Welcome to supplemental instruction! You will have the opportunity this semester to help many students succeed in class—and possibly become better overall students—by leading out-of-class sessions throughout the semester. This handbook will overview the basic ideas of supplemental instruction (also called "SI") and offer many strategies for approaching sessions, including tips on facilitating effective classroom environment.

Learning Resource Networks
Director: April Heaney ★ aprilh@uwyo.edu
Program Associate: Jessica Willford ★ jwillfo1@uwyo.edu

1000 E University Ave, Dept. 3334
Coe Library, Room 307
(307) 766-4322 ★ fax (307) 766-4822
www.uwyo.edu/lrn

Supplemental Instruction Features

Traditional supplemental instruction involves an undergraduate or graduate student attending class regularly and leading out-of-class sessions each week—or several times per month. Typically, this student has successfully completed the course (sometimes very recently) and demonstrated the qualities of a good peer mentor.

The teacher's presence in an SI session is likely to make students nervous about asking questions or talking about their challenges (not to mention dramatically changing the atmosphere of the sessions), so instructors do not attend the out of class sessions. However, as an SI leader, it's important that you communicate closely the instructor throughout the semester. The instructor should include SI information on the syllabus, advertise the sessions often in class, and perhaps allow you to speak briefly to the class on a regular basis (to highlight upcoming sessions, etc.).

Students can use the SI sessions for questions on content and study skills, help with specific areas of class, and for guest speakers and other projects that help students connect with course material. On the flip side, you can also provide useful feedback to the instructor about student confusions, ideas for course enrichment, and course organization. Supplemental instruction leaders cannot perform the same duties as TAs—you should not lead class if the instructor is gone or comment on or grade students' coursework.

Brief History

The supplemental instruction model was first developed at the University of Missouri, Kansas City, in 1983 with the goal of identifying and supporting the most challenging courses for students. Because of its proven success, the supplemental instruction model has become popular in many universities and in a wide range of courses. The goal of supplemental instruction is to help students master course content while developing effective learning, critical thinking, and study strategies.

Supplemental Instruction has extended to over 800 colleges and universities around the world. As of January 2000, 700 institutions in the U.S. provided training to their faculty and staff for implementing supplemental instruction. Studies show that students who attend supplemental instruction sessions earn statistically higher final course grades than those students who do not attend—even among students who are under-prepared when they enter the course (Congos and Schoeps, 1993, Congos, Langsam, and Schoeps, 1997).

Approaches to Supplemental Instruction

While most students are familiar with a lecture-style class, supplemental instruction sessions should try to maintain a student-centered approach in every session. Students learn best in SI when they can participate heavily and even help shape the sessions. This does not mean that SI leaders should never lecture—you may need to give presentations on a variety of topics. But whenever possible, keep the bulk of the SI time devoted to student activity, where students are asking questions, working individually or in groups, sharing their work, or giving mini-presentations.

Classroom Environment

It can be frightening to face a group of students as a course leader. I still get sweaty palms and shaky knees when I face a new class of students—even after ten years of teaching. As a student leader, you have your own set of benefits and challenges when it comes to gaining students' trust and building a work ethic in the sessions. In the SI sessions, you will become a mentor, resource, and leader in the classroom. In order to make the best use of SI sessions, it's important that students show respect for each other, you, and the use of your time together. The following suggestions are designed to help you create a strong classroom environment.

Choose some "ice-breaking" strategies to use early in the semester

It's ideal for students to have some time early on to get to know each other, diffuse tension in the class, and build a sense of a friendship. Consider using the interview strategy described below (or others) to help students break the ice; a good guideline is about 10-15 minutes in the first SI sessions.

Ask students to interview each other in groups of 2-3. They might ask each other for hometown, major, reason for taking the class, personal interests, 1 unique characteristic, something they did over break that reveals something about them, etc. Then, ask the students to introduce the members of their group (each student should interview one other person).

Develop guidelines for participation in class meetings

Keep in mind that students will learn best when they understand that your main concern is their success in class. And, students will appreciate guidelines that you set (with their input and help) for classroom behavior. This doesn't mean coming in with a set of "rules," but it does mean collaboratively setting up guidelines and being consistent with them. Talk over any problems with the instructor, and also contact me if you would like to talk about strategies for specific challenges. You might consider asking students to help you develop guidelines for class conduct, discussion, and use of your time. <u>With the instructor, you should develop guidelines for late-arrivals or early-departures, and a system for keeping attendance at SI sessions.</u>

Let students know early in the semester that SI sessions are designed to help students learn material, practice strategies for course work or study, and have fun connecting with the course in a smaller setting. In other words, SI sessions do not simply provide students answers to coursework, study guides, or exams. <u>Students learn almost nothing when an answer is given to them</u>. Let students know that SI is not a "quick fix" for the course, but a place where you can work together to improve their learning in the course.

> Within the first few SI sessions, choose a day to have students brainstorm what they want to gain from the SI sessions (what they hope to take from the sessions specifically). Then, ask them to brainstorm some behaviors they've seen in their classes that keep them from being able to pay attention, work, or have a good discussion. Type these student expectations and guidelines, and post them if possible or hand them out to all students at the next session. Always feel free to ask students to write a brief response (anonymously) to how well the SI sessions are going and any suggestions they have at the beginning or end of a session.

Keep each session task-focused; come prepared!

With the course instructor, develop "lesson plans" for the SI sessions; it's a good idea to meet with the instructor perhaps every couple weeks to design or review these plans. Feel free to adjust your ideas (with the instructor's consent) to better meet student needs. The instructor can help make students aware of the plan for SI each week.

