

## Group Work

The point of group work is to provide active learning activities that help students master content to a deep level and also develop skills in doing important things with the content. This will enable students to recall and use concepts from your course in future courses and life beyond university, more so than they would otherwise likely gain from the lecture format only. Research evidence bears this out (Spronken-Smith, Batchelor, O'Steen, & Angelo, p. 57).

### Essential Aspects of Group Work

Share your reasons for using group work, explaining that it is based on research evidence on the scholarship of teaching and learning. It is motivating for students if they understand the benefits of collaborative learning, and including them in discussions about teaching techniques helps them think about how they learn and moves them down the road towards becoming self-managing learners. Otherwise, students may think you are using group work to avoid lecturing or course preparation.

**1. Task Identification:** Group work is best for application activities, where students have to do something useful (that is, connected to knowledge and skills outcomes). Some examples are:

- Solving “ill structured problems” (examples or vignettes that have both relevant and irrelevant information, unlabelled, and students need to figure out what is relevant and what to do)
- Deciding between equally appealing alternatives
- Discussing or debating issues
- Categorizing or prioritizing ideas

The activity should strike a balance between providing a challenging task that demands higher-level thinking, and (b) enough supportive structure that students can reasonably be expected to meet this challenge. Completing these types of tasks in a group rather than individually may help students overcome fear and anxiety that demanding assignments may provoke.

### 2. Timing:

Prior to lecturing, to help students recall prior knowledge and to heighten interest:

- Formulating group responses a series of true/false or agree/disagree statements relating to upcoming lecture material.
- Brainstorming/free associating about the upcoming lecture topic

Prior to another type of active learning activity (e.g., group activity, discussion, or video), develop questions they hope will be addressed in an upcoming class discussion.

After another type of active learning activity (e.g., after a class discussion where group members identify positions or issues that were overlooked in the discussion, or share whether their pre-discussion opinions were changed or strengthened).

During the lecture, at a critical point ask groups to compare notes, resolve conflicting ideas or perspective, develop specific examples, or create possible test questions.

An end-of-class activity, to respond as a group to lecture concepts with a group "minute paper" or "reaction paper," a statement of what they learned or what issues they feel are still unresolved or unclear.

### **3. Group Composition:**

The instructor should create groups that will be involved in topics that require critical thinking (e.g., evaluation or synthesis) or personal opinion (e.g., values or diversity).

Create homogenous groups (similar academic major or with similar course interests, residential proximity, class and work schedules if group continues outside of class) to promote bonding, productivity, and synergy among group members.

Create heterogenous groups (different or diverse with respect to gender, cultural background, age, student status (e.g., direct-from school and re-entry students), levels of academic achievement, learning styles, and/or personality profiles) to promote critical thinking, appreciation of diversity, cultural harmony and to increase friendships amongst people of diverse backgrounds.

Forming groups based on proximity or students' choice is quickest, especially for large classes. The trade-off is that less is learned because students end up working with friends or, at least, the same people.

You can randomly assign students to groups by

- Counting off and grouping them according to number
- Having them line up according to birthday, height, hair colour, etc., before dividing them;
- Distributing candy (e.g., Starburst or hard, coloured candies) and group students according to the flavour they choose.

When diversity within the group is important, assign students according to information you collect from each student, perhaps on index cards or in email, on the first day of class in which they offer important information about their backgrounds, knowledge, and interests. Or, ask students to state their preferences (e.g., list three students with whom they would most like to work, or two topics they would most like to study), and take them into account as you assign them to groups.

### **4. Group Size:**

Standard practice is groups ranging in size from 3-6 students. Larger groups (5-6 students) are more likely to ensure that individual students are exposed to a rich diversity of viewpoints and thinking styles with respect to the group task. As group size increases, the trade-off is that

- Each person participates less often, and
- It's easier to coast on other people's work (aka "social loafing")
- It's harder for each group member to learn all the knowledge and skills that are the point of the group activity.
- The logistics of group meetings outside of class (for assignments) become more time consuming.

An even number of group members makes it easier to form equal-sized subgroups for specific partial tasks.

