NEWSLETTER

Issue 21: Autumn 2020

Editor's Note

It is with pleasure; I present the Autumn Edition of the **sigma** Newsletter 2020. It is understandably thin this time as we all scramble to adapt our offer for different delivery modes, but a good read, nevertheless.

During the new ways of working at this time of crisis **sigma** Network held a virtual AGM the report of the meeting in provided here with further documents available via the link in the report.

One of the items in the AGM was the Steering Group Membership; David Bowers' announced he was stepping down as Chair. His work for the Network is exemplary and I am sure we will discover how much consistent effort it takes to make things happen in a timely manner. Thank you, David!

As a result of David's decision; Emma Cliffe is now Interim Chair and Nick Goddard is Vice-Chair see their brief introductions. Please email answers to Nicks question to Nick.

Peter Mitchell had provided another real-life query from student and how it was addressed. Now to figure out how it can be done virtually! I have taken the liberty of re-publishing Mark Hodds report on the Online work shop held in May as I suspect you'll find the reviews presented useful. Do have another look at the previous Special Edition of the Newsletter on Remote Delivery; I suppose we now need to consider a hybrid approach.

That may another section to be added to summary of the recently published paper on the Evolution of the Provision of Mathematics Support provided by Duncan Lawson, capturing the history, its development and interestingly its evaluation.

Thank you, of course, to 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.

On a more lighter not I'd like to share this mesmerising video – may your teaching and interactions with student by wonderfully graceful and synchronised as this duo. 😊

Happy Teachers Day

– Chetna Patel

Annual General Meeting 2020

David Bowers
Chair | sigma Network
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The Annual General Meeting of the **sigma** Network traditionally takes place in early September on the fringe of the CETL-MSOR conference. CETL-MSOR attracts many members of the maths support community, as well as those with a wider interest in HE mathematics, statistics and OR learning, teaching and assessment, meaning that our AGM is usually well attended and allows us to present our work and get feedback from a varied audience of like-minded practitioners.

This year, with the restrictions due to the coronavirus pandemic, CETL-MOR did not take place, and we had to take steps to make the AGM "virtual". Documentation was placed on our website at the end of July (http://www.sigma-network.ac.uk/constitution-and-agms/) and those 160 people who were registered as Individual Members of the **sigma** Network were send a link to an online voting portal. Thirty-two people logged in by the deadline of 4th September, making the meeting quorate.

The Chair's Report outlined the issues experienced by the mathematics and statistics support community due to the pandemic, and highlighted the ways in which the **sigma** Network had responded proactively. This included a well-received online workshop with 287 registered attendees to share experiences of providing maths support remotely, a detailed survey on how centres have responded to the Covid-19 pandemic, and a special edition of our Newsletter dealing with the challenges.

The Secretary's Report summarized the growth in Individual Membership of the **sigma** Network over the past year. If you have a professional interest in HE maths support, do please sign up as an Individual Member – it is free and brings no obligation, it evidences your commitment to mathematics and statistics support, and it will add weight to our community of practice. A simple application form is available here: http://www.sigma-network.ac.uk/apply-for-individual-membership/

The Treasurer's Report reminded us that the **sigma** Network continues to work magnificently as a self-sustaining professional association, with individuals and institutions giving freely of their time and facilities to ensure our programme can continue on behalf of the sector. Thanks go to all for their generosity.

A key element of the AGM is to ratify the Steering Group membership for the coming year, and the list of names (see below) was approved. A vote of thanks was proposed to David Bowers, who is now standing down as Chair of the **sigma** Network after four years in the role, and a new Chair will be selected at the first meeting of the new Steering Group in September 2020.

Finally, the AGM provided a number of suggestions for future activities, and also gave appreciative feedback, one of which is reproduced here:

"Thank you for the amazing work to David and the steering group. It has been a challenging year, but the **sigma** community has been so full of support for each other and joy for our profession!"

Steering Group Membership 2020/21

Emma Cliffe (University of Bath)
Nick Goddard (University of Chester)
Mark Hodds (Coventry University)
Mary Lorimer (Loughborough University)
Tony Mann (University of Greenwich)
Ellen Marshall (Sheffield Hallam University)
Alun Owen (Coventry University)
Chetna Patel (De Montfort University)
Theresa Wege (Loughborough University)
Robert Wilson (Cardiff University)
Plus 4 co-opted members . . .
Representative of the IMA Duncan Lawson
Representative of the SMSN TBC
Representative of the IMLSN TBC
Membership database officer (Bath) Ed Southwood

ANNOUNCEMENT

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

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.

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

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Introductions from Interim Chair and Acting Vice-Chair

Emma Cliffe
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Emma is Head of the Maths and Statistics Help (MASH) at Bath and prior to becoming Interim Chair she was Vice-Chair of the Network with another key responsibility within the Network for Accessibility of resources. I am writing this brief introduction for completion at this point, but she will be saying her piece in the next edition!