Avoid letting the SI sessions become a chatting session

It's always healthy to let students do a little bit of "venting" about their reactions to a class (you may be able to provide useful feedback to the instructor based on students' open discussions of class projects, etc.) But, be cautious of letting free-form discussions of "class" take too much time from the SI session. Students can be persistent about co-opting the session time to talk about their own issues; the problem is that this kind of talk steals valuable time away from students who are there to get concrete help.

> Transition out of unconstructive chatting sessions by reminding students of the tasks you have for the session. ("OK, let's get on to working on a study guide for the exam…") Also, advise students to contact the instructor with any major concerns or suggestions.

Ask difficult students to stick around and talk to you after the session

This doesn't happen often, but if you have a student in the SI sessions who is causing trouble on a regular basis, start by asking the student to meet with you after the session. Then, try to find out what is causing the problem and ask the student to stop the problematic behavior. If a student continues to spark difficulty, talk to the instructor. You might consider asking the student to meet with the instructor before coming to another SI session.

Some "problem personalities" you might encounter include:

Monopolizers: students who tend to dominate the discussion, resulting in low participation among other students. It's best to talk to these individuals early, when you first recognize the problem. Ask them to talk to you quickly after class, tell them how much you appreciate their participation, but let them know your concern that other students will just "sit back" and not participate, or count on the one student to do all the responding.

Manipulators: students who will try to attract a lot of attention, often acting as if they need to be "rescued" or supported in excessive ways. Avoid being drawn into too much interaction with these students; show respect for them at all times, but draw boundaries.

Distractors: individuals who sidetrack a group with clowning, loud talk, side conversations, or attempts to change the direction of a discussion in unproductive ways. Meet with the student individually, and be honest and direct about the impact of their behavior on the group.

Aggressors: angry people who create disturbance by attempting to spark debates or negative feelings in a group. Confronting aggressors can be difficult because it presents more opportunity for them to "fight," but doing nothing can be even more destructive to the class environment. Again, best to start by trying to talk to the person after a session or setting up a meeting with the person and the instructor.

Assess the SI sessions at least twice during the semester (typically midterm and final)

Work with the instructor to create an assessment plan for the SI sessions. This might involve both qualitative and quantitative assessments; qualitative surveys or brief written responses at midterm and final, and quantitative evaluation of students' grades on projects and in the course as a whole. For these assessments, it's important that you keep careful track of the students' names who attend each SI session. With the instructor, determine questions that you will ask students to respond to, such as strengths of the SI sessions, areas for improvement, impact on students' success or approach to the class, etc. If you would like someone from LeaRN to come in and do a quick interview with students about the SI sessions, we are happy to help with this (we can also help with quantitative assessments and compiling responses).

Encouraging Participation

In order for participants to learn from each other, people have to participate. The first step in encouraging participation is to create a comfortable atmosphere.

- Set up ground rules

- Be aware of your personal body language: maintain a positive, open stance

- Show interest in what is being said, regardless of how you feel personally

- Look at the person speaking

- Use appropriate comments: "Thank you", "Interesting point", "I appreciate your sharing"

Sometimes the best way to foster participation is to allow silence. Often the impulse as a facilitator is to jump in when there is a pause. Silence can be valuable, however, in allowing time for participants to process information or collect their thoughts.

- Allow silence by slowly counting to 10 in your head before you say anything

- If people are not responding to the question, try to rephrase the question or give encouraging comments: "I know this is a tough question", "I know there are some interesting viewpoints represented here, and I'd love to hear them"

Some people have a harder time opening up in large groups, so whenever possible provide a variety of presentation methods, such as small group discussions, lecturettes, dyads, etc.
Another way a facilitator can make participants feel comfortable is by writing comments down. Participants like to feel that their contributions are heard and valued. Seeing their comments written down is one way people can feel acknowledged.

- Be sure to write every person's suggestions down
- Ask participants for their permission if you want to paraphrase or reword
- Writing is not always appropriate, so when writing, be sure that:
- The purpose of the session is to get information or data
- The activity is lower risk
- There is a future need for capturing ideas or questions

General Session Types

Study Skills Improvement: Exam, Note-taking, and Reading
In the study skills model, students attend the supplemental instruction sessions to learn how to more effectively take notes in class, annotate and absorb the readings, and prepare for exams. You can use short activities, group work, and re-playing portions of lecture on videotape to help students become more efficient and effective at organizing and studying course information. You can also help students prepare for memorization tests by introducing techniques such as flashcards, categorizing information, and small group study.

Course Skills Improvement
Skills-based sessions focus on particular skills needed in the class, such as math, quantitative reasoning, reading, or critical thinking. In these sessions, students work through specific course problems or course/SI assignments.
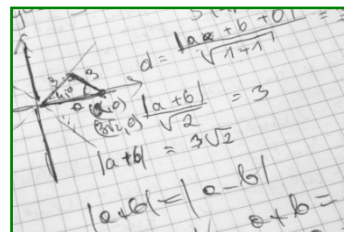
Writing, Research and Oral Presentation Help
Students often need help in narrowing topics for essays, developing theses, and brainstorming organizational strategies for different kinds of essays. You can also meet students in a computer lab or library and assist with secondary research. In addition, the sessions can become non-threatening venues for students to develop and practice oral presentations, individually or in groups.

Extra Credit or Supplemental Projects for Credit
While instructors sometimes offer small credit for simply attending the supplemental instruction meetings, some instructors choose to offer supplemental projects that can only be completed by attending the out of class sessions. These projects are introduced, developed, and finalized in the out of class sessions. The projects can involve community involvement, professional or career exploration, or further study of course material. Projects or reflective writings might also be connected to a guest speaker or campus/community event or speaker.

