Facilitating feedback generation and group skill development through assessment design

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Received 2 October 2023
Revised 2 December 2023
30 December 2023
25 January 2024
8 February 2024
Accepted 18 February 2024

Abstract

Purpose – Large classes pose challenges in managing different types of skills (e.g. maths, subject-specific knowledge, writing, confidence and communication), facilitating interactions, enabling active learning and providing timely feedback. This paper shares a design of a set of assessments for a large undergraduate economics course consisting of students from diverse cultural backgrounds. The benefits, challenges and learning experiences of students are analysed.

Design/methodology/approach – Students worked in groups to complete an assessment with several questions which would be useful as a revision for the individual assessment, the following week. Survey questionnaires with Likert-type questions and open-ended questions were used to analyse the learning and skill development that occurred because of the group work. Responses to the open-ended survey questions were coded and analysed by identifying the themes and categorising the various issues that emerged.

Findings – This assessment design developed group working skills, created opportunities to interact and enhanced learning. The analysis of the responses found that working with peers enabled the students to generate their own feedback, clear doubts and learn to solve problems. Effective communication, planning meetings and working around the diverse group members' strengths and weaknesses are some graduate skills that are developed in this group assessment. The challenges were arranging meetings, finalising assessments, engagement of group members and unreliable technology. However, the students found ways to overcome these challenges.

Originality/value – This assessment design can be useful in higher education practice by introducing a mechanism for authentic collaborative practice. This paper adds to the literature on peer interactions and group work and enables effective learning at scale.

Keywords Active learning, Learning at scale, Group skills, Large class, Multicultural skills, Two-stage exam

Paper type Research paper

Introduction and background

The exploratory study presented in this paper is about an assessment design to address the various challenges in a large and diverse class. Such classes are a common phenomenon but not limited to business school degrees. The Microeconomics course in the 2nd year of a four-year undergraduate degree at a Scottish university is compulsory, consisting of more than 400 students, who are diverse in terms of cultural and academic backgrounds.

Large classes result in many challenges. These include limited student–teacher interaction, inability to provide frequent timely feedback, less active learning and more

I would like to thank the course coordinator, Professor Michele Battisti for his support as well as Dr Wenya Cheng, Prof Ian Smith and various conference audiences (University of Glasgow L&T and CABS LTSE for their valuable feedback). The comments from the anonymous referees have been extremely useful in improving the paper.

Journal of Work-Applied Management
Vol. 16 No. 2, 2024
pp. 269-282
Emerald Publishing Limited
e-ISSN: 2205-149X
p-ISSN: 2205-2062
DOI 10.1108/JWAM-10-2023-0103

passive learning in lectures, getting lost in the crowd and feeling anonymous, difficulty in getting to know peers for meaningful interactions and forming study groups and not enough opportunity for feedback to help with the revision (Mantai and Huber, 2021; Mulryan-Kyne, 2010).

This study took place in 2021/22, when there were lockdown restrictions. Some students were still at home, while others were in the locality. This situation made it even more difficult to meet and make new friends and develop study groups. Another factor to consider is that in the 2nd year, we welcome a large cohort of international students, predominantly from China, from a feeder institution (i.e. these students do a one-year programme to prepare them for the British degree programme so that they can enter directly into the second year). Since this is a first semester course, it plays a significant role for these incoming students, who make up nearly 30% of the class, settling into the degree and the university. The numbers of the new influx into an already large class together with the cultural diversity contribute to the lack of interaction between these two groups of students. Existing research shows that cross-cultural interaction is less prevalent and offers some reasons as to why the students are reluctant to interact across boundaries: perceived language barriers, inability to find common interests to form friendship groups, acculturative stress, discrepancies in learning approaches and different academic expectations (Arkoudis *et al.*, 2019; Bai, 2016; Popov *et al.*, 2012).

The teachers of this course observed these issues and introduced an intervention in the form of an assessment design, which is presented in this paper along with an analysis of its effectiveness. The findings from this study will be useful to the academic practice of the higher education sector and add to the strand of literature, which explores ways to overcome the challenges posed by learning at scale (Mantai and Huber, 2021; Roll *et al.*, 2018; Vallis *et al.*, 2020).

