

Two heads are better than one

Exploring the features, issues and opportunities in student group work

A guidance report resulting from a Faculty of Science & Engineering Task & Finish Group

September 2022

Content

Introduction	3
Using this guidance	4
Gathering insights: Methods	5
Themes	7
1. Making groups work - management and logistics of group work	8
2. Developing student know-how – teaching of group work	11
3. Monitoring student progress – assessment of group work	15
Emerging considerations	18
10 Key Points about Group-work	19
Further reading	22
Acknowledgements	23

“

*Two heads are better than one,
not because either is infallible,
but because they are unlikely to
go wrong in the same direction.*
C S Lewis

”

Introduction

Task & Finish Group Aims

- To identify and describe the group work practice that currently takes place in FSE disciplines
- To explore the ways in which groupwork practice is taught and assessed
- To draw on staff experience to collate guidance to inform practice across FSE
- To innovate ideas towards areas where development in groupwork practice is a need

The University guidance highlights that teaching and learning in small groups serves a number of educational purposes, including:

- a. **Studying collaboratively has been shown to directly enhance learning as it enables a variety of ideas and resources to be discussed/used, and encourages deep learning and consequently better retention of knowledge;**
- a. **Developing the growth of students' inter-personal skills, and skills of reasoning, problem solving and leadership;**
- a. **Employers value the particular skills which group work may help develop, such as teamwork, negotiation and communication skills**

Group work ranges from small group activities that enable students to explore problem or open-ended questions on a topic to longer-term assessed group problem or design-based projects, requiring them to collaborate to cocreate an artefact or solution to a science or

engineering problem. Recent studies have suggested that in order to complete tasks, students typically can be found to complete sections individually and consolidate their individual parts to form a complete group solution (Kelly et al, 2020). In general students allocated individual roles to group members so that they worked in parallel to complete a section and combined their individual parts at the end. This suggests that students are working independently rather than collaboratively, although the benefits still showed in that collaborative work could promote attendance and improved engagement in module activities during the semester.

In this Task & Finish Group we were keen to explore the ways in which group work was undertaken across the Faculty of Science & Engineering. We set out to identify where group work was taking place, how often, for what purpose and the issues arising from its management, teaching and assessment. Our intention was to identify practices that could be shared between colleagues to support our commitment to the ongoing improvement of students' experience in STEM education.

Using this guidance

This guidance is offered as an internally-focused guidance report that presents findings as seen through the eyes of academic colleagues across the FSE disciplines. The information will be useful for individual reflection on practice and to inform discussion and decision making between colleagues engaged in planning, administration, delivery and assessment of group work.

The guidance presents the views and experiences of colleagues in the Faculty. It 'holds a mirror up to' our current practice and invites us all to consider the strategic and operational changes that would further improve student and staff experiences of group work teaching, learning and assessment.

Teaching and teaching-support staff may use this guidance to reflect on individual practice and to inspire dialogue with colleagues. The guidance provides useful stimulus to share personal experiences, to develop ideas and to become increasingly open about our pedagogy as a community of teaching professionals.

Key questions to consider:

- How does my work compare to that of others?
- Are there areas of interest that we could take forward in the short-term that could maximise the impact of the experience of my colleagues?
- Is there professional development that can be identified and offered to deepen understanding and reflection on theory as well as the sharing of ideas?

Leadership teams may use this guidance to undertake strategic dialogue about student and staff experiences of group work, with increased insight into current practice across

