

network for excellence in mathematics and statistics support

NEWSLETTER

Issue 13: Spring 2017

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FUTURE EVENTS

Mathematics and Statistics Support in the Age of "Big Data" – Monday 13 March 2017, University of Essex IMA Mathematics 2017 conference – Thursday 23 March 2017, London Dyscalculia, Numeracy and Maths Anxiety – Wednesday 12 April 2017, Loughborough University Statistics SIG event: 'Resource in a day' – Friday 21 April 2017, Birmingham City University

PAST EVENTS

Maths Support through Embedded Classes – Wednesday 16 November 2016 Learning Support in STEM – Thursday 12 January 2017



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Update from the Steering Group

The June and October 2016 issues of this Newsletter outlined how the leadership of the **sigma** Network passed to an elected Steering Group, bound by a new constitution, when the HEFCE funded period came to an end last summer.

Since then, the new Steering Group has met on three occasions, to ensure that the **sigma** Network continues to represent and respond to the mathematics and statistics support community.

In recent months, we have:

- Organised four tutor training events around the country for new maths support tutors;
- Held and supported three professional development meetings;
- Established a websites working group to re-vamp the **math**centre and **stats**tutor websites and make their resources more accessible;
- Received reports from, and given advice to, the three sigma Special Interest Groups;
- Started to systematically update our list of maths support contacts across the sector;
- Renewed strategic contacts with the Nuffield Foundation and Lord David Willetts, who have been most supportive of **sigma** in the past.

Further details of the above can be found elsewhere in this Newsletter.

Future plans include:

- At least one further tutor training event for new maths support tutors;
- More professional development meetings across the regions;
- The creation of a toolkit to support the professional recognition of maths support staff;
- Closer collaboration with the Scottish Mathematics Support Network and the Irish Mathematics Learning Support Network.

We are delighted to announce two new members of the Steering Group that will facilitate this collaboration; Morgiane Richard (representing the Scottish Mathematics Support Network) and Eabhnat Ní Fhloinn (representing the Irish Mathematics Learning Support Network). Morgiane and Eabhnat will join the next Steering Group meeting in March.

We will keep you informed through this Newsletter and our Jiscmail mailing list (<u>www.jiscmail.ac.uk/sigma-network</u>). Meanwhile, if you have any suggestions for future activities and events, or would like to be more closely involved, please contact <u>chair@sigma-network.ac.uk</u>

- David Bowers, Chair, sigma Network



Update from the Special Interest Groups

Accessibility SIG update Emma Cliffe and Clare Trott

We have set up a mailing list to facilitate the sharing of information on access to mathematics and statistics in the British Isles. Membership is not confined to **sigma** members. Please join at: <u>http://www.jiscmail.ac.uk/SIGMA-ACCESSIBILITY</u>

We have completed a survey focusing on access barriers for students with disabilities or maths anxiety and received 67 responses. We are analysing and will report on the results. Participants also reported positive support for various types of resource ranging from 64% to 89% positive responses, which will help us to prioritise our future activities. In the coming months we will invite contributions from those with relevant areas of interest and expertise – do get in touch to express interest. The SIG has a potentially broad scope so ideas on the wider remit of widening participation or language barriers are also welcome.

We have started to give input to the **sigma** website working group on future directions for improving access to **math**centre and **stats**tutor resources and have also been involved in two conferences. Clare Trott contributed a talk and Emma Cliffe delivered a workshop at the recent Learning support in STEM: Learning differences and teaching innovations conference. There is an item with more details about this event later in this newsletter. This event brought together support for students with specific learning difficulties and maths support. Clare is a co-organiser of the upcoming one day conference *Dyscalculia, Numeracy and Maths Anxiety* on 12th April at Loughborough University and Ciarán Mac an Bhaird will give a short presentation on the SIG survey results as part of the day.

If you can contribute or would like to be involved in the direction and organisation of the SIG please get in touch with Emma Cliffe (<u>e.h.cliffe@bath.ac.uk</u>) or Clare Trott (<u>c.trott@lboro.ac.uk</u>).

Statistics SIG update Ellen Marshall and Alun Owen

The Statistics Special Interest Group (SIG) undertook a short survey amongst the members of the SIG to find out what they would like to see happen over the next 12 month. The top priorities were greater sharing and easier access to suitable resources and the other was more training opportunities, especially in more advanced topics in statistics for less experienced staff.

