Small Group Problem Solving

Students are given a problem or concept to discuss in class that may require further research outside of the class. The group completes and offers a solution for the problem. The instructor can use class time to ensure students distribute work evenly.

Appropriate Student Level: Any Level
Suggested Class Size: 3 – 100+
Ease of Use Rating: Easy – Moderate

Activity Description:

The focus of small group problem solving is designed to address the 'divide-and conquer' (uneven distribution of work) problem by requiring student interaction during class time and not placing a high expectation on the group to meet outside of class. Groups brainstorm and discuss a problem presented in class. The students leave class with specific research that can be done individually or with other group members. The students bring results and ideas back to class the following session for further discussion and idea exchange. This method has both aspects of individual work and group work, the solution, however, is the result of the group.

The method can be implemented in this way:
1. Form small groups or pairs of students to work on an assigned problem. The groups will be working together in class, individually out of class. (see *"Some suggestions for forming groups"* for more information on groups).
2. Present an ill-defined problem to the group. The effective design and presentation of the problem can influence the eventual success of the activity. Find out more about writing a good problem at "Writing an Ill-defined Problem".
3. Present the problem during class time and allow students to discuss and work on the problem before time is up. Allow students to seek guidance from the instructor and ask questions if necessary. Be sure that students understand their individual roles prior to leaving; this will allow the activity to move forward at the next class meeting. Keep in mind that the purpose of assigning roles is to force students to deeply research one aspect of the problem and bring it back to the group to solve a 'whole' problem.
4. Define for students how many class periods will be devoted to the project. Create a clear timeline for the completion of all parts of the assignment. Also, check in with each group every class meeting to be sure that each member is contributing. By using proactive problem solving techniques instead of reactive techniques, many problems can be avoided.

"Simply forming groups and giving group assignments is no guarantee of increasing learning or enhancing students' ability to engage in effective group problem solving. In fact, such problems as free riders and internal conflict are commonplace. Two conclusions have been reached, however:
1. The vast majority of problems with learning groups are both predictable and nearly 100% preventable.

2. Almost all of the reported failures of learning groups occurred when instructors gave group assignments that were completed through what students call the divide-and-conquer approach, which involves students' meting out aspects of an assignment to individual group members." (Michaelsen, 1999)

References:

Caropreso, Edward J. (2000) "Teaching economics; A cooperative learning model" College Teaching; 48(2); pg. 69

Diaz, David P (1999) "Students' learning styles in two classes" College Teaching; 47(4), pg. 130

Michaelsen, Larry K (1999) "Making learning groups effective" Selections, 16(1); pg. 28

Siciliano, Julie I (2001) "How to incorporate cooperative learning principles in the classroom: It's more than just putting students in teams" Journal of Management Education; Feb 2001

The Core Competencies are:

1. Writing, speaking and/or other forms of self-expression
2. Information gathering, such as the use of the library, computer/electronic resources, and experimentation or observation
3. Synthesis and analysis in problem solving and critical thinking, including, where appropriate, the application of reasoning and interpretive methods, and quantitative thinking
4. Collaborative learning and teamwork
5. Activities that promote and advance intercultural and/or international understanding
7. A significant alternative competency for active learning designed for and appropriate to a specific course