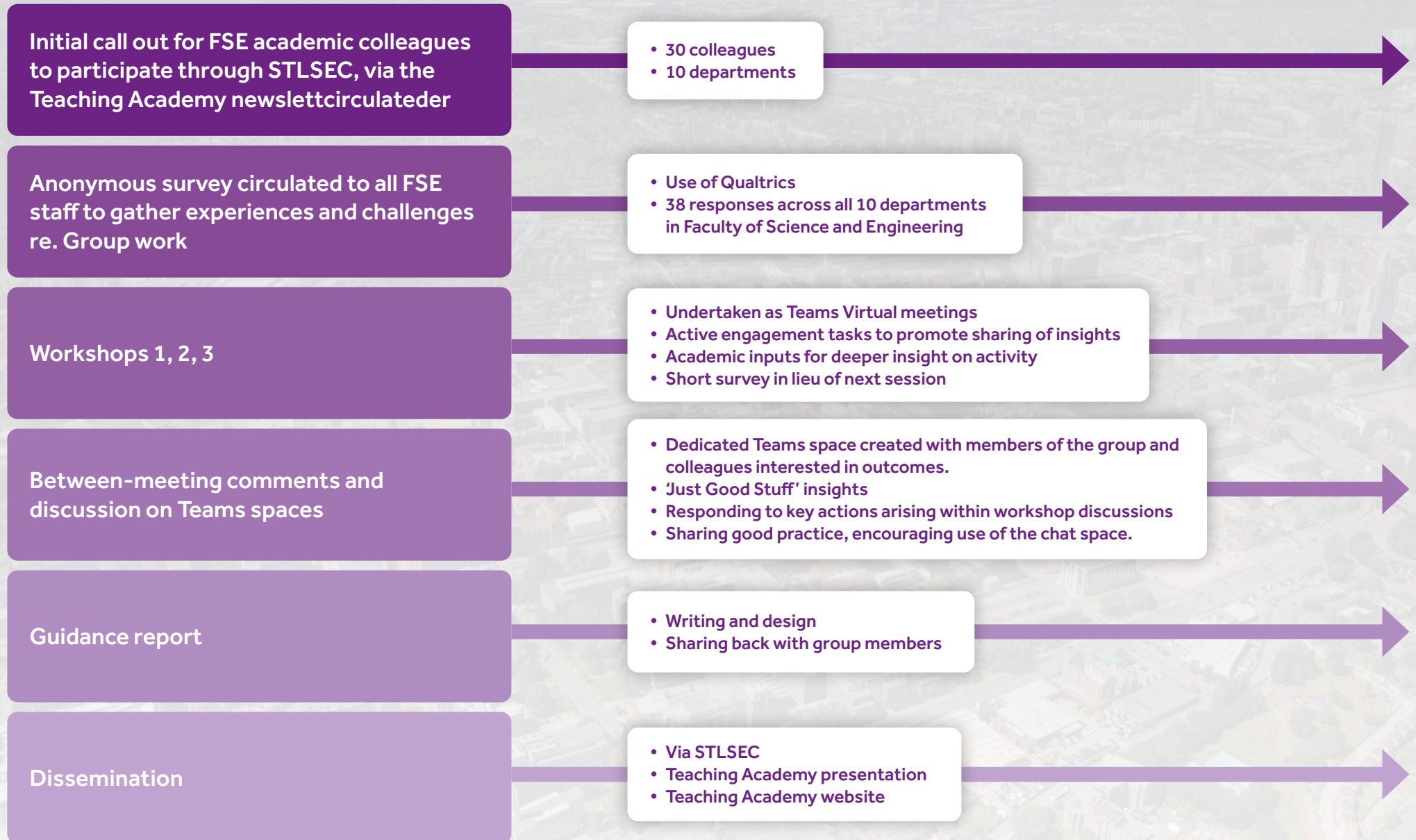
the Faculty. The guidance enables strategic teams to develop action plans and to decide on whether there are areas of group work practice that may benefit from increased consistency across disciplines. Key questions to consider:

- How does the group work practice in our department compare to those across the Faculty?
- Are there strengths or gaps in group work provision and how do we capitalise on them or address them?

Students may use this guidance to inform discussion with peers and with staff. The perspectives and viewpoints of students is a necessary part of taking this guidance forward. By using this guidance key questions for students are:

- Do our current approaches to group work impact on your learning experience?
- How can group work be improved to further develop collaborative learning?

