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WHY DO STUDENTS DISLIKE PEER FEEDBACK?

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ABSTRACT

Engineers are required to communicate in a range of formats, including written reports, but this skill does not come naturally to undergraduates. Typical approaches to teaching writing skills require small class sizes, expert staff, and multiple cycles of feedback. These approaches, while successful, are difficult to scale and do not always result in students being able to transfer their writing skills to other units/topics.

The School of Civil, Aerospace, and Mechanical Engineering at the University of Bristol teaches writing skills mainly within a single 20-credit first-year unit, delivered to 550-650 students per year. Students are required to complete a number of at-home labs and write up various sections of a lab report for a series of four formative assessments. A peer review process follows each formative task to encourage engagement with the assessment criteria, encourage reflection and self-regulation, and provide prompt feedback on work.

The benefits of peer review and feedback are well known and are carefully explained to students. However, each year, a relatively small but vocal number of students are

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reluctant to engage with it and express a strong preference for staff feedback. This project evaluated student perceptions and experiences of the peer review process using a survey and focus groups. Results suggest that although students recognise many benefits of peer reviews, they lack confidence in their ability to provide it, leading to apparent reluctance to engage. This highlights the importance of providing support and training as part of the process.

1 INTRODUCTION

1.1 Teaching writing skills

The ability to communicate is a core competence for professional engineers (Engineering Council 2020), yet students often begin engineering degrees with low ability and interest in written communication (T. Moore and Morton 2017). Various interventions have been attempted to improve writing skills. Teaching writing within specific units (sometimes combined with further 'soft' skills) helps students to focus on developing their skills, but can create silos whereby students are unable to effectively use these skills in other areas (Goldsmith and Willey 2018). Embedding writing within multiple units can overcome this siloing issue, but requires trained staff and a consistent approach, and increases the marking and feedback workload (Wingate, Andon, and Cogo 2011). With larger classes, these problems of providing feedback on multiple practise tasks in a timely manner become even more challenging.

Peer review is one possible solution which moves the feedback load from staff to students, not only helping to manage workload, but also engaging students with assessment criteria and encouraging development of self-regulated behaviours (C. Moore and Teather 2013).

1.2 University of Bristol context

Engineering undergraduates at the University of Bristol across Civil, Mechanical, Aerospace, Engineering Design, and Mechanical and Electrical engineering programmes are taught 100-credits of common units in their first year of studies. Engineering by Investigation is one of these common units – a 20-credit unit with a focus on developing laboratory skills, including written communication skills. A cohort of 550-650 students are taught in active group-based sessions and are required to complete four formative partial lab reports throughout the year. The final assessment is a summative lab report, following the same guidelines and criteria as were used in the formative assessments.

Each formative report submission is followed immediately by a peer review session. The peer review sessions take place in groups of four students, with each student in the group allocated a single review to complete. Students are encouraged to work as a group to review each report, so each student contributes to four reviews. To complete a review, students were required to answer a mix of yes/no and open-ended questions about the report, which were closely mapped onto the summative assessment criteria. While the process implemented was pedagogically sound, staff perceived a continual stream of requests for staff feedback either in addition to, or in place of, peer reviews.

1.3 Project aims

This project forms part of our continual evaluation of teaching practice within the unit and had specific aims of evaluating student perceptions and experiences of the peer review process used during 2021/22 to inform our practice going forwards.

2 METHODOLOGY

This project was given ethics approval by the Faculty of Engineering Research Ethics Committee at the University of Bristol (ref. 10229) prior to commencing data collection. A combination of a survey and focus groups were conducted to collect breadth and depth of information about student perceptions and experiences of the peer review process being used.

2.1 Survey design and implementation

Students were invited to complete a survey during an in-person session held mid-way through the unit, with the aim of maximising the response rate. Students had already completed peer reviews for one formative assessment and were about to complete peer reviews for the second formative assessment. The survey was designed to collect student perceptions of peer reviews and their experience so far of the process used in this unit. The survey was created in MS Forms and a 'tinyurl' link to the survey was shown on screen. Students who accessed the link were able to read the participant information sheet and choose whether to participate or not. The main part of the survey consisted of three open-ended questions and nine five-point Likert-scale questions (Table 1). Attendance at the synchronous sessions was approximately 50% of the cohort, and the majority of students in the room chose to consent and complete the survey, giving 314 responses.