As a result the SIG is organising a "Statistics resources in a day event" on April 21st at Birmingham City University. This is being organised by Ellen Marshall and Alun Owen with the help locally of Peter Samuels. Further details of this event and how to register are contained in another item in this newsletter.

Depending on funding, we aim to organise additional workshops focusing on training opportunities in more advanced topics in statistics for less experienced staff, where we hope sigma colleagues and fellow Statistics SIG members will offer to run a short session on a topic of interest to the community. Further details will be announced in the near future. To receive emails relating to the statistics special interest group, please register your interest by emailing either Alun (alun.owen@dmu.ac.uk) or Ellen (ellen.marshall@sheffield.ac.uk).



Employability SIG update

Peter Rowlett, Jeff Waldock and Kinga Zaczek

Based on the responses to a survey carried out at the end of 2016, the group decided what resources will be collected and produced. This will include: a list of websites offering practice in psychometric tests including (but not exclusively) numeracy tests, teach-yourself worksheets to aid student learning, as well as downloadable PPT and PDF files to aid taught sessions. Resources for teachers will go beyond (numerical reasoning) psychometric tests and will also include resources on professional skills tests for prospective teachers and numeracy nursing tests. We also intend to produce a number of video interviews with employers and recent graduates who could talk about the importance of numeracy skills in the job market. Although this idea has not been investigated yet, we hope to be able to find people willing to take part in this project.

Work is continuing to produce a guide for staff aiming to develop student employability through the curriculum, with the group currently working on a draft document. In addition, a call for case studies on employability across subjects relevant to sigma has produced some good examples, but further case studies are sought. If you are willing to write a short case study (two pages) relevant to this theme, please contact Peter Rowlett <u>p.rowlett@shu.ac.uk</u>.

Editor's Note

It can't have escaped your attention that this newsletter is in a bit of a different format to previously. I hope that you enjoy the new style – or at least, I hope that you do not dislike it too much. The move to a PDF was taken due to the time commitment in creating an online version, now that the responsibility has fallen to the Steering Group.

The article-per-page approach we have has led to some inevitable white space, so I have tried to fill this with something that I hope you find interesting – just look out for the **grey boxes**.

I'll happily receive comments about the new format, along with suggestions for changes. If you have any feedback or you'd like to get involved (as a proofreader, for example), then please do get in touch! Contact me via email at newsletter@sigma-network.ac.uk.

Thank you to all authors for their contributions to this edition. The deadline for contributions for the next edition (Autumn 2017) is **31**st **July 2017**. 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 <u>http://www.sigma-network.ac.uk/sigma-newsletters/</u>

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

Enjoy!

- Cheryl Voake-Jones



The Chair's piece: On getting stuck

David Bowers Chair | sigma Network chair@sigma.network.ac.uk

I was delighted to see that one of the best-selling books last Christmas was *The GCHQ Puzzle Book*. This collection of brain teasers was compiled by codebreakers working at the government's intelligence and security agency, and invites the reader to "pit your wits against the people who cracked Enigma".

Like (presumably) most mathematicians, I am a sucker for a good puzzle. What number fills the gap: 6, 7, 9, ___, 6, 8, 6? If somebody just told me the answer, it wouldn't best help me to develop my reasoning skills in order to grapple more successfully with such problems in the future.



It is the same with maths support. Students often come along because they are "stuck", they "can't see" what to do, they "don't get it". Often this is because they are not maths specialists – they are studying a non–STEM subject but are unexpectedly required to carry out some calculation or use some equation that they have not been formally taught, because their lecturers assume that they already know it. In such cases, the seasoned maths support tutor will try to strike a balance between solving the immediate problem at hand, and explaining to the student how to approach similar problems in future.

This is easier said than done. But members of the **sigma** Network have experience to share, and this comes to the fore during our regular networking meetings that are open to all mathematics and statistics support practitioners. **sigma** publications such as *Tutoring in a Mathematics Support Centre* (<u>http://www.sigma-network.ac.uk/wp-content/uploads/2012/11/46836-Tutoring-in-MSC-Web.pdf</u>) or the *Do's and Don'ts* videos on **stats**tutor (<u>http://www.statstutor.ac.uk/staff/types/staffresources/trainingresources/</u>) give valuable advice to maths support tutors on how to respond constructively to students' needs. And our **sigma** Network training days for new maths and stats support tutors reinforce this through examples and role play.

