sigma network for excellence in mathematics and statistics support

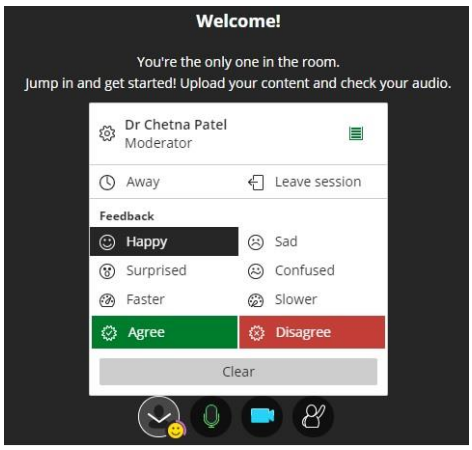
NEWSLETTER

Issue 20: Special Edition 2020

Editor's Note

Welcome to this special edition of the **sigma** Newsletter. The regular edition is due in September 2020.

This edition has been put together to capture the practical approaches being employed by **sigma** members to deliver maths and statistics teaching and support remotely. The first part of the Newsletter contains write-ups of the talks given at the recent **sigma** Network Online Event hosted by Mark Hodds at Coventry University. The number of delegates highlighted the current thirst and need to come up-to-speed with technology to enable remote delivery. The second part provides a reflection on online delivery from John Little who has been using the approach for over a decade over multiple location.



Along with getting to grips with appropriate technology there are other considerations around pedagogy and impact of teaching in this manner. Student expectation and experience is currently an ongoing challenge as we try to gauge how they are reacting. How do we provide a comfortable space for students to share their comments in the *Chat* functions, *Raising Hand* or use the available *Emoji* functions to guide us? These are all questions that conversations will help to address.

Figure 1 – Blackboard Collaborate Ultra Emoji Function

Keep an eye out for the announcements related to the special edition of TEAMAT 'Restarting the New Normal'.

I thank all authors for their contributions to this edition. The deadline for contributions for the next edition (Autumn 2020) is **28th August 2020**. We welcome contributions on any topic that may be of interest to practitioners and academics supporting higher education students in their learning of mathematics and statistics.

To submit an item, see http://www.sigma-network.ac.uk/sigma-newsletters/.

Finally, as usual: the views expressed do not necessarily constitute recommendations from the **sigma** Steering Group or any associated parties.

Happy Reading!

– Chetna Patel

sigma Online Workshop 29th May 2020

Mark Hodds
Event Host | Coventry University
ab7634@coventry.ac.uk

The outbreak of Covid-19 has meant we have had to rapidly change our lives in many ways. It of course has also meant that, as maths and stats support practitioners, we have had to adapt the way we provide support to students and do this virtually. On Friday 29th May 2020, we hosted the first ever online workshop to showcase how practitioners from across the world are support their students currently.

The demand for this workshop was unprecedented with over 280 people signing up and therefore the initial plan of enabling delegates to log in to individual systems simply would not have worked. Instead, the workshop was streamed live via YouTube and delegates were able to interact with presenters by logging into Coventry University's Big Blue Button system to ask questions. I hope to provide more details on how I set up and ran the YouTube stream in the future, but the photograph below gives you some idea of the screens and hardware needed to make it run smoothly!

Figure 1 – Set-up for the streaming of the event

The day began with a talk from Donald Shearman and colleagues at Western Sydney University on their perspectives of using Zoom followed by a very useful and interesting talk by Tom Goodale from Liverpool John Moores University on the different types of whiteboard software available. 6 further systems were then presented to show the range and variety of support available. These included Big Blue Button (Mark Hodds, Coventry University), Adobe Connect (Sue Pawley, Open University), Microsoft Teams (James O'Malley, Maynooth University), BB Collaborate (Jenny Freeman, Hope Thackray, Pete Hart, and Marta Emmett, University of Sheffield), Skype (Monica Hess and Noel Parnis, Brunel Unversity), and YouTube (Peter Klappa, University of Kent).To close out the day, delegates were assigned to breakout rooms to discuss issues surrounding teaching and learning maths and stats both now and in the future. Finally, we discussed some of the results so far from our survey into the provisions of maths and stats support during the pandemic. A report will be published shortly on this survey on the **sigma** Network website.

As a one man team, running the day was quite challenging but the feedback I have received showed it was worth it and shows that we can continue to network and discuss issues despite the challenging times. A full re-run of the day is available now on YouTube at https://www.youtube.com/watch?v=CoFu78AKE9c but you will be able to find a short article by all of the presenters in this special edition of the **sigma** Network newsletter. I hope this is the first of many online workshops we are able to provide both now and in the future when we return to the new normal.

Online maths and stats support at an Australian University

Don Shearman
Learning Adviser, Mathematics Education Support Hub (MESH) | Western Sydney University
d.shearman@westernsydney.edu.au
Jim Pettigrew
Lecturer, MESH | Western Sydney University
j.pettigrew@westernsydney.edu.au
Leanne Rylands
Head, MESH | Western Sydney University
l.rylands@westernsydney.edu.au

Western Sydney University, Australia, is a large multi-campus university with approximately 50,000 students. The Mathematics Education Support Hub (MESH) offers mathematics and statistics support to all students. Until mid-March MESH ran face-to-face workshops and help sessions on six campuses. MESH has the equivalent of 5.1 full-time staff on three campuses.

Our Autumn semester began on the 2nd of March. On the 16th of March staff were told that all teaching would be online by the end of March; by the 19th MESH had moved all services online.

MESH has online resources available on the learning management system and on the university's website, including an online discussion forum where students post problems and staff respond. After the move to teaching online, use of the discussion forum roughly doubled.

The MESH face-to-face drop-in support and targeted workshops are now run online using Zoom. Staff use iPads, Surface Pros or equivalent for writing maths, using the Zoom whiteboards, OneNote and onscreen annotation tools. Students often have their video off and are unable to annotate on screen due to a lack of suitable hardware (students generally don't have tablet devices).

MESH workshops are run for particular subjects or cohorts of students, and can be as small as a few students to over 100. Students use the text chat more than talking and staff often use breakout rooms in Zoom for smaller group work. Staff don't see much of students' work. Instructor-led workshops suffered less from the move to online support.

Advantages of online support:

- Support is available to all students, regardless of campus.

Disadvantages of online support:

- Communicating is slower, so more time and staff are needed.
- More staff needed to run workshops for any but a handful of students as one person is needed to manage breakout rooms.
- Many students are reluctant to use audio and if they communicate at all, use chat.
- Fewer students use online support.