Gathering insights: **Methods**



Ranking aspects of group work

Survey responses showed the areas which they found most and least challenging to deal with, when involving students in group work

Workshop 1

Focus: Practicalities of managing student group work projects

Areas of discussion:

- student group allocation
- student group sizes
- mitigating issues

Workshop 2

Focus: Teaching for groupwork

Areas of discussion:

- Teaching for groupwork
- What good groupwork is.
- How students receive communications

Workshop 3

Focus: Assessment and Feedback

Areas of discussion:

- Issues that posed a challenge for students
- Focus and format of assessment.
- What is the most important thing to access – the end product or the journey?

Most challenging



Least challenging

Mitigating problems – absence of a group member, disputes/ disagreements, avoiding poor academic practice and malpractice

Assessment of group work – mark allocation, distributing feedback, group developed documents

Managing groups to be successful – supporting them to get started, meet deadlines, share information, stay on track

Teaching of group-work – teaching students about professional competencies/group work

Accessing information about the groups – where information is found or stored

Group size – deciding how many students are in a group

Themes

In this section, the guidance is grouped into three themes that provides detail of the responses provided by the Task & Finish group participants. Within each section there is exemplification of activity provided by academic colleagues. Each theme is intrinsically linked and the commentary is not offered by way of making judgements but to shed light on experiences and practices, and to highlight where further strategic development may be required.



Making groups work

Management and logistics of group work



Developing student know-how

Teaching of group work



Monitoring student progress

Assessment of group work





Making groups work

Management and logistics of group work

Group work is a common active learning strategy in higher education when the goal is to enhance deep learning and develop teamwork skills. Culturally diverse learning groups are particularly valuable in preparing university students to participate in a globalized world. Student engagement in group work is critical in realizing these benefits. Poort, 2020

Participants explained how they get students started with group work, and set expectations in order to enhance success by supporting them to stay on track.

Selecting student groups – current practice

Student groups are informed before the semester starts via email with the groups set up within Blackboard timetabling. Supervisor meetings then enable monitoring of activity and progress. Selection happens in various ways:

Students self selection: students self choice, guided by their seminar groups. This can reduce tension between students, especially where language barriers may be prevalent.

Blackboard 'Shuffle' function: provides random selection.

Alphabetical groupings: useful for speed and consistency.

Demographic/EDIA groupings: used to avoid groups that are made up of only one nationality, or where there is only one student of a particular gender, e.g. only one female.

Timetabling groupings: for lab grouping there can be restrictions on grouping due to course timetabling arrangements

PASS coordinator selected groupings: when first year students are assigned to groups by leaders who have done the same degree.



Pause for thought...

How do we accommodate for students with low literacy and language?

- What inclusive group work practices can support international students?
- How do groupwork practices translate across cultures? Are there key differences that need to be taken into account?



Making groups work

FAQs about group-work management

It's been very useful to find out how others approach the issue of group work.

How many students populate a group?

Groups currently range from 1 to over 6. 3-5 students in a group is ideal and means that if a student drops out, the project can still continue successfully.

What determines group size?

In large cohorts, group size is influenced by resources, lab space and availability and to limit marking load. On occasion this is also affected if it is challenging to find supervisors for groups.

Are students given guidance on expectations for group work?

There is a recognised expectation that everyone takes part in presentations, when students clarify their roles in completing the group work task.

How are individual student inputs recognised within the group?

Practices included: Each student submitting their own work (they work in a group on a task and then submit an independent piece of work); peer marking for a final mark that is then moderated by staff; mid-point presentations; accreditation statement from the students in final report of who did what task, weekly journal entries on Blackboard to comment on individual progress within the group. There is a danger that the student whose job it is to 'write up the report' overstates their contribution, and complaints do arise when some students don't feel their contribution has been adequately represented in a group submission.

How are marks awarded in a group work assignment?

All students get the same score unless it is clear there is no engagement.



Pause for thought...

Is a group of one student acceptable?

- Does this authentically satisfy intended learning outcomes for collaborative groupwork?
- Are there any circumstances, e.g. DASS, where this should be accepted?



Making groups work

Case insight Dept of Mathematics

The discussions have opened my eyes to the different options for assessing groupwork.

