Sarah Budello: FSE eLearning Team

Peer Assessment Pilot Project Buddycheck Report

INTRODUCTION

As a part of the FSE eLearning team's peer assessment pilot project, we reviewed and assessed the capabilities and relevancy of the peer scoring[1] software 'Buddycheck' for our staff and students. Buddycheck is a software specifically catered to group work in which a final mark is rewarded. Using Buddycheck, each group member can score their group mates, with the aim of producing a fair evaluation based on differing contributions by individual members in the group relative to others. Using the software, academics are able to easily pick up on issues with group dynamics and individual performance, particularly useful in large cohorts, and can then adjust individual marks based on these scores.

To further strengthen the research basis for the use of this software at assessment level, the framework used is the 'Comprehensive Assessment of Team Member Effectiveness' (CATME) system developed by Purdue University. Team-member effectiveness is scored on a scale of 1-Strongly Disagree to 5-Strongly Agree in five areas that research has shown to be important:

1. Contributing to the Team's Work
2. Interacting with Teammates
3. Keeping the Team on Track
4. Expecting Quality
5. Having Relevant KSAs (Knowledge, Skills, and Abilities)

When asked their motivation for using the software, the majority of our academics named student dissatisfaction with group marks as the primary need (see Table 2). Issues with group work are well known and universal, specifically individual members 'free riding' or contributing little to a group project. This alongside problems with formal assessment leading to the issues of proving equal or different marks to individuals within the group, at the same time as an increasing importance placed on group work within the curriculum (Burd, Drummond et al. 2003) means that a software such as Buddycheck can provide a user friendly, scalable solution if implemented properly.

[1] For the purposes of clarity, we refer to 'peer scoring' for any peer assessment task that involves individuals providing a numerical score to measure the performance of other members of their group.

SUMMARY

Academics across six courses and four departments (Mechanical, Aeronautical, and Civil Engineering, Chemical Engineering and Analytical Science, Materials and Mathematics) completed 13 evaluations, with a total of 1,156 students taking part, see 'Table 1' for a breakdown of the individual course details.

Of the six courses, two were set up and run by the academics without support from the eLearning team, and the remainder were run with varying degrees of input and support. The team provided advice and consultation to encourage the use of the software, technical support including setting up the Buddycheck evaluations specific to each course, developed communications and guidance for staff and students, met with the academics during and after the evaluations to reflect on results, and followed up with staff and student feedback surveys once the final evaluations were completed to understand positives and negatives of the software from both perspectives. Please see Appendix 1 for a full breakdown of the support provided per course.

Table 1: Buddycheck pilot evaluation details

Academic	Course/s	Total students	No. of Evaluations	Formative or Summative	Completion Rate %
Lynne Bianchi	MACE40530&61060 Mechanical Group Design Project 2021-22 Full Year	13	1	Formative	85%
Bernard Treves Brown	CHEN10122 Chemical Engineering Design Project / CHEN64421 Research Techniques and Methods (Skills) 2021-22 1st Semester	309	2	2x Summative	96% / 99%
Neil Morrison	MATH20062 Mathematical Communication & Group Projects	190	3	2x Formative 1x Summative	52% / 84% / 90%
Steve Edmondson	MATS31902 Polymer Synthesis & Characterisation 2020 – 2021 2nd Semester / MATS31902 Polymer Synthesis & Characterisation 2021 – 2022 2nd Semester	75	2	2x Formative	94% / 93%
Barbra Waters	MATS11701 Management and the Apparel Pipeline 2021-22 1st Semester	185	2	1x Formative 1x Summative	35% / 85%
Andy Weightman	MACE21342&21442 Data Acquisition & Experimental Methods 2021-22 2nd Semester	384	3	2x Formative 1x Summative	92% / 43% / 84%

