ACCOUNTING EDUCATION
2023, VOL. 32, NO. 1, 90–113
https://doi.org/10.1080/09639284.2022.2034023

Routledge
Taylor & Francis Group

Managing group work: the impact of peer assessment on student engagement

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ABSTRACT

This study investigates the impact of peer assessment on students' engagement in their learning in a group work context. The study used regression analysis and was complemented by qualitative responses from a survey of 165 first-year undergraduates in a UK university. Findings suggest that students' perception of their contribution to group work fosters engagement and enhances their learning in a group. Also, that students' perception and the overall experience of rating their peers' work impact their engagement within a group. The study contributes to the literature by focusing on the assessment of the entire learning journey within a group rather than the final group output. In particular, the study highlights the significant contributions of peer assessment in managing student engagement in modules and/or assessments for large cohorts.

ARTICLE HISTORY
Received 27 August 2019
Revised 13 April 2020; 28 October 2020; 31 August 2021
Accepted 16 January 2022

KEYWORDS
Group work; peer assessment; student engagement; collaborative learning; UK

Introduction

This study investigates the impact of peer assessment on students' engagement in their learning in a group work context. Student engagement is a key performance indicator for many higher education metrics which affect their rating, funding, impact and esteem position in an increasingly competitive higher education sector. Student engagement is defined as 'both the time and energy students invest in educationally purposeful activities, and the effort institutions devote to using effective educational practices' (Kuh et al., 2008, p. 542). Extant literature has established clear links between student engagement and variables such as student retention (Kuh et al., 2008), academic performance (Pascarella et al., 2010), progression and graduate destination (Thomas, 2012). However, we know a little about how peer assessment affects student engagement, especially in a group work context. In view of this, the following research question

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was formulated for this study: *Is there a relationship between peer assessment and students' engagement in group work?*

Various assessment methods are employed to understand students' achievements. Hence, selecting the most effective method that helps to achieve the intended learning outcomes in a module with large cohorts is challenging. Group work is increasingly used to address these issues. Its advantages include the promotion of active learning and also inspires students to work together (Falchikov, 2005; Stamatoplos, 2000), development of critical thinking skills through interactions with other group members (Cohn, 1999; Dundes, 2001), and a forum for experiential learning, and a more efficient way to instruct large student numbers Fellenz (2006). In addition, group work and peer assessment can be complementary as students within a group can assess each other (intra-group peer assessment) formally, where they are asked to do so as part of the learning process, or informally, where they do so as part of a group dynamics (Singh & Vinnicombe, 2004).

The literature on peer assessment based on students awarding marks, grades, and tests have shown positive formative effects on student achievement and attitudes (Sridharan & Boud, 2019; Topping, 2005). However, many accounting education studies on peer assessment (e.g. Delaney et al., 2013; Hassan et al., 2014) have focused on the final individual piece of work – written or oral presentation - and not on the whole students' experience of producing the work (i.e. entire learning journey), especially within a group context. We expand the literature in this regard by focusing on the peer assessment of the entire learning journey of students within a group work setting. This learning journey covers the period the students were given the task to when they present their findings. This aims to encourage deep learning (appropriate and meaningful engagement with the task where students use the most appropriate cognitive activities for handling it) and a positive learning engagement (Biggs & Tang, 2011, p. 26). It also involves the careful alignment of an assessment task to a module learning outcomes. Understanding the impact of peer assessment on student engagement in a group context will contribute to the ongoing debates on the pedagogical merits of group work and peer assessment in higher education (Adelopo et al., 2017; Elliott & Reynolds, 2014; Falchikov, 2005).

The study used a regression analysis from a survey of 165 first-year non-accounting undergraduates taking an accounting module in a UK university. Peer assessment in this study was measured based on students' response to the survey questions that focus on their perception of the fairness of the assessment, their contribution to the assignment, their experience of the peer assessment exercise and the opportunity to be involved in the peer assessment again in the future. Student engagement was measured based on students' perception of their level of engagement in the peer assessment exercise. We provide details of these measures in the study design section of the paper. We used ordinal logistic regression in our analysis. This allows the dependent variable to have more than two categories which helped us assess the degree of satisfaction within groups. Findings suggest that students' perception of the fairness of the assessment process, personal experience, and contribution to the group task are associated with their engagement with the group assessment. Sex and peer assessment scores do not seem to affect student engagement.

Contribution

This study makes two main contributions to the accounting education literature on group work, assessment methods and student engagement. Firstly, the study advances the literature on the pedagogical benefits of group work as an assessment method in higher education by exploring how it facilitates peer assessment. Findings from the study indicate that students' perception of their contribution to group work fosters engagement and enhances their learning in a group. Secondly, the study contributes to the literature on assessment methods in higher education by showing that the students' perception and the overall experience of rating their peers' work impact student engagement. In addition, understanding the dynamics of the group work by studying how students get on with a group task improves the clarity of the factors that enhance group work as an effective assessment approach and mitigate some of the concerns students have about the value of group work and peer assessment.

The rest of the paper is organised as follows: the section 'literature review' provides the relevant literature on peer assessment and student engagement, which underpin the research question for the study. Next, the section 'study design and methodology' outlines the research methods employed, the section 'results and discussion' presents the results and discussions, and the section 'conclusion' highlights the main conclusions and implications of the study.

Literature review and theoretical framework

This section presents the theory that underpins this study and reviews the relevant literature on peer assessment, group work and student engagement. It also presents the research question addressed in this study.

Theoretical framework - collaborative learning

This study is based on collaborative learning theory. According to Dillenbourg (1999, p. 1), collaborative learning 'is a situation in which two or more people learn or attempt to learn something together'. Dillenbourg (1999) further summarised collaborative learning to mean a situation in which a form of interaction among people is expected to happen, and that could trigger the learning mechanism. Within a learning environment, the purpose of collaborative learning must be clear, and students should benefit from it and report on their engagement.