Student-centered Discussion and Guest Speakers
For some courses, the greatest benefit of supplemental instruction is the room it offers students for intensive, small group discussion of course concepts. In this model, students bring in topics for discussion, current events, newspaper or magazine clippings, or guest speakers to facilitate greater exploration and debate of course material. You might talk with the instructor about the possibility of guest speakers or extra-credit projects that can happen through SI sessions.

Ideas for SI Activities

Ideas for Lecture Review

1. During the first 10-15 minutes of the SI session have the students summarize the most recent lecture, or have them identify the key words from that lecture.

2. Give students three minutes to find support in their lecture notes for a given generalization.

3. Have the students predict the direction of future lectures based upon the past lectures.

4. Have students arrange terms from lecture and text into a structured outline.

5. Reinforce new terms or important information by using clearly constructed handouts (can be complete or nearly complete at the beginning of the term but should gradually require more and more filling in as the group becomes more accustomed to working together).

6. Review material from previous sessions and lectures.

7. Take a couple of minutes at the end of the SI session to summarize the main idea covered during the session. Ask the students to help summarize.

8. Have students write a one paragraph summary of the lecture. List the new vocabulary terms introduced with this lecture.

9. Formulate potential exam questions, based on the main ideas from the lecture.

10. Formulate potential answers from details in the lecture notes.

Ideas for SI Activities

Oral Reading of Lecture Notes

Note review is a good strategy to use early in the academic term. Why?

- Students see the importance of taking comprehensive notes.

- Students can fill in the gaps in their notes, as well as clear up discrepancies and misinformation.

- Each student in the session has a chance to participate.

- SI leaders highlight and discuss the language of the discipline, the new vocabulary. Students identify meaningful examples and check for understanding.

Procedure

1. Tell the group that you will begin reading from your lecture notes and will ask the student on your right or left to pick up where you stop. Let them know that the role of reader will move to each student in the circle.

2. Look at the students and encourage them to let everyone know if something is left out or inconsistent with what they have recorded. To note inconsistency does not mean that someone is necessarily right or wrong; moreover, members of the SI group will discover how to remedy the problem through the following resources:
   - Ask the student who disagrees to read from his or her notes.

   - Ask the group if their notes compare.

   - Check in the textbook for support; add the page reference to the notes.

   - If a consensus is not reached, work with the students to formulate specific questions to ask the professor in the next class.

3. The pressure of reading may unnerve a student who believes that his or her notes are too rough to read. Since reading aloud is a form of performance, some students may be reluctant. Gently encourage the student, but if he or she is rat comfortable, don't push. Perhaps note taking skills and confidence will improve as the term progresses and the usefulness of good notes becomes apparent.

4. As you approach the end of the SI session and material has not been discussed, suggest to members of the group that they should finish reading through their notes. If they have questions or blanks in their notes, tell them to work with another student to find the answers or to bring these questions to the next SI session.

Incomplete Outline

The Incomplete Outline is an excellent means of helping students recognize the main points and the organizational pattern of information given in lecture. It can also be used for 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 to figure out what's important.

Procedure

Step 1: Point out that the main points might not be clear from a specific lecture (or series of lectures) and present to the group an outline with some of the parts missing.

For example: Aspects of Medieval Life

I. _____

II. _____

III. _____

Step 2: The group must then work through their notes to figure out how to fill in the outline.

Note: This activity is an excellent way to gradually promote group independence. At the beginning of the term, provide outlines that are nearly complete with some of the items filled in and all of the numbers and letters filled in. As the term progresses make the outlines more and more incomplete, putting in fewer and fewer entries, then eliminating the notation. By the end of the term, students should be able to complete their own outlines without assistance.

The Matrix

A matrix is used when the same types of information are provided in the notes or text for a set of topics. A matrix helps students organize information by showing its relationship to similar categories of information.

Colonization

	Religious	Economic	Political
Dutch			
English			
French			
Spanish			

Sample Vocabulary Matrix

Term	Paraphrased Definition	Example from Lecture	Example from Textbook	New Example
oligopoly	a market where a few firms produce all or most of the market supply of a good or service	airlines	soft drink manufacturers	domestic car makers (G.M.; Ford; Chrysler)
monopoly	a firm that produces the entire market supply of a good or service	Niagara Mohawk	none	New York telephone local service

Adapted from Onondaga Community College, Syracuse, New York
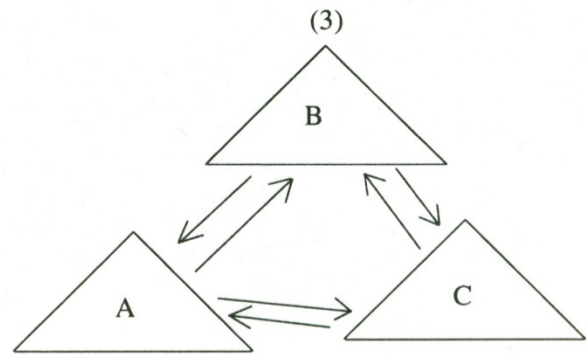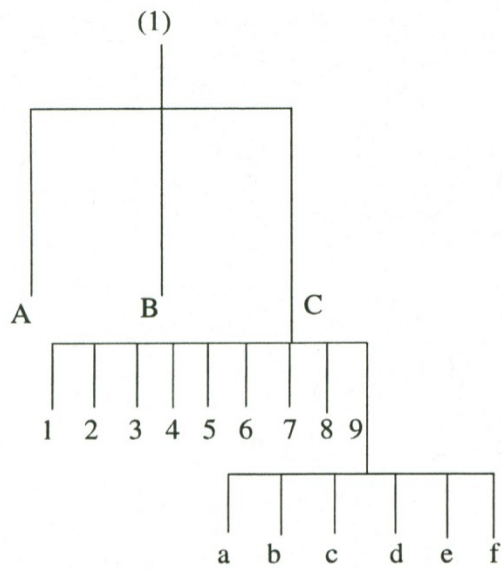
Visual Techniques

Some students learn well by creating visual study aids. This type of learner may actually picture the page of notes when answering essay questions on a test. Therefore, notes that are clear, concise and well organized are essential. There are a variety of ways to summarize notes in a few words.