Table 2: Staff feedback survey results

Survey Question	Stephen Edmondson	Barbara Waters	Neil Morrison
Why did you choose to use Buddycheck? What teaching problem were you hoping to solve?	Peer moderation of group marks to recognize disparity of effect in groups	Student dissatisfaction with group marks for a group assignment.	Peer ratings of individuals within a group.
Did Buddycheck solve your problem?	Yes	Yes - although there were a few complaints from students whose marks had been reduced by peer assessment, overall student satisfaction improved and the majority of students felt that the marking was fairer.	Yes
What features did you find most useful as an instructor?	Good integration with blackboard (group members and marks pulled in automatically)	Automated integration with Blackboard for group set-up and mark adjustment, pre-built questions, ability to send reminders to students, lots of flexibility in applying adjustment factors.	Student ratings automated and converted into numerical factors.
How did your students engage in the peer scoring activity?	Very well, ~90% completion. Only one group seemed to not score sensibly (all 5s) - others seemed to engage honestly	Virtually all students engaged and completed a questionnaire. It was clear that some students decided to give everyone in the same group equal marks, whilst others heavily penalized certain student - it was good to see that Buddycheck flagged these incidents. However, overall, the majority of students fully engaged with the peer scoring.	High engagement overall.
How much training and support did your students need?	None	Very little. I showed them part of a Buddycheck video in the introduction to the assignment, and offered a formative Buddycheck assessment part way through the project so that they could practice with it.	None
What major issues did you come up against when using Buddycheck?	Needs more help/tutorials/on-screen guidance. Some important options are hidden/opaque	Lack of documentation and training. There was very little available online or on the Buddycheck site. The scoring and adjustment factors had to be set up with trial and error, but generally it was relatively simple to use, so it wasn't a huge issue.	If one student in a group doesn't vote at all, this can skew the results of the others.
What do you and/or your students require to help increase the effectiveness of Buddycheck?	Better guidance for me. Nothing needed for students	Training (eg: videos/factsheets on set up and applying adjustments for staff, and videos on peer scoring for students)	-
Would you like to continue using Buddycheck in future course units?	Yes, definitely	Yes - definitely!	Yes

RESULTS

Staff

Our results show that the Buddycheck software successfully solved the main requirement of providing objective individual scores for members who had submitted a piece of group work when comparing differing levels of effort and input.

Completion rates and engagement were generally high (Table 1), with the lowest engagement recorded for formative evaluations which was to be expected. Staff reported low levels of support required by students with the use of the software once the initial introduction was completed.

All of our academic leads agreed they would use Buddycheck again in future course units and that the overall experience was positive, see the 'Staff Feedback' section below for full details.

The most useful features of the software identified by staff were:

1. Automated integration with Blackboard for group set-up
2. Automated integration with Blackboard grade centre for mark adjustment
3. Pre-built questions based on CATME framework
4. Ability to send completion reminders to students
5. Flexibility in applying adjustment factors

Students

Student feedback was gathered via a Qualtrics survey, and of the potential 1,156 students across our 6 pilot courses we received 17 responses in total, the majority from Neil Morrison's course MATH20062 Mathematical Communication & Group Projects. The results are therefore not representative of the full cohort – but lessons can still be extracted from those received responses (see 'Student Feedback' section below for full details), in particular:

- The majority of students have not encountered peer assessment elsewhere, and so clear communication about its benefits and uses will be paramount in engaging students with the process (Q8)
- The majority found the tool easy to use (Q7)
- Most agreed that the tool effectively identified group conflict (Q7)
- Most agreed the scoring results represented an accurate reflection of their individual contribution (Q7)
- The majority of students agreed that there was value in adjusting the individual marks based on peer scoring (Q7)

CONCLUSION

Buddycheck has met requirements when it comes to finding an automated software, integrated with Blackboard to adjust individual marks for group work – however there are some areas which can be improved for both staff use and student satisfaction, these include:

1. Better guidance for staff on the use of Buddycheck – in particular the adjustment factor (pages currently being created on the FSETA site – to be finalized August 2022)
2. A standard process for dealing with non-contributing students (Task and Finish Group for Group Work currently working on this issue)
3. Clearer guidance and explanations required for students as to the process, benefits and assessment consequences of peer scoring including the adjustment factor (Student pages to be included in the FSETA site pages coming August 2022)
4. Ensuring scoring questions are relevant to the individual course and related to any in-person sessions

Staff feedback

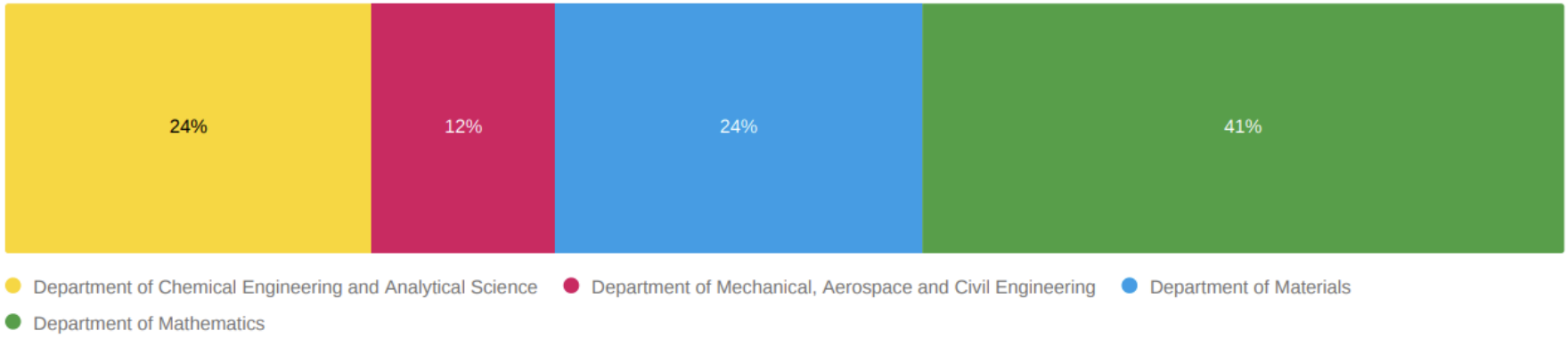
'My experience with Buddycheck has been positive. I've found it to be a more sophisticated tool to one I had built 'in-house' and supports my students in reviewing their own and other's personal skills and experiences. The software isn't as intuitive as it could be, but once trained it is easy to access and interpret the data. Going forward having the ability to set windows of student completion oneself would be most ideal.' – Lynne Bianchi

'Needs a mechanism to flag a student as "non-contributing", so they can be taken out of the scoring mechanism and just award zero.' - Barbara Waters

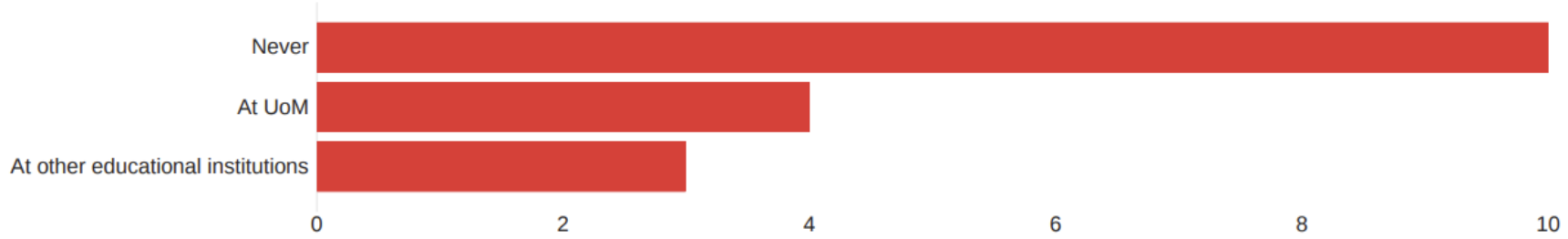
'I found Buddycheck invaluable. It would be very difficult for us to use peer assessment manually with such a large group (around 190 students), and it definitely had a positive impact on student satisfaction.' - Neil Morrison