Charles Walkden

Director of Teaching and Learning
in the Department of Mathematics

Pre-sessions for Group Work

Context: Second year Communication and group project, often the first-time maths students have worked within a group.

Session on working in a group: Reminding students that everybody is different, unique set of skills, reinforce the idea that the whole is better than the sum of the parts.

Key activities

Personality Tests: Working with the library and careers to create sessions where students can do personality tests eg Myers Briggs to highlight that people think and work in different ways.

Practical Suggestions: Encouraging students to establish a group contract, agree frequency and location of meetings, how files and resources are going to be shared. Encourage students to create a 'group contract' to follow.





Developing student know-how

Teaching of group work

Group work is a teaching strategy that deliberately creates a social setting for learning to enhance deep learning, however a group assignment, in itself, does not guarantee knowledge co-construction; it is through communication, interaction and collaboration that knowledge is co-constructed. Oxford, 2020

Participants explained how they teach students about group work, noting that this was mainly informal.

Teaching of group-work – current practice

Teaching mainly takes using a blended approach – in person supported by remote activities using My Learning Essentials, personality quizzes. Generally, this was provided by academic tutors and Graduate Teaching Assistants in through:

- Supervisory inputs, informal and anecdotal advice raising students' awareness:
- That groups may not always work well at all times
 - About tracking and evidencing progress using a group work log-book
 - About identifying and working to individual areas of strength
 - The importance of equal contribution and role allocation and to have a plan Have a plan for students who can't or don't participate
- Formal lectures about working in teams and thinking about key features of good communication, regular meetings, minute taking, assigning tasks.



Pause for thought...

Should there be a consistent approach to teaching of group work across FSE?

- Are there aspects of group work that are discipline specific?
- Do accrediting bodies influence our teaching practice of group work?
- Are we confident that all students across FSE receive an equitable experience of teaching about group-work?



Developing student know-how

FAQs about teaching of group work

What are the things students find most difficult to understand about effective group-work

- Students find it most difficult to understand how lead a group. Delegation of group leader happens without clear understanding of how to chair or bring the group together and share information.
- Sharing work fairly also poses issue. Some students can be found taking too much on board personally, sometimes in response to other students slow progress – they wish to 'get it done properly'.
- Some students seem not to take group-work seriously or recognise the transferable skills it provides opportunity to develop. As a result, when a group mark is applied, they can have a tendency to coast.
- Empathy – students can struggle to understand the circumstances of their peers and accommodate for them.
- Trust – supporting students to understand that their mark is coupled with what their peers do is challenging. They can be found to not trust each other as they are most familiar with individual exams.
- Taking responsibility for their on conduct in the group and recognising the impact this has on other students – some students can end up being isolated or overly dominant.
- When a student is struggling, they sometimes don't feel comfortable sharing this with their group



Pause for thought...

What should students consistently be taught about group work?

- Should students receive input early in their degree programmes?
- Could there be optional inputs for group/team leaders? Do all students need all inputs?
- Are academic adequately informed to provide informal and/or formal inputs?

How is the teaching of group-work planned for, logged, saved and made accessible afterwards?

- A variety of approaches are used, e.g. In MACE student logs are not shared with each other; in Computer Science a short, non-mark bearing, oral reflection on progress is shared. This received mixed experience, and best when students engage with it fully. In Materials students write a Wiki – a useful formative piece of work that is undertaken part way the group work experience that promotes reflection on practice.



Developing student know-how

Case insight Dept of Materials

It's been inspiring and illuminating!



Fiona Velez-Colby

Postgraduate Coordinator International Fashion Retail Programme

Project Management and Communication for Group Work

Context: A session in the unit, titled 'Brand Management for Fashion', focuses on the nature of good project management, how to identify different roles in teams, how to foster good relationships in teamwork and how to compare communication channels to assess their suitability for different situations.

Session on working in a group: Students discuss how to sharing good practice, fair division of workload and accountability, as well as how to plan projects thoroughly.