### 5. Group Duration:

If group composition is changed every class or two, students have a wider variety of experiences. Longer duration may foster social cohesion and bonding (emotional ties) among teammates, which are good for many types of more complex tasks. Also, if students know that they will be working with the same people for a long time, then they are more likely to try to resolve group conflicts.

You can take advantage of the benefits of both short and long term groups by having "ad hoc" groups with varying membership and more permanent "base" groups with stable membership throughout the course. Short-term groups may be used for brief, non-threatening tasks (e.g., brainstorming) while long-term groups may be used for cumulative tasks (e.g., group projects) or tasks involving sensitive issues (e.g., personal values).

### 6. Teaching How to Work Together:

Long-term groups need team building activities, such as ice breaker games and team identity formation activities such as creating a team name, photo, and exchanging contact information.

Long-term groups work toward a common product by reaching consensus, or one of the other decision-making methods in the table below. Instructors are wise to provide group work structure through worksheets and lists, and have groups create charts, concept maps, or slide presentations to be shown to the instructor and other groups.

It is a good idea to set up interdependent but complementary roles within the group. "Job descriptions" for each are a bonus. Different types of roles include:

- **Functional roles**, such as recorder, spokesperson, project manager to keep people on time and task, accuracy coach or editor, researcher, "devil's advocate" to test ideas.
- **Cognitive roles**, that contribute one aspect of critical thinking to the group's final product (e.g., application, synthesis, or evaluation); or contributing one important perspective or viewpoint

(e.g., ethical, social, or economic perspective). These roles will be more effectively performed if the instructor explicitly identifies, models, and assigns them.

Should you have group members keep or switch roles over time?

The benefit of role stability is the higher level of performance that comes from opportunities to practice the same task several times and to learn from those experiences.

The benefit of rotating roles amongst team members over time is to "stretch" the student beyond their comfort zone a bit to learn new skills. For example, some students may never develop public speak skills unless they are required to take the role of group "spokesperson." It may be necessary for the instructor to assign specific roles to students rather than allowing them to self-select roles for this to happen.

**Techniques for improving listening skills:** Ask each team member to correctly paraphrase or restate the idea of the teammate who spoke previously, before contribute her or his own idea. Variation: team members say something to affirm some aspect of the previous speaker's comment (e.g., its clarity, creativity, or most powerful point) before contributing.

Structured teamwork can reinforce good teamwork skills by requiring peer evaluation of all team members, or a combination of self, peer, and instructor evaluation, all using the same evaluation rubric. This makes everyone accountable to each other, as is typically the case in collaborative work environments. The following links are examples as idea starters for creating your own evaluation rubric:

<http://www.cse.ohio-state.edu/~neelam/abet/DIRASSMNT/teamworkRubric.html>

<https://www.cmu.edu/teaching/designteach/design/instructionalstrategies/groupprojects/tools/index.html>

Students can improve their team work skills through the workshop "Unlocking the Secrets to Great Group Work" part of Student Affairs and Services Student Success Series:

<http://www.unb.ca/fredericton/studentservices/studentssuccessseries.html>

Interpersonal skills are best learned by "situating" these skills within performance tasks, rather than teaching them separately—they will be more likely to "take hold" or be internalized by students and applied in other small-group settings. It also helps, while doing this, to provide tips on effective skills for communicating and relating to others, such as:

- Encouraging and supporting other group members
- Active listening
- Constructive disagreement
- Conflict resolution
- Consensus building

