

How to work effectively in groups

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During your studies, you will be frequently required to work in groups. The reason is simple: as future engineers employed by a company, most of your work will be accomplished as part of a team, not alone, and often on several projects in parallel. Your team may even be scattered throughout the world and time zones. Group work does however require interpersonal skills related to communication, project management or leadership.

The rest of this document provides recommendations to help your group succeed by collaborating with each other, as well as to help you identify your own strengths and weaknesses. Recommendations are based on references [1, 3, 2] which are listed at the end of this document, as well as on my own experience as a former student and instructor:

1. **Establish a common goal:** review the assignment goals and discuss your understanding of it with other group members. Make sure everyone understands what they will need to achieve, and how the final product, e.g., a report and a presentation, will be assessed (graded). If necessary, ask for clarifications to the instructor.
2. **Divide your group's work into small tasks:** while the overall workload may seem daunting at first, splitting it into several smaller tasks makes it easier to deal with. This is also required to dispatch the tasks among the group members, preferably according your respective skills and preferences. Make sure that each member understands that he/she is *responsible* for his/her own tasks, and that the corresponding time commitments are as evenly balanced as possible. As a general rule, everyone should participate equally. Note that, as described below, the tasks include a lot more than just splitting the report writing into several parts!
3. **Assign roles:** based on the above, it is good practice to identify from the start *who* will be doing *what* and *when*. One person may have several roles, and roles can change. Roles typically include leader, writer, researcher, editor, organizer, and presenter. For example, the role of the editor is to make sure that the final product is logical and consistent: use of the same formatting, writing style, references, abbreviations and notations, coherence of transitions, etc. In other words, the editor should make sure that the final product is written as a group, and is not just the merging of several individual works. *More details about each role can be found in [1], which is reproduced at the end of this file.*
4. **Create a timeline:** as the saying goes, failing to plan is planning to fail. This means that you should prepare a schedule of your work until submission, e.g., in the form of a Gantt chart with deadlines, week by week, task by task. This will enable you to plan your work adequately, considering the time required to carry out each task, their interactions (and interdependences), and constraints like exams. In the end, this should show you that you need to work efficiently from the start: do not waste time, or your final product will not be impressive.
5. **Schedule meetings:** frequent meetings are necessary to keep everyone up to date with what has been done, discuss the overall progress with respect to the Gantt chart and any topic that may seem relevant, and decide on the next steps. Meetings can be done in person, e.g., on campus, or online, e.g., using Skype or Google Hangouts. Take notes of the discussions and decisions for future reference, as well as of who did not attend the meeting or did not complete their assigned work. Establish a protocol to follow when someone cannot attend a

meeting (e.g., send a report in advance). Meeting minutes (notes) should be made available to all group members. Note that in case a presentation is required, sufficient meeting time should be allotted to rehearsals.

6. **Create a communication plan:** share email addresses and phone numbers to facilitate contact, and create a dedicated, shared folder on an online collaboration platform such as Dropbox or Google Drive. This will make file sharing and report editing much easier, without having to deal with multiple versions of the same file.
7. **Resolve conflicts:** as we are all humans and therefore imperfect and unique, conflicts will arise in most groups. These conflicts must however be resolved *quickly* and *fairly*, in a respectful manner. Only consult your instructor if no solution can be found in the group. *More details about how to deal with such issues can also be found in [1].*

References

- [1] University of Waterloo – Student Success Office. *Working effectively in groups*.
https://uwaterloo.ca/student-success/sites/ca.student-success/files/uploads/files/TipSheet_GroupWork_0.pdf
- [2] University of Leicester – Student Learning Development. *Successful group projects*.
<https://www2.le.ac.uk/offices/ld/resources/study-guides-pdfs/study-skills-pdfs/successful-group-projects>
- [3] MacEwan University – Student Success Program. *10 tips for Working Effectively in Groups*.
<https://learningmatters.viu.ca/sites/default/files/pdf/tips/10-tips-working-effectively-groups-web.pdf>

Working effectively in groups

Group work is a fantastic opportunity for students to draw on the strengths and experience of their peers. However, often group work is a new experience for some students and can result in stressful situations. The following material is meant to give students some helpful advice in order to create a successful group.