There are many objectives for applying collaborative learning, and Meijer et al. (2020) group them into didactic and pragmatic objectives. Didactic objectives for applying collaborative learning include, among others, developing cognitive outcomes (e.g. knowledge), social outcomes (e.g. communication and collaboration skills, reduce free-riding behaviour), and motivational outcomes (e.g. attitudes) (Strijbos, 2011) while pragmatic objectives for using collaborative learning could include the sharing of learning materials (Van Aalst, 2013) and reducing the time needed for teaching and grading students (Ahern, 2007; Augar et al., 2016; Boud et al., 1999).

Furthermore, student engagement has been understood by Zepke (2015) and Trowler (2015) to encapsulate students' direct participation in various forms of active learning.

Extant literature has highlighted how intra-group peer assessment can promote students' participation and decision-making process within groups - student voice (Little et al., 2009; and Wimpenny & Savin-Baden, 2013), and reduce free-riding behaviour and social loafing (Johnston & Miles, 2004; Shiu et al., 2012; Sridharan et al., 2018). Therefore, the peer assessment format used in this study (intra-group) aligns naturally with collaborative learning (Meijer et al., 2020) and students' participation in this type of assessment can provide insight into the collaborative process that is often not accessible to tutors (Onyia, 2014; Strijbos, 2016).

Peer assessment & group work

For the purpose of this study, peer assessment is defined as the process whereby students participate in grading the work of their peers (Falchikov, 2005; Topping, 2009). Ellington (1996) argues that this assessment method allows students to have a greater sense of ownership and empathy for the subjective judgements required throughout the assessment process.

Sluijsmans et al. (2001, p. 153) argue that assessments should help students develop high order thinking skills, including their ability to reflect on their own behaviour (self-assessment) and those of their peers (peer assessment). This is consistent with Freeman's (1995) argument that the assessment system plays a huge role in influencing students' behaviour and attitude to learning. However, peer assessment is not without some drawbacks. For example, extant literature highlights concern over the accuracy of peer assessment grades versus tutors' grades, students' competence and proficiency in undertaking assessment, and lack of training for students who complete the peer assessment (Cheng & Warren, 1997; Gatfield, 1999; Smith et al., 2002) amongst others.

Nonetheless, group work helps facilitate the use of peer assessment as students can easily identify and assess the contributions of their peers within the smaller groups rather than the large cohort. In particular, this study focuses on the assessment of the entire learning journey of the students while working on the group task. Group work is increasingly being used in higher education (Akindayomi, 2015; Elliott & Reynolds, 2014). Adelopo et al. (2017) argue that this could be in the form of a group discussion or group tasks, which is class-based, or group assignments where students work together outside class and later submit their findings in the form of reports or presentations. Falchikov (2005) argues that assigning group work is a popular teaching strategy, and student-centred classrooms particularly benefit from this because it encourages active learning and inspires students to work together. Fellenz (2006) adds that group work provides an excellent forum for experiential learning and helps instruct large student numbers more efficiently. This is further supported by Adelopo et al.'s (2017) work on learning groups: the effects of group diversity on the quality of group reflection, where tutors need to adequately provide clear explanations of the objectives and process of reflection before students are asked to reflect on learning and write reflective reports (p. 571).

However, while there is a body of literature that supports the benefits of using group work, not many studies have explored how to make group work fairer to students who are worried about the associated demerits of working in a group, especially the problem

of free riding (Davies, 2009; Hall & Buzwell, 2013; Healy et al., 2014). Despite some benefits from working in a group environment, many think that group work could adversely affect their grades. Some feel that it is not a true reflection of their ability (Davies, 2009). Fellenz (2006) argues that its use often brings about problems that limit and even negate its potential benefits. Specifically, the difficulties associated with accurately and fairly assessing individual contributions, performance, conflict within workgroups, and free riding of individual members are frequently cited problems associated with group work (see also Davies, 2009; Falchikov, 1988; Magin, 2001; Ross et al., 1998). Many of these problems are due to students' lack of clarity, cohesion, and necessary skills on how best to organise their activities to achieve the best group outcomes (Davies, 2009). Yet, these problems often go unnoticed because module leaders/tutors only see students' final output but hardly see how groups interact outside the classroom to produce their assessed work. Given the benefits associated with peer assessments, and the opportunity that each group member has to express views about the contributions of others to the group work and participate in deciding their grades, it is conceivable that peer assessment may mitigate some of the main concerns students often have about group work, especially around a perceived lack of reward for individual effort and free riding (Healy et al., 2014). This may be the case especially if the assessment is based on the individual contributions and efforts throughout the life of a group project rather than just the end product. Thus, the current study focuses on how peer assessment impacts student engagement in a group work context.

Student engagement

Astin's (1984) work on student involvement highlights issues around student engagement. This attracted considerable attention in the 1990s (e.g. Astin, 1993; Berger & Milem, 1999; Kuh, 1995; Kuh & Vesper, 1997; Pascarella & Terenzini, 1991). Trowler's (2010) review on student engagement shows that this was followed by 'research-led teaching' and later 'the student experience' (p. 2) but argues that those aiming to enhance learning and teaching in higher education now focus on 'student engagement'. The prominence of student engagement is underpinned by its strong link to student success (Thomas, 2012). However, Zepke (2014) argues that the debate around the importance of student engagement escapes serious critique or could be referred to as 'an uncritically accepted academic orthodoxy' (Brookfield, 1986, p. 96). Or at best, promotes higher education neoliberalism that is characterised with the marketisation of knowledge, performativity, and accountability (Trowler, 2015; Zepke, 2015).