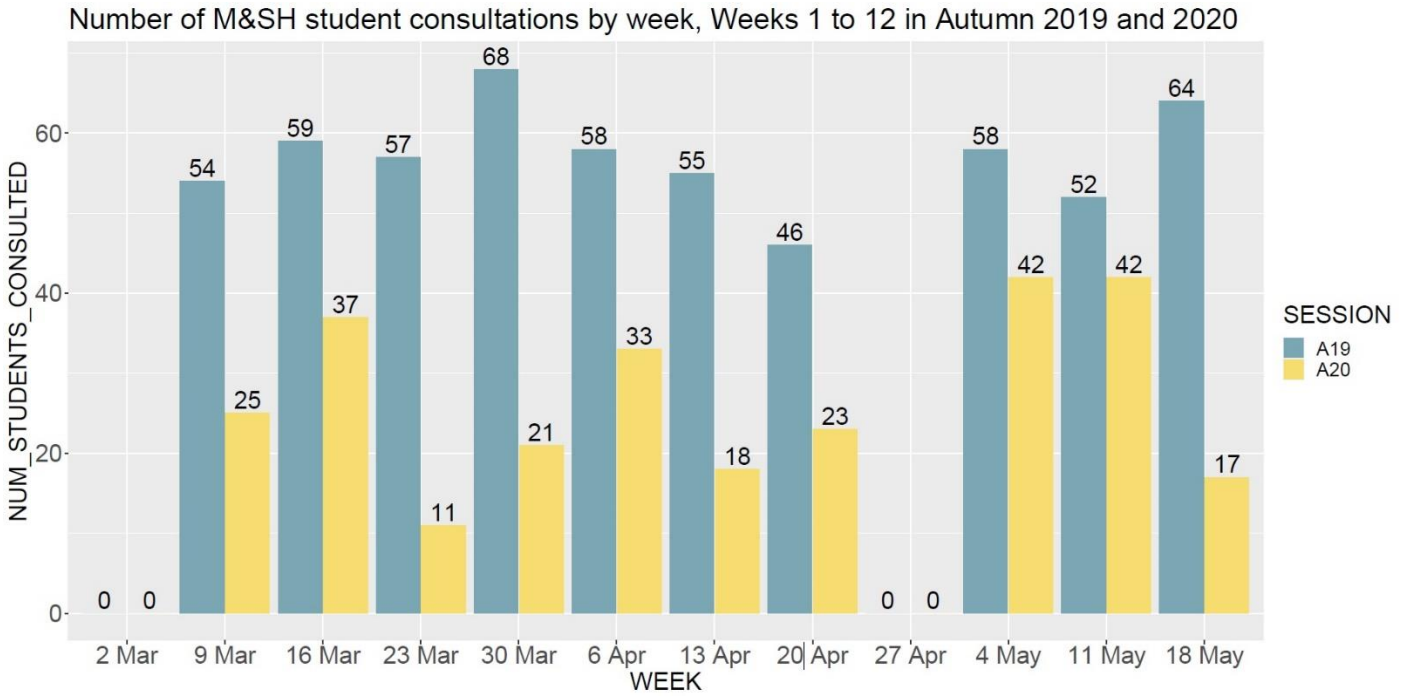


Figure 1 – The number of students consulted within the MESH drop-in service in the first 12 weeks of Autumn Semester, 2020 (yellow) versus 2019 (blue).

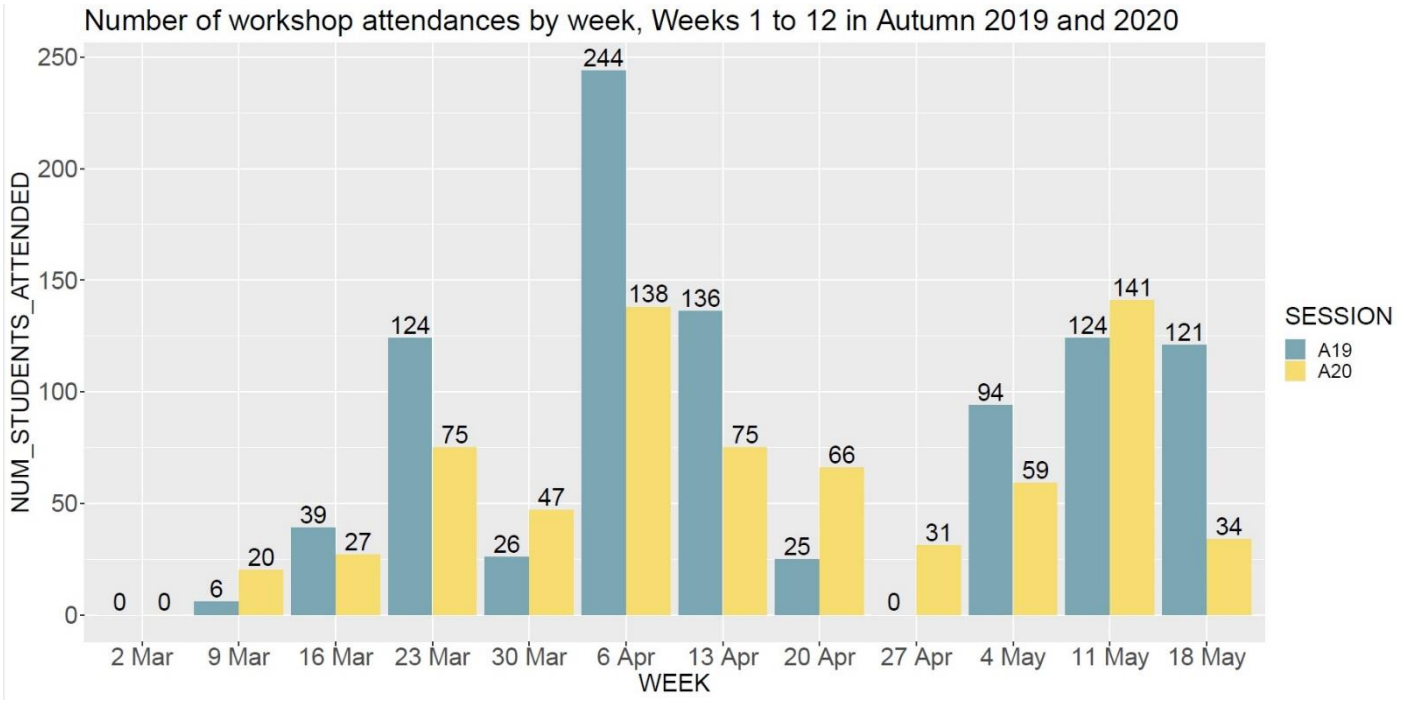


Figure 2 – The number of students who attended MESH workshops in the first 12 weeks of Autumn Semester, 2020 (yellow) versus 2019 (blue).

Figures 1 and 2 show a drop in use of MESH's major support services in Autumn Semester 2020 versus 2019. There is evidence of a staggered return to 2019 levels in the last three weeks of the surveyed period, but the overall pattern is a significant fall in use in 2020 following the switch to online delivery.

Overall staff feel that online support is not as effective as face-to-face. As online support is accessible to students on any campus it is likely that some online support will remain once students and staff return to campus.

On the Comparison of Online Whiteboards

Tom Goodalel
Mathematics, Statistics and IT Tutor | Liverpool John Moores University
t.r.goodale@ljmu.ac.uk

Being able to write on something in front of students is essential in almost any mathematical teaching activity, whether it be lecturing to a large group or in one-to-one tuition. The move to online teaching has led to a plethora of online whiteboard systems being developed, with a range of features; before adopting a whiteboard solution it is important to evaluate it.

Evaluation criteria include:

- Can multiple people write on the board?
- Is it easy for students to install and access?
- Responsiveness
  - When writing the pen strokes should be detected at a natural writing speed.
- Lag
  - When you write, how quickly does it appear at the remote end?
- Is the whiteboard infinite or finite?
- Locked view?
  - If one person scrolls, does the view scroll for others?
- Can you create new pages and flip between them?
- Does the whiteboard persist between sessions?
- Can you quickly paste in screenshots?
- Can you upload a document to the whiteboard?
- What is the range of drawing tools?
- Can you set a grid background to facilitate graph drawing?
- Can you control who has access?

Not all criteria will be equally important for every user and usage. E.g., for lecturing it would be possible to use a locally installed whiteboard, or even a drawing program, and use screen-share to show it to the students, so the main criteria would be responsiveness, size of whiteboard, and features such as the ability to paste in screenshots or upload documents; whereas for tutoring the multiple user feature is essential, and so an online whiteboard becomes important, with the concomitant requirement for a lack of lag.

The following table summarises the main features of several popular online whiteboard systems. Big Blue Button is integrated within the Canvas VLE. Microsoft Whiteboard is integrated into Microsoft Teams, or can be used independently, although access to the whiteboard is restricted to members of the same organisation. BitPaper is a standalone product which has recently introduced fees.

	Big Blue Button	Zoom	Microsoft Whiteboard	Microsoft OneNote	BitPaper
Multi-user	yes	Yes	yes	Yes	Yes
Installation/access	Students access through web	Web browser or application	Web browser or application	Web browser or application	Web browser
Responsiveness	Occasionally Poor	Good	Good	Good	Good
Whiteboard size	Fixed	Fixed	Infinite	Infinite	Infinite
Locked view	N/A	N/A	No	No	Yes
Multiple pages	Yes	No	No	Yes	Yes
Persistent	No	No	Yes	Yes	Yes
Paste	No	No	Yes	Yes	Yes
Upload documents	Yes	No	Yes	Yes	Yes
Range of tools	Limited	Limited	Good	Good	Good
Grid background	No	No	Yes	Yes	Yes
Access control	Via VLE	Via meeting	Yes	Yes	No

Table 1 – Review of Whiteboard Capabilities

In the author's personal experience and evaluation Microsoft OneNote is the best fit for a freely available solution, although some users have reported severe lag, and BitPaper of the paid-for whiteboards. This is, however, a rapidly changing field, with new solutions emerging all the time, and new features appearing in established products.

NOTE:

Published here are only 5 of the options highlighted at the **sigma** event; the author has a more comprehensive review of more whiteboards or equivalent and is happy to share on request.