Table 1. Survey questions. The Likert-style questions L1-L9 were preceded by the question: *How much do you agree with the following statements?*

Q	Question text	Response options
O1	What were your expectations of the peer review process before you had completed any of the peer reviews?	Open-ended free-text response
O2	How would you describe your experience of giving peer reviews?	
O3	How would you describe your experience of receiving peer reviews?	
L1	Student feedback is more likely to be phrased in a way I can understand than staff feedback.	Five-point Likert-scale: strongly disagree, partly disagree, neutral, partly agree, strongly agree
L2	Giving feedback to my peers helps me to understand how my work will be assessed.	
L3	I learn more by receiving a peer review than giving a peer review.	
L4	Giving feedback to peers is a skill that I will use in the future.	
L5	I have made changes to my work as a result of the peer review process.	
L6	I learn more from giving a peer review than I would from receiving staff feedback.	
L7	I think that staff feedback would be less detailed than student feedback.	
L8	I think that student feedback is more likely to be correct than staff feedback.	
L9	Overall, there are some benefits in receiving feedback from students instead of staff.	

2.2 Focus group design and implementation

Focus groups were conducted to further investigate some of the themes raised by responses to the survey. Survey participants had been asked whether they were willing to be contacted to take part in a voluntary follow-up focus group. A random selection of participants were invited, with a target of having six participants in each of eight one-hour groups. Groups were semi-structured, with the lead investigator on the project posing initial questions to start discussions, but also allowing participants to take the conversation in whatever direction they wanted (Morgan 1998).

Due to timetabling constraints, focus groups were held at the end of the unit and after assessments in other units had been completed. Due to this timing, and a low response to invitations, only three groups were run with three, three, and one participants.

3 RESULTS

314 completed surveys were received and analysed. Responses to Likert-scale survey questions are shown in Fig. 1. Overall, students recognised a benefit in receiving peer rather than staff feedback (L9), and appreciated that peer feedback had helped them to improve their work and understand the assessment criteria (L2, L5). Responses were split over whether the reviewer or reviewee benefitted most from peer review (L3) and whether staff or student feedback was more accessible (L1).

Despite these positive responses, there were also a number of negative perceptions – students reported perceptions that staff feedback would be more detailed, and more correct than peer reviews, and would therefore help them learn more (L6, L7, L8).