Extant literature on engagement identifies its multifaceted nature. For example, Fredricks et al. (2004, p. 60) identify three dimensions to student engagement, which are (1) *behavioural dimension* - where students who exhibit behavioural norms like attendance and involvement in academic and social or extramural activities achieve positive academic outcomes; (2) *emotional dimension* - where students with emotional engagement would experience affective reactions to an institution such as interest in a subject, enjoyment/desire to do the work or a sense of belonging; and (3) *cognitive dimension* – where students with cognitive engagement would invest in learning, with the desire to go beyond the requirements whilst seeking opportunities to challenge themselves further.

For the purpose of this study, we used student engagement as a construct Fredricks et al. (2004) that includes behavioural, emotional, and cognitive components (see Guthrie & Anderson, 1999; Guthrie & Wigfield, 2000) to provide a richer characterisation of students than is possible in research on single components. These components also align with collaborative learning objectives highlighted earlier. This is particularly important because peer assessment happens 'throughout our lives' (Topping, 2009, p. 21). Grouping students to work together and peer-assess each other's contributions provide the opportunity to capture the impact of this assessment strategy on student engagement. Consistent with collaborative learning theory, working in a group requires different and additional skills compared to working alone. It challenges students to use their negotiation, communication and interpersonal skills (Adelopo et al., 2017). It also builds performance expectations and could put students in the spotlight, meaning that they may not want to be the odd one out or be the one responsible for the failure of the group tasks (Watkins, 2004). In this sense, it could be argued that working in a group enhances students' motivation and incentive to engage more with their learning. Furthermore, knowing that other students could form an opinion on their individual contribution to the group task could also be an additional incentive for learners to engage with their study. This is because their peers can reward members' contributions or punish their free riding. However, these possibilities have not been empirically explored in the extant literature. This provides the motivation for our research question in this study:

Is there a relationship between peer assessment and students' engagement in group work?

Study design and methodology

The context

This study focuses on students in a Business School at a UK post-1992[1] university that has 1,200 students and 70 faculty members. The Business School has a common first year for most of its courses, enabling students to change to any other course within the Business School at level 5. It also means that most students have to take an Introduction to Financial Accounting module at level 4. As a result of some technical aspects of financial accounting, non-accounting students take a variant module[2] called Accounting and Finance for Business (AFB). The aim is to help students taking this module appreciate the importance of accounting and finance information and its importance in the decision-making processes within organisations. Like other modules within the Business School, the module is 20 credits. Students need to complete 120 credits in any academic year and 360 credits in total to gain a bachelor's degree in the UK. This study is based on an assessment component of the AFB module. There were 268 students enrolled on the module during the period the study was carried out. However, only 165 students returned completed questionnaires. This gives a response rate of 61.67%, which is similar to some other studies involving questionnaire surveys (see Daly et al., 2015; McDowall et al., 2015). The module had two assessments components of 50% weighting each. The first was a time constraint computer-based exam, and the second was group work. This research is based on the second assessment component, and the next section discusses the group structure.

Group structure/composition

Students were required to form a group of between four and six members for the group work within their seminar groups[3] at the start of the academic year in September 2012. However, there was one group with seven members and another with only one member. While assigning students to groups have their advantages, e.g. fairness in group dynamics (Chapman et al., 2006), the study uses self-selection as students have initially been randomly allocated to seminar groups. This also helps with the group organisation outside the regular seminars. Students are likely to be available for group meetings at similar times every week based on how they have been timetabled for lectures and seminars.

Group task

The assessment task is set such that each member of a group has some responsibilities to contribute to the overall achievement of the group task. This is consistent with Davies (2009, p. 570) argument that 'additive tasks' are more appropriate for group work. Students were asked to rate other group members' contributions to the assessment tasks (intra-group peer assessment) and submit this together with their final work after presentations. As highlighted earlier, peer assessment has many benefits. The intra-group peer assessment used in this study has the capacity to facilitate collaborative learning, and the shared activity within the groups can produce a community of learning (Søndergaard & Mulder, 2012).

Five criteria were used in the rating (see Appendix 1). These criteria represent a section of the tutor's assessment criteria to evaluate how well the groups have worked together (see Appendix 2). The results from these ratings contribute 10% of the total assessment mark for each student. Students had access to the rating form seven weeks before the final submission of the group work. However, the rating exercise could only be completed within a week before the final submission. This is to allow students to have observed and reflected on group members' contributions to the group task over the seven weeks. After each group presented the assessed work, students were then asked to complete a questionnaire (see Appendix 3) relating to their experiences of using the ratings to assess other group members. The group presentations and the face-to-face completion of the questionnaires occurred within the first two weeks in May 2013.

For peer assessment to be effective, extant literature has shown that training students on using the tool provided is important (Gielen et al., 2011; Lindblom et al., 2006; Sluijsmans et al., 2001, 2002; Topping, 2010; Vickerman, 2009). Hence, our assessment criteria clearly state what is required of students, the process by which they will assess each other's contributions during the period of working together as a group, and ongoing discussion on how to use the rating criteria at the end of the period. This is consistent with suggestions by Sluijsmans et al. (2001), where they identified the necessary ingredients needed for a peer assessment strategy and how training participants could help to achieve an optimal effect.

Data

The data for this study was based on the opinions of year 1 undergraduate students on the AFB module described above. It focuses on students' experiences of peer-assessing each other on a group task over seven weeks.