Using Big Blue Button to support students at Coventry University

Mark Hodds
Mathematics Support Lecturer, sigma Mathematics and Statistics Support | Coventry University
ab7634@coventry.ac.uk

Prior to Covid-19, Coventry University were providing remote lecturing and online learning for their CU Online branch through a system called Big Blue Button. The system allows the sharing of documents, the ability to screen share, breakout rooms for discussion, and a two way whiteboard. **sigma** Maths and Stats support at Coventry were invited to provide support to some online students on Ratio Analysis using this system and it eventually provided a way for us to support students during the pandemic.

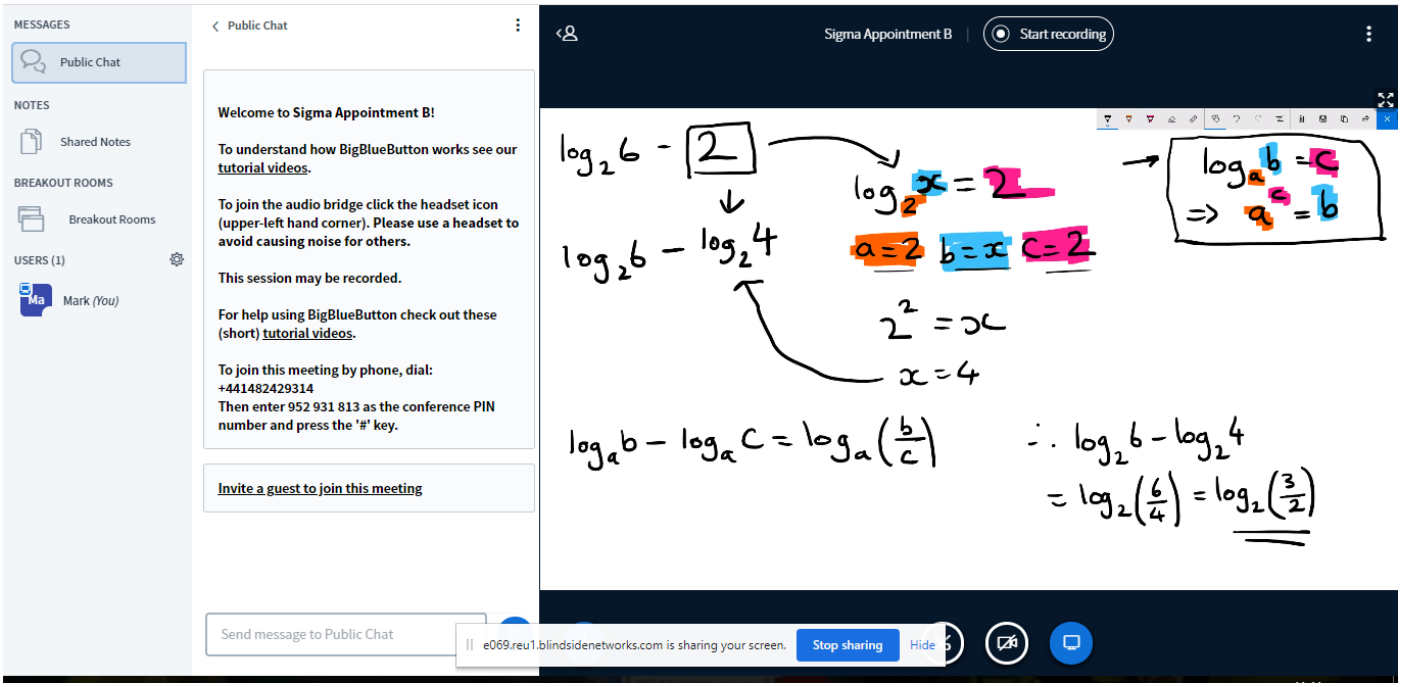


Figure 1 – Big Blue Button set up with Windows Ink screenshare

In order to provide support to our students, a link to the room was provided on the centre's website. Once in the room, a student proctor would welcome the student and ask what their query was about. The proctor would then direct the student to the relevant breakout room (either to see a stats tutor or maths tutor for example). In the breakout room, support was provided by either screen sharing or by uploading documents. Our staff all had access to either a tablet or a Windows Surface so they were able to write on the screen. We found that it was better to use screen sharing and "Windows Ink" to write on the screen as it was more responsive than the in-built whiteboard of Big Blue Button. The downside to this however was that the student could not write on the whiteboard.

Alongside the drop in sessions, we held workshops and one-to-one appointments. We found that the uptake was very poor, with limited numbers of students accessing the sessions. However, the workshops were very popular and we had more students attending those than usual. We are yet to understand why this is the case.

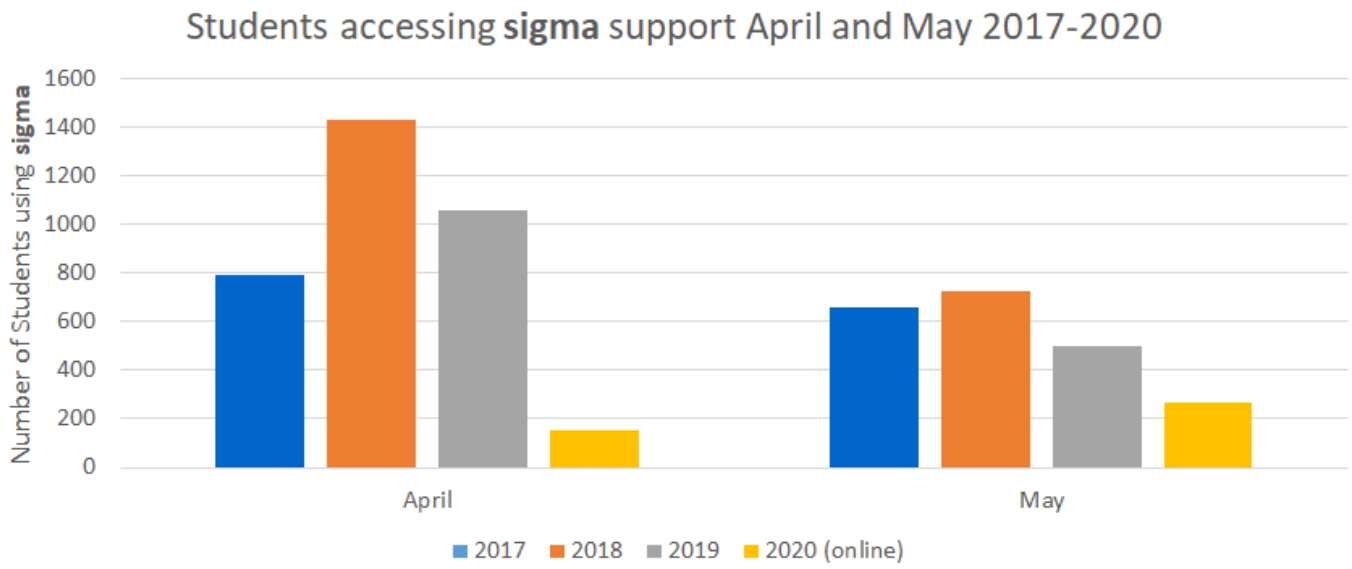


Figure 2 – The number of students accessing support in April and May 2017–2020

We have found Big Blue Button to be a simple but effective method of providing maths and stats support. Although it has issues, like not working on Edge/Internet Explorer or Safari, and students sometimes do not come with the equipment needed, like headphones/microphone, we have still been able to provide support, albeit to a smaller but wider range of students.

For more details, please see the attached clip from the workshop.
Big Blue Button presentation from the sigma Network Online Workshop

ANNOUNCEMENT

TEAMAT SPECIAL ISSUE:
RESTARTING THE NEW NORMAL
First call for papers and guest editor

Coventry University

The editors of Teaching Mathematics and its Applications are planning a special issue Restarting the New Normal concerning the effects of COVID-related restrictions on post-16 mathematics teaching. Our aim is to publish this special issue in late 2021. We are seeking papers in the following areas particularly:

- Research into approaches to teaching mathematics to the COVID-affected cohorts
- Research into the needs of mathematics learners in the COVID-affected cohorts
- Research into distance learning of mathematics at undergraduate/advanced secondary level
- We will also consider articles on other topics related to the impact on mathematics learning and teaching of the COVID-19 pandemic.