The intervention

This section describes the assessments and the reasons behind this design, bearing in mind the various issues which were highlighted above and incorporating lessons from the existing studies.

There is evidence that team-based learning, two-stage exams and other group activities have many benefits (Fatmi *et al.*, 2013; Knierim *et al.*, 2015). Skills that are important for successful group work include: collaborating with peers, allocating work according to strengths, supporting each other, resolving differences and finding solutions (Tholen *et al.*, 2016; Litchfield *et al.*, 2010). Working in groups towards a common objective develops valuable graduate skills such as: time management, being dependable, effective interaction and communication and being a good team player. Engaging in discussions when answering questions enables the students to clear doubts, find reassurance in the answers, learn efficient ways to approach and solve problems, develop critical thinking and generate immediate feedback and deeper learning. Thus, we wanted to incorporate an assessment design which fosters discussion and provides timely revision opportunities.

Despite these benefits, studies have verified that the students seem to be suspicious of group assessments because of a preconception of group members, not engaging and free riding, anxiety about interacting with unfamiliar people, grades being negatively affected because of others' academic ability, skills, work ethics and low aspiration (Aggarwal and O'Brien, 2008; Davies, 2009; Meijer *et al.*, 2020). To reduce these concerns, less weight was attached to the group assessment. Moreover, it is useful to make the benefits of the group work immediate (i.e. benefits of group work are not only in the unknown future) and to penalise nonengagement.

We followed a suggestion in Arkoudis *et al.* (2013), to use subject matter to facilitate interaction and designed an assessment, which required the students to solve questions with

which they were already familiar. The feedback we have received from past students is that it would be beneficial if group work experience is introduced earlier in the degree, not only because the grades are not linked to the final degree outcomes but also because they will be better trained in team working as they progress through the degree. Introducing this group work in the second year of the four-year degree attempts to achieve this.

The diverse student bodies in the universities provide a good opportunity for students to interact and learn many useful aspects about different countries and cultures. Large multinational corporations to small global firms are increasingly looking for employees who have multicultural awareness and skills that can help the organisation to operate in different countries and with culturally diverse people (Engelsberger *et al.*, 2022; Fitzsimmons *et al.*, 2017; Pascarella *et al.*, 2014). Many studies have shown that the international students value cross-cultural interaction, especially with their local peers. However, students tend to build friendships and study circles with those from similar cultural backgrounds and rarely take the initiative to engage in multicultural interactions (Arkoudis and Baik, 2014; Glass and Westmont, 2014; Rienties and Nolan, 2014).

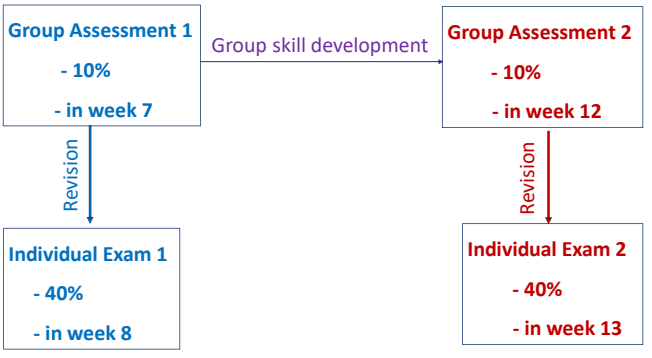
Working in mixed groups can be a tool to promote interactions across various barriers as long as necessary steps are taken to guide the students through the challenges (Cheng and Selvaretnam, 2022; Cruickshank *et al.*, 2012; Rienties *et al.*, 2014). In this assessment design, students worked in groups, which included students from different cultural backgrounds.

Reflection is a tool through which students can self-regulate themselves by realising their own strengths and weaknesses in the current context and prepare for the future (Grossman, 2008; McGuire *et al.*, 2009; Ryan, 2015). Dedicating some time to reflect on their interaction with the group members can reveal that most people face similar challenges in group work and that they are capable of tackling these challenges successfully (Taylor *et al.*, 2020). Providing an opportunity for students to reflect on their experience could be beneficial for self-realisation and development.