Questionnaire survey

Respondents were given a five-point Likert-type scale to indicate their level of agreement to a number of statements relating to the focus of the study. While Hodge and Gillespie (2007) argue that the 5-point Likert scale focuses on moderate levels of agreement as it could only capture part of the underlying attitudinal continuum, the literature suggests that the five-point Likert scale appears to be simpler for respondents to complete and to improve response rate (Babakus & Mangold, 1992; Bouranta et al., 2009; Devlin et al., 1993). The questions were informed by the extant literature as enumerated in Table 1 below. A high score on the scale was set to mean a favourable perception and a low score an unfavourable perception. Thus, a score of '5' is set to 'strongly agree' or 'very important' and '1' to 'strongly disagree' or 'not at all important'. Apart from allowing a numerical value to be given to an opinion, Hussey and Hussey (1997) alluded to other advantages of using Likert-type scale, but not limited to (1) a number of different statements can be provided in a list, which does not take up much space; and (2) simple for the researcher to code and analyse.

All students enrolled on the module were notified at the start of the term that their participation in the survey is voluntary and that they can withdraw their participation at any time without repercussion. Before this, ethical approval was received from the University's Ethics Committee, and anonymity was promised to the participants, so it was impossible to link respondents to their completed questionnaires. As lecturers are often unaware of what happens within the groups, the grading criteria for the peer assessment were mainly taken from a section of the grading criteria that the lecturers used to assess the group work (see Appendix 1). Mark allocation for the peer assessment was informed by Boud's (1995) method of scaling (see Appendix 1). Both helped students respond to the questionnaire later, which was underpinned by the issues raised in the peer assessment and group work literature discussed above. Before its use, the questionnaire was reviewed by the University's learning and teaching enhancement team, and minor revisions were made to the questionnaire following their suggestions around the wording and presentation of the questionnaire. Table 1 below shows the main literature that informed the questionnaire, but we did not use all the questions from the questionnaire in this study.

Table 1. Questionnaire development and its link with extant literature.

1.	**Engagement** The opportunity to rate each other's contributions has enhanced my engagement with the task.	(Fredricks et al., 2004; Thomas, 2012; Trowler, 2010)
2.	**Accurate and fair assessment** Since the group members will get an equal mark for the task, it is fair that they also have a say in the assessment of their peers' contribution to the group task.	(Davies, 2009; Erez et al., 2002; Falchikov, 1988; Fellenz, 2006)
3.	**Impact on my contribution** Reflecting on the criteria for rating my colleagues' contributions to the group work, the exercise has also helped my own contributions to the task.	(Sluijsmans et al., 2001; Gillies & Ashman, 2003; Topping, 2009; Sridharan et al. 2018)
4.	**My experience** Overall, my experience of the opportunity to rate other group members' work has been positive.	(Falchikov, 2005; Topping, 2009)
5.	**Opportunity to do it again** If given another opportunity, I would like to do this again.	(Sluijsmans et al., 2001)

Qualitative data

Participants in the survey were allowed to provide qualitative comments as part of the survey. However, out of the 165 who returned the questionnaire, only 24 added further comments. The peer assessment exercise also allowed students to add comments based on their experience - 'considering your contributions to the group work, what would you have done differently?'. A total of 108 students completed this section of the peer assessment rating form.

We used thematic analysis to explore the responses to the open-ended questions. Thematic analysis is 'a qualitative analytic method for identifying, analysing and reporting patterns (themes) within data, which minimally organises and describes data set in rich detail' (Braun & Clarke, 2006, p. 79). We allocated codes to the open-ended questions (QS for comments from the questionnaire; PS for comments from the peer assessment exercise) and categorised them based on common themes identified once they were collated. We grouped these themes into three main areas- (1) how well the group worked together; (2) students' self-reflection of their engagements; and (3) others which range from 'keeping more copies of the work done' (QS19), 'the room for meeting' (QS50), 'pick another group' (QS34).

Sample selection

To be included in the study, a student must have completed their group presentation and completed and returned the questionnaire. Only 165 questionnaires were completed and returned. We did not attempt to obtain more responses as the presentations were held into the last week of the term. Students were to bring the completed questionnaires to their respective presentations. Although the task was group-based, the responses are from individual students. The sample size in this study is comparable to previous group-based studies (Elfenbein & O'Reilly, 2007; Stewart & Johnson, 2009).

Variable definition - dependent, independent and control variables

Our dependent variable is student engagement Engmt is defined as students' perception of the opportunity to rate each other's contribution and engagement with the group work. Engmt is derived from question one of the questionnaires (see Appendix 3).

The main independent variables are the components of the students' perception of the peer assessment based on the four components represented on the questionnaire in Table 1. These are the Impact on my contribution (Imp_Contr); My experience (Myexp); Accurate & Fair Assessment (Acc_Fair); and Opportunity to do it again (Opp_Again). Imp_Contr is measured as the impact of using the rating criteria on individual student's contribution to the group work. Myexp is measured as the overall experience of rating other group members' work. Acc_Fair is measured as students' feeling that it is fair that they also have a say in assessing their peers' contribution to the group work instead of having an equal mark for the task upon completion. Opp_Again is measured as the extent to which students want to participate in a similar process if given the opportunity.

We used the following control variables in all regressions based on extant literature (e.g. Adelopo et al., 2017; Hassan et al., 2014). These include Group size, Sex, Peer

assessment score, and Assignment 1. Group size is defined as no of students within a group. Literature on group size shows that the size of groups is essential for effective group work (Davies, 2009), and larger group size is linked to higher group performance (Adelopo et al., 2017; Chapman et al., 2006; Davies, 2009; Myers, 2012). Sex is defined as a dummy variable representing the respondents' sex where one is equal to female and zero for male. Studies show that student performance and behaviour differ according to sex (Ballantine & McCourt Larres, 2007; Takeda & Homberg, 2014), but Gibbs (2009) argues that these differences are not found in all studies. Peer assessment score is defined as weighted average grades (in %) awarded to each student based on group members' ratings. Assignment 1 is defined as grades from the first assessment prior to students participating in the group work. All variables are defined in Table 2 below.