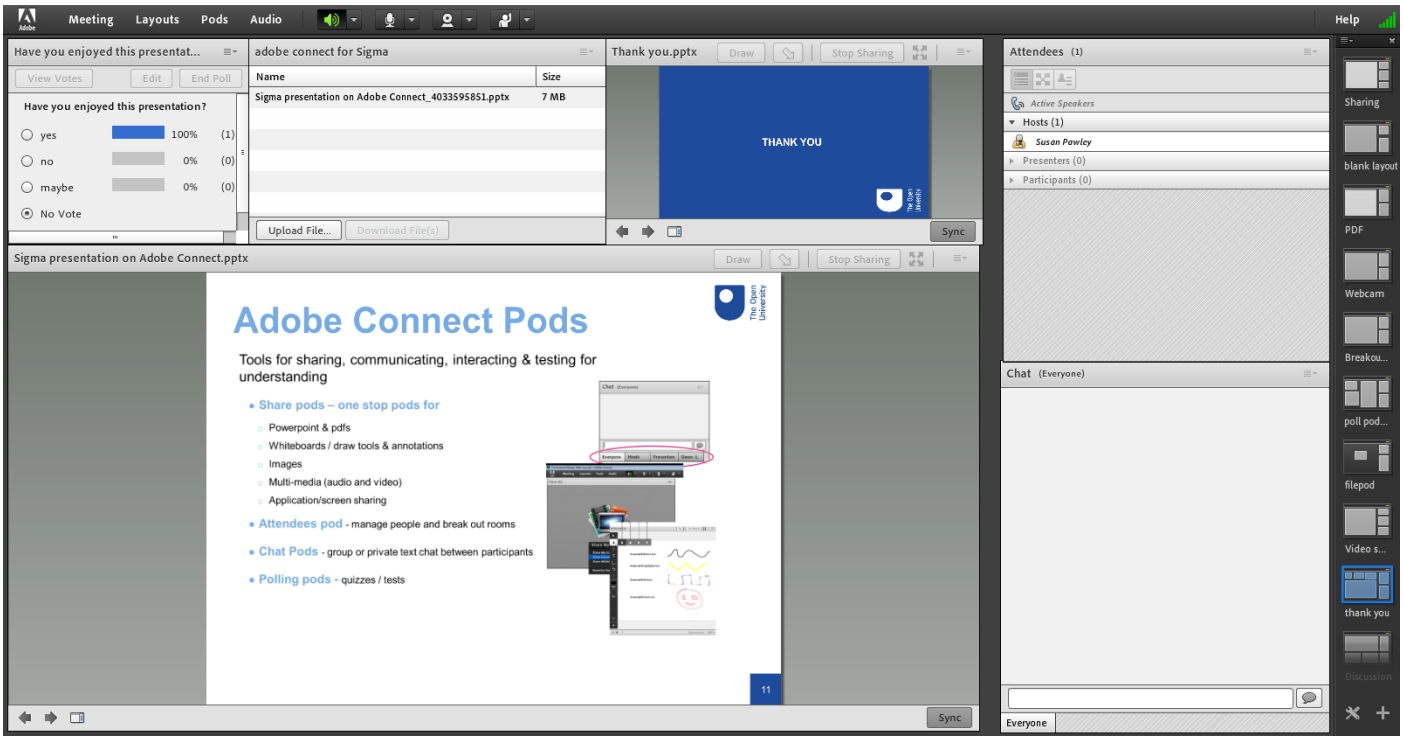
- We are also seeking a guest editor to work with Cathy Smith on this issue
  - 31 July 2020 Expressions of interest in becoming Guest Editors.
  - 28 February 2021 Articles Submitted
  - November 2021 Publication
- Contact cathy.smith@open.ac.uk to register interest

Further details are available at https://academic.oup.com/teamat/pages/call-for-papers-restarting-the-new-normal.

The use of Adobe Connect at the Open University for supporting students

Susan Pawley
Lecturer, | Open University
s.c.pawley@open.ac.uk

The Open University has been using Adobe Connect to successfully support students for 2½ years. We use it to work with students on a one-to-one basis, in small groups and for large lectures. Adobe connect is a "pod" based system where you can add and remove elements as and when you need them.



Screen Print 1 – Typical Adobe Connect layout

Aspects that are particularly useful for supporting students

Simple methods of communication: spoken interaction, text chat pods and sharing prepared documents.

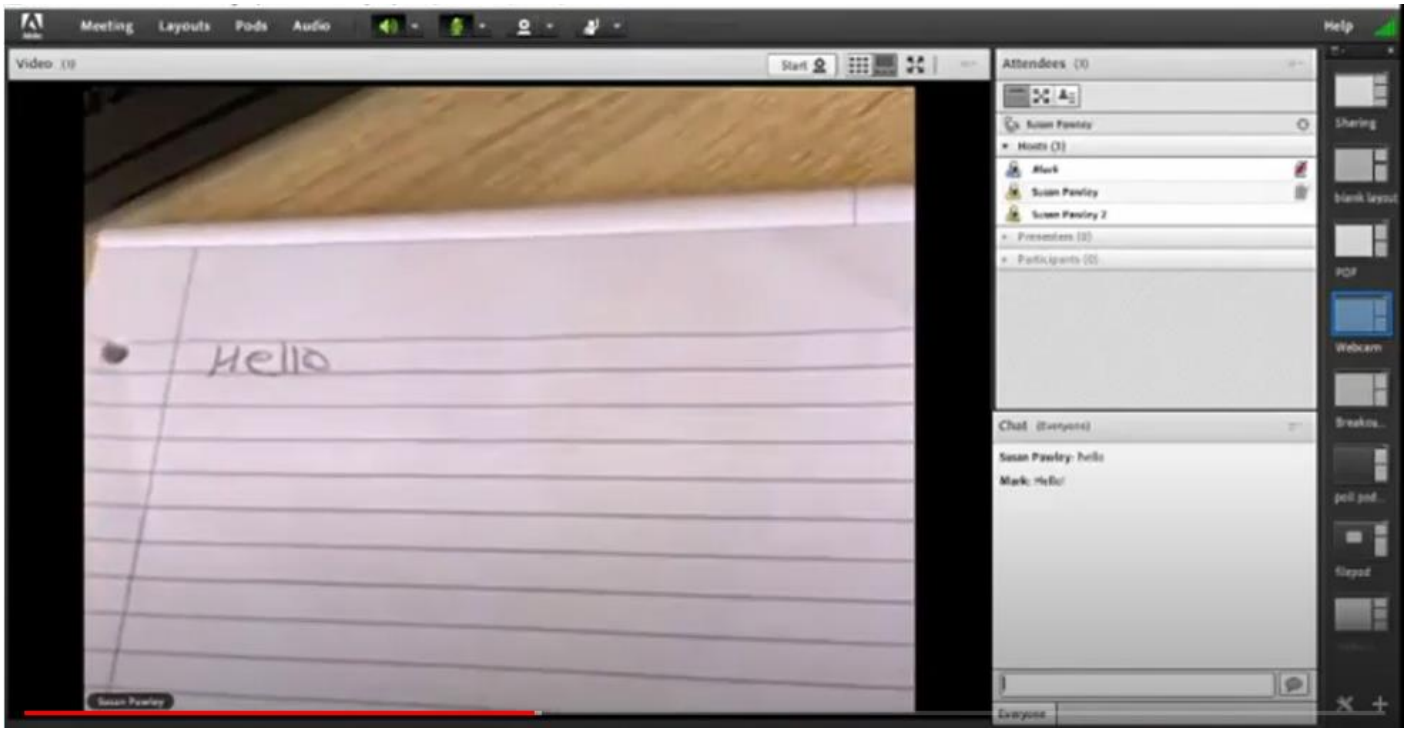
Screen sharing a blank PDF document: This enables the lecturer to answer student queries by writing directly onto the PDF using a touch screen or external pen and tablet. The annotated PDF can be downloaded by the student at the end of the session using the file share capabilities of Adobe Connect.

Showing real time externally written work: Either a webcam, or smartphone using an app, such as EpocCam, can be used to broadcast externally written work directly into Adobe connect. This can be done by both lecturer and student.

Student screensharing: it is possible for a student to screenshare a document they have produced or scanned and uploaded, which can then be annotated by the lecturer.

Breakout rooms: Adobe Connect can be set up so it can have several virtual rooms within one Adobe Connect meeting. This can be used for drop-in sessions where more than one student can be helped

simultaneously by entering a central main room and then being placed into one of the breakout rooms which can be staffed by individual lecturers.