Currently, apart from the manic start of term workload she had been working on spearheading the captioning of the mathcentre videos.

> *'This is a call for your help to* **crowdsource mathcentre video caption corrections.** *We need captions for mathcentre videos to help us meet accessibility requirements. … Started and made substantial headway on autogenerating captions; Made these available through a collaborative caption editing site which will also display them with the video hosted directly from mathcentre. The adds either captions or a simultaneously highlighted transcript or both… or neither. We are not altering the videos themselves.'*

Get involved, especially if you are going to be using the videos. More information on how to help:
https://bathmash.github.io/mathcentre-videos/

Nick Goddard
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Hi all, my name is Nick and I am the new acting vice-chair of the **sigma**-network. I am a Maths Skills Adviser at the University of Chester and in my spare time I work on my psychology PhD!

My first contact with the **sigma**-network was at CETL-MSOR in 2018. The following July I organised a **sigma**-network workshop at Chester on supporting the use of free stats software and subsequently joined the Stats Support SIG. This year I organised what turned out to be the **sigma**-network's last pre-COVID face to face workshop, this time on maths/stats anxiety. I recently took on the role of acting vice-chair and website co-ordinator and look forward to working with you all.

Bonus points if you can guess my fandom from the picture!

P.S. Nick is also involved in maintaining the **sigma** Network Web pages and will be looking into how to improve it; so if you have any suggestions and or offers of help do get in touch with him.

My supervisor says that I need a statistical test

Peter Mitchell

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A student came to Mathematics and Statistics Help (MASH) in the University of Sheffield to check a few points in his nearly completed thesis. On seeing the raw data for Nigeria in a large table, his supervisor had commented that a statistical test was required for *every* result. This included the proportion of respondents in a survey whose first sexual intercourse was under age 15 years, in each environment, urban or rural. The student had used a chi-squared contingency test to look for association between environment and age of first sexual intercourse but his supervisor wanted a test for the proportion in each environment. Here we show the results for the urban environment as an example (Table 1).

Table 1. Extract of data from a survey, with a chi-squared test on the proportions in the two categories, using a null hypothesis of a 50:50 split.

Urban

Percentage (count)

Age of first sexual intercourse (years)	
Under 15	3.0% (2)
15 or older	97.0% (64)

Chi-squared = 8.2

$P < 0.0001$

We discussed with the student the possibility of a goodness-of-fit test, if suitable data were available from other sources. For example, could he find data from urban environments elsewhere, such as for another country or for the whole of Africa? Apparently not, so the student had resorted to a null hypothesis of 50:50, i.e. expected count of 33 in each category, from which a tiny P-value emerges from a chi-squared test. The student recognized that this was not an informative goodness-of-fit test but it appeared to satisfy his supervisor. We hoped that an eagle-eyed examiner would not choose to enquire about the trivial null hypothesis!

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A summary of The evolution of mathematics support: a literature review

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Last September, the International Journal of Mathematical Education in Science and Technology published (online) the paper The evolution of mathematics support: a literature review by Duncan Lawson, Michael Grove and Tony Croft. Since not all members of the **sigma** Network may have access to this journal, it was suggested that a summary of the paper should be published in the **sigma** newsletter.

The paper begins by describing changes in the external environment over the past 25 years which have impacted in different ways on mathematics support (MS). These include the widening participation (WP) agenda; the introduction of fees creating more 'consumerist' students, the marketization of HE and institutions looking for selling point, the increased focus on student employability and actual employment, more widespread use of numerical reasoning tests as part of graduate recruitment processes; and the increasing quantification of many disciplines beyond traditional STEM subjects.

The changing nature of the 'Mathematics Problem' is discussed. The paper outlines different stages of the problem:
· it began with a focus on "A levels not being what they used to be";
· moved on to the admission of less well qualified students because of the WP agenda and the decline in the number of students with A level maths following the Curriculum 2000 disaster;
· progressed to more subjects needing students with mathematical skills (notably social sciences and humanities);
· and is exacerbated by the UK being an outlier in terms of the small number of students studying some maths post-16, so not enough students are educated beyond GCSE level in mathematics.

After this background to the need for MS, the paper then highlights how MS has evolved in four key areas: Users & non-users; tutors; position with HE structures and evaluation.

With regard to users, initially MS was provided for 'at risk' 1st year STEM undergraduates. However, that has completely changed. Several studies have shown that at least as many good students use MS as weak ones. Furthermore, there is now increasing demand (particularly for stats support) from final year and postgraduate students from disciplines far beyond STEM.