Some of these techniques include mapping, and picturing. The best visual techniques do more than just con-dense notes; they help students understand the relationship between topics covered in various lectures and provide a "big picture." Students who simply memorize their notes as if they contained a series of several hundred unrelated facts may easily miss the point. Visual techniques help pull the ideas together.

Mapping and **picturing** are used to draw a picture of the concept presented verbally in the lecture. The relation-ships between the topics are stressed in the map by the use of arrows. There are many types of mapping and picturing techniques. Two are shown on the following page. These must be adjusted to the subject matter. The key idea is to visualize the information and to use as few words as possible.
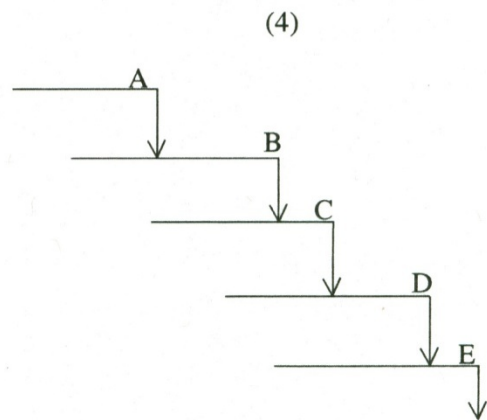
Mapping   **Picturing**

$ Independence of Women   Positions of Theorists on Basic Assumptions

Freedom	Maslow, Rogers Freud, Skinner	Determinism
Good	Rogers. Maslow. Freud	Evil
Holistic	Jung. Rogers. Maslow. Freud	Atomistic
Environment	Skinner, Erickson, Freud, Jung	Heredity

Mapping diagram: "$ Independence of Women" with an arrow pointing down to a box labeled "DIVORCE". Two arrows point up to the DIVORCE box from "High Expectations of Happiness" and "No Social Stigma".

(1)

A   B   C

1 2 3 4 5 6 7 8 9

a   b   c   d   e   f

(3)

B

A

C

(2)

	a	b	c	d
1				
2				
3				
4				

(4)

A

B

C

D

E

Vocabulary Activities

All disciplines have technical terms which have precise definitions in that subject matter, and may mean something quite different in another context. One of the purposes of most introductory courses is to teach students to speak "the language of the discipline." Therefore, a clear understanding of the technical vocabulary in the course is essential for the students in your study group. Students must be able to do more than simply "parrot back" rote definitions of terms. They must be able to paraphrase the meaning of the term, understand how it fits in with the topic under discussion.

Vocabulary Activity Goals

1. Identify key technical terms in their notes and text and be able to generate a precise definition.

2. Paraphrase the definitions in their notes and text.

3. Understand the relationship between one term and other key terms which fall under the same topic.

4. Create a parallel example to the one given in the notes or text.

5. Be comfortable enough with the terms to "speak" the language of the course, both in the group and on tests.

Procedure

Here is a list of suggestions for working with course vocabulary in study groups:

1. Don't "translate" - use the term yourself. For example, if a student in an economics supplement were to talk about "product satisfaction," the SI leader might ask, "And what is the economic term that means satisfaction?" Then, the student will use the economic term "utility," rather than the equivalent translation, satisfaction. Remember, on essay tests one of the things instructors looking for is whether the students can use terms correctly.

2. Before a test, create a handout to help students identify terms in their notes by passing out red pens and suggesting that they circle all key terms in red. Then, have one of the students record the complete list on the board. Put students in groups of two or three. Ask that they refer to their definitions of all of the terms and pair together terms that they feel are connected in some way. Then, report back to the larger group.

3. Create a vocabulary matrix. Get students to work together to fill in the matrix (see example below). One student can work with lecture notes and the other with the text. They may also work together to create the new example.

Term	Meaning	Example from Notes	Example from Text	New Example

4.   Create vocabulary note cards for a quick review.

5.   When appropriate, introduce the meaning of Greek or Latin roots that will help students remember their technical terms. For example, in sociology, students who know that the root "gam" means "marriage" have an advantage on a test question which asks about "exogamy". A good way to present key roots is to put the root on the board and then ask students to name as many words as they can think of that come from the root.

Example: "GAM"--bigamy; polygamy; exogamy; endogamy; monogamy

Ask what the words all have in common. This way the group figures out the meaning of the root them-selves. They can use this same procedure once they become proficient when faced with an unfamiliar word on a test or in a textbook.

Vocabulary – Summary

1.   Continually use and review vocabulary words from previous lectures and from the text.

2.   Have students predict vocabulary words that might be used in a lecture from text readings.

3.   Work with students on **application** of terms. Instead of saying "What does _____ mean?", say "Here is a situation....This is a good example of what?'

