



Abstract

This case study documents and reflects upon the use of conferencing software (MS Teams) to facilitate learning environments conducive to peer to peer and Academic to student learning. The focus of this case study is an 86 student strong cohort studying a third-year Mechanical Engineering module: Kinematics and Dynamics of Machinery during the COVID-19 pandemic. The case study highlights the successful use of MS Team channels and announcement functionality to facilitate peer to peer learning. Challenges of the approach such as lack of participation within a minority of peer learning groups are identified and mitigation strategies such proactive engagement with individuals are identified.

1. Background

The case study takes place during the third semester affected by the COVID-19 pandemic. Due to the module size (86 students) face to face teaching was not deemed safe. Normally face to face teaching comprises a weekly 2 hour lecture and 1 hour tutorial. The lecture is didactic in style, while the tutorials involve separation into small peer groups to solve the tutorial problems with support of peers and academic staff who circulate the room. A review of peer to peer learning by Stigmar [1] highlighted benefits in metacognitive skill development such as critical thinking. Such skills are of key importance for this module. The group is brought together at the beginning and end of the face to face tutorial to cover key learning objectives, learning outcomes and any widespread technical misunderstandings. This case study documents an approach to recreate the peer and staff interactions online using MS Teams.

2. Methodology

During the first online lecture the students organised themselves into groups of 5 or 6 to conduct the coursework and to form a peer to peer support group for tutorials. Once the students submitted their groups 15 channels were set up on module MS teams team and students were added to the corresponding channel. The use of channels allowed for information to easily shared and saved within group communications. The tutorials were timetabled for 09:00 to 09:50 on Thursday mornings. The methodology described chronologically below was repeated for each of the 12 weeks of the semester.

07:45-08:45: Prepare, record and upload to Panopto a short 3 minute tutorial introduction and conclusion video.

08:45-09:00: Use the announcement function to send tutorial instructions: Tutorial subject, link to the tutorial sheet, key learning objectives and link to the introduction video. On the announcement a header image related to the tutorial was used, a link with further information on the image was provided in the text. This helped meet a module learning outcome of exposing students to real world mechanisms and provided further reading to stretch students who wanted additional challenge.

09:00-09:50: The three members of academic staff were responsible for 5 groups each week and circulated through the groups answering and asking questions to induce conversation and discussion necessary for peer to peer learning to take place.

09:45-09:50: A end of tutorial message was sent to all module team group channels to cover the key learning outcomes of the module both as text and as a video.

3. Issues

In 3 groups only one or two students regularly attended the tutorial and therefore there was limited

peer to peer learning opportunities for the students in these groups. Interestingly this occurred in groups which hadn't responded to my invitation to organise themselves into a group and therefore the students were placed into these groups. The issue was addressed by staff members spending more time proportionally with the groups with less students to make up for the lack of peer to peer learning. This was highlighted by a student in the module feedback [2]:

"I enjoyed the new tutorial structure at the start of the module, but potentially later in the module Week 8-11, groups could combine to help mitigate against decreasing attendance at this point in the Semester 2." [2]

4. Benefits

The benefit of this method is that it encourages students to take an active role as learner even when online. Significant periods of peer to peer learning are facilitated and also students who dislike asking question to academic staff in front a significant number of peers were more comfortable asking question in a small and familiar group. Evidence for these aspects is provided in section 5. The metacognitive skill development mentioned by Stigmar [1] is harder to assess.

5. Evidence of Success (if available)

Evidence from 2020/2021 module feedback [2]:

"The Break out rooms for this module have worked well for the tutorials." ¹

"Well Structured Lectures and Tutorials"

"It gave interesting problem solving opportunities and the group projects were very well handled."

"Great module, very well structured. High quality learning despite COVID. Should be seen as an example for all modules on the course."

"I really liked the tutorials in small groups. Good to work through parts of the questions with each other and also the lecturers were there to answer questions within the small group. This is especially good for people like myself who don't normally feel comfortable asking questions in a big room of people. Also the whole module felt very organised and it was clear the lecturers were keen to give the best experience for the students."

"Well taught module, which expanded my knowledge of engineering. Excellent Example of a TFE Gold standard of teaching."

6. How Can Other Academics Reproduce This?

Other staff can replicate this methodology either online using teams or during face to face teaching. The approach can be extended to a range of subject areas where the student cohort has a sufficient level of maturity and critical thinking skills are key to the module learning objectives.

7. Reflections

On reflection the tutorial structure worked well as the students had a desire to engage with the material and were mature enough as learners to discuss, learn and teach from each other. In future if this were to be delivered online again, I would potentially set up a call in the general channel for anyone to join if they had poor attendance in their dedicated channel.

8. References (if available)

[1] Stigmar, M., 2016. Peer-to-peer teaching in higher education: A critical literature review. *Mentoring & Tutoring: partnership in learning*, 24(2), pp.124-136.

[2] Student Feedback. Loughborough University module feedback 20WSC105.

¹please note we used channels rather than the specific Teams breakout room functionality.