

Group Work in Math Recitations

Spring, 2003

In the Spring of 2002, I urged the recitation leaders in 18.03 to experiment with the use of group work in recitations. For each recitation except the ones immediately before an hour exam, I distributed copies of specific problems connected with the current material from the lectures and reading. I think there is value to this practice, and will be happy to work with you if you would like to try it. I'd also be happy to discuss this with you or even visit the recitation if you like.

You will find links to thoughtful essays on group work by Robin Pemantle and by David Carlton on my webpage, <http://www-math.mit.edu/~hrm>.

I think we have learned that it is a good idea to talk a little at the start, less than five minutes (time yourself!), setting the context; and then a little at the end, wrapping up, making sure people are satisfied with the answers and understandings they have achieved.

If you decide to use this approach in your recitations, even on an occasional basis, I would like to hear about how it goes.

Forming groups. There is much discussion about how to form groups. The physics department administers a diagnostic test at the beginning of 8.02 and forms groups of three with one high scorer, one middle, and one low. In this department we have tried randomized group membership, but more often we have allowed groups to form by themselves. This will often be quite random, based on accidents of seating. Many students will know few other students in the class. I think it's a good idea to pass around a paper for students to sign after the groups have formed for the first time, with their groups declared. There are good reasons for keeping a group together for the term, as much as possible.

During your first encounter with the students, or the first one during which you intend to use this method, you have to explain it. Many of the students will be familiar with it from other classes. There is much to be said about group work, but you can probably get away with something simple, explaining that it lets you attend in more detail to the specific needs of individual students.

Getting started. Begin by handing back whatever needs to be returned and seeing if there are questions of general interest about the material from the lectures or the reading. Then ask the students to form into their groups, hand

around copies of the problems and let them get to work. You should probably stay away from them for the first few minutes, to let them get going. But be sure they are sitting in a way that will encourage communication between all the members of the group, and are reasonably organized in appearance. Unfortunately the classroom space we have available is not too conducive to this, but I think we can make do.

The process. When the group work commences, you have various options, which you can use depending upon your inclinations and the circumstances.

- You can circulate, making yourself available for guidance if a group is stuck on something or has questions.
- You can come to a group and ask generally where they are, what they are working on at the moment, what their approach is. Ask for an interim report.
- You can pick one person from the group and ask for a report from that individual.
- From any of these starting points, you can ask others in the group for help in making the next step.

When you find that a group is stuck on some point, you will experience a very strong urge to go to the blackboard and clear up all the confusion. I think this urge is generally to be resisted. I would like to discourage you from jumping in too fast with an answer. Let them struggle; that's the point. On the other hand you do have insights to offer which may help them learn how to overcome stumbling blocks.

When you find that several groups are stuck at the same point, it's probably worthwhile to collect for a class-wide discussion of the point. The group work will have done its job, in forcing students to recognize that they are confused about some particular issue.

The most successful recitations use a mixture of group work and classroom discussion, which evolves as a collaborative achievement between you and your students.

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