Get organized

1. **Assign roles.** See examples of roles below.
2. **Create a timeline.** A timeline is important to make sure the project isn't left until the last minute.
3. **Divide projects into chunks.** Distribute work between members to make it less overwhelming. This also makes it easier to complete because group members can work independently on their sections.
4. **Schedule meetings.** Group meetings do not have to be done in person. They could use virtual technology such as Skype or chat applications. Sometimes projects can be organized mostly via email which makes it easy to share notes and research.
5. **Create a communication plan.** However you decide to organize your communication, it is important to set mutually agreed upon ground rules for contribution. For example, if you miss a meeting you could be expected to read and respond to notes taken at the meeting within 24 hours. Or, if you consistently miss meetings/fail to communicate/produce work, you may not be given credit for the project. That being said, life happens. Put yourself in the shoes of your group members. Try and understand where they are coming from and be inclusive as much as possible.



Group roles

In order to work effectively as a group assigning group roles and division of labour is critical. The following list is not exhaustive, but it can be a starting place of assigning roles to suit your group's needs.



1. Leader

- Leads discussion with open-ended questions
- Encourages all group members
- Facilitates brainstorming by summarizing and clarifying group comments
- Helps guide conversation and focuses on positive statements
- Checks for consensus or questions from group members

2. Organizer

- Schedules meetings
- Keeps the project on track
- Thinks about the 'big picture'
- Ensures meetings follow a time line/agenda
- Takes notes at meetings to send to everyone afterwards

3. Editor(s)

- Edits completed work
- Compiles different pieces of reports/presentations from different group members to create 'flow' and consistency

4. Researcher(s)

- Researches topics for the project
- Presents information to the group
- Provides the group members with sources and information

5. Writer(s)

- Writes the project/report/presentation
- Responsible to follow guideline so that editor(s) have time to review and compile information

6. Trouble-Shooter/Brainstormer

- Thinks about positive/negatives of ideas presented by the group
- Thinks about possible solutions to problems
- Critiques project based on assignment expectations/rubric to ensure success

7. Presenter(s)

- Works with group members to compile and create presentation
- Presents information to class



Group work challenges and solutions

Group work challenges	Description	Solution
Scheduling problems	This can create roadblocks to getting started/continuing with projects. It is frustrating for students who feel that others aren't compromising and don't take their situation into consideration.	<ul style="list-style-type: none"> • Try and be understanding of others' schedules and responsibilities which may be different from your own. • Consider using virtual meeting spaces such as messenger chats, Skype, and email to communicate. • Take turns picking the venue and time of the meeting.
Group conflict	Group conflict is natural and often necessary for effective projects. Sometimes though, it escalates and makes it even more difficult to focus.	<ul style="list-style-type: none"> • Don't let personal feelings impact your work in the group. Focus on the task. • Try and find common ground between two ideas to reach reconciliation. • Address conflicts directly and respectfully.
Uneven contribution	<ul style="list-style-type: none"> • Some group members don't contribute to the group project or aren't perceived to be contributing to the group. • This creates tension in the group and is unfair to the group members 	<ul style="list-style-type: none"> • Set up clear guidelines and work expectations at the beginning of the group project. • Assign roles and responsibilities so that each person will be making an equal contribution. • Speak directly, but respectfully to the person who is not completing their work.



Group work challenges	Description	Solution
Different expectations	<ul style="list-style-type: none"> • Some members strive for perfection, while others simply want to pass. Some begin projects in advance, while others procrastinate. • This can create tension because the group is not working towards the same goal. 	<ul style="list-style-type: none"> • Early communication is key to make sure everyone is focused on common goals. • Keep goals realistic and understand that your actions affect others in the group. • Make a timeline so that your group can stay on an agreed plan for getting the project done.
Getting stuck	At some point groups may get 'stuck' and hit a mental road block. This is discouraging and can lead to procrastination and avoidance.	Reread project expectations and goals. Have a brainstorming session where ideas are discussed. Create a mind map to link common ideas and trains of thought. Seek help from your professor if you remain stuck.
Groupthink	'Groupthink' occurs when members of a group agree with other group members in order to avoid conflict. This stifles creativity and constructive evaluation of alternative ideas.	Thinking critically about ideas presented, offering and assessing alternatives, and embracing diverse opinions from group members. Work through projects analytically using the groups' combined knowledge and experience.