**Methods of Making Group Decisions:**

Method	Description	When to Use	Pros and Cons
Decision by authority	The group generates ideas and holds open discussions, but the final decision is made by one person.	Appropriate when there is a clear topic expert in the group.	<ul style="list-style-type: none"> <li>• Very fast</li> <li>• Does not maximize the strengths of the individuals in the group</li> <li>• The group may not be dedicated to implementing a decision made by one person</li> </ul>
Decision by majority	The group holds a vote on a particular issue following a period of discussion. The majority wins.	All group members have similar levels of ability and expertise.	<ul style="list-style-type: none"> <li>• Fast</li> <li>• Tyranny of the majority can overwhelm minority views, perhaps encouraging factions to form within the group</li> </ul>
Decision by negative minority	The group holds a vote for the most unpopular idea and eliminates it. They repeat this process until only one idea is left.	Use when there are many ideas and few voters.	<ul style="list-style-type: none"> <li>• Democratic</li> <li>• Group members may feel resentful at having their ideas voted as unpopular</li> <li>• Slow</li> </ul>
Combining ideas	Instead of dropping one idea in favor of another, the group searches for possibilities of implementing both or combining them into one solution.	May be useful when there are strongly held opinions on each option.	<ul style="list-style-type: none"> <li>• Polarizing (black-and-white) decisions are avoided</li> <li>• Implementation may take longer since more than one idea is being considered</li> <li>• A decision that combines two solutions can sometimes be worse than either of the original solutions</li> </ul>
Decision by ranking	Group members individually write down the 5 (or fewer) ideas they like best, then rank each idea from 1 to 5, with 5 being the best. The votes are recorded on the board and totalled. The idea with the highest total is selected.	Includes a voting procedure and, therefore, gives the impression that the final decision represents each person's opinion.	<ul style="list-style-type: none"> <li>• Takes time</li> <li>• The numbers game can result in a decision that no one fully supports</li> </ul>
Decision by unanimity	All group members must agree that the decision is the best one.	Everyone will be on board with the decision and resulting course of action	Unanimous agreement might be impossible to reach.
Decision by	All members agree that the	The best way to make	<ul style="list-style-type: none"> <li>• All members feel that they</li> </ul>

Method	Description	When to Use	Pros and Cons
consensus	<p>decision is acceptable. Each member to select one of the following responses:</p> <ol style="list-style-type: none"> <li>1. I can say an unqualified “yes” to the decision.</li> <li>2. I find the decision acceptable.</li> <li>3. I can live with the decision, but I’m not especially enthusiastic about it.</li> <li>4. I do not fully agree with the decision, but I do not choose to block it.</li> <li>5. I do not agree with the decision, and I feel we should explore other options.</li> </ol> <p>Discuss until all answers are 1, 2, 3, or 4.</p>	decisions, if you have the time.	<p>have had an equal opportunity to influence the decision and will continue to support the group</p> <ul style="list-style-type: none"> <li>• May be difficult to reach a consensus</li> <li>• May be very time consuming</li> </ul>

### 7. Instructor’s Role:

Don’t sit in on groups (unless invited) but quietly circulate around the room to:

- Ensure that groups understand the task and stay focused on it.
- Encourage and reinforce instances of cooperation and critical thinking.
- Experience directly students' thought processes, conceptual errors, and depth of reasoning.
- Offer encouragement, catalyze dialogue.
- Issue timely questions that encourage elaboration and higher-order thinking.

Tell students what you will be doing as you circulate and why, so you don’t dampen group interaction because they think you may be “spying.” Also, interacting with groups in this way helps instructors to know students better, which will help focus lecture material and find examples that resonate.

The instructor’s role during group work is to foster a learning environment where all students feel safe and comfortable interacting with their peers, by establishing a classroom climate where students are encouraged to express their ideas without fear of rejection or recrimination, denigration is forbidden, and where diversity is appreciated, not merely tolerated. Interventions should be unobtrusive, empowering rather than interfering with the development of self-reliance and independence from authority.

### 8. Full Class Learning From Group Work:

For knowledge and skills that everyone needs to master, the group work must be structured in such a way as to ensure that everyone in the group gets them, and that the division of labour in the group-produce product does not prevent this from happening. There is such a thing as overspecialization of labour. Also, if the work roles are set up and/or rotated to ensure everyone does things that will result in them mastering all the knowledge and skills, there needs to be accountability to make sure the work unfolds as planned. This can be done through peer evaluation according to criteria in an evaluation rubric.

