

Collaborative Learning Techniques (CoLTs)

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Reciprocal Teaching

THINK-PAIR-SHARE

This process requires three stages. The students should be given a question, concept, or problem and then encouraged to think about it alone for a (short) designated time period. Then they pair with another student and discuss what they found individually for an additional time period. Lastly, the pairs join the large group and discuss their conclusions as a whole.

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STRUCTURED PROBLEM SOLVING

Identify the steps in solving the particular problem, and separate the students into groups. Because the steps for solving the problem are given, it is easier for the students to handle large complex problems and they have greater confidence. Assign them a sample problem and give them a specific time period, at the end of which the group must have reached a consensus for the answer. Ask the students to report their solution and explain the steps that led to their answer. This strategy is most helpful for larger multi step problems.

Collaborative Learning Techniques, Barkley, Cross & Major

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JIGSAW

Similar to divide and conquer, this is a method of making the group as a whole dependent on subgroups. A large group is divided into 2 or more groups (3-4/ group) and each group is assigned a topic/task/step in problem etc. becoming an "expert". Students then move from their expert group to a new jigsaw group in which each student acts as the only expert in their specific topic and teaches the material to rest of group. Each new jigsaw group consists of 3-4 students prepared to teach subject to peers.

Collaborative Learning Techniques, Barkley, Cross, Major

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RECIPROCAL QUESTIONING

This strategy improves students' questioning and reasoning skills by encouraging the students to consider the quality and type of question. The leader should prepare ten to twelve varied questions over an important lecture or section of text. Once at the session, ask the students to read or review the assigned material to understand it 100%. Then, allow them to ask you questions. If students' questions extend beyond the reading, model your think process for them. After students have finished asking their questions, begin by asking them questions directly from the text or lecture. Then move on to higher order questions (refer to leader manual pg. 30-31). Finally, lead a discussion concerning what type of questions were asked? What were the differences and similarities between the students' and leader's questions?

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SUMMARIZE LECTURE

As a group, summarize the lecture from the previous class. You may have to provide prompts for the students. For example, "The first concept discussed was Civil Liberties and Public Policy, what did the professor highlight regarding this?" You may want to ask them to try summarizing without looking at their notes; however, if they are having a difficult time remembering, tell them to refer to their notes.

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Reciprocal Teaching

IDENTIFY THE “BIG IDEA”

Ask each student to tell what he or she thought was the most important concept, idea or new information they learned during a particular lecture or even a session. “if you could only take one thing from the information present, what would it be?” Ask each student to offer a different “take home.” Students often feel overwhelmed by the sheer volume of information they have to deal with and this technique helps them identify and organize the information presented.

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BOARDWORK MODEL

This is a method of organizing board work in order to facilitate an understanding of problem-solving strategies. The board should be divided into 4 sections:

- 1- Prerequisite knowledge,
- 2- Mathematical steps,
- 3- Narrative of the steps,
- 4- Additional sample problem

Encourage one student to fill out section 1 on the board. Then, encourage two students to simultaneously complete section 2 and 3 on the board. Lastly, have another student complete the 4th section. Encourage students to use this model when studying outside of the SI session.

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SEND A PROBLEM

This strategy can work in pairs or individually depending on size of group. Works well in Math and Chemistry after a new concept has been taught to check for understanding.

Generate a list of problems and assign each a different problem. Have students complete Step 1. After a minute have them pass their problem to the right and then complete Step 2. Continue process until all steps are complete.

Collaborative Learning Techniques; Barkley, Cross, Major

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DIVIDE AND CONQUER

This strategy is designed to conquer a difficult reading assignment. The assignment should be divided up into meaningful sections and each student (or group) should be assigned one section. Ask the students to read and summarize their section. After they all have read the material, have each student read aloud their summary. Encourage students to ask questions and be prepared to emphasize areas students may have overlooked. Lastly, discuss the article as a whole.

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ASSIGNED DISCUSSION LEADER

One person in the group is asked to present on a topic or review material for the group and then lead the discussion for the group. This person should not always be the regular group leader.