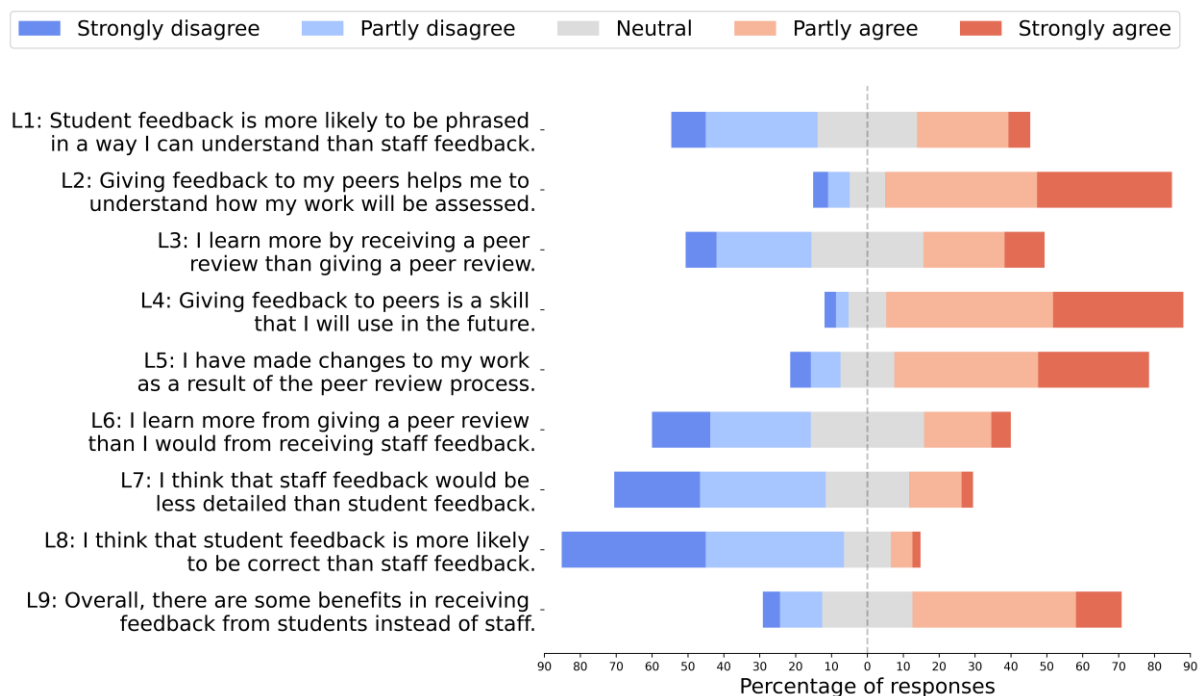


Fig. 1. Summary of responses to Likert-scale survey questions

Open-ended survey questions were analysed using reflexive thematic analysis, with the lead investigator familiarising themselves with the data and attempting to group

similar comments together into themes (Braun and Clarke 2020). This process was repeated multiple times until all responses fitted satisfactorily into a theme. Three overarching themes were chosen, with several sub-categories within each theme, as shown in Fig. 2.

The small size of the focus groups meant that they did not function as intended, but some expansion on the themes from the survey data was attempted. The main theme raised by focus group participants was the ‘Lack of confidence’ previously identified in the survey results, especially the ‘Student is not an expert (but teacher is)’ sub-category.