Time Lines
Time lines can be an effective way to show a continuum of events or ideas. Students can use time lines as a frame on which they can hang additional information.
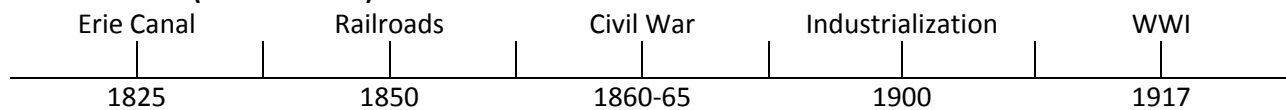
Double Time Lines
It is important that students understand the relationship between new material they are learning and what they already know. A historical perspective on key dates in the notes and text can be very helpful. For example, if a Psychology instructor mentions a study which was completed in Germany in 1939, the student should automatically place this information in the context of Nazi Germany. More recent information can often be own life to make it more meaningful.
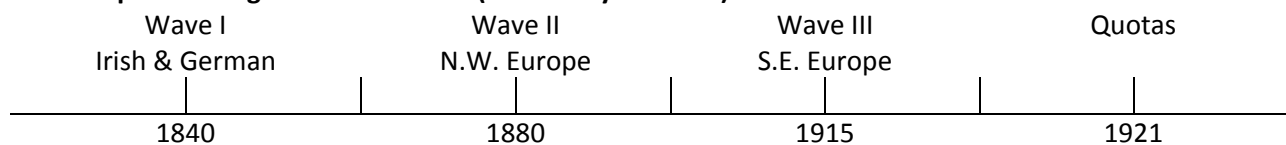
Procedure
Make sure that the dates are truly important before using this procedure. Then, make a brief, very general time line of events happening in the U.S. and/or world at approximately the same time as the dates presented. Give this general time line to the group at the beginning of the session.

Then, have the students draw a duplicate time line directly below the one they have previously constructed. They should work in pairs to find key dates from the notes and text and place them on the new line. Discussion should center on events which were happening at the same time as the dates which were presented in class.

1. U.S. Events: (Initial timeline)

Erie Canal	Railroads	Civil War	Industrialization	WWI
1825	1850	1860-65	1900	1917

2. European Immigration to the U.S. (Secondary timeline)

Wave I Irish & German	Wave II N.W. Europe	Wave III S.E. Europe	Quotas
1840	1880	1915	1921

Ideas for SI Activities

Preparing for Exams

Often students become anxious simply by the language of the question. It is important that students in your group begin to develop the skill of predicting test questions. Once they discover that the origin of test questions is not always mysterious, they will feel much more confident going into their test. You can help students develop this confidence and skill by creating practice exams in the study groups. This type of activity is good shortly before an exam when you have a large number of non-regular participants in the study group. Plan to work together to create study sheets for each predicted question at the next study group before the test.

Review Dates
The dates of exams should be reviewed regularly so that students are reminded to start studying early.

Identify Exam Format
Discuss with the students the kinds of questions to expect on exams. Also explore the amount of emphasis that will be placed on the text, lecture, outside readings. For example, one half of the points are earned through multiple choice items that focus on information from the lecture and text; the other half of the possible points are earned through two essay questions that focus on the supplemental readings, the assigned novels.

Develop Practice Exams
Have students submit 3 to 5 questions. These questions can be assembled into a practice or review exam and returned to students for study. If appropriate, periodically offer practice essay questions. Ask students to outline the answer first. Initially, have the students use their book and lecture notes, but work toward a normal test situation. Provide sample summary sheets for each exam which provide less and less information, thus forcing students to progressively become more and more independent and able to write their own summaries. The first summary sheet could be written by the SI participants as a group. If the professor distributes a sample question or has a file of previous tests on reserve in the library, discuss the wording of the question in SI.

Use Practice Exam in the SI Session

> Ask the instructor to look over questions and make suggestions. With the instructor's permission, announce to the class that the practice exam will be used in the next SI session. If possible, ask the professor to suggest that students take the practice exam.

Ideas for SI Activities

Post-Exam Survey

Following are some questions students might like to think about after taking an exam. Answers to these questions could help them focus on effective exam preparation strategies. Research suggests that each student has their own pattern of the types of errors they commit during examinations. Helping students to self-discover those patterns will help them to self-correct. One goal is to identify correct answers and associate them with study skills that worked for the student or identify incorrect answers and discover study skills that might be helpful.

1. Which part of the exam was the easiest for you? Why?

2. Which part of the exam was the most difficult? Why?

3. Which of the following activities did you complete prior to the exam?
    a. All required reading assignments.
    b. Preparation and review of reading notes.
    c. Review of lecture notes.
    d. Self-testing of material to be covered by the exam.
    e. Prediction of possible questions by you prior to the exam.
    f. Study with friends.
    g. Others.

4. Which of the above did you find most helpful in preparing for this exam?

5. How much time (in hours) did you spend preparing for the exam?

6. Did you feel prepared when you walked into the exam? Why or why not?

7. What changes might you make in the way you study for the next exam in this course?

Types of Supplemental Instruction

Writing Skills

Writing itself can pose special challenges for students in the humanities. SI in the humanities is often attached to course in which students are graded and tested by essay (either essay exam or papers) because the course material requires more than a recognition knowledge of the material.

When writing is intensive, the SI session must respond with appropriate help in order for students to succeed. Although the SI session is not the place for one-on-one help with individual writing problems, it is a place where ideas can be generated and where students can practice predicting and answering possible test questions.

