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Information for People who Teach
at the University of Washington



Problem-Solving in Groups

Working in groups can help students tackle challenging problems by stimulating creative thinking and higher-level reasoning strategies. It can also help promote long-term retention of course content.¹ Student response to collaborative learning depends largely on *how* group work is used. Clear goals, organized groups, and explicit links to other components of the class all help contribute to effective learning in groups.

"The group worksheets help us better understand the concepts and allow us to work with the week's material in an environment where we can get help from our TA and our peers."²

STUDENTS LEARN BETTER WHEN THEY ARE GIVEN CLEAR GOALS FOR GROUP WORK.

Decide on your instructional goals for group work.

- Agree on goals for group work among faculty and TAs.
- Communicate your goals to students. Consider including these goals on the syllabus if group work is going to be used extensively.
- Communicate assignment-specific goals each time group work is used (e.g. discover the formula for integration by discussing the relationship between velocity and position).
- Select problems with an appropriate level of difficulty to meet your goals. Use a worksheet to guide students from basic concepts to more challenging or unfamiliar material.

STUDENTS LEARN FROM GROUP WORK WHEN THEY SEE ITS CONNECTIONS TO HOMEWORK, LECTURES, AND EXAMS.

While the connection between concepts explored in group work and lectures or exams may seem clear to you, it is not always clear to less experienced learners. To help students see the links:

- Tell students what topics the group assignment reviews or *previews*.
- Let students know how these topics fit into the larger context of the class, and how these concepts will be tested in the future.
- If using a worksheet, include references to pages in the textbook where similar problems can be found.

STUDENTS LEARN MORE EFFECTIVELY WHEN GROUP WORK IS WELL-STRUCTURED.

Working collaboratively to solve problems may be a new skill for many students. Here are some tips for helping students form organized and effective groups.

- Provide clear directions for forming groups. Saying "form a group with people around you" is not always helpful for students. Instead, provide a way for students to form groups (for

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example, counting off).

- Make it clear to students what they should do individually, what they should do as a group, how long you expect different parts of the task to take, and what the final outcome of the group work should look like.
- Let students know that *everyone* must be in a group for group work to be effective, even if some students say they prefer to work on their own.

STUDENTS LEARN BETTER WHEN GIVEN APPROPRIATE FEEDBACK DURING AND AFTER GROUP WORK.

Balance being involved and available during group work with allowing students the opportunity to think through challenges for themselves.

- Walk around the room to monitor group progress. Limit time with each group in order to check in with all groups. If a group needs more time, try to get them to a point where they can work alone for a few minutes and assure them that you will be back to help them on the next step.
- If you find that many of the groups are struggling with the same concept, you can pull the groups together for a few minutes to do a “mini-lecture” and then have them return to their groups.
- Leave enough time at the end of class to debrief, even if students are not finished working on the problems. Draw out the key concepts from the day’s assignment and explain how it will relate to the next topic.

HOW CAN CIDR HELP?

At CIDR we can help you plan, implement, and assess the use of group work in your classes. Call or e-mail to arrange an appointment. For resources on active learning, using groups, and teaching math, science or engineering, see:

<http://depts.washington.edu/cidrweb/resources/topics.html>

This issue of the Bulletin was developed by CIDR Staff Consultants Clarisse Messemer and Alka Arora.

References:

1 Johnson, R. & Johnson, D., An Overview of Cooperative Learning. Retrieved May 1, 2002, from

<http://www.clcrc.com/pages/overviewpaper.html>

2 Student comment on the use of group work in a class at UW



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CIDR promotes excellence in teaching and learning at the University of Washington through its work with individual faculty and TAs, departments, campus-wide initiatives, and University leaders. CIDR staff are available year-round to collaborate on the design, implementation, and assessment of ways to advance teaching and learning for all students in the diverse UW community. Consultations are confidential and offered at no charge to UW faculty, TAs, and departments.

If you have questions about teaching and learning, or you would like to find out more about working with CIDR, you can call us at 543-6588, send a message to cidr@u.washington.edu, or visit our web site:

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