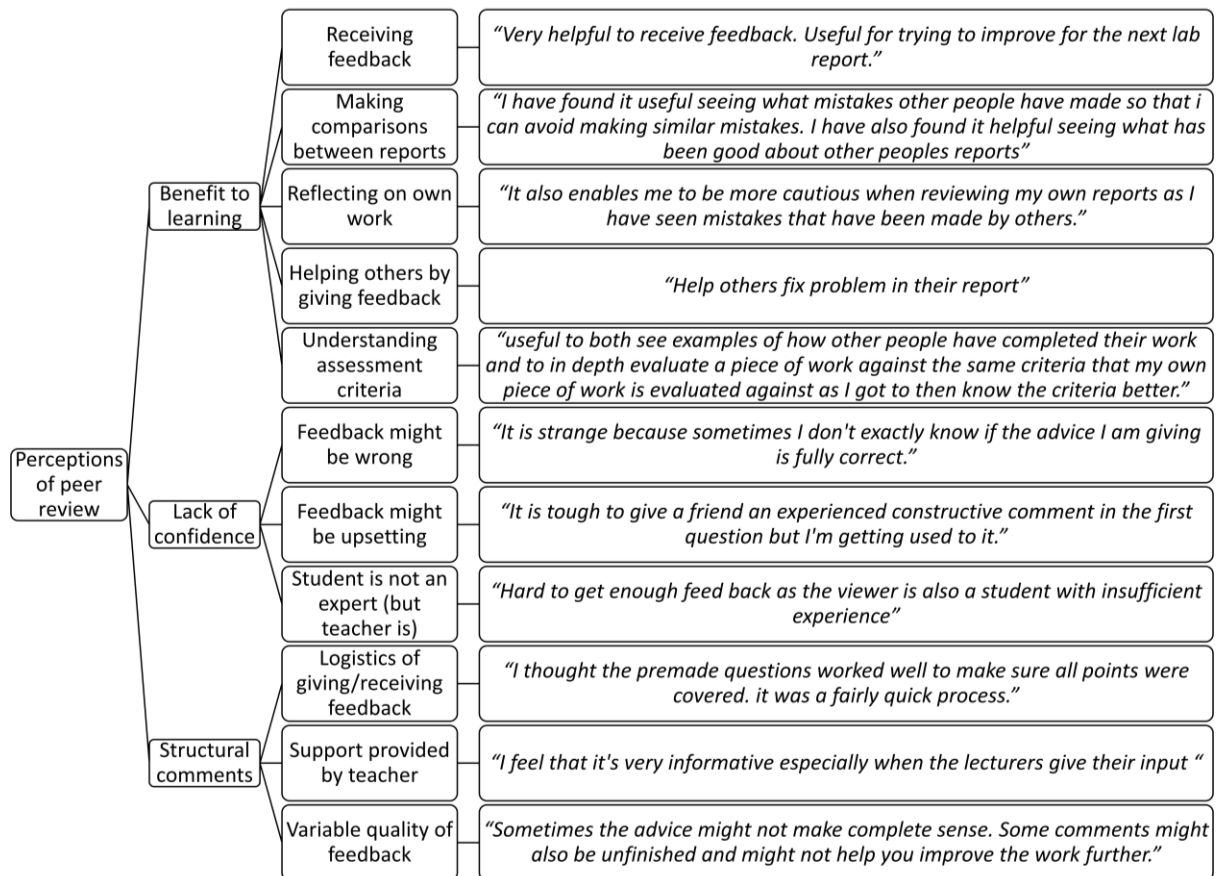


Fig. 2. Themes identified in open-ended survey questions and focus group discussions, together with sample comments for each category.

4 DISCUSSION

The positive perceptions reported by participants suggest that the process is successfully supporting them to become self-regulated learners who are able to internalise assessment expectations and modify their work accordingly (Zimmerman 2002). Students were also positive about the structure of the peer review process, suggesting that the detailed review questions were helpful both for providing feedback and interpreting feedback to make improvements. This is consistent with literature showing that providing question prompts increases student engagement with peer feedback (Jurkowski 2018).

The negative views of peer reviews perceived by staff appeared to be driven by a lack of confidence among students – which is entirely probable when considering a first-year cohort learning new skills (writing skills). Research has previously

confirmed that active learning strategies, of which peer review would be one example, can cause anxiety in students for a number of reasons, including not knowing whether their answer is correct (England, Brigati, and Schussler 2017). Active learning strategies have also been shown to divide student opinion, which explains the opposing responses seen for all questions in the survey (Patrick 2020).

This project has shown that students found peer review helpful for their understanding of assessment criteria (both L2 and 'Understanding assessment criteria' sub-theme), which is a key skill in transitioning to and succeeding in university studies. Implementing peer review more widely throughout a programme could have significant positive effects on students internalising assessment criteria, while also mitigating some of the negative experiences caused by a lack of familiarity with the process and confidence in their own abilities.

Students also appreciated the value of peer review to their future careers (L4), and reported the usefulness of the reflective and critical thinking skills that were being developed ('Benefit to learning' theme). These skills are essential attributes for graduate engineers, and are strongly supported by engagement with the peer review process (Nicol, Thomson, and Breslin 2014; Hirudayaraj et al. 2021).

4.1 Limitations of the study

There were several limitations of this study. The only students invited to participate were those who attended the second in-person peer review session, so students who had already disengaged from the process (through non-attendance) were not able to take part in the study. Voluntary studies are also affected by participation bias, so the results will not be representative of all students in the cohort. This is partly mitigated by the high number of responses to the survey.

The extremely low uptake of invitations to focus groups, and low conversion of accepted invitation to actual attendance meant that focus groups did not function as intended – they were more structured than intended and relied heavily on researcher prompts. This may explain why no new themes were identified in the focus group data as the researcher prompts had been influenced by existing themes from the survey data.

4.2 Recommendations and future work

The results of this study highlight the importance of providing appropriate support for students undertaking peer reviews for the first time – both in terms of a scaffold to structure their feedback, and training to help students see how an 'expert' would approach the task. By providing this additional support, students may become more confident in their ability to provide peer feedback. It is also important to be clear with students about the benefits of engaging with peer reviews compared to only receiving staff feedback to maximise their engagement with the process.

The Engineering by Investigation unit was modified in 2022/23. The overall peer review process was maintained, but additional 'training' was provided in the form of staff demonstrating giving feedback to sample reports before each peer review. The structure of the peer review questions was modified to reduce the number of open-ended questions reviewers needed to answer, as novices are more comfortable with closed questions (Nilson 2003). A self-review task carried out with group discussion also replaced one of the four peer review tasks, in an attempt to maintain student engagement and make explicit the link between providing feedback and making

changes to their own work. Evaluation of these changes is ongoing, but initial results suggest students have been more engaged and more confident while providing peer feedback.

5 CONCLUSION

This project gathered data about student perceptions of peer review through surveys and attempted focus groups. Results showed an overall appreciation of the benefits of peer review and the structure of the process used in the unit. Staff perceptions of student reluctance to engage in the process was likely due to low student confidence in giving peer feedback. This has been addressed by providing additional training and support for students engaging in peer reviews for the first time within the unit.

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