Facilitating Cooperative Work: How to Assess Active Learning Experiences

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Icebreaker:

Break up into **groups of 5-6** and share:

- Name
- Department
- What you LIKE about group work*
- What you DISLIKE about group work*

*Either from your experiences as a student OR as a facilitator in a class you have taught.
In this session, we will:

- Identify purposes of cooperative work in the classroom.
- Discuss research-based evidence for the effectiveness of group-work to promote student learning.
- Create solutions for common challenges to effective problem-solving as a team.
- Develop a strategy for evaluating student learning during cooperative work in your discipline.
Why use Cooperative Work?

- Practice teamwork skills
- Work on a complex problem which could be not solved individually
- Expose students to alternative points of view
Pedagogical Reasons

- Development of higher order cognitive skills - Bloom’s Taxonomy
- Deeper learning and increased retention as a result of peer teaching
- Increased intellectual engagement with material – students prepare more if expect to actively participate
- Generating a broad array of possible alternative points of view or solutions to a problem
- Helps identify what students do know, what they don't know and what they need to find out
- Build rapport – reduces anonymity in a large class
Practical Reasons

- Builds confidence
- Conflict resolution
- Multidisciplinary teamwork opportunities
- Greater complexity and depth in assignments
- Teamwork skills are needed for future employment!
Research-Based Evidence

- Increased academic achievement, motivation, and retention.
- Meta-analysis by Springer et al. (1999) showed effect sizes of ~0.5 in multiple studies of >1000 students.
- Effect size increased to 0.76 for underrepresented minorities.
- Main persistence effect: retain 22% more STEM students!

Barkley et al. (2005); Carleton College; Johnson and Johnson (2002); Wenzel (2000)
Scenario: Students are working in groups of 4 to solve a problem and present their answer to the rest of the class.

What are four ideal roles which divide the group responsibility equally and ensure that the group meets learning goals?
Benefits of Role Assignment

- Defined expectations for each student
- Roles can be rotated periodically
- **Jigsaw**: applicable to team assignments that call for expertise in distinct areas.
- Laboratory Example: experimental design, equipment calibration and operation, data analysis, interpretation of results

R.M. Felder and R. Brent, "Cooperative Learning." Chapter from Active Learning: Models from the Analytical Sciences
Break up into **groups of 3-5**

Assign each member of the group a role: [**Reporter, Recorder, Leader, Timekeeper, Clarifier**].

Discuss your case study and answer the questions.

Each group will have **1 minute** to present their findings.

Each group write down (on 3x5 notecard):

1) One remaining question about your case study
2) One positive aspect of your group dynamic
3) One negative aspect of your group dynamic

Hand in notecard to front of class.
Case Studies

1) Social Loafer

2) Lone Wolf
   Terri F. Barr, Exploring the “Lone Wolf” Phenomenon in Student Teams (2005)

3) Cluster of Introverts

4) Achievement Gap
   R.M. Felder, Effective Strategies for Cooperative Learning (2001)
Assessment of Group Work

Informal Assessment
- Minute Papers, Notecards, Writing questions on board

Formal Assessment
- Rubrics, peer evaluations
Assessment of Group Work

- Ensure that groups (and you!) know how each member is doing by integrating assessment throughout the semester.
- Provide regular feedback!
- Give students an opportunity to evaluate the effectiveness of their group.
- Give students an opportunity to evaluate themselves.
XXX has a need to be in control of everything. It is annoying and frequently disrespectful. While he works hard and his work is usually good, his style leads to a lot of wasted effort and replication of work.

XXX worked extremely hard and was often the driving force of the team. The truth is that we would not have finished this project without her. The other side of the truth is that she does not "play very nice" with others. She often forced her will upon the team and rubbed me wrong many times. I had lots of opportunities to "fight" but decided that it wasn't worth it and ended up just letting her dominate. She probably spent more time than anyone on this project and is probably most responsible for the end product (for better or worse). I would not work with her again because I didn't enjoy it but I haven't decided if I would hire her or not. She has many obvious qualities, and as far as performance goes, she is very useful.

XXX was very supportive whenever I needed help. She was also great in organizing the meetings and making sure the group time line was well defined and respected. I found XXX was a very good project manager.

XXX was a joy to work with. He worked extremely hard and provided good insight. He was always there for the team and never complained. He had good ideas, I just wish he would have spoken up a little more.
Find a group of 3-5 people in your discipline:

[Life Sciences, Math/Computer Science, Physical Sciences, Social Sciences, and Engineering]

Design a classroom evaluation for student group-work which measures:

1) Understanding of key concepts
2) Group effectiveness

If people in your group brought co-op problems, you can use them as the basis for your evaluation.

Otherwise, discuss the general strategies for problem types common in your discipline.
Wrap up: Your experiences today!

- Provide clear instructions and expectations at the beginning of group work.
- Self-selected vs. instructor assigned groups
- Assigning roles for team problem solving
- Benefits of formal vs. informal assessment

Please turn in EVALUATIONS before you leave.
Further Reading

- http://serc.carleton.edu/introgeo/cooperative/index.html
Preparing Future Faculty to Assess Student Learning is a joint project of the Graduate School, CTE, and CU-CIRTL.