Key activities

- How well do you know yourself? Good habits, bad habits – encourage students to take a personality test.
- How well do you know your skills? Students make a list of all the things you are good at which you will need for this project, linked to the assignment brief.
- The Belbin Team Roles – Students consider which of the 9 team roles fit their characteristics. They list roles they are most confident about performing as number 1, number 2 and so on
- What shared activities do you need to carry out? Understanding how to research, analyse and synthesise information.



Developing student know-how

Case insight Dept of Electronic and Electrical

It's been great to stimulate my quest to find better ways to teach students about the ways of teamworking.



James Brookes
Senior Lecturer,
Academic Lead for
Pedagogy in Science
and Engineering

Teaching and tracking groupwork

Context: A 15-credit compulsory MSc course students work together in teams to research and produce a business case for selected innovation.

Teaching input: Teamworking is taught in the same way as technical material using a flipped approach using two 15 minute videos: Team Working – part 1 and Team Working - part 2; with recommended reading: Chapter 17 of Handbook of Principles of Organizational Behavior and in-class discussion.

Grouping: Students, are randomly assigned into 4's create and submit a 1 page 'Teamwork contract'

outlining when they will meet, how they will work together and how they will overcome the challenges of working in teams.

Learning activities

Tracking progress in groupwork

Each team is given access to a shared "tasks and workload" spreadsheet (attach 'Tasks and workload' to support the monitoring of work against each student. The team meet weekly for a 'planning' meeting to:

- 1) log who has attended the meeting
- 2) tick off completed work for each member
- 3) assign work for the next week, outlining estimated hours per task.

The course tutor has visibility of this which means it is easy to check if any problems are arising.

Challenges: Ensuring students keep the Tracker spreadsheet up to date
Benefit: Highlighting and mitigating problems early.

Reflection & Assessment

Towards the end of the course students complete a survey, within which they score all other team members against two criteria:

- **'Team-based trust'** – Do they feel comfortable asking for help, admitting mistakes, suggesting ideas, and raising concerns with each other?
- **'Task-based trust'** – Can they rely on each other to complete their assigned work on time and to a high quality?

The survey also includes an individual reflection on their overall team performance against given criteria. Finally, each student individually writes a 1-page reflection on teamwork performance, including individual performance in the team and a plan to improve teamwork performance.

An 'Assessment brief' outlines this approach [attach 'Team working assessment brief'].

Even better if... If the course was more than 15 credits I would move the improvement plan and survey to be halfway through the course so that they can see the effects of their improvement plan.



Monitoring student progress

Assessment of group work

Compared with individual learning, collaborative approaches promote higher-quality learning, deeper understanding of course content, more creativity, greater retention of material, and greater student satisfaction.

Gaudet et al., 2010; Johnson et al., 2014

Participants explained the assessment approaches for group-work they used with students and how marks were determined.

Assessment of group-work – current practice

Almost 75% of group work across the Faculty is mark bearing.

Marking criteria and rubrics outline standards of groupwork covering multiple intended learning outcomes. These are provided on Blackboard with marking criteria, and grading descriptions. Rubrics offer detail about different areas of focus within the group-work activity, including technical elements of the problem-based task. The rubric includes a section on the students' management of group work. Adjustment of marks is available for groups that have broken down.

The focus of group-work assessment ranged across the disciplines. Participants explained that assessments either:

- focused on student's ability to reflect on their experience in the group, as opposed to the group's technical output. This draws on students self-awareness and metacognitive skills, or
- focused on the subject matter and output, not the process of groupwork, or
- on both.

Assessment formats included Word/PDF documents, verbal presentations, group presentations, videos, Latex & PDF, extended reports in which sections are completed by each student and brought together as a single document from which a large portion of the marks are allocated to 'group work', reports with recommendations to industry / government.

The emphasis by accrediting bodies to use peer-assessment has its pros and cons. There is a potential danger that students 'game' peer assessments, e.g. agreeing beforehand that all group members award each other 5/5, or 'playing the marks' to influence particular group members.



Pause for thought...

What is the purpose of assessment in group work?