There are several studies which explain the benefits of scaffolding the learning experiences of students so that they can systematically progress (Chun and Cennamo, 2022; Kang *et al.*, 2014). Scaffolding the learning and group skills is a crucial aspect of this assessment design, which is explained in the next section.

The assessment design

The economics course that is used for this intervention had two individual unseen exams to cover the first and second half of the material. In 2021/22, we added two group assessments, with mostly multiple-choice questions (MCQs) so that there were four assessments. Figure 1



Source(s): Authors' own creation

Figure 1.
Flowchart describing the assessments

shows the order of the assessments and the weight placed on each assessment. The idea was that the group assessments, each worth a small value of 10% of the total grade, serve as revision opportunities for the individual exams, worth 40% each.

Group assessment 1 is the first one that the students face in week 7, covering the course material in weeks 1–5. The same material was used for individual exam 1 that took place the following week, giving students yet another week to revise. Moving on to the second phase, students were assessed on the material they learned in the second half of the course in weeks 6–10, with the group assessment 2 in week 12, followed by individual exam 2.

We can notice that each of the group assessments scaffolds up to the respective individual exams, while the first group assessment also scaffolds up the group working skills to the second group assessment. Moreover, starting the undergraduate students on group work in the second year itself will enable them to develop useful graduate skills as they progress to the honours years (years 3 and 4).

Students were informed in advance about the time the questions will be released for the group assessments, and they had three full days to complete the questions. This allowed students to pre-plan how to tackle the group assessment, arrange meeting times and locations and set deadlines for each person's work. Group assessment 1 was made up of 30 MCQs, which required the students to know about the application of the economic concepts they had learnt and solve some problems. Group assessment 2 was also made up of 30 MCQs, but there were some additional questions requiring short answers. The answers to the group assessments were released within a couple of days so that the students could use this information when preparing for the individual exam the following week.

We were inspired by the idea of two-stage exams, where students solve problems on their own, followed by working in groups, which enable them to perform better as a group and self-generate feedback about their own work (Nicol and Selvaretnam, 2021; Knierim *et al.*, 2015). Inverting the order, this assessment design enables the students to discuss as a group first and then attempt the individual assessment. Although the questions were different, they were about the same material and problem-solving processes. This design enables students to not only generate feedback about their understanding of the material and process but also make use of the revision opportunity to perform better in their individual work.

Group description

There were 473 students in total, including 140 international students who joined in the 2nd year. Groups were created by the end of week 3 so that students could get to know each other and decide how to tackle the group assessment. Students were allocated into groups by the course administrator using the Moodle command for random allocation, ensuring that each group consisted of new international students and existing students. We planned to allocate students into groups with at least two new students in a group of six (if the numbers did not divide, we would have a few groups of five members). However, because of administrative difficulties in having information about the students moving between courses, we had 81 groups – 68 groups of 6 and 13 groups of five members, out of which 59 groups had two new students and 22 groups had only one new student. This is described in Table 1.

No. of groups	Group size	Type of students
59	6 students	4 existing students and 2 new students
9	6 students	5 existing students and 1 new student
13	5 students	4 existing students and 1 new student
Total number: 81		

Table 1.
Group makeup

Source(s): Authors' own work

Research methodology and data

In order to evaluate the effectiveness of this intervention, survey questionnaires were used. Likert-type surveys are used in studies to get a sense of students' opinions, attitude, levels of understanding and enjoyment of something specific that can be written clearly as a statement, while open-ended questions are used to draw out students' independent reflection without constraining their thoughts (Kusmaryono *et al.*, 2022; Taherdoost, 2019; Cohen *et al.*, 2018). We used both these types of questions in the surveys to draw the necessary information effectively and appropriately. This research has the ethics approval from the College of Social Science of the university where this study was conducted.

We decided to use surveys because we wanted all the students to have the opportunity to answer the questions, and this method would be an efficient mechanism. Regardless of whether they consented to be a part of the research, answering the questions is an opportunity to reflect upon their experience. Online surveys allow private space for students to reflect and be confident about their anonymity. The survey questions were designed to find out whether the objectives of this study were achieved: more interaction with peers, including those from different cultural backgrounds; engagement in group work and useful revision to enhance learning. To complete the first group assessment, all the students were required to individually submit responses to the survey questionnaire. This was our main source of data. We did not make the second survey compulsory although more than half the students completed it.