Student Feedback

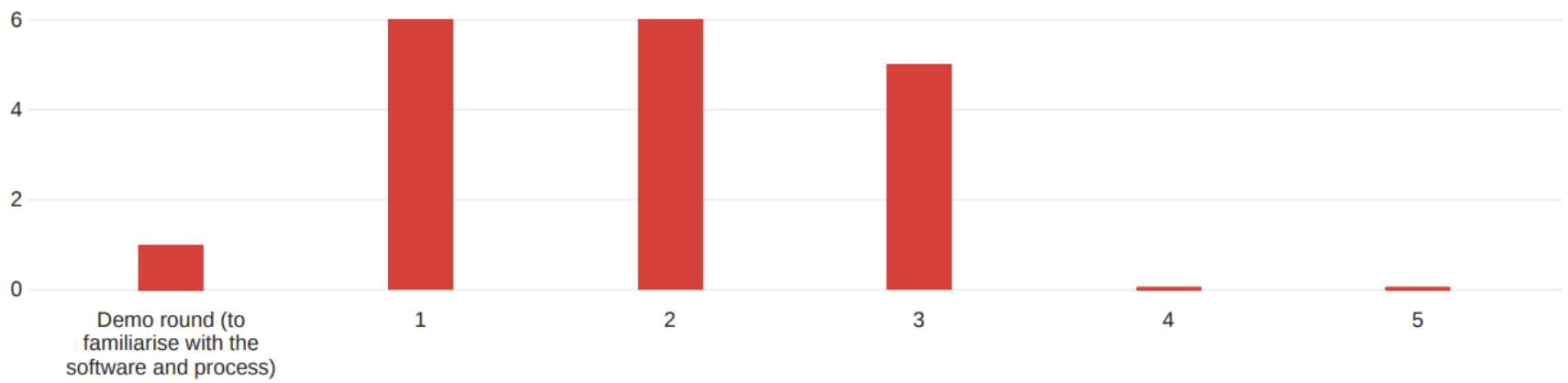
Q2 - Which Faculty/School do you study at?



Q8 - Have you encountered Peer Assessment in any previous form of education (either at UoM or elsewhere)?



Q4 - How many rounds of peer scoring (with or without mark adjustment) did you complete in the course unit? Choose all that apply.



Q5 - Was Buddycheck used to adjust the final mark?

Q7 - Please rate the statements below.

Field	Agree	Neither agree or disagree	Disagree	Total
Buddycheck is an easy tool to use.	16	1	0	17
Buddycheck is an effective tool to use to identify group conflict.	9	6	2	17
The feedback and personal report received after completing an evaluation was a valuable to help me reflect on my individual contribution.	7	7	2	16
Peer scoring helped us to identify problems and work more effectively as a group.	5	7	4	16
We discussed our group's performance based on the peer scoring results.	5	1	10	16
The peer scoring results were an accurate reflection of my individual contribution to the group.	9	7	0	16
It is useful to adjust final individual marks through peer scoring.	12	3	2	17
The individual mark adjustment I received based on peer scoring was fair and accurate	7	7	0	14

QID1 - Information and instructional materials

Field	Yes	No	Total
Was there information in the course unit explaining the peer scoring process and Buddycheck?	14	2	16
Was the guidance provided in the course unit sufficient to understand how Buddycheck works?	14	1	15
Based on the information available in your course unit, did you feel confident to complete the peer scoring evaluations?	15	1	16

Q8 - Please provide feedback and suggestions on the peer scoring process and use of Buddycheck.

