="list-style-type: none"> • <i>The instructor strives to create "a learning environment in which the student can learn to restructure the new information and their prior knowledge into new knowledge about the content and to practice using it" (TPE p.425)*</i> • students activities during class 	<p>Comparison of amount learned The Student</p> <ul style="list-style-type: none"> • <i>"students are assumed to enter the course with minds like empty vessels or sponges to be filled with knowledge" (TPE p.424)*</i> • "traditional class": lecturing instructor verbalizing information to passive note-taking students

<p>time; in my classes, examples are</p> <ul style="list-style-type: none"> o the Daily In-class Quizzes o the Modified Socratic Method <ul style="list-style-type: none"> • students are expected to look up definitions and vocabulary before and after class • the instructor provides examples and illustrations of geologic concepts, processes and features <ul style="list-style-type: none"> o visual aids, demonstrations, etc., integrated into class presentations • the instructor explains concepts, principles and methods for geologic interpretation • students practice applying these skills to geologic interpretation • "facts and concepts must be tested and used to be learned" (<i>TPE p. 425</i>)* • "students develop skills in constructing and using knowledge with the instructor's guidance" (<i>TPE p. 425</i>)* <p>"various active learning methods, including lecturing" (<i>TPE, p. 425</i>)*</p>	<ul style="list-style-type: none"> • mostly verbal lectures • instructor is "verbal" textbook • instructor reads definitions to the class • student is an "empty" vessel to be filled with knowledge • student is passive "tape recorder" • on exams, students regurgitate what the instructor tells them
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* TPE= "The Two Paradigms of Education and the Peer Review of Teaching", by Dean A. McManus, School of Oceanography and Center for Instructional Development and Research, University of Washington, Box 357940, Seattle, WA 98195-7940; in the NAGT Journal of Geoscience Education, Vol. 49, No. 6, Nov 2001, pp. 423-434. Material obtained from: <http://lpc1.clpccd.cc.ca.us/lpc/hanna/learning/activevspassive.htm#such>

ACTIVE LEARNING STRATEGIES

There are numbers of teaching strategies that can be employed to actively engage students in the learning process, including group discussions, problem solving, case studies, role plays, journal writing, and structured learning groups. The benefits to using such activities are many. They include improved critical thinking skills, increased retention and transfer of new information, increased motivation, and improved interpersonal skills. Some examples of active learning strategies in small and large classes and with all level of students are given below.

Think/Pair/Share

The objectives are to engage the class with the material on an individual level, in pairs, and finally as a large group. The activity can help to organize prior knowledge;

brainstorm questions; or summarize, apply, or integrate new information. Approximate time: six to eight minutes.

The procedure is as follows:

- ✚ individuals reflect on and write brief notes for one minute in response to a question;
- ✚ students pair up with someone sitting near them and share their answers verbally for two to three minutes, or they may choose to work together to create a better answer;
- ✚ the instructor randomly chooses a few pairs to give thirty-second summaries of individual or joint answers.

Question and Answer Pairs: The objective here is to engage individuals with readings and then to pair them to answer particular questions. This helps to increase motivation to read before the class, to deepen the level of analysis of articles, and to practice explaining difficult concepts. Instructors may choose to model the kinds of questions that are appropriate to this exercise or somehow indicate the level, content, or scope of appropriate questions. Approximate time: five to ten minutes.

The procedure is as follows:

- ❖ students read the assignment before class and compose one or two questions about it;
- ❖ in class, the students pair up; A asks a prepared question and B responds; then B asks a prepared question and A responds;
- ❖ the instructor may ask students to turn in their questions and summary answers.

Note-checking Pairs: The objective is to engage students with their notes during class in order to integrate their notes on new material with previous material, to clarify major and minor points, and to increase accuracy in note-taking. Approximate time: two to five minutes.

The procedure is as follows:

- at the end of a lecture segment (15 minutes is a good length), students pair up to complete a task with their notes; for example, they could summarize the three major arguments of the lecture, choose the most important idea that will appear on the exam, check the accuracy of some information, or use the notes to solve an example problem;
- the instructor may generate a question from the group for the pairs to work on; the instructor may ask students to turn in their answers.

Games : Games such as jeopardy and crossword puzzles can be adapted to course material and used for review, for assignments, or for exams. They can be used at the individual, small group or full class levels. There are now some computer programs, for example, to help you create crossword puzzles.

Analysis or reactions to videos: Videos offer an alternative presentation mode for course material. Videos should be relatively short (5-20 minutes). Screen them to make sure they are worth showing. Prepare students ahead of time with reaction or discussion questions or a list of ideas on which to focus; this will help them pay

attention. After the video, have them work alone or in pairs to answer critical questions, write a "review" or reaction, or apply a theory.

Student debates: These can be formal or informal, individual or group, graded or not, etc. They allow students the opportunity to take a thesis or position and gather data and logic to support that view, critically. Debates also give students experience with verbal presentations. Some faculty members ask students their personal view on an issue and then make them argue the opposite position.

Student generated exam questions: This can be used for review or for the actual exam. This technique helps students actively process material, gives them a better understanding of the difficulties of writing reliable and valid exam questions, helps them review material, and gives them practice for the exam.

Mini-research proposals or projects; a class research symposium

Have the students work on designing a research study on a topic from the class. In some situations, you may be able to have them collect data during class time (observe some situation or give out some short surveys) or you may have them doing this as part of an outside-of-class project. Either way, have students present their research in a class research symposium similar to what we do at professional meetings. Invite other faculty and students.