Methodology

The findings in this study are based on regression analysis and complemented by qualitative responses. In this sense, we used ordinal logistic regression analysis for the quantitative analysis and thematic analysis for the qualitative comments. Ordinal logistic regression is the appropriate model because the dependent variable has more than two categories (a scale of 1–5) (see Wood, 2006). Our regression model is stated below. The regression model allows us to establish the relationship between the dependent and our main independent variables while controlling for other variables that may be useful in explaining these relationships. Table 2 below presents our variable definitions and their sources.

$$Engmt_i = \beta_0 + \beta_1 Imp\_Cont_i + \beta_2 Myexp_i + \beta_3 Acc\_Fair_i + \beta_4 Opp\_Again_i + \beta_5 Sex_i + \beta_6 Gsize_i + \beta_7 Peeass_i + \beta_8 TCA1_i + \varepsilon_i \quad (1)$$

The number of students i is 165. The term ε_i represents the error term. Engagement (Engmt) shows student's perceptions of the opportunity to rate each other's

Table 2. Variable definitions.

Variables	Acronym	Measurement
Engagement	Engmt	Students' perception of the opportunity to rate each other's contribution and engagement with the group work.
Impact on my contribution	Imp_Cont	The impact of using the rating criteria on individual student's contribution to the group work.
My experience	Myexp	The overall experience of rating other group members' work.
Accurate & fair assessment	Acc_Fair	Student's feeling that it is fair that they also have a say in the assessment of their peers' contribution to the group work instead of having an equal mark for the task upon completion.
Opportunity to do it again	Opp_Again	The extent to which students want to participate in a similar process if given the opportunity.
Sex	Sex	A dummy variable representing the respondents' sex where one is equal to female and zero for male.
Group size	Gsize	No of students within a group
Peer assessment score	Peeass	Weighted average grades (in %) awarded to each student based on group members' ratings.
Assignment 1	TCA1	Grades from the first assessment prior to students participating in the group work.

contributions and how the experience has enhanced their engagements with the group work.

Results and discussion

Descriptive statistics

This section presents the descriptive statistics, correlation matrix and our regression analysis in the context of the extant literature.

Table 3 below presents the descriptive statistics of the variables used in this paper. The mean group size was 5, and 57% of the respondents were female. The average score awarded by peers following the ratings was 80% which is 16% higher than the mean mark awarded by the lecturers in the first assignment. Both dependent and the remaining independent variables also have an average of approximately 4 points.

This table provides descriptive statistics for the 165 respondents to the questionnaires following their experience of peer assessment except for Peeass and TCA1, which were based on the entire cohort on the module. Two respondents also did not complete the part for Sex. All variables are as defined in Table 2.

Spearman correlation matrix

The results of the Spearman correlation coefficients are presented in Table 4 for all variables included in the study. Imp_Cont and Myexp showed a positive and statistically significant moderate correlation with Engmt at 5% level, while Acc_Fair, and Opp_ showed a statistically significant but weak correlation with Engmt.

Regression analysis - results and discussion

Student engagement and peer assessment

Table 5 below presents the results of our regression analysis. The results (Column 1 of Table 5) show that two out of the four independent variables significantly positively

Table 3a. Univariate Analysis by Liker Scale.

Variable	1	2	3	4	5
Engmt	0	9	24	96	36
Imp_Cont	1	4	24	93	43
Myexp	0	2	17	95	51
Acc_Fair	3	3	15	84	60
Opp_Again	4	8	50	58	45

Table 3b. Summary Descriptive Statistics of all Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Engmt	165	3.9636	0.7642	2	5
Imp_Cont	165	4.0484	0.7474	1	5
Myexp	165	4.1818	0.6558	2	5
Acc_Fair	165	4.1818	0.8135	1	5
Opp_Again	165	3.8000	0.9765	1	5
Sex	163	0. 4294	0.4965	0	1
Gsize	165	5.0606	1.0042	1	7
Peeass	268	80.1903	31.0390	0	100
TCA1	268	64.3880	16.3100	0	100

Table 4. Correlation matrix.

	VIF	Engmt	Imp_Cont	Myexp	Acc_Fair	Opp_Again	Gsize	Sex	Peeass	TCA1
Engmt		1								
Imp_Cont	1.43	0.547*	1							
Myexp	1.49	0.527*	0.527*	1						
Acc_Fair	1.18	0.315*	0.317*	0.417*	1					
Opp_Again	1.16	0.306*	0.224*	0.416*	0.274*	1				
Gsize	1.01	0.138	−0.002	0.0512	0.024	0.018	1			
Sex	1.04	−0.038	−0.102	−0.046	−0.173*	−0.063	0.064	1		
Peeass	1.05	−0.130	−0.137	−0.031	−0.002	0.111	−0.118	−0.013	1	
TCA1	1.02	0.015	0.0211	−0.028	0.053	0.013	0.048	−0.096	0.001	1

Variables are as defined in Table 2

impact student engagement. The coefficient of the variable (Imp_Cont) is significant (1.296, t-stat = 4.64), demonstrating a statistically significant positive association between a student's perception of their contribution to the group work and their perception of their engagement in their learning. This implies that a higher perception of individual contribution to the group task is associated with better engagement in learning. Group work captures student experience and engagement both within and outside the classroom (Falchikov, 2005). The findings are consistent with Jaques and Salmon (2007), where they argue that the process element of group work often happens in the absence of the lecturers. This is further strengthened by the coefficient of the variable (Myexp), which is significant (1.180, t-stat = 3.85), demonstrating that students' individual experience of using peer assessment in a group work setting impacts positively on their engagement. It shows that increase in a student's perception of their individual experience of using peer assessment is positively associated with improvement in engagement. This is consistent with Sridharan et al. (2018) finding that peer assessment improves communication and the quality of group members' contributions to the group work. The coefficient of the variable (Acc_ Fair) did not show a significant statistical relationship with student engagement (−0.049, t-stat = 0.20). However, (Opp_Again) shows a positive and statistically significant relationship with student engagement, albeit marginally (0.302, t-stat = 1.66). This indicates that students consider that the opportunity to peer-assess each other impacts positively on their engagement.