- **Should there be generic rubric for the assessment of group-work?**
- **What are the pros and cons to standardising assessment for group-work across the Faculty?**



Monitoring student progress

I feel inspired by simple solutions to run group work, explained by colleagues who are running things and sharing what they know.

Case insight

Department of Materials



Barbara Waters
Lecturer in
Fashion Business

Using Buddy Check for Peer Assessment

Context: 1st year core UG unit in Fashion Business & Technology with 185 students enrolled. Group assessment worth 30% of final mark.

Activity: A group size of 4-6 students interview a manager within a fashion organisation and give a short analysis of how they approach activities such as operations, planning, organisation, leading and motivation. They produce a Pech Kucha style presentation/video of your findings.

Using Buddycheck: This is set up through Blackboard groups and the evaluation rubric. The system allows students to track team satisfaction, whether the team is on track, view participation rates and edit and adjust marks.

Student Feedback: 71% of students thought that their personal Buddycheck report was useful, 86% preferred peer assessment adjusted marks to a single group mark, 93% found Buddycheck easy to use. But some students felt that their peer review was not reflective of their contributions.

Reported benefits of using Buddycheck: It is easy to use and set up with full Blackboard integration, flexible and adaptable.

Case insight

Foundation Year



Simon Raw
Senior language
Tutor English

Use of Feedback Studio

Context: Working with a supervisor, research and undertake a piece of extended writing on a topic relevant to their chosen degree progression by putting into practice skills developed in Semester 1.

Activity: Students create a project plan worth 10%, project journals worth 10%, project report worth 60% and project presentation worth 20%. All students are awarded the same mark unless there is issues with engagement, lack of contribution to the 4 tasks and attendance to group meetings. This is monitored by liaising closely with supervisors, having catch ups and drop ins with groups, accreditation list drawn up by the group of who did what.

Challenges: It can be hard to standardise marks, even with detailed marking criteria. Markers have unfamiliarity with Foundation Year and student's abilities. Lab based vs non lab-based project groups.

Ideas for the future: To trial peer assessment for presentations next year, add a 10% weight for involvement in peer feedback (possibly using Eduflow)



Monitoring student progress

Samples of assessment approaches for group work

Case insight Civil Engineering

For each member of the team, apart from yourself, award a mark out of 5 for your team member level of participation and contribution in each of the following tasks:

- (A) Initial forming of the team and subsequent actions as a team player
- (B) Developing the conceptual elements to the design and project
- (C) Contribution to the final design and report
- (D) Planning and managing the project, leadership displayed

Note: if you considered all the team members contributed equally to the project then give each person a mark of 3. Marks below and above 3 are awarded for less than, or better than, the norm contribution to the team.

Use the following grading scale and enter your responses in the table on the final page.

1. made an inadequate contribution
2. willing but not very successful, below average
3. average – the 'norm' for the team
4. above average, made a significantly positive contribution
5. outstanding, made an exceptionally positive contribution

Quality of summary report and general presentation	Clear overview, explaining the elements of the project in a well-organised and concise way. Are the various parts of the submission presented and organised in an effective and professional way?	/10
Brief, background and context	Clear brief. Matters that need to be taken into account in the design: general geography, site details, stakeholders, environment, regulatory constraints, overall business of client, site investigations etc.	/15
Final design: general features	Is the final design an effective and efficient solution to the problem? Do the proposed design solutions demonstrate CDM 2015 compliance from a construction, operation and maintenance perspective? Is it clear how residual hazards in the designs will be managed? Is it clear how issues of environmental impact and sustainability have influenced design and the steps taken to address any issues? Is there evidence of a risk management strategy and is this appropriate to the construction plan? Are guidelines, regulations, standards and contracts appropriately used and referenced in all these areas?	/20
Final design: technical details	Engineering drawings, demonstration of suitable engineering judgements, quality of the technical reports, engineering calculations, material specifications and other quantitative and technical details. Clear justification of design against appropriate standards, properly referenced.	/30
Group management and reflection	Group organisation, meetings, communications, individual diaries, clear allocation of roles. Evidence of clear planning of group activities, suitable charts etc. Have the group reflected on the process?	/10
SECTION C TOTAL		/100

Guidance for 'Team Health Checks'

in Course Mechanics, Computer Science

This approach is provided to students to encourage them to reflect on their group work practice. Consider whether your department has anything similar.