Hints:

- When assigning a discussion topic to individual members of the group, you may need to be prepared to allow a little time for the person leading the discussion to prepare for the discussion.
- This technique works best when everyone or nearly everyone in the group is given an assignment to be the “expert” on.

The Leaders Guide to SI

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Learning Strategies

PEER LESSONS

Select several problems over related material. Divide the students into 4-5 groups. Give each group one problem and have them write out the solution, using their textbook and class notes, on a transparency or at the board. Have each group come up and explain the problem in as much detail as they can. Have them show their thought processes and methods used in finding the solution. The SI leader adds or corrects anything he/she feels is necessary.

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INCOMPLETE OUTLINE

Create a set of incomplete lecture notes by making an outline with some of the parts missing. Example:

Events that led to the start of WWI

- 1.
- 2.

The groups must then work through their notes to figure out how to fill in the outline. The incomplete outline is an excellent means of helping the students recognize the main points and the organizational pattern of information given in lecture. It can also be used for the textbook information. Determining the major points can help to sort information and locate the ideas being communicated, making connections easier to find and understand. It helps the students figure out what is important.

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VISUALS

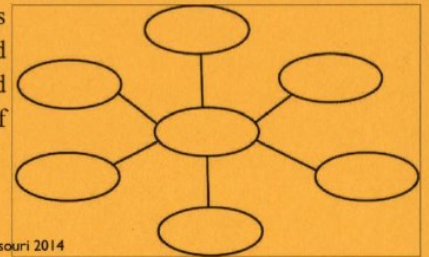
Don't forget the importance of using visual study aids to emphasize important points. Visuals should be used to help students grasp the "big picture." The key idea is to visualize the information and use as few words as possible.



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CONCEPT MAPPING

This strategy will look like a big spider web on the board when you are finished. Have the students break into small groups and encourage them to identify the central word, concept, or question around which to build the map. Start with a circle in the middle of the board and include the main idea within. Extend branches out from the central circle that includes all the subtopics from the main idea. Continue to add additional branches with related topics and circle groups of branches that are linked. This mapping encourages students to see the overall picture and helps bring focus away from minute details and back to the main ideas. End with an overall discussion of the topic.



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Think Aloud

Model for students the thought processes that takes place when difficult material is read. Use think aloud, verbalize your thoughts while you are reading orally or working out a problem. Students will understand comprehension strategies better because they can see how the mind can respond to thinking through trouble spots and construct meaning for themselves from the text.

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Comprehension & Review

TURN TO A PARTNER

Group members work with a partner on an assignment or discussion topic.

Hints:

- This technique works best with group participants who have already been provided with enough background on a subject that they can immediately move to a discussion with their partner without previewing or reviewing concepts.

The Leaders Guide to SI.

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INFORMAL QUIZ

The quiz should consist of 5-7 questions that are read aloud by the SI leader. The questions should require short multiple answers and focus on particulars of major points. The students should not be encouraged to talk or share answers; however, they can refer to notes or text book. If they do not have the answer they can write down the question. The quiz should be followed by a debriefing where the short answers to the questions are expanded upon through discussion. Allow the students to answer the questions in any order, have the student restate the question and give their answer. Allow time for other students to concur or disagree and encourage discussion.

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3:2:1

This strategy can be very useful before an exam. Have each student come up with: 3 topics that they know well enough to “teach” to the other students, 2 topics that they do not understand and need further assistance with, and 1 possible test question. Then have each student write their 3:2:1 topics on the board. Most of the time, the students’ topics will overlap allowing students to “teach” the other students who need additional assistance. Follow up with discussion of the possible test questions.

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PREDICT TEST QUESTIONS

Put students in groups of two or three and assign them to write a test question for a specific topic, ensuring that all topics have been covered. Ask students to write their question on the board or on an overhead for discussion (would the professor ask this question?, what is the answer?, etc.) Students will have the benefit of learning to think like the teacher and they’ll be able to see additional questions that other students have written.