The control variable (Gsize) is positive and statistically significant, albeit marginally when added in column 2 in Table 5 but not in other models. Other control variables (Sex, TCA1, Peeass) are not significant when added to the model. However, some of the qualitative comments also support this finding. Especially the responses from the open-ended questions on the peer assessment rating form which show student's self-reflection on how they could have improved their engagement with the learning process, as the examples below show:

Table 5. Student engagement and peer assessment.

Variables	(1)	(2)	(3)	(4)	(5)
Imp_Cont	1.296***	1.323***	1.310***	1.306***	1.294***
	(4.64)	(4.68)	(4.64)	(4.62)	(4.52)
Myexp	1.180***	1.182***	1.201***	1.208***	1.207***
	(3.85)	(3.81)	(3.86)	(3.86)	(3.86)
Acc_Fair	−0.049	−0.043	−0.003	−0.008	−0.010
	(−0.20)	(−0.18)	(−0.01)	(−0.03)	(−0.04)
Opp_Again	0.290	0.302*	0.304*	0.304*	0.309*
	(1.60)	(1.66)	(1.68)	(1.67)	(1.69)
Gsize		0.277*	0.261	0.261	0.259
		(1.68)	(1.57)	(1.57)	(1.56)
Sex			0.215	0.209	0.202
			(0.63)	(0.61)	(0.59)
TCA1				0.003	0.003
				(0.28)	(0.27)
Peeass					−0.002
					(−0.27)
Obs.	165	165	163	163	163
Pseudo R^2	0.220	0.228	0.229	0.229	0.230

Standard errors are in parenthesis
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

> I worked to the best of my ability but will improve communication outside the seminars and lectures (PS2).

> I would attend to the meeting more (PS12).

Other students remarked:

> I would have been more prepared for the workload by having a more structured and organised schedule (PS23).

> Considering how the majority of the group worked well together, one did not pull her weight and let the team down. But apart from that, I would not have changed anything (PS54).

The results in Table 5 show that the peer assessment of the entire learning journey seems to enhance students' engagement in their learning. It created an opportunity for students to see themselves 'as a learning community with shared goals and interests' (Søndergaard & Mulder, 2012, p. 344). This is expected to lead to deep learning (Biggs & Tang, 2011) for all participants. Furthermore, students' qualitative comment indicates that they did not just see the experience as an avenue to score higher marks or punish the unengaging peers. Instead, it seems that they felt a level of satisfaction by being involved in the whole process of the assessment. Some students even suggested ways in which the rating exercise could be improved. For example, QS16 remarked:

> I think a 0% box should be available to give a more accurate measure of people's contribution.

The findings show that students take responsibility for their learning (Adesina, 2020; Liu & Carless, 2006) when they are able to rate other group members' contributions, together with and their perception of the fairness of the assessment process. This is consistent with Meijer et al.'s (2020, p. 1230) argument that intra-group peer assessment could prompt peers to 'invest more effort and/or raise the quality of their contributions to the collaborative process and/or product.'

The assessment criteria (see Appendix 1 and 2) and students' responses to the questionnaires suggest that there is an increased awareness of roles, responsibilities, and tasks, which led to student behaviour that is more aligned with the objectives of collaborative learning (Meijer et al., 2020). The intra-group peer assessment also allows the voice of each student to be heard, which often result in positive attitudes of students toward learning. Other results from the qualitative data (see comments below) suggest that students are motivated to learn, engage actively, and contribute to group tasks, perceive the assessment process as fair and that the overall experience was positive.

> I think we should continue to rate each other as others should not be able to take credit for the hard work of others when they have lacked contribution (QS12).

Another student remarked:

> It allows for a fair rating as to who has pulled their weight (QS3).

A very few students had concerns that some students may not be truthful about their rating in their comments:

> In addition, people have lied on the marks - leaving it open to unfairness in the system (QS1).

Table 6. Student engagement and peer assessment – Robustness test.

Variables	(1)	(2)	(3)	(4)	(5)
Imp_Cont	0.385***	0.392***	0.392***	0.390***	0.385***
	(5.16)	(5.30)	(5.23)	(5.19)	(5.02)
Myexp	0.332***	0.324***	0.330***	0.332***	0.333***
	(3.72)	(3.67)	(3.68)	(3.69)	(3.69)
Acc_Fair	−0.030	−0.027	−0.018	−0.020	−0.020
	(−0.47)	(−0.42)	(−0.29)	(−0.31)	(−0.30)
Opp_Again	0.097*	0.100*	0.100*	0.099*	0.101*
	(1.84)	(1.91)	(1.90)	(1.89)	(1.90)
Gsize		0.102**	0.099**	0.098**	0.097**
		(2.17)	(2.05)	(2.03)	(2.01)
Sex			0.069	0.066	0.064
			(0.70)	(0.67)	(0.65)
TCA1				0.001	0.001
				(0.40)	(0.38)
Peeass					−0.001
					(−0.38)
_Cons	0.773**	0.238	0.161	0.096	0.171
	(2.11)	(0.54)	(0.36)	(0.20)	(0.33)
Obs.	165	165	163	163	163
R-sq	0.370	0.388	0.392	0.393	0.393

Standard errors are in parenthesis
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

However, many have followed the instruction that we gave that group members must not show each other their ratings. For example, QS24 remarked:

> I think it should be stressed that the reviews are completed independently to prevent not wanting to hurt people's feelings.

Unfortunately, the comments from the third theme, 'others,' do not support or refute our main findings from the regression analysis.