One way this works well is to create a question, then ask students to brainstorm all the ideas and facts they know about the question. Students can put similar ideas together and state which facts support the ideas. The group can then write the first sentence or two of the proposed essay. Individuals can be encouraged to finish the practice essay on their own, and read them to each other.

Condensed from "Supplemental Instruction in the Content Areas: Humanities" by Sandra Zerger in Supplemental Instruction: Increasing Achievement and Retention (Deanna C. Martin and David R. Arendale, editors) Jossey Bass Publishers, Number 60, Winter 1994.

Humanities SI Sessions

Differences

The humanities provide a way of seeing and knowing which is different from the sciences. In the sciences, students learn to use words like: reliability, verifiability, clarity, empirical evidence, correspondence with natural laws, research methods, graphic presentation. In the humanities, students are more likely to encounter words like: ambiguity, uncertainty, intuition, insight, self-knowledge, truths, process, symbolic representation. In the humanities, aesthetic forms--such as metaphor, image, sound, dance, narrative--lead to understanding rather than empirical research.

Elaboration Rather Than Reduction

Scientific method is predicated on the assumption that truth may be discovered independently of "context" or "time." Physicists, for example, are used to having a high level of certainty, and may find it difficult to pick out what is important in a literature class. Knowledge in physics is arranged vertically (certain things must be learned before others), whereas knowledge in the study of literature is not as vertical and the order in which one takes the courses may not be important.

The tendency for science professors is to simplify complex ideas, while literature professors tend to favor probing for complexity. Professors in the humanities complain that students want certainty rather than enjoying the struggle with complexity. Even the artist who occupies a central position in his or her own discipline may struggle with the issues of certainty and judgment. Students are not comfortable with questioning ambiguities, and lack a map or framework from which to build judgments. SI leaders must help students move beyond simple answers in the humanities. The leaders need to design sessions that encourage elaboration rather than reduction of information. Students may struggle with the fact that, while there may be no one right answer, just any answer will not do either.

Reliance on Language

Talk is the method of presentation most prevalent in the humanities. Language is valued; a well-turned phrase is applauded. In humanities classes there may not be much information written on the black board, and in the textbooks there may be few illustrations or diagrams. This lack of visual presentation may be disconcerting for those used to having it. Because so many lectures in the humanities rely on words, SI sessions need to provide visual models. These visual models should help show how concepts are related to each other.

Because the content of the humanities is particular, students must pay close attention to what is said, how it is said, and by whom it is said. Students new to the discipline may not pay sufficient attention to the author of a statement. Professors frequently summarize various scholars' positions ("according to Tillich") but students may not write down the name of the scholar or critic and then when asked to discuss a position that is identified by the scholar's name, they cannot do so.

Original Thought

Students who expect to do well in the humanities should, as one professor of literature said, find out all that is out there and then write something different. SI leaders must help students to develop positions that go beyond, "I like it" or "I feel good about this text." Beginning students may feel that they cannot write anything new about the text, and thereby, have trouble writing anything at all. Or they may feel their arguments must agree with the professor, not appreciating that the professor often welcomes an opposing point of view which is clearly developed.
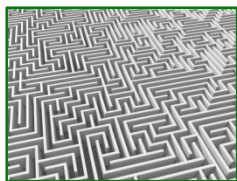
Problem-Solving SI Sessions

Problem-solving courses like chemistry, physics, or mathematics are major obstacles for many students. Students often don't know to how to begin to attack a problem or do not know what to do when they encounter difficulty in the midst of finding a solution.

Many college instructors do not have time to present problem-solving strategies in class. In general, SI creates a "safe haven" for students to learn general problem-solving skills.

In SI sessions, attendees help each other by actively exchanging strategies for problem-solving. Students need to become part of a collaborative, mutual-help team, attacking a common problem and solution together by pooling resources. When students get stuck, the manner in which SI leaders handle the situation determines whether the student gains an understanding of the process or merely gets a right answer.

A model of board work that facilitates a process understanding of problem-solving strategies in chemistry is presented below. It shows how four types of information are placed on the board as problem-solving is modeled in an SI session.

This model employs essential components for understanding neatness, orderliness, logical development and visual models. Well organized board work in SI sessions is crucial in helping students understand how to solve specific problems.

Chalkboard Model

PREREQUISITES	STEPS IN THE SOLUTION	RULES	SIMILAR PROBLEM
This first step includes relevant *equations, formulas, charts,* and *general rules* for solving this type of problem, along with the source. For example: % yield = $\dfrac{actual}{theoretical}$	$\dfrac{XXXX}{XXX} \quad \dfrac{XXXXX}{XXX} =$ The SI leader or the student(s) model the solution step-by-step with *what is done in each step of a solution and why it is done.* 1. 2. 3. 4. 5.	Here, a narrative description of what is done in each step of a solution is written down. 1. 2. 3. 4. 5.	$\dfrac{XXXX}{XXX} \quad \dfrac{XXXXXX}{XX} =$ Here, students check their understanding using prerequisites, steps in solutions and rules as learning aides. 1. 2. 3. 4. 5. Answer and a source for the verification of the answer.

Problem-Solving SI Sessions, continued

SI leaders use the board work model when (1) students don't know how to solve a problem, (2) students are stuck within a problem/solution or (3) to check student understanding of how to solve each type of problem. This type of board work model includes the following:

1. SI leaders need to model the value of learning and using prerequisite information like formulas, equations, charts and general rules in solving each type of problem. Students need to see the sources of information for answers and for solutions to each type of problem.

2. Students see models of how to solve each type of problem as SI leaders or students think through, verbalize and write out solutions that include explanations of what and why something is done step-by-step.