Team Health Checks

During the year, there are 3 tutorials where you carry out team health checks. These are structured discussions where you analyse how your team is working and communicating, try to identify potential risks or bad habits that have crept in, and try to resolve these. As usual, you need to prepare for these and take minutes.

To prepare for this, reflect on how your team has worked and how you have worked in your team:

- Re-read your team's rules: do you all stick to them?
- Read the universities policies on dignity at study and harassment reporting mechanisms which are in the University Policies section on Blackboard.

- **Do you feel you make a good contribution to the team?**
 - What kind of contribution?
 - Is there something that stops you from contributing more/better?
 - Do you feel your contribution is valued?
- **How is the communication working in your team?**
 - Does everybody seem to be happy to chat?
 - Is everybody listened to?
- **How is the task distribution working?**
 - Is everybody putting in similar effort?
- **How is decision making working?**
 - Do you discuss choices, plans, etc in a fair way?

Most importantly, do not focus on who is to blame or who is the culprit, but on the change you want to see in the future:

- **Re-read your team's rules: do you all stick to them?**
- **Is any bullying or harassment going on in your team? You may not want to raise all your concerns during your tutorial: feel free to contact your tutor, your Year tutor (Gareth Henshall), or the COMP10120 team (e.g., Uli Sattler).**

10 Key Points for Group-work

The following notes are offered to inform decision making about managing group-work, and suggested advice when communicating with students.

- 1. Group size:** 3-5 students in a group is ideal and means that if a student drops out, the project can still continue successfully.
- 2. Group allocation:** Random allocation of groups using Blackboard Shuffle will authentically emulate professional working practices, and limit any accusations of bias.
- 3. Teaching group-work:** All students should be informed of My Learning Essentials resources in order to provide a level of consistency across FSE disciplines.
- 4. Feedback:** Describe to students how each will receive feedback during the group working activities and also after submission of summatively-assessed work.
- 5. Assessing group-work:** Methods of calculating the group mark should be explicit at the start of the course, including arrangements for peer-assessment. Non-engagement and/or absence of a student from the group will result in no mark being allocated.
- 6. Intended Learning Outcomes:** These should relate to expected methods of working in a group and to the deliverable or artifact being marked.
- 7. Rules for late submission, plagiarism:** State that these apply to the whole group for a single submitted piece of work for that group.
- 8. Extensions:** Make clear to DASS students that automatic coursework extensions do not apply to group work (as noted the **Student guidance on DASS-related Automatic Extensions**). Also, C3 Mit circs extensions cannot be applied for by groups or individuals due to the implications on the full team.
- 9. Resolving disputes:** Explain the procedure and escalation process in case of bias, bullying, coercion or manipulation – consider how the group will raise this formally in the group, resolve in the group, escalate to unit coordinator.
- 10. Re-sits:** Prepare these to assess the same ILOs in case any student has persistent absence, is granted Mitigating Circumstances, or fails.

Emerging considerations

The Task & Finish Group revealed a range of approaches and insights into the way that students in FSE discipline courses experience group work. This guidance focuses mainly on project-based group-work activity and gives insight into ways in which academics manage, teach and assess.

Next steps are for consideration of the information provided, in particular the 'pauses for thoughts' that are collated here.

- *Is a group of one student acceptable?*
- *Should there be a consistent approach to teaching of group-work across FSE?*
- *What should students consistently be taught about group work and when?*
- *What is the purpose of assessment in group work?*










How are marks allocated to students who do not fully complete the group-work assignment or over-perform within it?