The survey questionnaire consisted of the following: five Likert-type questions, which asked students to choose on a scale of five (strongly agree, agree, neutral, disagree and strongly disagree); one question which asked whether the group assessment questions were attempted beforehand; two open-ended questions, which asked students to reflect on the benefits and challenges of working in such a group assessment and one question about unengaged group members. The second survey also had an open-ended question to draw out information about how the experience of the first group assessment influenced the way they behaved in the second assessment. The answers to the surveys were not graded. The survey questions that are analysed in this paper are presented in the Appendix as Table A1.

A criticism could be that the framing of the Likert questions has a positive bias. However, the questions are not emotive and allow students to strongly disagree if they wish. Moreover, an important objective of these assessments was to enhance interaction and develop group working skills. Since anonymity was preserved and we did not ask for their nationality, we could not analyse according to such diversity.

Of the students who returned the survey questionnaires, only the answers of those who consented to take part in the research were included in the analysis. All the answers to the questions in survey 1 were analysed. Of the 302 students who consented and answered the Likert questions, the open-ended questions to reflect upon the benefits and the challenges were answered only by 212 and 218 students, respectively. From survey 2, which had the consent of 221 students, only the additional question to "reflect on the learning from MCQ1 that was useful when working on MCQ2" was analysed, which was answered by 146 students. We did not analyse the other questions from the second survey because both the surveys were teasing out the same information about the learning experience, benefits and challenges.

Each entry was given a student number – survey 1 entries were numbered 1sX (X = 1, 2, ... 302) and survey 2 entries were numbered 2sY (Y = 1, 2, ... 221). The answers to the Likert questions are presented informatively in Table 2, with strongly agreed and agreed being combined as the positive responses and strongly disagreed and disagreed being combined as the negative responses. The textual responses to the open-ended question were coded by first identifying the themes that emerged from the responses, and then, dissecting them further into categories (Maguire and Delahaunt, 2017; Braun and Clarke, 2006).

Responses to Likert statements	Strongly agreed and agreed (%)	Strongly disagreed and disagreed (%)
My group members contributed well to complete the assessment	92	2
The opportunity to do these questions as a group enhanced my understanding of the material	80	8
I would get a better grade because we did the assessment as a group	70	7
I will continue to interact with at least some of my group members	71	9
I benefitted by this opportunity to interact with students from diverse cultural backgrounds, which may not have happened otherwise	72	10

Table 2. Responses to the Likert questions

Source(s): Authors' own work

The open-ended questions enabled students to reflect upon the benefits, challenges and learning from group assessment 1. Each comment was carefully read so that relevant phrases could be placed into the appropriate category and counted. Sometimes students wrote a benefit under challenges or vice versa, which were counted under the appropriate category. For each category, some quotations are presented to clarify what it captures and to add depth to what the students conveyed as their experience.

Survey results and discussion

An analysis of the effectiveness of this assessment design is presented and discussed in this section. First, the results of the Likert questions in survey 1 are presented as percentages in Table 2, where strongly agreed and agreed are combined as the positive responses while those who disagreed or strongly disagreed are combined as the negative responses (neutral answers are not presented).

There was also a question, "before the group discussion, I had myself attempted" for which 56% said they had attempted all the questions beforehand and a further 24% had attempted more than 20 questions (out of the 30). Only 7% said that they attempted less than ten questions.

Next, the responses to the open-ended questions are combined with the results from the relevant Likert questions in the analysis and discussion below, under the headings: learning enhancement, peer interaction and communication, cross-cultural interaction, group skill development, deterring nonengagement and lessons learnt.

Learning enhancement

The group assessment was designed ahead of the individual assessment to provide a revision opportunity to students. In terms of learning, as high as 80% agreed with the Likert statement that "the opportunity to do these questions as a group enhanced my understanding of the material". While 70% of students agreed "I would get a better grade because we did the assessment as a group", only 7% disagreed.

In the open comments, a total of 149 comments confirmed that the group assessment enhanced their learning. Of these, 63 comments mentioned that group work improved their content, knowledge and learning approaches.