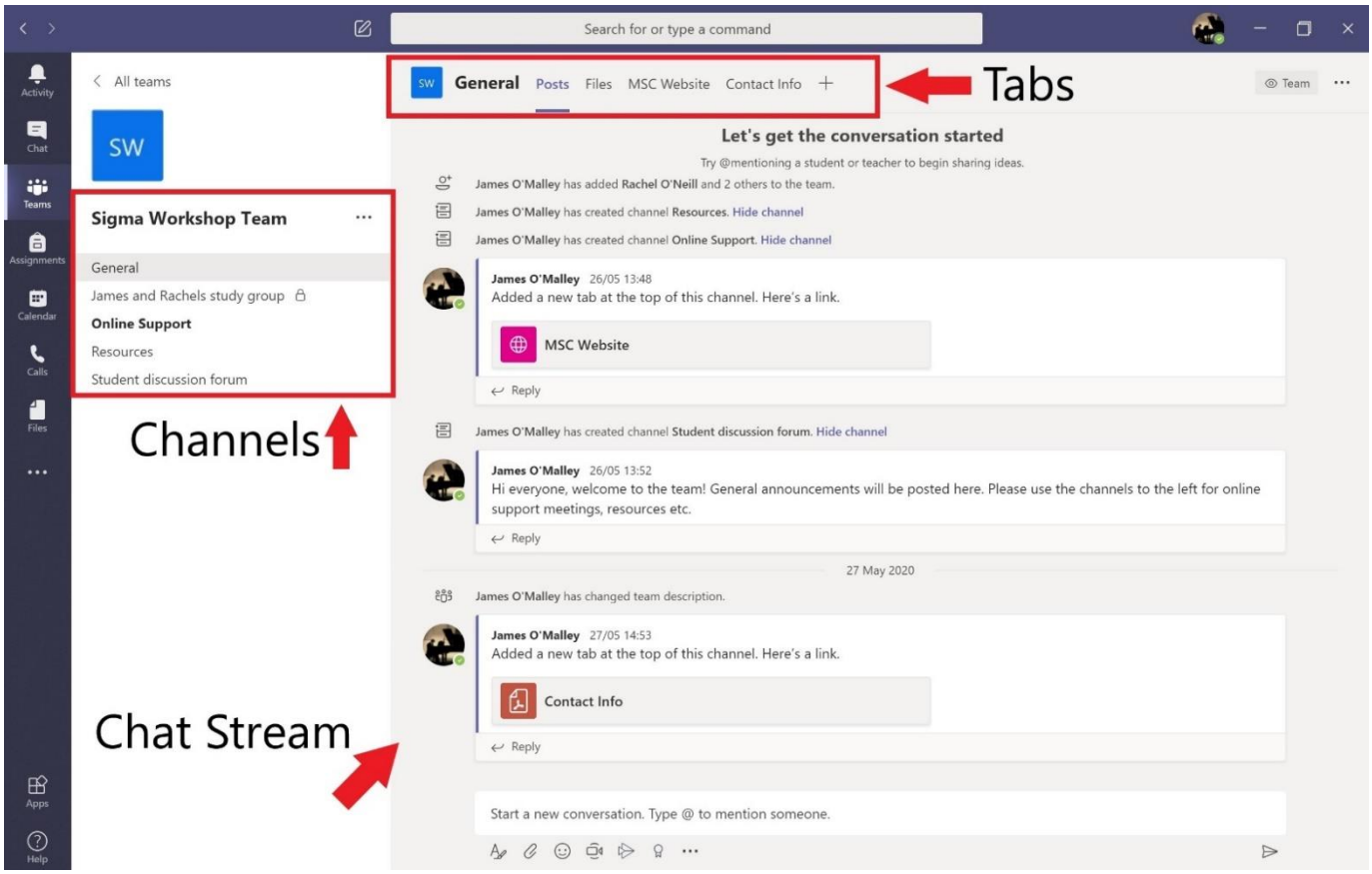
Screen Print 2 – Sharing real time written work

Many thanks to Mark Hodds and the **sigma** team for allowing me to showcase the work of supporting students through Adobe Connect at the Open University. For more details please contact Sue Pawley (s.c.pawley@open.ac.uk).

Providing Mathematics and Statistics support online via Microsoft Teams at Maynooth University

James O'Malley
University Tutor | Maynooth University
James.omalley@mu.ie
Rachel O'Neill
University Tutor | Maynooth University
Rachel.oneill@mu.ie

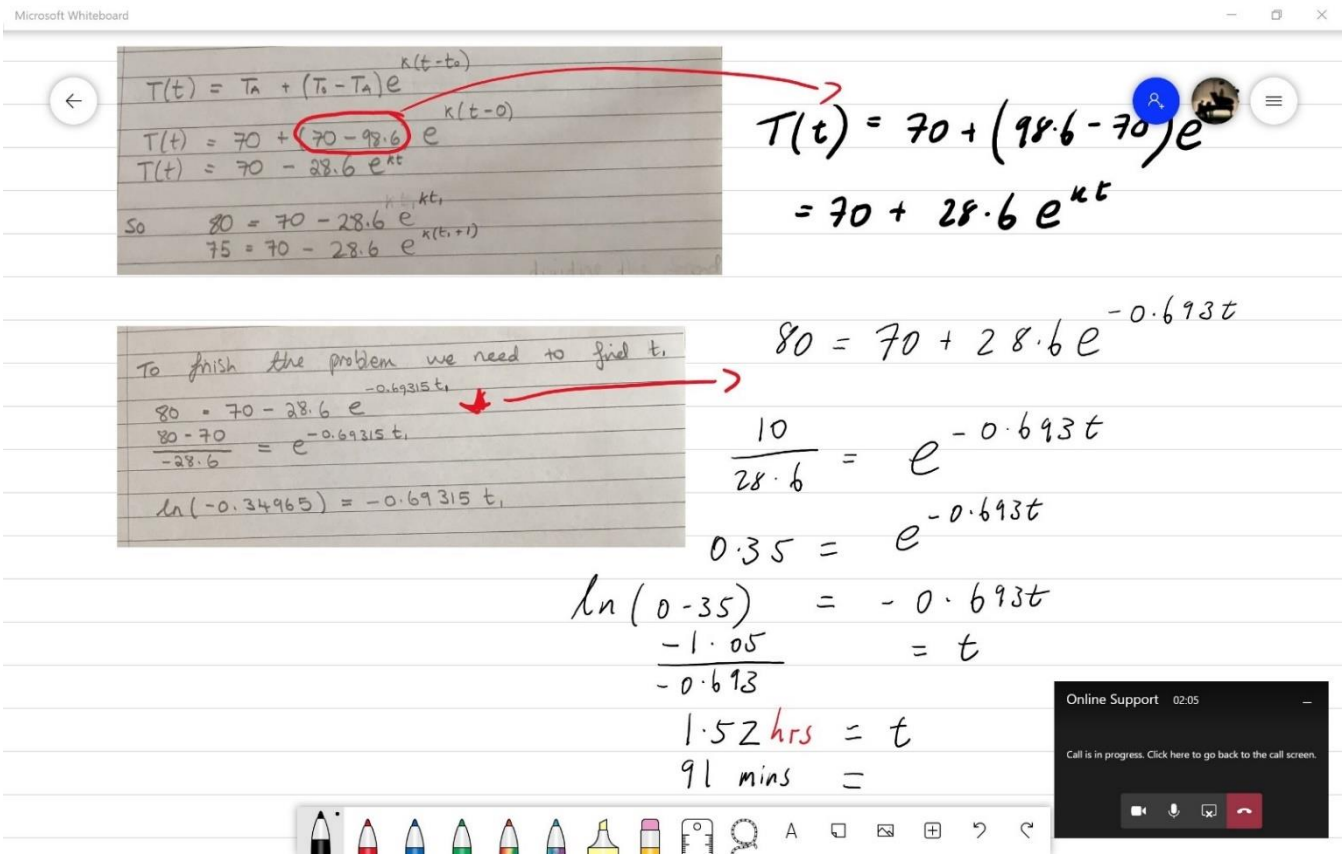
During the period of closure from the 16th of March 2020 the department of mathematics and statistics at Maynooth University provided online maths support via the office 365 application- "Teams". Students, lecturers, and tutors were added to dedicated module groups on the app where they could communicate, share resources, and hold meetings. The Teams are split up into different 'channels', containing subsets of participants, which can be used for various purposes e.g. online support, sharing resources, private study groups. Each channel within the team offers the same functionality, primarily focused around a chat stream where members can share ideas or ask questions. A tab section is included for the purpose of sharing files, links to websites or displaying PDFs.



