

RESEARCH ARTICLE

“It’s so unfair” – Can we increase student perceptions of equity in the grading of group assessments by allowing them to declare a distribution of workload?

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Abstract

One of the most common complaints from students about taking part in group work is that the efforts of those who make the largest contribution are not rewarded fairly. One possible way to combat this is to allow students to agree on and declare a contribution split when submitting group projects, in the knowledge that their grades will be adjusted accordingly. We consider the results of a survey among students who have experienced group work graded both under this format and the standard “everyone in the group gets the same grade” approach. Quantitative analysis reveals that, in general, students may prefer the declaration of workload split approach. However, a closer analysis of free-text comments showed that feelings are often more nuanced than positive or negative. Students with social anxieties seem to be particularly conflicted by this method of assessment, with many reporting feelings of appreciation at the perception that their work is rewarded more fairly, concurrent with heightened stress and anxiety at the idea of approaching the conversation around workload split with their peers.

Keywords: group assessment, equity, anxiety, inclusivity.

1. Introduction

The benefits of group work in higher education are well established. Laal and Ghodsi (2012), described how collaborative learning could have social and psychological benefits as well as increasing academic attributes in students such as critical thinking skills. As graduate outcomes are an increasing priority of HE institutions, the need to embed employability skills into the curriculum has also increased. A study by the Confederation of British Industry found that 20% of graduate employers were not satisfied with the teamworking and problem-solving skills of graduate applicants, while 25% were not satisfied with the communication skills displayed by graduates (CBI 2017). These are three skills that are easily embedded and developed by the use of group tasks in the HE curriculum (Kornelakis 2020).

However, group work can also come with its pitfalls, and it is well established that unequal contributions or non-contributions from fellow group members, sometimes known as free-riding (Hall and Buzwell 2012), is often the biggest source of frustration for students (Aggarwal and O’Brien 2008). The most widespread solution to this issue is to introduce some level of peer assessment, in which students within a group can to some extent determine either the amount of work or level of work achieved by their peers (Topping 1998). This allows for different members of the same group to receive different grades when assessed.

Victoria (2020) provides a review of peer assessment methods and suggests that there are three major models under which peer assessment can take place. The first of these is the additive model, in which an individual’s grade is determined by a weighted average of the overall group mark, awarded by the tutor, and a peer awarded mark. Victoria notes that this model has been less prevalent in recent times, perhaps because the peer mark has no relationship to the quality of the

final product submitted by the group for assessment and so some academics may view this model to place too much emphasis on process rather than outcome.

The multiplier model is an adaptation that has been used and evaluated more recently (Jin 2012). Under this model, an individual's grade is calculated using the group grade and multiplying it by a ratio of the individual's peer mark in comparison to the average peer mark of their fellow group members. This ensures that the quality of the overall group submission underpins all individual grades. However, this method can be seen as opaque or overly complicated by students, depending on exactly how the multiplying factor is calculated.

The final model outlined by Victoria (2020) is the distribution model, which provides the focus of this paper. For this model, students agree as a group on the distribution of workload that they have completed for the project. An individual's final grade is determined by the group mark, but this is adjusted up or down depending on whether their workload percentage is above or below that of an even split. For example, an individual deemed to have contributed 25% would be given a grade lower, equal to, or higher than the group grade if they were part of a group of 3, 4, or 5 respectively. The extent to which group grades are adjusted if there is an uneven distribution of workload can be determined by the academic.

A study by Planas-Lladó et al. (2018) at Spanish universities found that the distribution model was well-received by students, particularly in terms of providing a fairer and more equitable grade for individuals. However, there are concerns raised around how students reach a consensus on the distribution of workload, especially if no clear guide is given for how students go about doing this. In this paper, we add to the work of Planas-Lladó et al. (2018) by surveying students at Nottingham Trent University (UK) who have completed group work that has been graded using both the standard "one grade for all" method and the distribution model of peer assessment. The aim was to determine whether the distribution model was preferable to students in general but also to find out whether students perceived any specific benefits or causes for concern from the approach. In Section 2, we describe the methods used to carry out this study. Specifically, who was surveyed, what they were asked, and how their results were analysed. Section 3 outlines the results from both a quantitative and qualitative analysis of the survey and Section 4 concludes the paper with a discussion surrounding these results.

2. Methods

The survey was open to Level 4 Forensic Science students and Level 5 Mathematics students at Nottingham Trent University in June 2021. Both sets of students had undertaken group work during the academic year that had been graded using the distribution model of peer assessment and had also had experience of standard group work, with all students receiving the same grade, at some point during their degree. The students were given no guidance about how to go about allocating a distribution of workload in either of the assessments that used this model. For group work under the distribution model, Forensics students were allocated their group, the Mathematics students were able to choose their group.