With regard to non-users, a number of studies have explored reasons for non-engagement and branded some of the more commonly given reasons (eg times MS is available are not convenient and not knowing where MS was located) as 'shallow'. Nonetheless, increasing engagement by students whose results show they do need help, remains an unsolved problem.

The section on tutors includes a description of the role and required characteristics of a MS tutor, including the delightful quote from Pitcher (1995, p.5) that tutors need to be "able to create the feel good factor out of an apparent disaster area". This section also describes how there has been a rise in the number of 'dedicated' MS staff. Here dedicated means that this is the sole focus of their post. This increase has been matched by a decrease in the number of staff from mathematics departments who work in MS. There has also been a rise in the use of post-graduate students as tutors. Finally, this section highlights some

potentially damaging staffing issues – that many 'dedicated' MS staff are employed on non–academic fixed–term (potentially renewable) contracts. Such contracts are not conducive for building careers (prompting some good staff to look elsewhere for career development) and may not include research and scholarship as part of the job role.

The position of MS within HE structures has also evolved. MS often began as an ad hoc local initiative by the mathematics department. But there has been increasing central oversight. MS became part of institutional WP provision (14 universities mentioned MS in their OFFA Access Agreements). As external scrutiny of HEIs became more intrusive (through QAA, NSS, League tables and the TEF), so institutional senior management has seen all forms of student support (including MS) as a strategic priority. Consequently, MS is often integrated within a central student support / study skills unit.

The final section on evaluating the effectiveness of MS summarises the different approaches that have been taken. Early evaluation made considerable use of attendance data ("if large numbers of students are coming and coming back then we must be doing something right"). This progressed to using student feedback, although it was pointed out that this tends to be positive because students are usually so pleased that someone will sit down and work with them one–to–one that they give good feedback. Later evaluation methods have used statistical methods to seek to establish that MS has a positive effect on such things as improved performance, higher retention and better student confidence. However, whilst correlation is easy to establish, causation is more difficult. However, one statistics is singled out as being particularly impressive; it comes from an all–Ireland survey conducted by O–Sullivan and colleagues: "22% of respondents who had availed of [mathematics support] had considered dropping out of their course due to mathematical difficulties and almost two thirds of these students stated that availing of [mathematics support] had a positive impact on their retention on their course" (O'Sullivan et al., 2014, p.11).

The paper is a literature review and includes 118 references.

A restricted number of free eprints of this article are available at
https://www.tandfonline.com/eprint/JMDPSKNMVVUM64ACBUAK/full?target=10.1080/0020739X.2019.1662120

These eprints are available on a strictly first come first served basis.

References
O'Sullivan, C., Mac an Bhaird, C., Fitzmaurice, O., & Ní Fhloinn, E. (2014). An Irish mathematics support network (IMLSN) report on student evaluation of mathematics support: Insights from a large scale multi–institutional survey. Limerick: National Centre for Excellence in Mathematics and Science Teaching and Learning.
Pitcher, J. (1995). The nature of the tutor's work at Luton. Math Support Newsletter, 3, 5. Retrieved from http://www.sigma–network.ac.uk/wp-content/uploads/2018/11/MSA–Newsletter–3–Summer–1995.pdf

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sigma Online Workshop 29th May 2020

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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.

TALMO Online Teaching Resources

http://talmo.uk/resources.html

Vast range of information for teaching maths online via TALMO:

All Times British Summer Time (=GMT + 1 Hour)		
Day 1 -- Tuesday 2nd June 2020		
Time	Speaker	Title
1:30-1:40		Introduction
1:40-2:00	Robert Wilson	Engaging students in online mathematics learning
2:00-2:20	Katie Chicot	Teaching Mathematics through Video Recordings
2:20-2:40		Break
2:40-3:00	George Kinnear	Using quizzes to deliver a course online
3:00-3:20	Mine Çetinkaya-Rundel	Remote Teaching - 3 Myths
3:20-3:40		Break
3:40-4:00	Emma Cliffe	Accessible maths e-resources – where do you start?
4:00-4:20	Ben Mestel	Sustaining a community of online learners – case study from the Open University's MSc in Mathematics
4:20-4:30	Closing remarks	
Day 2 -- Wednesday 3rd June 2020		
9:30-9:40	Introduction	
9:40-10:00	John Meyer	Reflections on a semester of remote delivery at the Jinan University - University of Birmingham Joint Institute (J-BJI)
10:00-10:20	Sue Pawley	Is there anyone out there? A guide to interactive activities in the online environment
10:20-10:40		Break
10:40-11:00	Tim Lowe	Electronic marking of electronically submitted coursework
11:00-11:20	Christian Lawson-Perfect	Numbas for formative and summative online assessment
11:20-11:40		Break
11:40-12:00	Tom Wicks	Webinars via Teams
12:00-12:20	Yuri Bazlov	Remote delivery of postgraduate-level courses
12:20-12:30	Closing remarks	