There are several ways to “put it all together” for the class after group work activities:

- **Report Back to Class:** Each group’s reporter shares its main ideas with the class. The instructor can write the main ideas reported from each group on a visual display the whole class can see, validating their contributions, and identifying important themes and variations across groups.
- **Reporters to Groups:** Each group has a "roving reporter" who visits other groups to share her or his team's ideas. Remaining members of her or his team stay together and act as "listener-synthesizers" who actively listen to the ideas presented by successive roving reporters from other groups and integrate the new ideas with those originally generated by their own team.
- **Group-Share-And-Synthesize:** Rotate each small group clockwise to merge with another small group to share and synthesize their separate work. The process continues until each group has had a paired interaction all other learning groups in class. The final step is for each team to generate a final product which is a composite of their own work and the best ideas gleaned from their interactions with other groups.

### 9. Should the Group Work Be Done Outside of Class?

This is fine but keep in mind the logistical challenges of meeting outside of class and putting disparate parts of a project together often make the time and effort of group learning higher than for individual projects. You need to figure out how to streamline this process.

### Types of Groups

These challenges were reported in a survey of hundreds of professors using peer instruction in a variety of disciplines (Fagan, Crouch & Mazur):

Type	Description	Tips
<b>Buzz groups</b>  Class size: any Time frame: 3-10 minutes	Students engage in short, informal discussions, often in response to a starter sentence or question. Have students turn to 1-3 neighbours to answer a question, define or give examples of key concepts, speculate on	This method is very flexible: it is easy to implement in any size of class and in most classrooms, even the most formally arranged lecture hall. Consider

Type	Description	Tips
Setting: no limitations Purpose: to generate ideas/answers, stimulate student interest, gauge student understanding	what will happen next in the class, or discuss any difficulties in understanding. The best discussions are those in which students make judgments regarding the relative merits, relevance, or usefulness of an aspect of the lecture (Brookfield & Preskill, p. 48). For example, “What’s the most contentious statement you’ve heard so far in the lecture today?” or “What’s the most unsupported assertion you’ve heard in the lecture today?” Reconvene afterwards and ask students to share ideas or questions that arose within their groups and have a general discussion.	how to regain the attention of a large group (e.g., turning the lights off and on).
<b>Think-pair-share</b> Class size: any Time frame: 5-10 mins. Setting: no limitations Purpose: to generate ideas, increase students’ confidence in their answers, encourage broad participation	<ol style="list-style-type: none"> <li>1. First, ask students to think individually about a particular question or scenario.</li> <li>2. Then, pair up to discuss and compare their ideas.</li> <li>3. Finally, share their ideas in a large class discussion.</li> </ol>	All students are forced to attempt an initial response to the question, which they can then clarify and expand as they collaborate. Being able to validate their ideas in a small group before mentioning them to the large group may help shy students feel more confident participating.
<b>Circle of Voices</b> Class size: any Time frame: 10-20 mins. Setting: moveable chairs preferable Purpose: to generate ideas, develop listening skills, have all students participate, equalize learning environment	Students take turns speaking. Students form circles of four or five. Provide a topic and allow a few minutes for students to organize their thoughts. Then, begin discussion by giving one student in each group up to three minutes (for example) of uninterrupted time to speak to the group. During this time, no one else is allowed to say anything. Then the next person to the right has her or his turn. After everyone in each circle has spoken once, open the floor within each group for general discussion. Specify that students should only build on what someone else has said, not on their own ideas; also, at this point, they should not introduce new ideas (Brookfield & Preskill, p. 80).	Lessen shy students’ fear of speaking by making the topic specific and relevant or by giving each person a relevant quote to speak about. A variation which encourages students to listen more carefully to each other is to require each person to begin by paraphrasing the previous speaker’s comments or by showing how his or her remarks relate to those of the previous speaker. For this variation, students may need less preparation time before the “circle” begins, but may need more time between speakers.
<b>Rotating Trios</b>	This strategy involves students discussing issues with many of their fellow classmates in	This type of group can be arranged with pairs or