Overall, the results are particularly important for modules, like the one used in this study, delivered across different courses outside the discipline. AFB was delivered to non-accounting students, so many of the students taking the module may find its contents challenging. Also, many of the students (studying marketing, human resources management, events management, tourism management, etc) always questioned the need to take Accounting as part of their degree. Hence, to get most of the class to talk about Accounting was a win-win for both students and lecturers.

Robustness test

This section reports the robustness test to enhance the reliability of our main results presented in Table 5 above. Table 6 presents alternative regression output using ordinary least squares with the average values of the dependent variable, which are assumed to be continuous variables. The results in these regression models are qualitatively similar to those in Table 5 largely supporting our main findings.

Conclusion

The study examined the impact of peer assessment on students' engagement in their learning in a group work context. The main research question for the study was stated

as: *Is there a relationship between peer assessment and students' engagement in group work?* The study establishes that peer assessment encourages student engagement with the group task, with 80% (22% - 'Strongly agree' and 58% - 'Agree') agreeing with the Engagement question. It also increases the awareness of the significant contributions of peer assessment to managing student engagement in groups. Especially in modules and/or assessments for large cohorts which accounting educators are often involved in teaching and where there are limited resources to manage the groups effectively to engage in the set task.

Our study shows that the pedagogical merits of group work and peer assessments in higher education are further enhanced when students have a say (i.e. student voice) over the grading of their peers where they have a better understanding of their contributions to the group tasks. An assessment is about making judgements concerning the level to which students achieved the criteria of the subject (Boud, 1986; Elwood & Klenowski, 2002). Therefore, the study shows that students' perception of their contributions to group work promotes engagement and enriches their learning in a group.

The study's approach to peer assessment, which focused on the seven weeks the students worked together, also helped them take responsibility for their learning. This further led to an improved group work experience for both the students and academic staff. The study shows that students' perception and the overall experience of rating their peers' work enhance their engagement. In the process, the students also start to develop certain soft skills like decision-making capability and motivation, which enhance their employability.

While there should be some cautions in using peer assessment in summative assessments (Sridharan & Boud, 2019; Topping et al., 2000), our study shows that the 10% that the students had control over provided enough incentive for better engagement, as evident in our findings. Future studies may consider higher percentages. Other studies could also explore an alternative and comparative setting. For example, the task could be set for cohorts that major in accounting and a similar study could be done in more than one institution for further insight.

Reflection

The actual task is similar to any other traditional assessment where students could work together and present findings at the end and marks awarded by tutors. However, varying how this would be delivered and assessed was not easy. One of our responsibilities was to ensure that students have gained the knowledge and skills needed to adequately engage with the task and the peer assessment exercise, so the training was vital.

The implementation of the process was lighter in the early stages but burdensome to the tutors who implemented the latter stages. For example, collating students' grades after the rating exercise was labour intensive. Tutors had to manually enter members' ratings on a prepared excel sheet that converts the ratings to one mark for the students. However, we believe the process can be enhanced with the use of the virtual learning environment for students to complete their ratings which tutors can then download. One student, QS14, even suggested 'online submission" in response to the open questions in the questionnaire.

Also, the experiences of students as revealed by many of their responses to the open-ended questions show how little we (tutors) know about what goes on within the groups but still often make a judgement about students' performance in the final output, whether in oral presentations like in this study and/or group report submitted following completion of the task.

Limitations

The data for this study was collected anonymously, which necessitated relying on respondents' reported judgement on peers' performance. The study asked students to reflect on their group work experiences throughout the seven weeks, but students may have allowed their performance at the presentation to dominate their thoughts. Respondents were all level 4 students. Their experience of transition to higher education may have influenced how they engaged with the study, which would be difficult to decern by the survey instrument.

Notes

1. UK universities can be broadly divided into two types: the traditional and the post-1992 universities. The traditional universities are older, and the post-1992 universities are former polytechnics or institutes of higher educations that were granted university status in 1992.
2. Accounting and Finance students take a module called Financial Accounting for Professionals at level 4. It focuses on the double-entry bookkeeping and final accounts for both sole traders and companies with their analysis. In addition, however, AFB focuses on the interpretation of financial statements.
3. Seminar groups

Acknowledgements

The authors thank all students who completed the questionnaire following the peer assessment exercise. We also thank Professor Gregory Stoner & Professor Silvia Casa Nova, and the reviewers for their constructive feedback on the previous versions of this paper.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendices

1. Group members' assessment rating criteria

1. *Group members' assessment rating criteria*

This form gives you an opportunity to assess the contributions of your group members. You do not need to write your name and do not have to show your group members your ratings.

Use one form for each member.

These ratings contribute 10% of the total mark for this assessment. So be as sincere as possible.

Group name: .....

Seminar: .....

Rate the contributions of your group member (100% = highest; 10% = lowest)

Name of the group member: .....

Criteria		Ratings									
	%	100	90	80	70	60	50	40	30	20	10
Attendance at meetings											
Team working											
Promote relationships which serve the group needs											
Understanding group dynamics											
Overall contribution to the project											

Considering your contributions to the group work, what would you have done differently?

.....

.....