3. At any point in the modeling process allow students to ask questions.

4. Rules for solving each type of problem are written in narrative form on the board. This allows students to utilize verbal skills in understanding problem-based courses as well as quantitative skills.

5. Students need to be given a chance to practice and/or check their understanding of how to solve a problem by doing a similar problem of their own.

6. SI leaders must avoid relecturing or simply telling students how to solve problems. This has little value in helping students understand problem-solving processes.

7. Numbering each step is a great help to students because they can clearly identify each step in an actual solution. When students break problem-solving down into the component steps, they can more easily pinpoint gaps in understanding, ask informed questions about the problem-solving process and practice their current understanding of the problem-solving process to enhance clarity.

(Adapted from 'A Model for Supplemental Instruction in Introductory Chemistry" by Dennis H. Congos in 2 *News, Summer, 1993)*
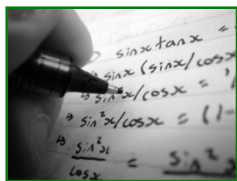
Math SI Sessions

Structure the SI Sessions

At the beginning of the academic term, SI leaders must provide structure to the SI sessions; don't expect to arrive at SI sessions with the intention of "answering questions." You may want to write an agenda of the session on the chalkboard for each session.

Syllabus

Review the syllabus with the students early in the academic term. Take note of the homework assignments, exam dates, and grading policy. Is the homework graded? If it is graded, announce that you are not allowed to work homework problems, but that problems similar to the homework will be discussed and worked on during the SI sessions.

Pre-lecture Notes

Use the titles on the syllabus to guide you to what are the important parts of the text chapter. Note which problems are assigned as homework.

Look at chapter headings, subtitles, diagrams and captions, and scan the text briefly. When appropriate, turn the headings and subtitles into questions and make a brief outline of what is being presented. In the margins of your outline, list significant terms and attempt a brief definition. Say the terms out loud. Leave space in your outline so that you will have room to incorporate lecture notes with your prelecture notes. Try taking your prelecture notes from the text in one color of ink and lecture notes in another color of ink. Be sure to read the chapter summary.

During the lecture, add the prelecture notes to the class lecture notes. Work the problems along with the instructor. After the lecture, work homework problems which relate to the activity. Reread the text book sections which apply.

Lecture Notes

During the first week, talk about lecture notes in the math course. If possible, look around the room during the lecture to see how students are reacting to the material being presented. For example, if the professor is discussing graphs, the students may have difficulty copying the graphs while taking notes about them. You may want to distribute copies of your lecture notes one time so that students can see your strategies for note taking. This can provide a basis for a discussion of note taking skills.

During the discussion on note taking you can suggest that they use the Cornell method of note taking. This system makes use of Summary Margin paper or graphic paper with a three inch margin on the left hand side for important notations. You can also share, for example, how you concentrate on what the instructor is doing, and how to get as many details as possible without getting distracted by trivia. Students will see the benefit of using Summary Margin paper when you suggest they take notes during the SI sessions in the margin of their lecture notes. Encourage students to rewrite their lecture notes as soon as possible after the lecture. Remember to ask for other students to share their strategies as well.

Textbook

Share with the students your method for reading the textbook. Focus on the different parts of the chapters: sample problems, new symbols and vocabulary, discussion and homework problems.

Math SI Sessions, continued

Strategies

Math SI sessions focus on getting students to work on problems. We encourage SI leaders to have the students first write problems on the board. Then ask students, "What do we do first?" or "Where do we start?" Promote interaction and encourage students to help each other. For example, to start the session, have students work a word problem or statement problem for about five minutes. Then have them pair up and discuss the problem. This technique helps students discover different ways to work similar problems while helping each other. SI leaders need to help students see the progression of mathematics. For example, the SI leader might point out that a student will see a new application for a familiar concept when moving from Algebra to Calculus.

Worksheets

Develop worksheets for use during the SI sessions which help generate discussion, focus on key concepts, and allow students the opportunity to easily identify their weaknesses. Worksheets also help students review for exams and allow the SI leader to guide students to consider math problems that are most representative of the key concepts that the professor wants the students to learn. It also allows the SI leader work out the solutions to the problems ahead of time.

(This material was developed to accompany a videotape of math SI sessions with Dr. Patricia Kenney.)

# Collaborative Learning Techniques
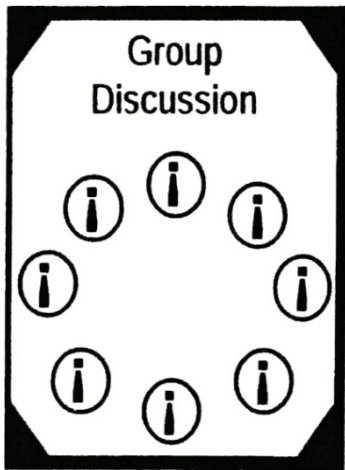
Group Discussion

A group discussion is, more or less, just like it sounds: a general discussion of an issue or topic by the group. Individual members are free to contribute or not contribute.

Hints

This the most common form of collaborative learning. It is also the form that requires the most skill to use successfully.