After determining whether the student was from Forensic Science or Mathematics, the following questions were asked:

- 1) *If you were set group work in future, would you like to have a declaration form describing the workload split? **Yes/No/No Preference***
- 2) *Please rate the following statements from 1 (strongly disagree) to 5 (strongly agree) to describe your experience of using a declaration form compared to standard group work:*

- a. *The grade I received for this piece of work was a fairer reflection of my efforts/performance than the grade I would have received in standard group work;*
- b. *The percentage that my group agreed on for my individual contribution was fair;*
- c. *Agreeing on individual percentages as a group was a significant cause of stress/anxiety.*

3) *Please use the comment box below to describe your feelings towards using declarations forms for group coursework in your own words. (Free text question.)*

Quantitative results, from questions 1) and 2) were analysed graphically. Hypothesis tests were also used to test if the proportion of respondents answering ‘Yes’ to Q1, or 4 or 5, to the Likert scale questions was significantly different from 0.5. These were two-tailed tests with p-values calculated exactly using the cumulative density functions of appropriate binomial distributions.

3. Results

The survey had 35 responses, 14 from Forensic Science, 21 from Mathematics students. Despite the differences in group allocation procedures, no significant difference was detected between the two subject areas when answering any of the questions. Figure 1 shows the results from the first question of the survey.

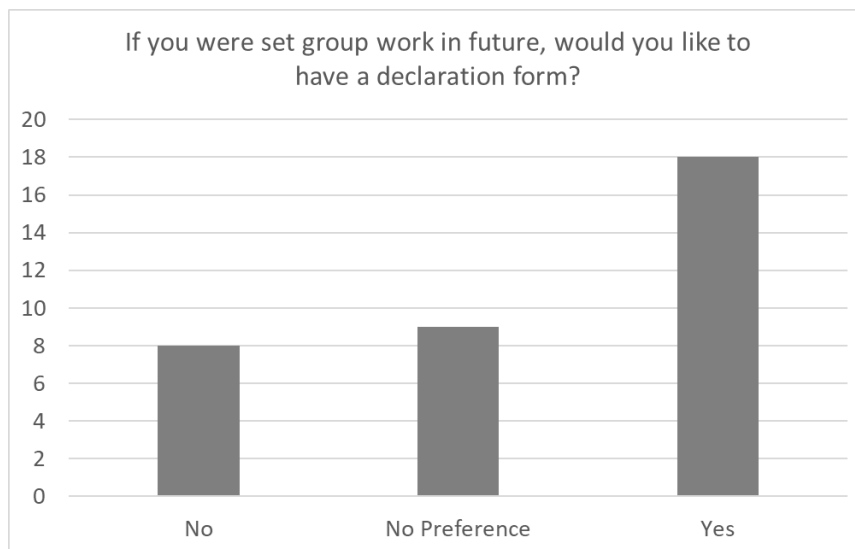


Figure 9. Answers to Question 1 of the survey, regarding whether students preferred the distribution model for assessing group work.

We observe that 18/35 students actively preferred the distribution model for group work while only 8/35 were against the use of the declaration form (either through opposition to the distribution model or, possibly, deeming the extra administration unnecessary). Whilst 18/35 is clearly not significantly more than half of the students, of those who had a preference, $\frac{18}{26} \approx 0.692$ said that they preferred the distribution model to the standard model. However, even this proportion is not significantly different from 0.5 (p-value of $p \approx 0.076$) when tested using the hypothesis test described in Section 2.

Figure 2 shows the results of the Likert scale questions from the survey. Only 2 of the 35 students (5.7%) disagreed with the statement that the distribution model resulted in them receiving a fairer grade for their work than the standard model, with 17 agreeing with the statement and a further 16

not committing either way. However, 29/35 students (82.9%) agreed that the percentage contribution that they agreed with their peers was fair when they completed the declaration form for the distribution model group work. This proportion is significantly different from 0.5, giving a p-value of $p \approx 0.0001$ under our hypothesis testing procedure.