Screen Print 1 – Teams group layout with main sections highlighted

Live maths support was offered via the Teams' meeting function- tutors logged on to a certain module's Team page at specific times and started a meeting. Students were free to join these meetings at any time to ask questions about their notes or assignments. Tutors and students were aware which questions on their assignments were being graded and no help was offered on these. In order to answer queries, tutors

made use of the screen sharing feature to display lecture notes and interactive whiteboards such as OneNote and Microsoft Whiteboard. To allow for accurate notation some tutors had access to a "One by Wacom" graphics tablet. These tablets allowed for clear and accurate notation via the aforementioned whiteboards.



Screen Print 2 – Screen sharing via Microsoft Whiteboard

The experience with the Teams app was quite positive with few bugs or technical issues. There were however some significant latency and call quality problems on slower internet connections which made real time maths support almost impossible. Student engagement was low across the board, including live departmental tutorials offered via the same system. During study week before the exams the MSC offered 100+ tutor hours via Teams, fielding only 107 questions in total, approx. 1/3 of the tutor sessions had no participants.

Figure 1 – Writing using the Wacom Tablet

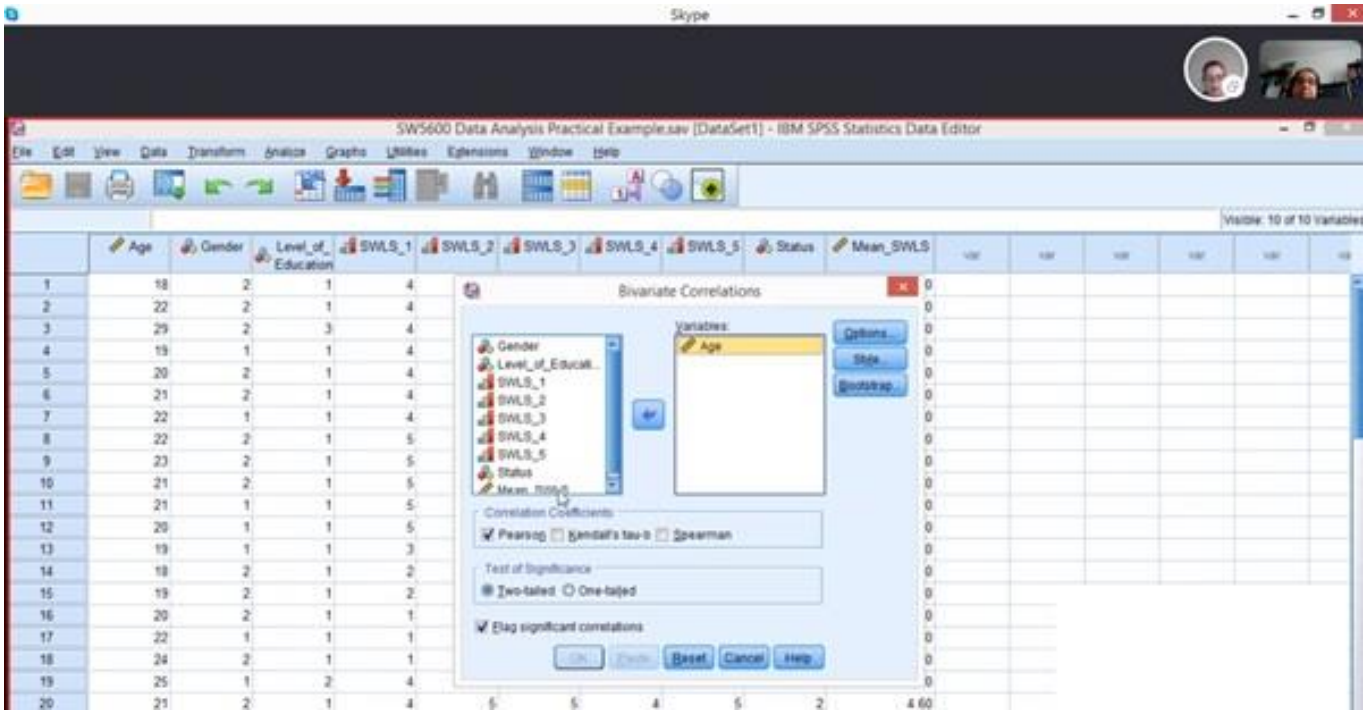
The use of Skype and Blackboard Learn Collaborate to provide on-line Statistics support

Monica-Cristiana Hess
Stats Adviser, ASK | Brunel University London
monica-cristiana.hess@brunel.ac.uk
Noel Parnis
Stats Adviser, ASK | Brunel University London
noel.parnis@brunel.ac.uk

The Covid-19 pandemic has led to academics, and non-academics involved in supporting students, embracing, willingly or not, various online teaching and learning related software applications, each with their advantages and disadvantages.

As part of the **sigma** Online Workshop held on 29th May 2020, which had as main objective to showcase the different online technologies used by various institutions, Monica Hess and Noel Parnis, from Brunel University London, gave a presentation highlighting the use of both BlackBoard Learn (BBL) Collaborate (Ultra) and Skype within the context of Statistics and SPSS support, including a live demonstration of the latter.

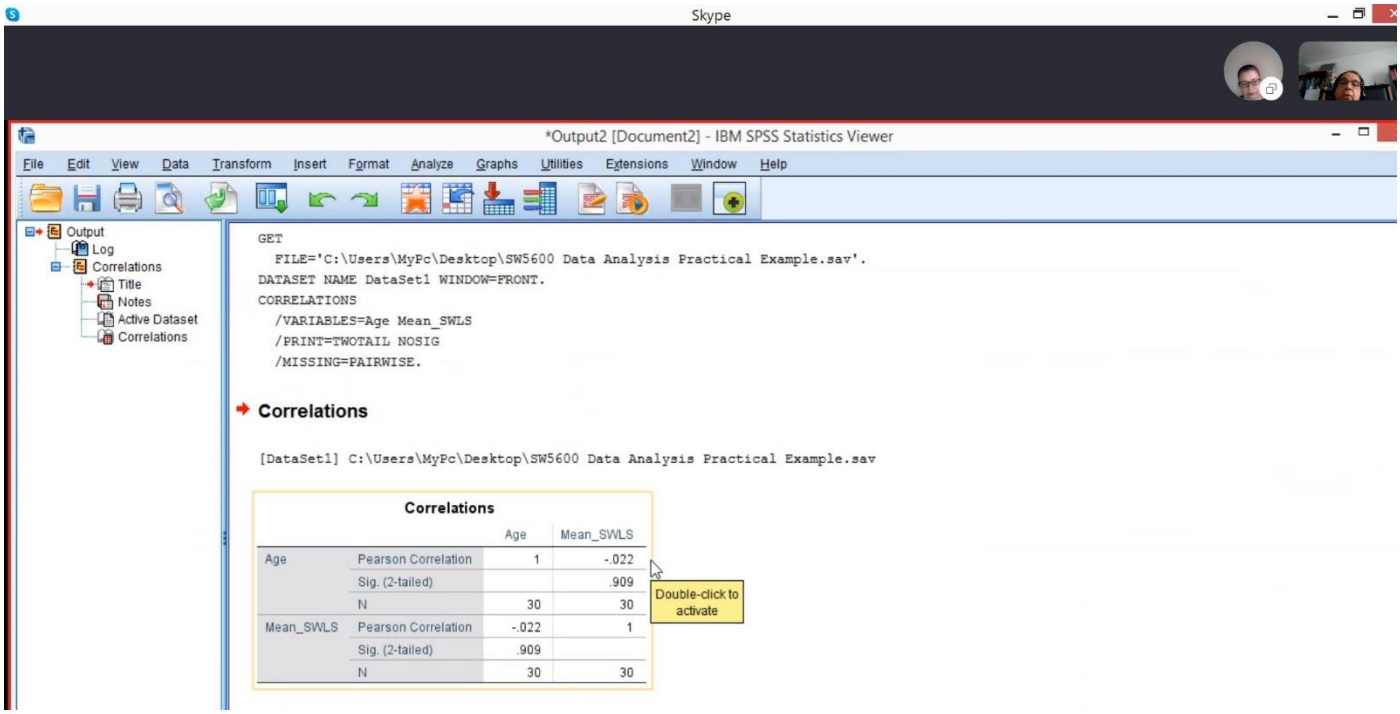
In this sense, they noted that BBL Collaborate tended to be used for both large to small group teaching and



Screen Print 1 – The tutor is live showing the student (how to run a correlation in this case) by sharing their SPSS screen via Skype

one-to-one student appointments, given features such as break out rooms, whiteboard and screen sharing and chat function. However, since Skype also has features such as screen sharing and the chat function, Skype is a plausible candidate for online one-to-one Statistics and SPSS support, thus freeing up capacity on BBL to be used for group sessions.