Type	Description	Tips
<p>Class size: 15-30 Time frame: 10 or more minutes Setting: a fair bit of space, moveable seating helpful (they could stand) Purpose: to introduce students to many of their peers, generate ideas</p>	<p>turn. Beforehand, prepare discussion questions. In class, students form trios, with the groups arranged in a large circle or square formation. Give the students a question and suggest that each person take a turn answering. After a suitable time period, ask the trios to assign a 0, 1, or 2 to each of its members. Then direct the #1s to rotate one trio clockwise, the #2s to rotate two trios clockwise, and the #0s to remain in the same place; the result will be completely new trios. Now introduce a new, slightly more difficult question. Rotate trios and introduce new questions as many times as you like.</p>	<p>foursomes and works well with most subject matter, including computational questions. It would be difficult to implement in a large class, however.</p>
<p><b>Snowball Groups/Pyramids</b></p> <p>Class size: 12-50 Time frame: 15-20 mins., depending on how many times the groups “snowball” Setting: moveable seating required Purpose: to generate well-vetted ideas, narrow a topic, develop decision-making skills</p>	<p>This method involves progressive doubling: students first work alone, then in pairs, then in fours, and so on. In most cases, after working in fours, students come together for a plenary session in which their conclusions or solutions are pooled. Provide a sequence of increasingly complex tasks so that students do not become bored with repeated discussion at multiple stages. For example, have students record a few questions that relate to the class topic. In pairs, students try to answer one another’s questions. Pairs join together to make fours and identify, depending on the topic, either unanswered questions or areas of controversy or relevant principles based on their previous discussions. Back in the large class group, one representative from each group reports the group’s conclusions.</p>	<p>This method takes time to unfold, so should be used only when the concepts under discussion warrant the time. Also, depending on the amount of time allotted, students may feel that certain nuances of their discussions are lost.</p>
<p><b>Jigsaw</b></p> <p>Class size: 10-50 Time frame: 20 or more minutes Setting: moveable seating required, a lot of space preferable Purpose: to learn concepts in-depth, develop teamwork, have students</p>	<p>This strategy involves each group of students becoming “experts” on one aspect of a topic, then group members dispersing to share their expertise with others. Divide a topic into a few constituent parts (“puzzle pieces”). Form groups of 3-5 and assign each group a different “piece” of the topic. Each group’s task is to develop expertise on its particular subtopic by brainstorming, developing ideas, and researching. Once students have become experts on a particular subtopic, shuffle the groups so that the members of each new group have a different area of expertise.</p>	<p>If the class is large, assign two or more subgroups to each subtopic. The jigsaw helps to avoid tiresome plenary sessions, because most of the information is shared in small groups. This method can be expanded by having students develop expertise about their subtopics first through independent research outside of class. Then, when they meet with those who have the same</p>

Type	Description	Tips
teaching students	Students then take turns sharing their expertise with the other group members, thereby creating a completed “puzzle” of knowledge about the main topic. A convenient way to assign different areas of expertise is to distribute handouts of different colours. For the first stage of the group work, groups are composed of students with the same colour of handout; for the second stage, each member of the newly formed groups must have a different colour of handout. Students can make notes individually or have an easel with newsprint on which group notes are made.	subtopic, they can clarify and expand on their expertise before moving to a new group. One potential drawback is that students hear only one group’s expertise on a particular topic and don’t benefit as much from the insight of the whole class; to address this issue, you could collect a written record of each group’s work and create a master document—a truly complete puzzle—on the topic.
<p><b>Fishbowl</b> Class size: 10-50 Time frame: 15 or more mins. Setting: moveable seating and a lot of space preferable; if necessary, have inner group stand/sit at front of class and the outer group sit in regular seats Purpose: to observe group interaction, provide real illustrations for concepts, provide opportunity for analysis</p>	This method involves one group observing another group. The first group forms a circle and either discusses an issue or topic, does a role play, or performs a brief drama. The second group forms a circle around the inner group. Depending on the inner group’s task and the context of your course, the outer group can look for themes, patterns, soundness of argument, etc., in the inner group’s discussion, analyze the inner group’s functioning as a group, or simply watch and comment on the role play. Debrief with both groups at the end in a plenary to capture their experiences.	The outer group members can become bored if their task is not challenging enough. You could have groups switch places and roles to prevent this. The inner group could feel inhibited by the observers. Asking for volunteers to participate in the inner circle or specifying that each student will have a chance to be both inner and outer group members may mitigate this concern. Although this method is easiest to implement in small classes, you could also expand it so that multiple “fishbowls” are occurring at once.

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