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LEARNING CELLS

To engage students in thinking about the content, encourage them to generate thought provoking questions and check for understanding.

- 1) Students develop list of questions & answers over course material;
- 2) Form pairs;
- 3) Student A asks the first question and student B answers. Student A offers corrections, clarification, additional info if needed;
- 4) Student B asks next question and student A answers.
- 5) Process continues until all questions are answered.

Encourage students to ask more open ended questions and to vary the types of questions.

Collaborative Learning Techniques; Barkley, Cross, Major

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Comprehension & Review

CLUSTERS

In clusters, group participants are divided into smaller groups for discussion. They may also be allowed to self-select the small group they want to be in. After discussing the assigned topic the cluster may report their findings to the large group.

Hints:

- If possible, see that each group is provided a space on the board to record important points of their discussion.
- Allow time for each group to report back to the large group. You may have to assign someone from each group to report back.

The Leaders Guide to SI.

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PLANNING EXTENDED REVIEW SESSIONS

Reviews should fall at least 2 days prior to the exam to allow students time to continue to study. Remember a balance must be struck between quality and quantity. Generally the best strategies utilize small groups, which allows for students to get more contact to understand the material. Plan to discuss the kinds of questions to expect on exams.

Useful strategies for extended sessions:

- **Divide and Conquer:** Cover lots of info in short amount of time. Use for going over notes, texts or sample tests.
 - **Matrices:** Allows you to compare/contrast in an organized way. Structure so students have enough time (in small groups) to determine title, subjects, categories, but can still complete outside the session.
- Reciprocal Questioning:** Helpful when students want to ask you questions. During this process the leader continues to redirect questions. By timing the asking and answering, the leader keeps the session moving quickly.

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JEOPARDY

This is a fun way to check to see if students know the material well enough for a test or quiz. The key is being well prepared with about 30-35 “answers” at different levels of difficulty and in different categories. Form small groups and let them know the rules: No books or notes. Designate a different person to answer each question but the team can discuss the concept before giving the answer. If the question is missed, other teams can steal. Teams keep control of the board with correct “questions” or alternate from group to group.

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GRAB BAG

This started out as a MLA grab bag where each student had to pull out a magazine, a paper, or a text book, etc. and reference it properly as if they were writing a theme paper. Other leaders realized that this idea could be adapted to objects that have to be identified and explained in a Biology session or word problems on cards in a hat for Math sessions. The options are bound only by your imagination. The intrigue, of course, is in not knowing which one you will pull out.

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FIRST LINE ONLY

Problem-solving courses, particularly in the Sciences, are often perceived as major obstacles for many students. Frequently, students do not know where to commence or approach a problem. The First Line Only Strategy is particularly useful for students who need to be encouraged “to take the first step” towards finding the solution. In order to complete this exercise, the following is recommended: Firstly, you need to present a variety of types of problems so that the learner builds confidence in addressing the first level of the problem. Secondly, you will also need to give a strict time limit so that only the first step towards the solution is addressed,

e.g. for Calculus, *Instructions: Examine the problems below and tell how you would begin the solution to each one:*

1. $\lim_{x \rightarrow 0^+} (\sin x)^x$ 2. $\lim_{x \rightarrow 0} \frac{(\sin x)}{x}$, etc.

You may want to follow this exercise with a matrix or Boardwork Model that assists them in further categorizing how to solve problems.

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Open & Close the Session

ONE MINUTE PAPER

The one minute paper is designed to help students realize what they know or do not know i.e. 'check for understanding'. The leader should ask the students to take out a piece of a paper and write on the topic presented by the leader. Remind them it is most important that they put their thoughts on paper in their own words, not that they produce polished piece of writing. Then have each student share their response with the group. Additionally, the leader may choose to encourage conversation regarding similarities and differences between students' ideas.

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CONDUCTING SESSIONS

Redirecting Questions is used to encourage more and better student to student interaction. Whenever possible, ask students to answer questions directed at you.