The presenters highlighted the advantages and disadvantages of both BBL Collaborate and Skype, within the context of Statistics and SPSS support. They pointed out that there are some challenges to be



Screen Print 2 – Tutor shares their SPSS screen with the student to explain the results of (a correlation in this case) via Skype

overcome, especially around student engagement with online teaching and learning. They proposed that one way to overcome this would be by implementing more interactive activities such as online quizzes and controlled forums during on-line sessions.

The presenters believe that these past few months have just been the beginning of a long journey in terms of human-machine interactions within the context of online teaching and learning. There is still a lot to be done, that will be beneficial for both tutors and students alike.

Live-streaming of lectures to YouTube

Peter Klappa
Reader in Biochemistry, | Brunel University London
P.Klappa@kent.ac.uk

The aim of this project was to support students, who are unable to attend face-to-face lectures, e.g. due to mental health issues, caring responsibilities, commuting restrictions etc. I wanted these students to have a similar experience to those attending physical sessions without me having to prepare additional online material.

Application

By writing on the screen of an iPad Pro with an Apple pencil the teacher can walk students through various concepts step-by-step. After extensive trial-and-error the most reliable delivery of a live-streamed lecture was found to be through a streaming service called 'Omlet Arcade', which allows live-streaming of tablet screens to online platforms like YouTube. Writings on the screen are thus transmitted via the Omlet Arcade app on the iPad and the University's Eduroam WIFI network. In the lecture theatre students can watch the live-streams on screen, via an internet browser on the desktop computer, connected to a data projector. Students in the face-to-face session AND anywhere in the world therefore watch exactly the same teaching delivery (Fig 1). To facilitate active engagement students can utilize the chat function on YouTube (Fig 2).

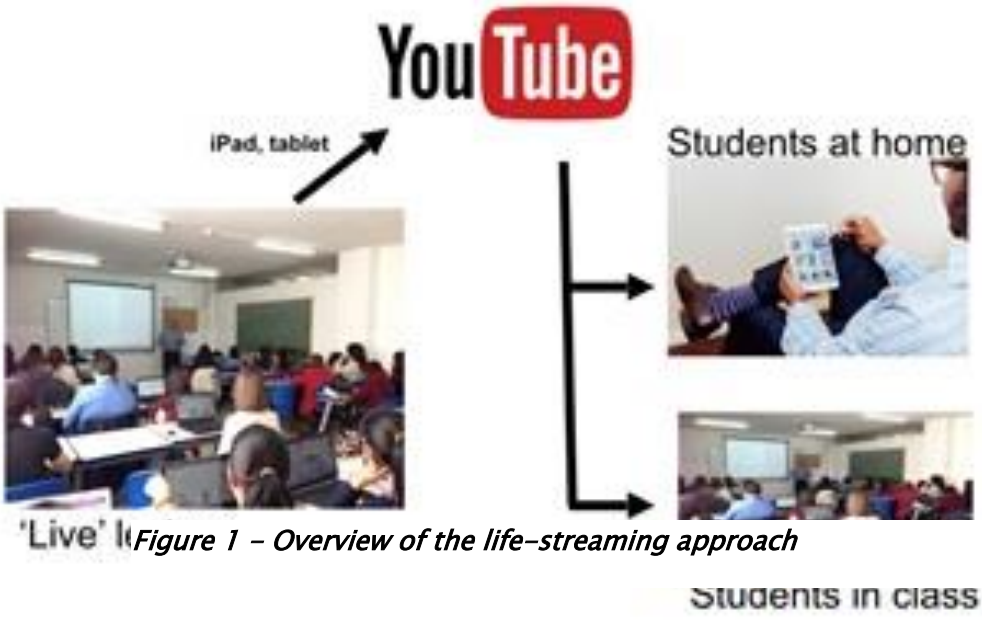


Figure 1 – Overview of the life-streaming approach

A step-by-step guide to setting up live-streaming to YouTube on an iPad can be found at https://sites.google.com/view/livestreamingtoyt/home.

Lecturer's perspective

With live-streaming students can benefit from lectures, even if they do not attend in person. It empowers students to decide, which format – face-to-face or online delivery – suits their needs best. Additional benefits are that live-streams are easy to schedule and deploy without timetabling constraints, e.g. availability of suitable teaching spaces. A major advantage for the lecturer is that no specific online teaching material has to be developed.

I decided against live-streaming to the VLE of my institution, since the set-up is more complicated and streams are less stable. Furthermore, YouTube as a platform for live-streams has the advantage that all students are familiar with it and its various functions – for example students can turn on automatic closed caption or use different playback speeds. Every live-stream is automatically saved to YouTube, thus providing students with a repository of lecture recordings, which they find useful for revisions.

What students think

All my teaching sessions were live-streamed to YouTube DURING face-to-face teaching in the academic year 2018/19 and 2019/20. Students from both year cohorts were surveyed through an online survey. A total of 140 responses (27%) were received, with 98.7% reporting a positive impact.

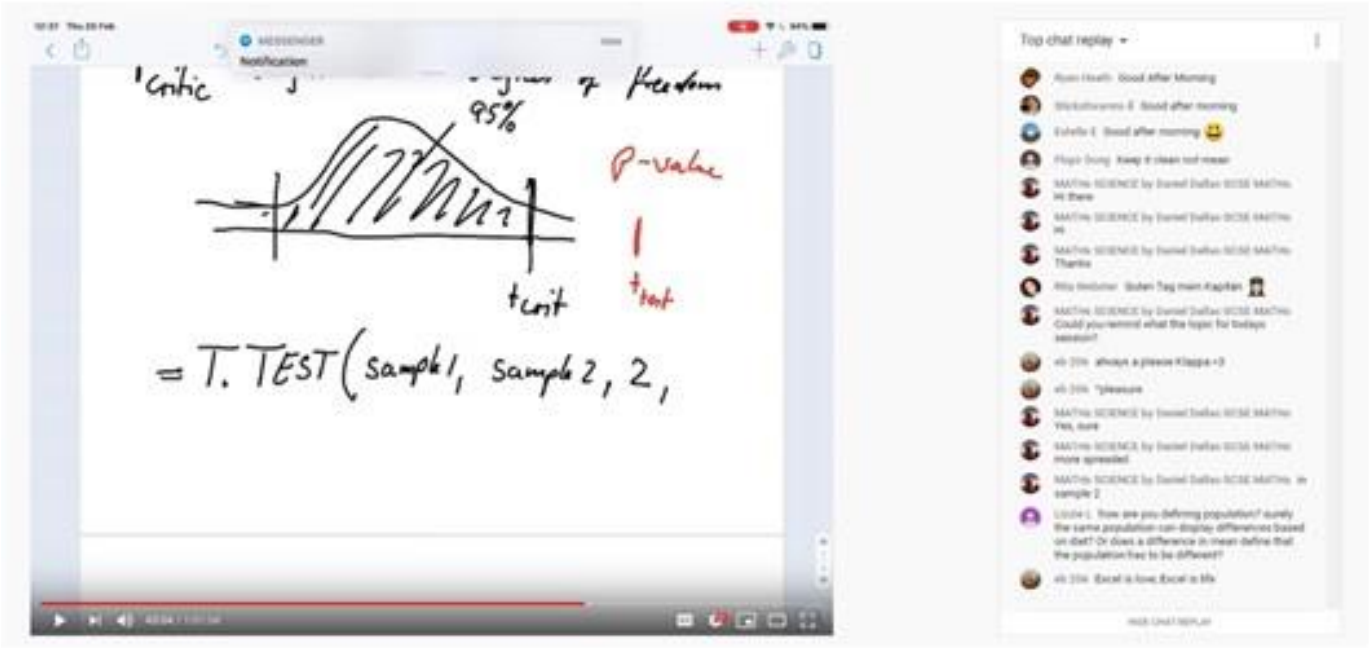


Figure 2 – Screenshot of a life-stream, including live-chat on the right-hand side

Potential issues

Comments in the chat during the live-streams can sometimes be distracting, especially when students used it for discussions not related to the lecture. This was addressed by hiding the chat function and replying to legitimate questions during frequent breaks or after the teaching session.