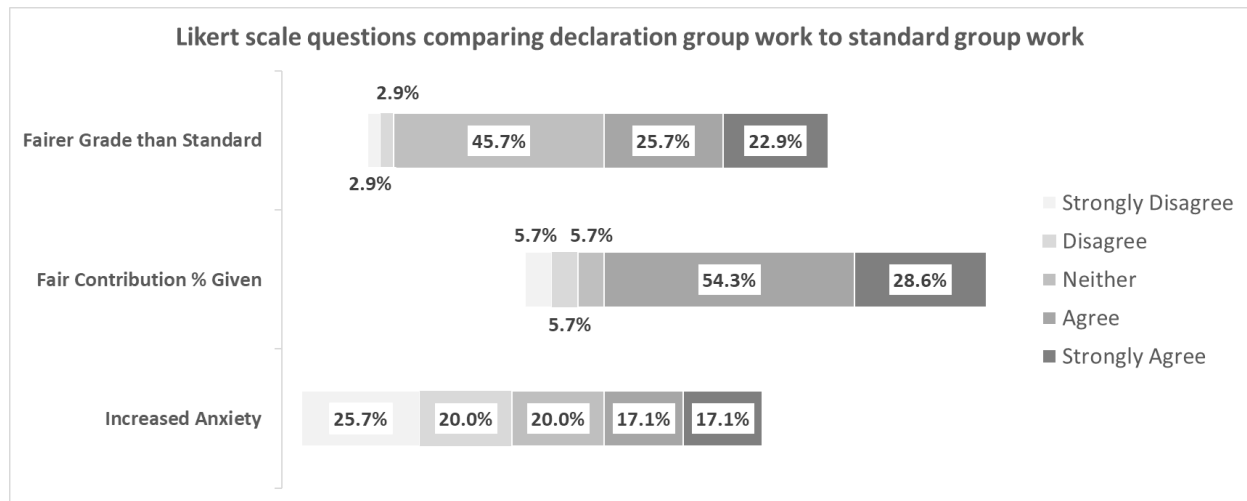


Figure 10. Answers to question 2 of the survey, comparing perceptions of different aspects of group work under the distribution model to standard group work.

The question relating to whether the declaration form led to increased anxiety about group work had a very even split with 16/35 disagreeing with the statement and 12/35 agreeing. Whilst this is slightly skewed towards disagreement, it does suggest significant diversity in the effect of a distribution model of peer assessment on the anxieties of students.

The comments made in response to the final free-text text question reflect this diversity and largely fell under three themes. Of the 28 responses to the free-text question, 13 were wholly positive. Those who had positive feelings towards the distribution model tended to focus on the fairness aspect, with comments such as “thought it was more fair and a more correct reflection on amount of work done”. The other positive was the perception that free-riding became more difficult, with one responder saying that the distribution model “means that everyone has to contribute and we don’t have to chase people to do work”.

A further 5 responses were entirely negative. All of these touched upon a common theme of fellow group members doing extra work in an attempt to gain a higher percentage of the workload distribution. One student stated that the distribution model “allows people to stab you in the back by doing more than agreed/asked for and using that against you”.

The remaining 10 responses were more nuanced. Many perceived that the distribution model was fairer but also noted that approaching the discussion around allocating the distribution was stressful. Interestingly, four respondents in this group explicitly mentioned that they suffered from some level of social anxiety. The following was a typical comment from this subgroup. “I struggle with conflict and telling people if they are doing something wrong. In my group I did a larger share of the work as other people didn’t do as agreed. Therefore, I was able to get better credit which was owed. However, approaching this topic is not easy for me.”

4. Discussion

This study has considered the perceptions of UK based Mathematics and Forensic Science students on the inclusion of a declaration for group assessments, in which students agree upon a distribution of workload for a completed project. This is known in the literature as the distribution model of peer assessment (Victoria 2020) and is a means to assign individual grades for a group submission.

In general, students participating in our survey were found to be in favour of the use of this model in comparison to standard group grading. Whilst the extent of this favour was not statistically significant, it does support similar conclusions found by Planas-Lladó et al. (2018) and so this method may have benefits for improving student satisfaction scores for modules and courses containing assessed group work.

Those opposed to the distribution model mainly cited the issue of over-delivery, in which group members did more than agreed, attempting to skew the final workload distribution more in their favour. Some students also declared that they were socially anxious, and they commented that approaching the conversation around workload split was extremely difficult and stressful. However, these students also commented that they liked the aspect of having the opportunity to be fairly credited for their work. The perceptions of these potentially more vulnerable students is perhaps the biggest dilemma for academics considering the use of a distribution model in group assessment. It is easy to understand how the use of this model can create a stressful environment, and that students with anxieties may be particularly affected by this. However, the opportunity to partake in difficult and uncomfortable conversations in a professional environment could be considered valuable in adding to the teamwork, problem solving, communication, and attitude/behavioural skills that employers look for in graduates (CBI 2017). The incentive of such conversations leading to students receiving what they perceive to be a fairer reward for their efforts may mean that assessing group work under the distribution model is one of the best environments for gaining that experience, particularly for those with social anxieties.

Some students suggested in their free-text comments that they would have preferred a model in which they could assign activities to each group member and the assessor work out the exact workload split from there. This approach may remove some of the difficulties around the peer assessment conversation for the students, but it also encourages students to consider the assignment as a series of individual tasks that come together, rather than a collaborative effort, reducing some of the key benefits that group work can provide.

Instead, future research may want to focus on how students can be aided or guided in approaching the conversation around deciding the distribution. Abelson and Babcock (1985), two of the pioneers of the distribution model, suggest that care should be taken to ensure that students may be tempted to evaluate peers evenly. However, this may be seen as a positive since an even distribution may allude to a group appreciating the overall team effort and choosing to overlook minor differences in the strength of contribution. In addition, Gransberg (2010) and Planas-Lladó et al. (2018) found that many groups did declare an uneven workload distribution in their studies of the model.

Where guidance may prove useful is in addressing the over-delivery issue. For example, a tutor may want to advise students that if their peers produce what is agreed of them, or even make a concerted effort to do so, then they should not be given a lower percentage than they would receive through an even split. This may go some way to addressing the perceptions of unfairness raised by students in this study. Research into the effects of different levels of guidance would be an invaluable addition to the literature in this area to help determine whether the distribution model of peer assessment has a future in higher education.

5. Acknowledgements

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