> Helped prepare for the exam because if one of us didn't know how to answer a question, another could teach them. (1s37)

> Working with others means people can fill each other's gaps in knowledge (1s290)

The balance of 87 comments confirmed the findings in Nicol and Selvaretnam (2021) that comparing with the peers' answers and discussion furthered their learning and critical thinking. Discussing the processes of finding solutions and comparing their answers will reinforce understanding and enable the students to self-generate feedback without direct instructor input. This is, especially beneficial in a large class, when students are preparing for an individual assessment.

> Working in a group ensured critical thinking when approaching questions and understanding other people's viewpoints in why they chose an answer. (1s197)

> . . . explaining my answers and reasoning to the other members of my group really helped to solidify my understanding of certain topics and having my team members explain their reasoning to certain questions really opened my mind to different thought processes. (1s232)

In the Likert questions, 56% of the students said that they had attempted all the questions beforehand and a further 24% had attempted more than 20 questions (out of the 30). The teachers did not require the students to attempt the questions on their own beforehand. It was up to the individual student and the group to decide how to approach the assessment. In the second survey, some students revealed (20 comments) that they learned the importance of working on their own before meeting as a group.

> work on problems individually and then come back and compare our solutions. (2s147).

From this analysis, we can be confident that this group assessment enabled the students to critically discuss the course material to enhance their understanding of the concepts and problem-solving skills. This is particularly useful as a revision exercise before the individual assessment.

> It allowed us to share knowledge and ideas which I believe will help me greatly in the individual exam. (1s56)

Peer interaction and communication skills

One of the objectives of this intervention was to facilitate the students in this large and diverse class to get to know each other. The Likert statement "I will continue to interact with at least some of my group members" drew 71% positive responses. The responses to the open-ended questions also provide evidence that this intervention has been useful in providing opportunities for a positive experience of interaction, communication and support among peers.

When asked about the benefits of this group assessment, there were a total of 186 comments, which said that it facilitated interaction and developed communication skills. These included 34 comments, specifying that it provided an opportunity for interaction with peers.

> It was good to meet other people studying economics and hopefully in the future we will be able to study together. (1s249)

Another 70 comments said that it enabled sharing of ideas, listening and discussing with peers, while 82 students said that the group assessment developed their communication skills to be clear, persuasive and confident. An important achievement of this assessment design is the scope to develop communication skills.

> Working in a group allows us to share our ideas and different methods on how to answer questions. (1s302)

> All of us discussed together and tried to persuade others to accept our opinions. It is quite a good way to practice our persuasion skills. (1s170)

> Working in a group is the best way of listening the other member's opinion in order to influence your own thinking. (1s233)

Students acknowledged, with 56 comments, that there was a challenge in finalising the assessment because group members can have different answers and opinions. However, this challenge itself developed better communication skills in discussing, listening to others' explanations and explaining their own thoughts and persuasion skills.

> When people had different answers we each took the time to explain our working and show exactly how we reached our answers. This helped anyone to realise any errors in their work or see if they had used incorrect logic or formulas. (1s38)

Cross-cultural interaction

A related objective of this assessment design was to create opportunities for students from diverse backgrounds to interact. Results indicate that we have been successful in creating multicultural interaction opportunities: the Likert question, "I benefitted by this opportunity to interact with students from diverse cultural backgrounds which may not have happened otherwise" had a positive response of 72%.

It is noteworthy that there were no negative comments regarding other group members' language skills. Only 14 comments explained their own difficulties in interaction because of the lack of confidence about their own language skills and knowledge. These students themselves acknowledged how supportive other group members had been. This is a good example of the student body being aware of each other's strengths and weaknesses and developing skills to support each other for the overall benefit of the group.

> English is not my native language, so first of all, I most worried about is whether the smooth communication and team members. (1s227)

> I enjoyed being in an international group. (1s70)

Group skill development

An important objective in this assessment design was to develop team working skills at this early stage of the degree. Planning meetings, time management, collaboration and effective work allocation are some of the skills that have been developed.