Concerns were sometimes expressed about the use of YouTube as a delivery platform and that students in certain countries would not be able to attend the live-streams. However, it is questionable whether these students would attend a live-stream, even if it was transmitted to a more accessible platform, due to differences in time-zones. Another question is related to who holds the copyrights for the material. This is a complex issue and would need to be explored individually – for example while teaching material is usually the property of the university, the performance rights reside with the person 'performing' in a session.

Views from Aberdeenshire

John Little
Maths and Statistics Tutor | Robert Gordon University
j.little@rgu.ac.uk

In preparation for the **sigma** Online Support Workshop on May 29th, and in light of the Scottish lockdown relaxation that very day that permits local travel for exercise, I took a dawn walk up a small hill with a tenuous mathematical connection. It is named Logg Hill and, what's more, there was an inversion!

Image 1 Logg Hill dawn inversion

That would be my fifth **sigma**/smsn workshop/conference sunrise/sunset hill to add to, in the past, Fourman Hill, Bannau Sir Gaer, Pen y Fan and the Mam Tor to Lose Hill ridge. It helps when you have a bad back.

Well, apart from making me a bit tired by virtue of the early start, the walk had the desired effect of giving me a stretch prior to those long but interesting hours I would spend watching the **sigma** talks.

In my case I have been relying on the same Trust graphics tablet that I've been using for the last ten years but the Wimba Classroom (Blackboard's predecessor) software I used for my first remote support session (Little, 2010) has improved substantially. That said, there are times when neither Blackboard nor MS Teams has worked well and on those occasions I've used good old email with Panopto video clips as follow up support where necessary. In fact, Panopto has been extremely useful for quickly recording demos/solution steps but editing of closed captions for online workshops is quite time consuming.

We've also recently adopted Zoom but no-one in our Study Skills department has used it yet for student appointments. My sigma workshop notes say though that at least one person found Zoom to work better than MS Teams so worth investigating I think.

I am also looking into how OneNote might be used for maths and stats support and was glad to see some relevant coverage during the workshop, having already attended Smerdon's (2020) webinar on the same.

Features (version dependent) of interest include ink to maths that can be read aloud by the OneNote immersive reader, graphing, quiz generation, dictation and collaboration space.

Of course, it's not all online. There has been the physical infrastructure to consider too. Body ache from day one of online support necessitated an upgrade of the new online maths support centre:

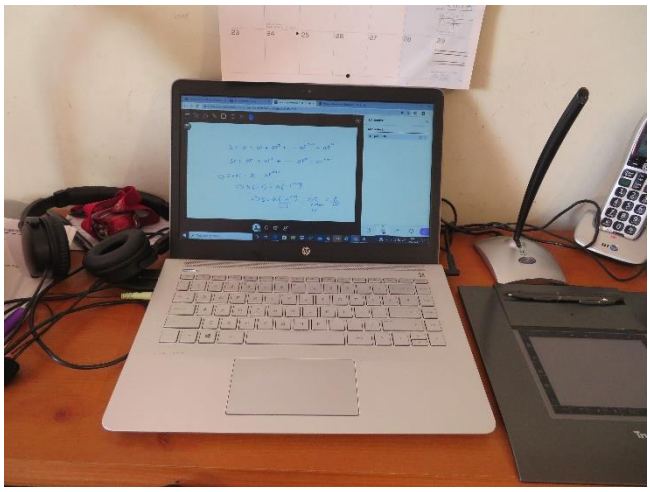


Image 2 ouch, first online maths support centre / torture chamber

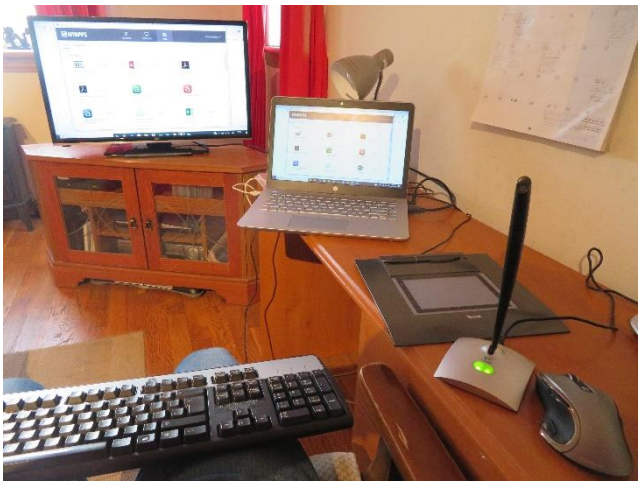
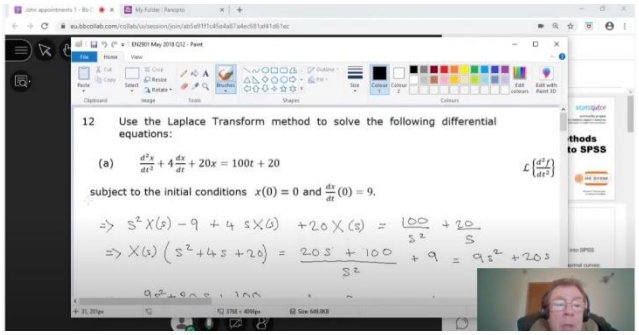


Image 3 reconfigured online maths support centre

Since we were asked to make a video demo of our workstations I've also added that here:



I cringe slightly at that video but I guess we have to become more used to making cameo video appearances, to get better at speaking and get better at listening.

Clip 1 the online maths support centre

The Future is perhaps not quite as predicted by Lawson and Croft (2015) but maybe only in the sense that the wider community of practice seems stronger than ever.

References

LAWSON, D. and CROFT, T., 2015. Mathematics Support – past, present and, most importantly, future. MSOR Connections Vol 14, No 1. [online] Available from:

https://journals.gre.ac.uk/index.php/msor/article/view/234/261 [Accessed 10 June 2020]

LITTLE, J., 2010. Maths support tuition provided remotely via Wimba classroom built into a moodle VLE. [online]. AdvanceHE. Available from:

https://www.advance-he.ac.uk/knowledge-hub/maths-support-tuition-provided-remotely-wimba-classroom-built-moodle-vle [Accessed 10 June 2020]

SMERDON, A., 2020. Using MS Teams and OneNote to Deliver Lecture Style Content. [online video]. 13 May. Available from: by clicking here on the day [Accessed 10 June 2020].

Sharing Experience and Ideas for Mathematics and Statistics Support during the Pandemic – A report of the 12th Annual IMLSN Workshop

Kirsten Pfeiffer
Lecturer | National University of Ireland, Galway
kirsten.pfeiffer@nuigalway.ie
Julie Crowley
Lecturer | Cork Institute of Technology, Cork
Julie.crowley@cit.ie

The 12th Annual Workshop of the Irish Mathematics Learning Support Network (IMLSN) took place online via Zoom on June 24th 2020 at 10:30 am. The theme of the two-hour workshop was 'Sharing Experience and Ideas for Mathematics and Statistics Support during the Pandemic'. Thirty-six participants from 17 institutions attended this workshop.

The aim of the event was to provide an opportunity for members to share their experiences in dealing with Maths and Statistics support during the pandemic and to identify ways in which members may benefit from an IMLSN community-wide approach. The workshop had three parts.

- Part 1: Mini-talks from 13 different institutions on the island of Ireland including 5 universities, 7 Institutes of Technology and one Technological University describing their experience with online maths support during the lockdown.
- Part 2: Discussions in five breakout rooms with groups of size 6-7 with guiding questions.
- Part 3: A representative from each breakout room fed back a summary of their discussions to the group as a whole.

The series of mini-talks revealed that most Irish institutions were in the position to offer some sort of online support after the closure of universities in March 2020. Attendance was poor in comparison to 'normal' times, however feedback from students was very positive and several institutions reported that a high percentage of online visitors came more than once. The main challenges were technical and connection issues as well as students' difficulties and reluctance to engage and to communicate their problems and approaches. Most institutions plan to set up or continue their online support and to look into opportunities to provide face-to-face support under current circumstances.

Challenges and opportunities of these changes were then discussed in the breakout rooms. Seeing that the number of repeat visitors were high, some groups discussed new ways to encourage students to use online maths support. Other discussion topics were practical issues like booking systems, tablets for tutors and how to plan for face-to-face support considering the current uncertainty.

Technical resources and challenges were also discussed in the Zoom Chat.

A feedback survey showed that all participants greatly appreciated the opportunity to catch up and share ideas and experiences. A vast majority indicated that they would be very much interested in a follow-up workshop in late August or early September, so we are planning to organise this and look forward to hearing what people are actually going to do next semester.