Please provide feedback and suggestions on the peer scoring process and use of Budduycheck.
very easy to use and give a good reflection of individual contributions
It seems that we can't change our marking once we finished the peer evaluation, so we have to be very careful so that we don't give a wrong mark for groupmates.
I'm not a fan of it really. Doesn't really encourage group work and friendliness in groups. Maybe because I was happy with my assigned group.
In earlier modules of group work where peers didn't get involved at all it would have been useful, but that might have been as it was online etc.. In person it doesn't really help though as we have the group mentor to report to if they don't get involved.
I feel like buddy check wasted time and wasn't needed.
Some feedback could be provided to show if my mark was adjusted and how other group members scored because now I'm not sure how well I worked compared to other people in the group.

Some elements can be harder to score than others, especially when considering peers. Maybe not all elements of the peer analysis come up during a project so perhaps it could be tailored. The graphs were really good though and it helped to compare marks given to you with what you thought about yourself.

Appendix 1 – Summaries of course support

Lynne Bianchi - MACE40530&61060 Mechanical Group Design Project 2021-22 Full Year

Lynne already had a list of competences that she asked students taking part in group work to complete - the questions being whole group statements rather than rating individual members of the group. She had the data on an excel sheet and wanted to be able to have the students using peer assessment as a reflective task, from which she could more easily extract useful data for group management and engagement. At first Lynne was unsure about having the students rate each individual member of the group as there was a concern about bias against students who did/didn't have good relationships, however I was able to talk to her about the benefits of having the students honestly rate their group members as this could highlight individuals who were not engaging, show groups who were struggling with conflict, and also the potential to adjust the students individual marks for their group work based on the results. I wrote communications for the students to introduce the software, task and expectations, and then set up a Buddycheck evaluation and trialed it with two groups, 13 students in total, from April 4th to 20th, using Lynne's 14 competences rather than the default BC questions. The completion rate was 85%. The students that took part were sent their 'Personal Reports' via the Buddycheck system, and were told by Lynne that they could use this report as 'evidence as a basis for applications for jobs and also as part of your Chartered Engineer Status' and 'In terms of using the evidence you are welcome to incorporate it into your Individual and/or Team Deliverable 6 for Professional Practice. You have no obligation to do this however you may wish to use it to support your critical reflections as part of the team or individual statements.' Overall a positive experience and Lynne is wanting to use the software again in the course in the future, with a view to using the results as one of the metrics they use to adjust individual marks.

Bernard Treves Brown - CHEN10122 Chemical Engineering Design Project

When meeting with Bernard he said that he'd used a peer marking process to adjust marks by a factor of 0.8-1.2 for several years using Excel, but because of the amount of data to collate he wanted a way of automating the process. I ran through the Buddycheck system with Bernard, and he felt confident enough to go ahead and set up his evaluations without close support. He ran his evaluation and we spent some time going over the adjustment factor and cap – he had a bit of trouble at first but then resolved the issue (*I had understood that the cap was the weighting factor (normally 0.2), but actually it just caps the adjustment factor, which isn't really necessary, as a factor of 0.2 provides all the capping necessary*). He said the response rate was good and was happy to continue to use the software, and recommended it to a course he was teaching on.

Barbra Waters - MATS11701 Management & the Apparel Pipeline

Barbara set up her own BC evaluation, I was in touch and she said ''we used Buddycheck on one of our first year units (MATS11701 – Management & the Apparel Pipeline). I thought it was fantastic and would be happy to share my experience using it ...We would really like to continue to use Buddycheck going forward. Student feedback was generally positive – I did a Menti Poll in the last class to try to capture some of it (unfortunately, as it was the last class before Xmas, only 15 students – out of a total of 180 - voted)''. Surveys sent but no response as yet.

Bibliography

Burd, Elizabeth & Drummond, Sarah & Hodgson, Brendan. (2003). USING PEER & SELF ASSESSMENT FOR GROUP WORK.

Cornell University. "Peer assessment." *Center for Teaching Innovation, https://teaching.cornell.edu/teaching-resources/assessment-evaluation/peer-assessment*. Accessed 2021/2022