Facilitating Group Work to Maximize Student Learning in Labs, Discussions, and Teams

GSI Teaching Orientations
Fall 2013

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The Cube Exercise!

**Purpose:** What does it look like when groups work together?

- Split into groups of 3-4 to work on solving cube puzzle.
- One person in the group is to act as an observer and not actively help solve the puzzle. This person should take notes of what they see happening as the others work on the problem.
- The observer will report his or her observations at the end of the exercise.
How does group work facilitate learning?

- Develops higher-order thinking and analysis skills
- Develops skills of interaction and cooperation
- Appeals to some learners who often feel lost in traditional learning environments
Group learning research shows...

- **Academic success:**
  College students who score at the 53rd percentile when learning *individually* score at the 70th percentile when learning *cooperatively.*

  Johnson, Johnson, and Smith. 1998. *Change*

- **Class size does not matter:**
  Although one might assume that smaller classrooms tend to feel more personal to students, studies indicate that students felt community in courses that used formal group work, regardless of class size.


- **Changes in attitude:**
  Students working in groups have been seen to show more persistence toward goals, have higher intrinsic motivation, and devote longer periods of time to the task. Groups also offer new situations for students to apply and build personal and interpersonal skills.
Characteristics of successful groups

- Heterogeneous in student ability and background
- Small, personal groups
- Both group and individual accountability

**Bottom Line:** Groups formed by the instructor tend to be more successful than those in which students choose their own groups.
Forming Groups: homogeneous vs. heterogeneous

Your Class

Student Selected

“Homogeneous” Groups

Instructor Selected

“Heterogeneous” Groups
Give students a transparent rationale for group formation

What are the learning goals?

Highlight your objectives for students, and benefits of group work – emulating a real life workplace, cultivating interpersonal and collaboration skills which are essential for professional success, etc.

Homework: Design a background questionnaire.

Think about the typical introductory course in your discipline. Imagine that you are trying to assess the preparation, ability, knowledge, and enthusiasm of students on this first day of class
How to use groups effectively

- Choose tasks appropriate for groups
- Choose relevant and interesting questions
- Promote higher-order thinking skills
- Provide structure to every task
- Promote group cohesiveness
- Require pre-class prep
- Build in individual and group accountability
- Actively engage and monitor groups
- Select a high energy debriefing mechanism
- Assess student learning either formally or informally

GSI Guidebook pp 69-71
Peer Evaluation: example forms

‘Course Name and #’ Group Evaluation Form- Due on XXXX

Please write the names of your team members below, and then score them on their team performance using the scale indicated at the bottom of this form. Please then sign the form and return to Dr. XXXXX either electronically or in paper format. You do not need to rate yourself.

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Rating</th>
</tr>
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<tbody>
<tr>
<td></td>
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</table>

Name

Signed

Feedback for Groups

Please take a moment to fill out the following feedback form. When you have finished, please share your responses with the rest of your lab group and discuss reactions.

1. Take a moment to rate your triad/quad on each of the following statements.

   + indicates that you think your group is doing very well in regards to the statement. √ indicates that you are satisfied with how your group is doing in regards to the statement, and – indicates that your group needs to work on this aspect.

<table>
<thead>
<tr>
<th>+</th>
<th>√</th>
<th>–</th>
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<tbody>
<tr>
<td>All group members are contributing to the completion of labs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No group members are dominating discussions or tasks</td>
<td></td>
<td></td>
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<tr>
<td>All group members engage with the task at hand</td>
<td></td>
<td></td>
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<tr>
<td>We listen carefully to each other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We acknowledge and appreciate each others differences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We give each other constructive feedback when appropriate</td>
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2. What steps should we take to improve group process within our group?

3. What could you specifically do to improve your contribution to the group?

Rating Scale

<table>
<thead>
<tr>
<th>Rating</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>Excellent</td>
<td>Consistently lead team efforts, carried more than his/her fair share of load, tutored teammates</td>
</tr>
<tr>
<td>Very Good</td>
<td>Consistently did what he or she was assigned, very well prepared and supportive of team functions and technical functions</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>Usually did at least his or she was assigned, acceptably prepared and supportive</td>
</tr>
<tr>
<td>Ordinary</td>
<td>Often did what he or she was assigned, minimally prepared and supportive</td>
</tr>
<tr>
<td>Marginal</td>
<td>Sometimes failed to show up or complete assignments, was rarely prepared</td>
</tr>
<tr>
<td>Deficient</td>
<td>Often failed to show up or complete assignments, was rarely prepared</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>Consistently failed to show up or complete assignments, was unprepared</td>
</tr>
<tr>
<td>Superficial</td>
<td>Had very little participation</td>
</tr>
<tr>
<td>No show</td>
<td>Had no participation at all</td>
</tr>
</tbody>
</table>
Case Study Analysis

Case Study 1: Duane
Case Study 2: Helen
Case Study 3: Nate, John, Margarita

■ What are the issues in this case?
■ What can the instructor do to improve this situation?
  Generate several possible suggestions.

Be prepared to share your responses with the group
Concluding Thoughts

- Transparent grading scheme, consisting of individual grade, group grade, and peer evaluation grade
- Instructor plays a *facilitator* in the classroom not a traditional lecturer role
- Input from students on guidelines, grading weights, etc. will enhance ownership of the process, and reduce resistance to group work
Resources

- **GSI Guidebook**
  
  http://www.crlt.umich.edu/gsis/gsi_guide.php

- **Student Teams in the Engineering Classroom and Beyond: Setting Up Students for Success**
  

- **Lab teaching**
  
  http://www.crlt.umich.edu/resources/lab-teaching

- **Group and team work**
  
  http://www.crlt.umich.edu/tstrategies/tsgwcl

- **Team-based learning**
  
  http://tblc.roundtablelive.org/

- **Engineering Teaching Consultants**
  
  http://www.engin.umich.edu/teaching/crltengin/gsi_serv/etcwebrequest.html
Thank you!

Please fill out your evaluation forms. Your feedback is greatly appreciated.
Additional Information
Team based learning

“A special form of collaborative learning using a specific sequence of individual work, group work and immediate feedback, to create a motivational framework in which students increasingly hold each other accountable for coming to class prepared and contributing to discussion”

http://tblc.roundtablelive.org/
Readiness Assurance Process (RAP)

Four steps to the RAP:

1. **Individual test**: to encourage students to do their pre-class readings
2. **Group test**: same test as above but taken as a small group, to ensure group accountability and peer teaching
3. **Written group appeals**: groups can correct questions they got wrong after reviewing notes and readings
4. **Instructor feedback phase**: mini lectures, which allow the instructor to correct misconceptions and clarify doubts

http://tblc.roundtablelive.org/
RAP and Team Based Learning

The RAP is followed by *in-class activities* that test the application of concepts.

Teams work on the same problem, and simultaneously report results and decisions.

During both the RAP, and the in class activities, feedback from the instructor and peers is immediate.

http://tblc.roundtablelive.org/