



Tools for enabling developmental feedback and teamwork grading by peer assessment: PeerAssessPro

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Agenda

Project scope, aim, methodology

Work in progress: Learnings from prototyping

Work in progress: Achievements

Emerging issues, challenges, and highlights

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Project scope, aim, methodology

How can we improve the fairness and quality of feedback provided to students participating in teamwork?

Peer Assess Pro is a software-based tool that helps students provide both developmental feedback to their peers, and a quantitative rating providing fair grades based on relative contribution.

The usability of the current tool is limited through its delivery platform, a prototype requiring persistence or technical sophistication found amongst early adopter users.

Aims

- (a) enhance the usability of the Peer Assess Pro tool
- (b) extend the impact of the system through expanding adoption of the tool amongst tertiary institutions.

Methodology

- (a) redesign the current software into a more usable web-based application
- (b) train a broader base of teachers to adopt the Peer Assess Pro tool
- (c) Extend evaluation of student and teacher outcomes from the use of the tool.



Work in progress: Learnings from prototyping

Define peer assessment

Benefits of peer assessment

Determine a personal result from peer assessed contribution

'Little data' insights

User interface experience, Ux = \$%#^&*!!!

Honest performance feedback from their team members contributes highly to students' course learning

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Introduction
Introducing peer assessment into team projects helps students work more effectively and efficiently. Specifically, the rates of social loafing have been demonstrated to diminish when a peer assessment component is incorporated into team projects (Karsu & Williams, 1993). Furthermore, if students know that their performance within a group project will be evaluated by their peers, Treviño, LePine, and Elms (2000) found increased rates of group sharing, cooperation, and team performance.
This poster presents results from using peer assessment for team-based learning combined with a Flipped Classroom (Sahin & Kurban, 2016) conducted in several postgraduate courses over an 18 month period at an institute of higher education in Auckland, New Zealand.

Investigation methods
Peer assessment has been conducted using the Peer Assess Pro™ tool as part of teaching six elective courses in the institute's Master of Applied Management programme. The peer assessment for each team member first calculates a Team Based Learning Score (TBL) from ten measures of team contribution (Figure 1). Next, the mark awarded to the team by the teacher for its outputs is combined mathematically with the TBL Score to determine a Personal Result for each team member. The Personal Result is a value above or below the team mark, and can range from zero to 100 per cent for the entire assignment grade (Figure 2).
Statistical regressions were used to explore how students' performance on individual assessments compared with their peer assessment ratings.


Results
Course grades are spread over a wider range than courses assessed without peer assessment
Figure 2 shows the distribution of Personal Results for a team assignment for one typical class of 56 students contrasting (a) quantitative peer assessment and (b) no peer assessment. The wider distribution of marks when peer assessment is used contributes to a widening of final course grades. In this class, two students failed the course as a whole, when their individual grades were included.
Low peer assessment ratings are associated with low individual grades
Figure 3 illustrates the relationship between students' end of course individual assessment marks and their Team Based Learning Score. Typically, a TBL Score below 75/100 is associated with an individual assessment below 50/100. We suspect that team members discover through their team work that a team member is poorly engaged with required course preparation. A poorly engaged student is generally penalised by their team members through receiving a lower peer assessment rating measured by TBL Score.
Students' peer assessment ratings correlate with early indicators of individual performance
Since a Flipped Classroom pedagogy was employed in this course, individual students' weekly test results also correlated moderately with Team Based Learning Scores. Combined with the use of formative peer assessment, this information offered the teacher the opportunity for early intervention with both students and teams at risk of later failing both individual and team assessments (*Mellalieu & Quilford, 2018).
Honest performance feedback from team mates is highly valued by students
In response to the question 'How did other class members most help you achieve your goals?' the most dominant reply, by 34% of students, was 'By giving me honest appraisals of my performance' (n = 56). Furthermore, in response to the question 'How did the instructor best help you to achieve your objectives?' 33% of students replied 'By providing regular feedback on my performance'.
Quantitative peer assessment helps identify areas of class strength and weakness
The TBL Scores are determined from ten component measures of Task and Leadership contribution. The class average values, Figure 1, pinpoint specific components of class weakness, such as Chairmanship, and Professionalism. Note how students self-assess themselves higher than their peers. This is typical in our experience affirming the Lake Wobegon effect where all the children are above average.

Conclusions
It is heartening to note the high value students place on regular, honest feedback from their peers and teachers, facilitated to some degree by comprehensive peer assessment. When a student receives their personalised and qualitative clues about their strengths and areas in need of development (Figure 1). Furthermore, the peer assessment process gives permission to students to engage in 'difficult conversations' with their team mates. This 'permission giving' is pertinent in the context of classes whose international students do not come from the high all ask the question 'What is the one thing that I do that gets in the way?' (*Heen, 2015).
Students rated adversely by peer assessment sometimes dispute with the teacher that their peers have biased their assessment against them (Figure 4). However, in most cases, an examination of such students' individual assessments finds that they are poor performers in other aspects of their course activities (Figure 3). In courses without peer assessment, such students might have passed the course as a whole, having been carried through by their team members. Robust team assessment helps the teacher confirm failed students' course grades and resists disputes. Furthermore, combined with formative use of the peer assessment tool and/or a Flipped Classroom teaching regime 'at risk' students and teams can receive timely warning of their need to improve performance.
Future development
Whilst students seem generally at ease giving honest, quantitative ratings to their peers our students appear to have difficulty expressing their qualitative assessments. The work of Osland et al. (2011) provides us valuable insight for enhancing students' capability in this aspect.

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Work in progress: Achievements

User experience designer

Peer Assess Pro™ professional coder team

Xorro-Q integration team

Project management and technical oversight team






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Emerging issues, challenges, and highlights

Declutter, streamline, simplify

'No place for group work in a postgraduate programme' (NZQA Monitor)



Next steps

Finalise coding and testing

Revise end user documentation

Extend adoption of peer assessment amongst tertiary staff

Evaluate impacts of use

Enhance in response to end user experience and feedback



Questions and discussion



Future possibilities?

Learning Management System (LMS) integration

Data mining across classes to enhance student success



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