The biggest challenge in working as a group that was expressed by the students was organising and running effective meetings with 122 comments. Out of these, 42 comments were about the students being at home under different time zones. Students found it difficult to coordinate a time, location or online platform which suited everyone.

> Finding a time and place to meet, however we ended up doing it on zoom instead. (1s266)

> different time zones with other members of the group didn't help at all. (1s32)

It is to be expected that students would face some practical hurdles, which they had to overcome together by turning to technology, meeting more often and being creative in finding solutions. In the coming years, we will not face the problem of navigating different time zones unless a similar crisis occurs.

> Getting everyone to be able to meet to discuss answers. To get around this we used WhatsApp to communicated. (1s263)

> We had some issues with the time zones but in the end we found a time for our meeting that more or less suited everyone; because not everyone was here at that point we did our meeting on Zoom. (1s289)

The category with the greatest number of comments (114) was that this group experience developed their skills in planning and collaborating with the group members.

> We were able to improve our collaborative skills in this group work, and we successfully completed the quiz by dividing up the work. (1s216)

> It definitely increased my team management skills. (1s100)

The idea behind having the same group members for group assessment 2 was to allow skills to be scaffolded. There were several comments that affirmed that this opportunity enabled the students to perform better as a group. Students said that they learned the importance of discussing, sharing and listening (32 comments) and working as a team player (26).

> (learnt to) listen to everyone and understand different methods of working out a question. (2s126)

> Our group learnt to work together as a unit. (2s73)

Allowing the same groups to continue enabled students to get an insight into group members' working methods and built trust from working together (31 comments) as well as gain more understanding of the strengths and weaknesses of the group members for effective work allocation (17).

> Firstly, we all knew each other at this point so it was easier to talk to everyone and we all felt more comfortable. (2s142)

> That everyone has different strengths and weaknesses, so it is important to assign people to questions they feel more confident answering. (2s171)

A challenge in group work is coordinating and planning to complete the output on time. Students were able to learn from the challenges they already faced to execute better time management and planning (29).

> Organising meetings well before the deadlines. (2s131)

Finally, it is heartening to note that creating this opportunity for interaction through group assessments resulted in students supporting each other. The survey questions did not specifically ask about this, which would be a useful research question in a future study. There were 24 comments in survey 1 that indicated that the students were able to support each other.

> The benefit was having a support system. Having someone to lean on and work out the problems together was really great experience. (1s186)

Deterring nonengagement

One of the concerns by students who are sceptical about group work is that the group members will free-ride and not engage in the work. It is noteworthy that only five students mentioned that the first group assessment alerted them the group members who could be shirkers. There were 19 comments on disengaged group members and ten comments were not happy about unequal contribution.

> When I ask the reason for choosing an answer for question to some members in my group, they simply muted themselves and did not answer. (1s133)

> Very unequal contributions, it's hard to hold people accountable. (1s272)

Given the large class, these few comments cannot be taken to support the literature about the negativity surrounding group work. Designing the group work as a revision opportunity for

the individual assessment would have motivated the students to engage and learn. We are glad to report that an impressive 92% positive response to the Likert statement "my group members contributed well to complete the assessment".

> We learned how important it was that everybody contributed so we could examine questions from different perspectives. (2s114)

Moreover, to give some confidence to students about the importance of engagement, there was a question in the survey which asked about nonparticipation, "Name the member(s) of your group who did not contribute to this assessment". We contacted all those who were named to get an explanation and discussed their engagement and their contribution. If it was decided to award the grade, the teacher explained the reasons to both sides and reiterated the importance of better engagement. If it was established that there was absolutely no engagement, the student received a grade of zero. Only three students did not engage with the group in both assessments. Around 10 students who were penalised in the first group assessment learned from this experience and showed more engagement in the second group assessment.

Lessons from this assessment design

We found that the students had challenges in making contact and organising meetings with group members. Even though the students were creative in finding solutions, we could have a workshop to introduce students into their groups as soon as they were formed to facilitate group cohesion. This could include group-forming activities, tips for productive group working skills, signpost contact points (course coordinator and teacher) and answer queries. It is important to allow time for the group members to get to know each other's group working characteristics, strengths and weaknesses (e.g. in Cheng and Selvaretnam (2022), the students worked together for nearly two months).