Analyze case studies: Bring in case studies for students to read (for example, I will put a case example of sexual harassment on an overhead). Have students discuss and analyze the case, applying concepts, data, and theory from the class. They can work as individuals or in groups or do this as a think-pair-share. Consider combining this with a brief in-class writing assignment.

Keeping journals or logs: Have students make journal or log entries periodically (on paper or computer, in or outside of class). Require a brief critical reflection or analysis of each entry as well. For example, in my gender class, students must record instances of sex inequality (sex discriminations, sexism, sexual harassment against women or men) they observe. They then discuss this instance applying course terms and theories. Be aware of ethical issues if you ask students to record and analyze personal events or issues.

Write and produce a newsletter: Have small groups of students produce a brief newsletter on a specific topic related to class. Students should include articles with relevant research, post information on upcoming related public events, and so on. Share these with faculty and students in related courses or in the major.

Concept mapping: Here students create visual representations of models, ideas, and the relationships between concepts. They draw circles containing concepts and lines, with connecting phrases on the lines, between concepts. These can be done individually or in groups, once or repeated as students acquire new information and perspectives, and can be shared, discussed, and critiqued.

Two Column Method

Before solving a problem or applying concepts, a discussion leader can help participants more fully consider a problem or issue or concept by employing a two-column method of generating and recording responses to a prompt – eg, "A Positive

Classroom Looks and Sounds Like/ Doesn't Look Like This." Head two columns on the board/flip chart with "Looks/Sounds Like" and "Doesn't Look/Sound Like" and ask the participants for ideas, observations, recalling of presentation information that will support one side of the board or another. You might ask half the room to be initially responsible for the two minutes of listing "Favourable to A" and the other half to provide "Favourable to B" listing; then you could take a minute to have participants generally add to this base of information and/or generate a "Creating C from A & B" column. This technique can be quite effective in moving a group discussion from basic ideas toward considerations of how to apply those ideas; the listing can provide a base of ideas from which potential problems as well as benefits/successes/possibilities can be identified so that participants can begin a next stage of discussion

Reciprocal Questioning

The facilitator provides question stems, such as the following:

Comprehension Question Stems

Describe...in your own words.

What does...mean?

Why is...important?

How could...be used to...?

Connector Question Stems

Explain why...and how...

How are...and...similar?

How are...and...different?

How does...tie in with...that we learned before?

Participants then develop specific questions from the given stems and provide answers. Students can work individually, with a partner, or in a small group.

Numbered Heads Together

Here participants work in groups (large or small). To begin, a group member asks a question, then others in the group put heads together and make sure everyone knows the answer. To close, the question asker picks one from the group to answer the question. This can also be done with two or even several teams, where Team One asks Team Two a question. Team Two puts heads together and makes sure team members know the answer. Then Team One selects a Team Two person to answer the question.

Corners

The leader of the day places content (or flipchart with question) in each corner of the room. Groups of 3-6 people move from corner to corner and discuss answer(s) to each posed question. The groups develop a consensus and write their answer directly on each flipchart. When the flipchart has an answer already written by a previous group, the next group revises/expands/ illustrates that response with additional information, if possible. Different coloured markers can be used for each group to see what each group wrote for each question.

Problem-Based Learning

Present a problem to the class/group. The problem needs to be based on an authentic situation that the participants could actually encounter. Partners or small groups must

apply the presented information to address the problem. They may address the problem deductively (determine what is causing the problem) or inductively (analyze the issues and identify the problem).

Shared Brainstorming

Presenter disseminates sheets of paper to each small group of 3-5 people. On each sheet is a different question. Team members generate and jot down answers to the given question. The presenter then instructs each group to rotate to another sheet containing a different given question to answer. Depending on the time available, this procedure is repeated, giving each group the opportunity to respond to as many questions as possible. At the end of this activity, each group returns to their original question sheet, reviews the given responses, generates a summarization of ideas, and shares their conclusions etc. with the entire group.

•**Clarification Pauses** - This is a simple technique aimed at fostering "active listening". Throughout a 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. You can also circulate around the room during these pauses to look at student notes, answer questions, etc. Students who would never ask a question in front of the whole class will ask questions during a clarification pause as you move about the room

ADVANTAGES

1. It take the student out of a passive role and create an environment where he or she can practice the skills that need to be developed.(Seeler et.al,1994)
2. Active learning and utilization of various activities that in corporate this approach facilitates active knowledge construction which in turn improves memory (step,2000)
3. In addition to memory enhancement; active learning demands more high-order thinking skills than does passive learning.
4. Individual students may get stuck on a problem and give up, where groups of students tend to keep going.
5. Students become exposed to alternative problem-solving strategies.
6. Students are much less fearful of generating and answering questions among themselves than individually and directly to the instructor in class.

Difficulties of using active learning.

One possible drawback from incorporating this type of learning into the classroom is that it could possibly force teachers to cover less material within a given time frame than would otherwise be the case. Active learning involves the application of knowledge during class activities, which provides students with opportunities to practice with newly learned material, but this is also a time consuming process.

Role of the teacher in making active learning work.

- ✚ The teacher should overcome the student resistance to active learning.
- ✚ He should counter student complaints about active learning.
- ✚ He should maintain control of his classroom during active learning.
- ✚ He should manage time pressures when using active learning.
- ✚ He should try to handle dysfunctional groups.

- ✚ He should ensure quality peer review of writing.
- ✚ He should come to the classroom before the period begins to chat informally with students as they arrive.
- ✚ He should make the students realize that they count as individuals.
- ✚ He should start teaching with students talking several times by giving easy exercise.
- ✚ He should reward students for participating classroom teaching.
- ✚ He should get to know the students by name, starting the first day.

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