Ideally, everyone is actively involved in the discussion and the discussion topic is of equal interest to all group members. When group discussion is successful, it may be difficult to determine who is actually leading the discussion.
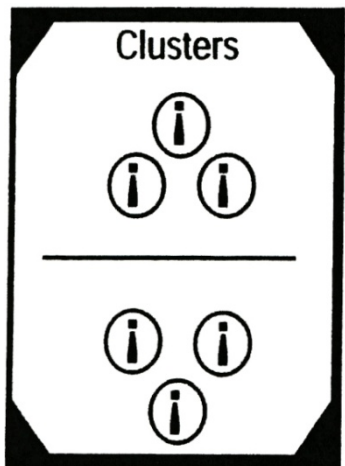
Clusters

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 flip chart or a space on the blackboard to record the 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.
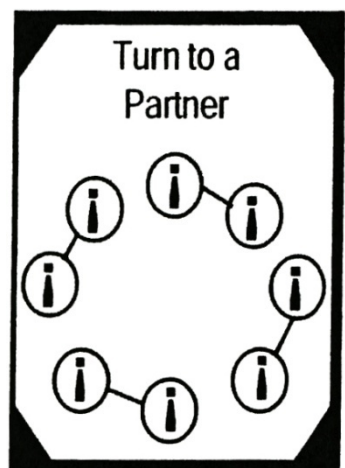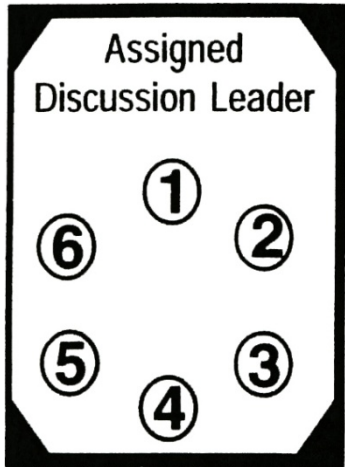
Turn to a Partner

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.

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 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.
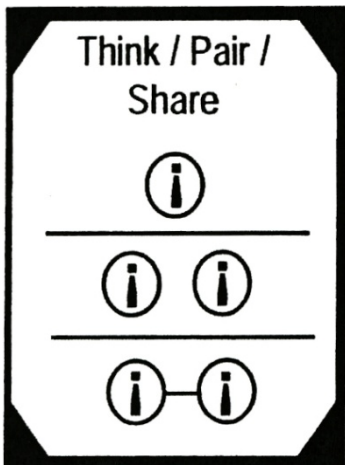

Think / Pair / Share

Group members work on an assignment or project individually and then share their results with a partner.

Hints

The goal of a Think/Pair/Share is allow participants time to think BEFORE they discuss. Research shows that when people are given time to contemplate an answer to a question, their answers differ from those they would give if they responded immediately.

When doing a Think/Pair/ Share, give participants a specific amount of time (30 seconds, five minutes, etc.) for the "think" portion.
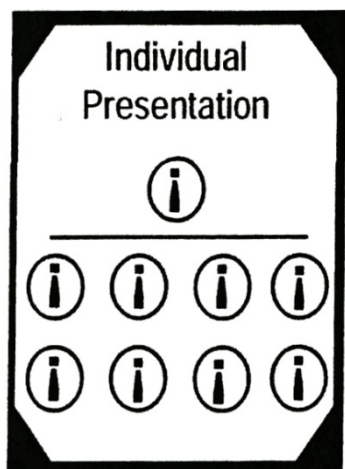

Individual Presentation

An individual presentation is an uninterrupted presentation by one person to the group. Group members present on a topic, question, or issue to the group. Unlike an "Assigned Discussion Leader" this is a formal presentation delivered to a captive audience.

Hint

Use individual presentations should typically be used sparingly and only when independent research is required.
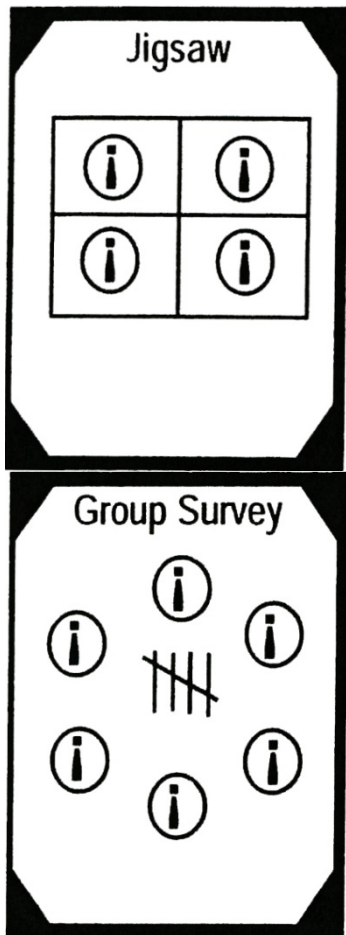
Jigsaw
Jigsaws, when used properly, make the group as a whole dependent upon all the of subgroups. Each group provides a piece of the puzzle. Group members are broken into smaller groups. Each small group works on some aspect of the same problem, question, or issue. They then share their part of the puzzle with the large group.

Hints
When using a Jigsaw, make sure you carefully define the limits of what each group will contribute to the topic that is being explored.

Group Survey
Each group member is surveyed to discover their position on an issue, problem or topic. This process insures that each member of the group is allowed to offer or state their point of view.

Hints
A survey works best when opinions or views are briefly stated. Be sure to keep track of the results of the survey.

Bibliography

Arendale, D. R. (1994). Understanding the Supplemental Instruction Model. New
Directions for Teaching and Learning.

Congos, D., and Stout, B. (2001). 20 FAQ's from Faculty about Supplemental Instruction
Programs. Research and Teaching in Developmental Education, 41 (18).

Ender, S., and Newton, F. (2000). Students Helping Students: A Guide for Peer
Educators on College Campuses. San Fransisco: Jossey-Bass.

SI Leader Manual (2007). The International Center for Supplemental Instruction,
University of Missouri-Kansas City.