



**Faculty: Engineering**

**Department: Bio engineering**

**Module name: Design and Professional Practice 2**

**Degree: Biomedical Engineering and Molecular Bioengineering**

**Level: Year 2 Undergraduate**

**Format: Project based (team projects)**

**Approximate number of students: 180**

**Weighting and credit: 4 assessments at 25% each**

**Module ECTS: 10**

## Integrating peer and self-assessment into module group work assessment design

### Assessment overview

This case study focuses on embedding peer and self-assessment into the assessment of group work. This occurs during the Year 2 Design and Professional Practice module, which consists of four assessments:

- a product specification document;
- a group presentation;
- Demonstration Day (which includes a group poster presentation);
- and final report.

Students are assigned to a project group (of approximately 10 people) based on their project preferences and complete all the assessments in the same group throughout the year. They peer assess the group presentation and peer and self-assess how they worked in the group in the final report that brings together their work on the entire module.

### Overview of assessment methods on the module

There are four summative assessments in total, each weighted at 25% and each supported with formative learning and assessment activities:

- product specification document (PSD) - a written document produced by the teams outlining the product they will be developing.
- Group presentation – each group presents their potential product as outlined in the PSD to their tutors and peers.
- Demonstration Day – each group produces a poster outlining their product and a prototype of their product that is summatively assessed.
- Final report – this assessment brings all of the learning from the module together and consists of two parts - a standard technical and group reflection on how they approached the project and what they might do differently in the future.

### Design decisions

#### Rationale for group work and assessment choice

The assessment structure models what students might be experiencing going into the industry hence is based on authentic assessment principles. Engineering is inherently a team-based discipline, very few engineers work in isolation. As such team working is one of the transferable skills that employers look for in their graduate employees.

#### The nature of the projects

The projects that the students work on address authentic problems in biomedical design that require solutions; by the end of the project each group will be close to having a product that could be made and marketed to real clients. The projects are different every year but tend to be centred around disability and frugal healthcare, i.e. making games and toys accessible for users with disabilities or specific medical needs, for example designing a more engaging exercise system for children with cerebral palsy or designing smart packaging for those with peanut allergies.



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## Practicalities

### Assigning groups

The groups are formed based on students' project choices. The module team puts out a project list every year and the students get to pick three choices in order of interest. Students are asked to provide a short 'tweet'-like justification of why they should be allocated their chosen project. This resembles authentic practice.

The groups tend to be relatively large – approximately 10 people. The reason for such large groups is to diversify students' group learning experience (in terms of range of skills and personalities within the group) and develop skills around working in a large group dynamic.

### Preparation for group work

As the module is based on group work, the first two taught sessions go into group working and team building. These sessions are an opportunity for the group members to get to know each other, allow them to set ground rules for group working and develop their listening, communication and accommodation skills. Please download the full case study for a description of activities used.

### Monitoring group work

The four assessment points plus regular contact with project supervisors help the module team monitor progress, in terms of students' group work and group behaviours. This is also done in a more formal way through utilising OneNote. OneNote pages are set up for each group so that they can document all their meeting notes and use the pages for communication. This is also supplemented with Teams channels.

### Tutor marking arrangements

The tutors mark and provide feedback for all assessments. For PSD tutor feedback is provided at the formative stage via Turnitin with detailed comments around how the PSD could be developed further. The marking criteria can be found in the downloads section.

Group presentations are assessed by the tutor and peers with the assessment criteria being generated by the students. An example of a marking form can be found in the download section. Each presentation is marked on a group basis so there are no individual scores for individual presenters. The Group Presentation is marked by multiple members of staff (ideally between 3-5) including technicians assisting on the projects. The averaged peer assessment mark is then added to these as if it was an extra marker.

The poster and the demo day is solely assessed by the tutors. The marking criteria is sent out to the students before the day so they know what to expect. Those can be found in the downloads section. The Demonstration Day is open to other academics in the department (including technicians helping students with the project) and the external examiners if they are on site who are all involved in marking. This allows for a good collation of opinions from about seven sources altogether to give the final average grade from all of those sources for the demonstration and the poster.

The final report is marked by the tutors (and combined with peer scores) according to the marking criteria (please see the downloads section)

### Peer marking arrangements

There are two instances during the module where peer assessment is integrated: for presentations, where the output is assessed; and the final report, taking into account the overall experience of working in a group whilst delivering the project.

When it comes to peer-marking of presentations, each student is allocated three videos to do a peer assessment on. The scores were aligned to the marking criteria which were developed through discussion with the students in the supervisor session.

Peer assessment also takes place at the end of the module with the final collated group grade. WebPA (Feedback Fruits from this year on) is used to get the students to rate the input of their fellow teammates against a marking criteria that is based on the



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ILOs. The group grade is then put into WebPA and an individual grade generated based on the peer scores which allows for a variation up to 25% in the final grade. Please see the criteria in the downloads section.

### Marking self-assessment (reflection)

The reflective element is attached to the final report. The students are asked to reflect on how they performed as a team and what they would do differently. The marking of the reflective part takes place more holistically meaning it is one of the criteria for the final report assessment.

### Establishing grades from tutor, peer and self assessment

The self- assessment grade is included in the WebPA system. Students evaluate each other and themselves for contribution to the project. The group grade is input to WebPA and it automatically calculates the individual grade based on their peer assessment / self-assessment scores. The grade therefore is a combination of self-assessment of how they think they did versus how they think everybody else did in their group only. The students have access to the qualitative comments their peers submitted about their work as well as numerical grades.

The group grade is generated from the 4 assignments (each contributing 25%). This mark is then adjusted by up to 25% (so in theory a team member in a group scoring 80% who scored really poorly in the peer assessment could end up with an individual grade of 60%).

### Preparation for peer marking and peer feedback

Students are prepared to peer assess and give feedback to others through a taught session that focuses on developing basic skills around this area. The students are presented with the rationale for using those approaches and the value of them in developing transferable skills as well as their own understanding of assessment criteria and feedback practice. As students generated the criteria for the presentations themselves, they already have a good understanding of what is expected from them.

### Preparing students for reflecting

To prepare students for summative reflection the module team conducts a session where they encourage reflective thinking. The session focuses on the students reflecting on their experiences so far through considering what they would tell themselves if they could start again, what would they do differently and advice they would provide to themselves. This activity is conducted as a group session with their supervisor.

### Provision of feedback

Across all of the assessments students get qualitative feedback, tutors provide feedback on each of those assessments, in addition there are instances of peer feedback for the presentation and the final report. For the presentation the students are instructed to give three comments about each of the presentations that they watched: 1) what's good about it 2) what's not good about it and 3) what could be improved.

The students generally approach the task of giving feedback well. Seeing comments from their peers allows them to see how others perceived their contributions and calibrate perceptions of own performance and their own feedback.

### Online adaptations

The assessments were delivered in a similar form during the pandemic with some alterations to the group presentations and the Demo Day. During Covid, group presentations were pre-recorded. Similarly, the Demonstration Day during Covid was conducted as a video presentation. It is currently held as an in person event as it is much more rewarding.