A challenge pointed out by many students was about finding locations and times for meetings. It would be useful to point the students towards places and times they could meet. Another solution that could be explored is to make use of the compulsory weekly tutorials that the students attend and align the assessment group members and the tutorial group members. Time could be allocated each week for a group activity that scaffolds up to the final group product to continuously build group skills. Moreover, one of the tutorials before the assessment could be dedicated for the students to work on the group assessment in their respective groups.

Reflecting on the assessment experience is a useful exercise, and the students were invited to do so in the survey questionnaires. It would have been better if students were given some guidance about reflective writing and opportunities to engage in short reflective writing in the classroom. Given the critical learning benefits of reflection, which were achieved through the survey questionnaires, such reflective questions can be embedded in the assessment designs.

Conclusion

We designed an assessment structure, which scaffolds knowledge and group working skills in a large and diverse class to address some issues which are highlighted in the existing studies. The group assessments were designed to develop group skills as well as to provide revision and feedback generating opportunities ahead of the individual exams. The benefits of this design facilitate students to discuss important subject-related concepts and solve problems in groups. This paper adds value to the discourse on effective learning at scale and introduces a mechanism for authentic collaborative practice.

The challenges and scepticism in the literature were considered in this assessment design. The objectives were to enhance learning, develop group skills and facilitate peer interaction in a large and diverse class. The positive aspects of how this group assessment was designed are as follows: it was introduced early in the 2nd year, when the grades do not affect the final degree classification and when students are more willing for new challenges; the first group assessment developed skills to work with the same group members in the second group assessment; group work did not account for a high proportion of the total grade; the benefit of discussion was more obvious because of the revision opportunity for the individual exam the following week; the reflective questions in the survey questionnaire enabled the students to realise the benefits of group work and how they could overcome challenges themselves with a sense of achievement and there was a specific question about unengaged group members, which enabled the teacher to take action. Going forward, the administration of this assessment design could be improved by having a dedicated time to run workshops to develop some group working skills. The survey questions encouraged the students to reflect on the skills they had gained and how they had tackled the obstacles when working in such a group. Given the benefits of reflection, it could be embedded in the teaching methods and assessments.

Several lessons can be learned from this assessment design, which was tried in a large economics class that are relevant to learning and teaching practice in higher education, especially in quantitative courses. The use of small groups to solve set problems gives a structured setting for students to enhance their learning and develop key graduate skills. Students could generate feedback for themselves and revise the course material by actively engaging with the material and with peers. Having such an opportunity before the main exam is useful for revision, which the students may not have organically created themselves in such a large class. Finally, the inclusion of students from diverse backgrounds allowed them to interact with peers they may otherwise not have met. This can be considered as a staged scaffolded assessment method to develop students' knowledge as well as skills – the group assessments lead up to the individual exam, while the first group assessment develops skills to enhance the second group work experience.

Now that this exploratory study has revealed some benefits, challenges and learning experience, we could build on this study and do a follow-up study, which has a longer Likert questionnaire. Another interesting research question would be to explore the different approaches of how the group project is completed and whether the approach is changed in the second group work. An aspect that emerges from this study is that group discussions require students to be able to explain their answers to each other, which indirectly assures academic integrity. This was not investigated in this study and would be an interesting study to undertake.

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(The Appendix follows overleaf)

Appendix

Likert questions
• My group members contributed well to complete this assessment
• The opportunity to do these questions as a group enhanced my understanding of the material
• I would get a better grade because we did the assessment as a group
• I will continue to interact with at least some of my group members
• I benefitted by this opportunity to interact with students from diverse cultural backgrounds which may not have happened otherwise
Questions attempted in advance
• Before the group discussion, I had myself attempted . . . (number of questions)
Open-ended questions
• Reflect on the challenges when working in a group to complete this assessment and how you overcame these
• Reflect on the benefits of working in a group to answer the questions and how this experience has developed your team working skills
Nonengagement
If you wish, you may name the member(s) of your group who did not contribute to this assessment at all
Additional questions in survey 2
Reflect on what you learnt about group work in MCQ1 that was useful when you worked on MCQ2

Table A1.
Survey questions

Source(s): Authors' own work

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