

# An emergency visualiser retaining a connection

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## Abstract

In the middle of March 2020, Loughborough University rapidly moved to online delivery of teaching sessions. In Mathematics, it is of vital importance to work through problems rather than simply uncovering solutions, and a visualiser or whiteboard is essential. As for many other colleagues, due to the rapid change in government advice the only option was to make use of whatever technology we had already available at home. This is a case study of an emergency visualiser, whilst importantly retaining a webcam looking at me to be able to keep a personal connection and use gesticulations and facial expressions as I would in person.

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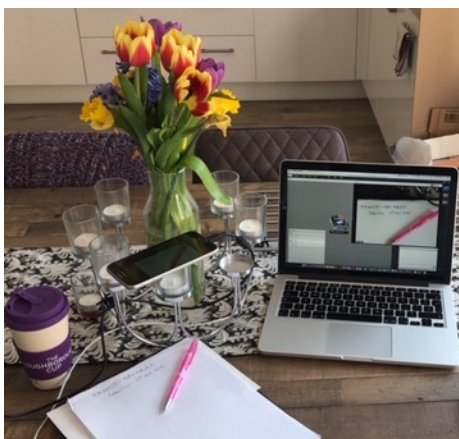
## 1. Background

The module in question is a large Part A module with approximately 230 students. Each week, one of the sessions is primarily focussed on solving problems, giving students time to work through them, ask questions, and then for the lecturer to work through a selection based on the ones that students feel most challenging. As the first remote session of this type was in the 7<sup>th</sup> week of the semester, the students already had experience (in previous face-to-face sessions) of the format. My primary objective was to give students a session in the same timetabled slot, and with as familiar a format and content as possible, given the stressful changes externally happening.

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## 2. Methodology

Adobe Connect was the software made available by the university for this sort of session (I personally found it very good, and I particularly liked being able to control how the various windows appeared for other participants so that I could make sure they saw me, the paper I was writing on, and the comments box for them to type... but I know some others had issues with it). My laptop (Macbook Pro, although probably irrelevant) had a built-in webcam (looking at me) and microphone to record my voice. I was able to log-in to the session a second time using my smartphone (a fairly old Samsung Galaxy S5, so no particular connection to the laptop), mute its microphone via Adobe Connect (so my voice wasn't broadcast through both devices), and balance it on a candle-stand on my kitchen table. The phone was balanced like this so that its camera was facing down at a piece of paper for me to write on, like a visualiser (see image below, with slightly intentional product placement of the Lboro cup and LSU pen(!)).



With this setup I was able to look into the laptop camera to talk/ask questions directly “to” the students, and they seemed to find typing questions into the chat preferable to speaking. I could then answer and work through problems on the paper, whilst also keeping an eye on the chat box in

case further questions were asked in the mean-time.

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### 3. Issues

One issue was that the resolution of my phone camera was a bit low, so my writing was a bit pixelated on the webcam. I tried to set things to highest quality, but a small amount remained. This didn't seem to impair the understanding of the students (I asked a few times), and given the questions being asked throughout, it wasn't a big problem.

Another issue was the precarious balancing of my phone on the candle stand. I improved this somewhat in later sessions with something to weight it down. I know other colleagues tried similar "home-made visualisers" doing things such as having the phone wedged between a pile of textbooks, or balanced on a tennis racquet in-turn balanced between two piles of books!

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### 4. Benefits

The main benefit was having 2 cameras – one to see me, and one as visualiser. Especially in this changeable time, being able to talk to the students, for them to see me, and to have the visual connection, felt really important. The other benefit of course was being able to draw/solve things as students would on paper themselves, so providing a genuine and detailed solution of problems.

A benefit over face-to-face was that the students attending definitely typed more questions that they would usually ask in lectures – this was even though their names were visible in the chat screen. Another related benefit was that the sessions could be recorded so students could see it if they weren't able to attend (or those that did could re-watch). Unfortunately attendance wasn't that good, but at this time many students were probably travelling before stricter lockdown measures came in etc.

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### 5. Evidence of Success

General feedback from students that attended seem to show they found it useful. The topics covered in the module after moving to remote delivery formed major parts of the module and were substantial parts of the remote exam assessment, and students did well in these. It was also very useful for me to have the recordings to direct students to, as in the run-up to exams I had quite a lot of email queries about how to solve things that were in these Adobe Connect recordings.

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### 6. How Can Other Academics Reproduce This?

Many academics will have probably experimented with similar things to this, e.g. using a tablet to write "live" whilst talking to the students. For me, the fact of having two cameras (or potentially one camera and then a tablet to write with a stylus on), was important.

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### 7. Reflections

I think aspects such as low camera resolution on my phone were forgiven by students due to the rapid changes occurring at the time. In the next academic year, they will likely expect more polished presentation. Additionally, the students had already experienced the session "format" in face-to-face sessions, and already had an idea of my personality (and indeed of their peers). For Part A (if remote) next academic year especially, time will need to be taken at the start to introduce oneself well and appear open and friendly, so that students remain comfortable to type (or speak) questions – or an anonymous chat through Veevox or similar could be deployed (I might try this). Some way of the students discussing with each other in small groups would also be beneficial (break-out rooms, possible), which was missing in my remote sessions here, but would naturally occur when student sit together in the lecture halls.