Wait Time is the time that elapses between an SI leader-initiated questions and the next behavior (student response or leader talking again).

Wait Time 1: time the leader waits after asking a question.

Wait Time 2: time the leader waits after a response.

Checking for Understanding is essential that students can explain the discussed topic in their own words so the leader knows that students understand before proceeding to the next topic.

Leader Resource Manual

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NOTE REVIEW

This is a method of getting the students to work together to review and augment their lecture notes in an organized way. In small groups, have the students take turns reading a portion of his/her notes. Encourage other students to interject with details missed or questions about the topic. Give students time to add information to their notes between turns. Follow up with a short discussion in which students share what note-taking strategies they find effective. Suggest that when students take notes in the lecture they include an "SI question" in the margin for the aspects in the lecture they would like to discuss in the SI session. Sometimes it is difficult to recall what those questions were if SI sessions are not right after the lecture!

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SUMMARIZING THE PROCEDURE/STEPS

This technique reviews the process of the learning that has taken place. It is important to cover how an answer was obtained rather than just making sure the answer was correct. This technique will insure that they will be able to satisfactorily complete more of the same type of problems in their homework or on a test.

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VERBAL VOLLEYBALL

In pairs students will review as many key concepts from class that they can remember. Student A will shout out any concept, idea, issue covered in class (make sure student explains idea), followed by student B. Students will continue volleying concepts back & forth until they run out of ideas. They cannot repeat something said by their partner. Spend approx. 8-10 min.

Once in large group ask students for 1 concept/ idea and explain it. Once all have shared, the leader can list any concept that may have been missed or needs further discussion. This is a good opener or closing activity for reviewing class material. It can engage all learners in the review and work in large or small groups.

Creative Learning: Activities & Games that Really Engage People; Robert W. Lucas

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Open & Close the Session

ASSESS THE SESSION

Occasionally getting feedback from your groups can be very helpful. Ask them how they feel the session went:

- Were all of their questions answered?
- Did they feel comfortable during the session?
- Were there aspects of the session that could have been improved or done differently?
- What suggestions would they make for being able to cover more material or to cover it more thoroughly?
- They may have valuable ideas that you may be able to utilize in your next session.

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NOTE CARDS

Note cards can be used for vocabulary, formulas, concepts, questions, etc. Take a stack of index cards with you to your session and have the students construct the cards during the session. Be sure to show the students how to make them and how to use them during your session. Write the cue or question on one side of the card and write the definition, description, or answer on the other side. Note cards are also portable and can be used as a quick review before tests and exams. Encourage the students to place the relevant cards in a place where they can see them regularly to assist them in remembering important information.

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PREDICT THE NEXT LECTURE TOPIC

This technique helps students prepare for new material, especially if it can be connected to information they have just mastered in the SI session. Have students predict the next lecture topic. Encourage them to make connections between the last lecture and the next one.

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TABOO

This strategy can be very useful before an exam. The SI leader should prepare multiple note cards with vocabulary or identification words and one additional related word or term. Once at the session, ask the students to divide into groups and split the note cards amongst the groups. One person in the group must **explain** the vocabulary term to the other group members without using any of the words written on the note card. The group members must then guess the vocabulary word based on the student's explanation. Have each student take a turn explaining. Once the group has guessed correctly, have them add 2 additional words to the card to make it more challenging for the next group. After all the words have been guessed, have the groups switch cards. The SI leader can sporadically join the groups and play along.

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POST EXAM SURVEY

The post exam survey is a self-test for students to assess how successfully they studied for an exam. The survey can be used in an SI session after an exam to target areas on which students need to improve. The SI leader should tailor a survey to the specific class and emphasize what they feel is important. The leader should assign a specific point value to each survey question that adds up to 100. Then the leader should read each question and have the students score themselves based on the specific value of the question. After all the survey questions have been asked, the students should total their score and see how close their survey score is to their exam score. This should lead into a discussion of the most effective way to study for the next exam.

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