2. Assessment criteria – group presentation

		100-80	79-70	69-60	59-50	49-40	39-20	19-0
Criteria	**%**	**Excellent**	**Very good**	**Good**	**Sound**	**Satisfactory**	**Fail**	**Fail**
PRESENTATION AND STYLE:	**20**	**PRESENTATION AND STYLE**						
Communication and presentation (appropriate to Accounting and Finance)		Effective communication which demonstrates a strong understanding of Accounting and Finance.	Good communication in a format appropriate to Accounting and Finance.	Communication is effective and in a format appropriate to Accounting and Finance.	Communication is generally effective and shows awareness of Accounting and Finance's academic style.	Generally clear but limited evidence of Accounting and Finance's academic style.	Communication is unstructured and unfocused and/or in a format inappropriate to Accounting and Finance.	Communication is disorganised and/or incoherent and/or shows no understanding of Accounting and Finance.
Presentation		Presentation is well structured, engaging and confident. Audibility and pace are excellent.	Presentation is well-structured and engages the audience. Pace and audibility are very good.	Presentation is well structured and attempts to engage the audience. Pace and audibility are effective.	Presentation has a generally sound structure. Pace and audibility are satisfactory most of the time.	Pace, audibility and/or structure of presentation are adequate but limited.	Delivery is disorganised and/or pace and audibility are poor.	Presentation is not understandable and/or inaudible and/or not an oral presentation.
CONFORMING TO INSTRUCTIONS:	**20**	**CONFORMING TO INSTRUCTIONS**						
Attention to purpose		Addresses the full purpose of the assignment with some creativity.	Addresses the full purpose of the assignment.	Addresses the main purpose of the assignment effectively.	Generally addresses the main purpose of the assignment.	Some of the work is focused on the aims and themes of the assignment.	Mostly fails to address the task set.	Fails to address the task set.
Clarity of objectives and focus of work		Defines appropriate objectives in detail and addresses them comprehensively.	Defines appropriate objectives and addresses them coherently throughout the work.	Outlines appropriate objectives and addresses them in a manner which gives a clear focus to the work.	Outlines some appropriate objectives and addresses them in a manner which gives a general focus to the work.	Uses generalised objectives to provide adequate but limited focus to the work.	Objectives are not appropriate and/or clearly identified.	No objectives are identified and lacks focus.
CONTENT AND KNOWLEDGE:	**40**	**CONTENT AND KNOWLEDGE**						
Quality of sources used		Significant use made of primary sources in conjunction with high quality secondary sources.	Uses a balanced combination of primary and higher quality secondary sources.	Mostly uses higher quality secondary sources, with some use of primary sources.	Mostly uses appropriate secondary sources, with some limited use of primary sources.	Uses appropriate secondary sources.	Makes some use of appropriate sources, but also draws upon unreliable and/or inappropriate sources.	Uses unreliable and/or inappropriate sources.
Information gathering / processing		Selects highly relevant information. Demonstrates understanding of the complexity of the information and processes it effectively.	Selects appropriate information and processes it effectively.	Selects mostly appropriate information and processes it adequately.	Selects some appropriate information and processes it adequately.	Selects some appropriate information but processed it with limited success.	Random information gathering. Inappropriate use of processing tools.	Fails to collect appropriate data in any systematic way.
Time management / self-management		Meets deadlines. Plans well ahead. Sets self-determined targets and contingency plans allowing sufficient time to receive and act on guidance.	Meets deadlines. Plans and monitors progress to allow sufficient time for development of the work.	Makes plans and implements them in a satisfactory manner to meet deadlines.	Meets important deadlines. Exhibits some limited evidence of planning.	Deadlines are acknowledged and time allocated is appropriate but not always adhered to.	Little evidence of attention to deadlines and time management.	Rarely meets deadlines. Appears unable to make and implement plans.
Interactive and group skills (including teamwork, negotiation, understanding group dynamics and empathy)		Effectively uses a range of networking skills within a learning or professional group. Addresses conflict. Seeks to promote relationships which serve the group needs.	Interacts effectively within a learning group, giving and receiving information and ideas and modifying responses where appropriate.	Meets obligations to others (tutors and/or peers) providing contributions to support shared objectives. Recognises and assesses alternative options.	Shows awareness of the need for adopting a range of responses to interact effectively. Contributes effectively to group aims.	Uses basic interactive skills appropriately to contribute to the group aims.	Avoids working with others or does not contribute effectively to the group.	Does not contribute or disrupts the group.
THINKING/ANALYSIS/ CONCLUSION	**10**	**THINKING / ANALYSIS / CONCLUSION**						
Conclusions		Conclusions are well developed, analytical, use appropriate forms of conceptualisation, and show some originality. They are thoroughly grounded in theory / evidence / literature. They	Conclusions show critical insight and development of thinking. They relate clearly and logically to evidence / theory / literature.	Logical conclusions are drawn which show some critical insight and are clearly derived from evidence / theory / literature.	Generally sound conclusions are drawn which are supported by evidence / theory / literature.	Some relevant conclusions are drawn which are derived from limited understanding of evidence / theory / literature.	Limited or ineffective attempt to draw together arguments.	Lack of conclusions, or unsubstantiated / invalid conclusions drawn.
		form an integrated part of the overall argument / discussion.						
MEMBERS' RATINGS	**10**							
Total %	**100**							

3. Questionnaire

The purpose of this questionnaire is to get your opinions on students' involvement in peer evaluation of others' inputs in group work assessments.

Please complete the questionnaire by ticking the box, which most readily corresponds to your feelings or opinions about the ***rating form*** you have just completed for your group work presentation.

	Strongly agree 5	Agree 4	Unsure 3	Disagree 2	Strongly disagree 1
1. Engagement The opportunity to rate each other's contributions has enhanced my engagement with the task.					
2. Accurate and fair assessment Since the group members will get an equal mark for the task, it is fair that they also have a say in the assessment of their peers' contribution to the group task.					
3. Impact on my contribution Reflecting on the criteria for rating my colleagues' contributions to the group work, the exercise has also helped my contributions to the task.					
4. Group self-management The process of rating others' contributions has enhanced group self-management.					
5. My experience Overall, my experience of the opportunity to rate other group members' work has been positive.					
6. Opportunity to do it again If given another opportunity, I would like to do this again.					

Any other comments: .....
.....
.....

Other information

	Male	Female
Sex		

	1	2	3	4	5	6
How many students are in your group? *Please tick one*						