Next steps:

As the Faculty continues its commitment to excellence in the student experience, it is recommended that further discussion takes place with:

- students to find out their opinions and experiences on group-work.
- across the Faculty and University with expertise in Equality, Diversity, Inclusion and Access as well as Disability in order to consider the implications for group work


Go-to support for group-work support


How to reflect on group work	Use Reflecting on group-work by My Learning Essentials	
How to allocate mark to group members	Base your judgements on evidence – have a clear marking scheme and rubric. Support with student log books, evidence logs or progress reports.	
How to be a positive and supportive team member	Use Growth Mindset by My Learning Essentials	
How to give feedback to groups	Use of marking rubrics can be really useful to feedback on assessments. For student-to-student feedback see	
What to do when individuals don't contribute to your group	Use Strategies for Effective Group work by My Learning Essentials	
How to avoid duplication of efforts in groups or gaps	Use How to Delegate	
How to develop and make a group presentation	Use Start to finish: Presentations by My Learning Essentials	
How to manage your group to meet deadlines	Use Tools for Groupwork by My Learning Essentials	
How to accommodate disability within group working	Contact DASS and take advice	
How to respond effectively to feedback	Use Making the most of academic feedback	
How to peer assess	Use Peer assessed group work by My Learning Essentials	

Further reading

Internal publications



The University of Manchester Guidance for Assessed Student Group Working. 


Faculty of Science & Engineering Teaching Academy – Planning Collaborative Activities. 

The University of Manchester My Learning Essentials – Start to Finish Groupwork 

Academic works

Higher Education Academy Publications:


- Groupwork 
- Assessing Groupwork 


Kelly, R. McLoughlin, E. & Finlayson, O. E. (2020) Gaudet, A. D., Ramer, L. M., Nakonechny, J., Cragg, J. J., & Ramer, M. S. (2010). Small-group learning in an upper-level university biology class enhances academic performance and student attitudes toward group work. *PLoS One*, 5(12), 1–10. 


Johnson, D. W., Johnson, R. T., & Smith, K. A. (2014). Cooperative learning: Improving university instruction by basing practice on validated theory. *Journal on Excellence in College Teaching*, 25(3–4), 85–118.

Interdisciplinary group work in higher education: A student perspective. *Issues in Educational Research*. 30(3). 1005-1024

Oxford, R. I. (1997). Cooperative learning, collaborative learning, and interactions: Three communicative strands in the language classroom. *The Modern Language Journal*, 81(4), 443–456.

Poort, I., Jansen, E. & Hofman, A. (2019) Intercultural group work in higher education: Costs and benefits from an expectancy-value theory perspective. *International Journal of educational Research*. 93. 218-231 

Poort, I., Jansen, E. & Hofman, A. (2020) Does the group matter? Effects of trust, cultural diversity, and group formation on engagement in group work in higher education. *Higher Education Research & Development*. 41(2).511-526. 

Ryan, M.F. *Groupwork in Higher Education – A practitioner’s guide*. 

Acknowledgements

With thanks to the participants who were involved in the Task & Finish Group. There was representation of all ten Faculty of Science & Engineering disciplines.

Particular thanks are extended to Jo Williams (Project Officer).

We appreciate the insights and professional learning shared between the following collaborators:

Sean Bechhofer, James Brookes, Jo Cartwright, Fiona Velez-Colby, Lee Cunningham, Samuel Draycott, Danny Dresner, Suzanne Embury, Kathryn George, Alison Harvey, Gareth Henshall, Dan Jagger, Tim Jones, Khris Kabbabe, Liam Marsh, Gabor Megyesi, Neil Morrison, Aurelie Le Normad, Ben Parslew, Stephen Potts, Mark Quinn, Simon Raw, Uli Sattler, Gregory Lane-Serff, Jennifer Sexton, Martin Simmons, Kate Smith, Colin Steele, Stephie Tsai, Charles Walkden, Barbara Waters.

About us

Dr Lynne Bianchi is a Senior Lecturer in the School of Engineering, the Director of SEERIH and the Vice Dean for SR & EDIA



Jo Williams is a Project Officer focussing on Teaching and Learning projects in the School of Natural Sciences.



For further contact about this topic contact:

Tim Jones, Head of Education, School of Engineering

Rob Appleby, Head of Education, School of Natural Sciences