So, are you still stuck with the problem above? Well, think what come in groups of seven. And count their letters...



MLS Teaching recognised by National Teaching Awards

Ciarán Mac an Bhaird Lecturer / Maths Support Centre Manager | Maynooth University <u>ciaran.macanbhaird@nuim.ie</u>

James O'Malley Maths Support Centre and Departmental Tutor | Maynooth University james.omalley@nuim.ie

Dr. Ciarán Mac an Bhaird and James O'Malley (Department of Mathematics and Statistics, Maynooth University) have received 'Teaching Hero' Awards from the <u>National Forum for the Enhancement of Teaching</u> <u>Learning in Higher Education</u> (National Forum). The Awards ceremony, run in conjunction with the <u>Union of</u> <u>Students in Ireland</u>, was held in Dublin Castle on the 27th of October 2016.

Over 800 teachers in higher education were nominated for the awards by their students, and 37 of these were presented with 'Teaching Hero' Awards following a review of the nominations. This review was also carried out by students, higher level staff were not involved at any stage in the process. Focused on innovative, creative and inspiring teaching and its impact on student learning, the awards honour the best of Ireland's higher education teachers for the influence they have on the development of their students and the part they play in promoting educational excellence in higher education.

The Irish Minister for Education and Skills, Richard Bruton, stated at the event that '*This year's awards*



Dr Ciarán Mac an Bhaird and James O'Malley, Maynooth University

honour outstanding teachers who bring about exceptional learning for students, who thrive in an environment of innovation, creativity and inspiration. Teaching excellence brings out the best in both teacher and student.'

While Dr. Mac an Bhaird and James O'Malley both teach in traditional roles in the Department of Mathematics and Statistics as lecturer and tutor respectively, the majority of their teaching is through the Department's <u>Mathematics Support Centre (MSC)</u>. The MSC at Maynooth University promotes an informal and friendly atmosphere, where undergraduates of any level are encouraged to bring their mathematical queries without fear or embarrassment.

Their dedication to the student learning experience was reflected by anonymous student comments which accompanied their nominations. Dr Terry Maguire (Director of the National Forum) said '*These Awards provide students with direct opportunities to recognise excellence in teaching and to have their voices heard as valuable partners in their own education*'.



Half of my biology students have an issue with calculating – what's that about?

Roseanne Quinnell

Associate Professor | School of Life and Environmental Science, The University of Sydney rosanne.quinnell@sydney.edu.au

Requiring students to transfer the skills developed in mathematics and to apply these skills to biology sounds simple enough, however, a large proportion of biology undergraduates find calculations problematic. What I see in the classroom resonates with national trends. In 2014, the Australian media offered headlines that referred to declining maths skills in Australia as being in a "crisis" (Mather and Tadros, 2014) and the article itself stated that "Mathematics is in a death spiral in Australian schools". This headline 'Science graduates are not that hot at maths – but why' (Matthews, 2014) refers to the lack of sound numeracy skills our science graduates demonstrate. If nothing else, these headlines tell us that the "maths problem" as it manifests in tertiary life science teaching and learning is complex and pervasive, and with emotive coverage from the media, it is of concern to the public at large.

For university biology students transferring 'mathematics' to a life science discipline is as uncomfortable for them as being in a mathematics class. I say 'uncomfortable' as about 50% of our life science students tend to adopt a rigid stance when required to take their raw data and generate data suitable for their assignments. It is unlikely that my students are innumerate, rather this statement of not being able to "do maths" represents a reluctance on the part of these students to participate in activities that, to them, look like maths. The nature of the rigidity can vary, it can be a claim that they "can't do maths" or it can be an unwillingness to engage unless they are provided with an explanation as to why understanding, say, statistics, is relevant. Understanding more about the nature of these rigid stances may offer clues to how best to accommodate our students' learning needs and improve engagement with numeracy skills development across science, technology, mathematics and medicine (e.g. Quinnell et al., 2013).

There are some excellent Pharmacy calculations resources on **math**centre, but they are likely to come in useful for Biology students too, as well as Chemistry, Dentistry, Medicine, Nursing... – take a look!

http://www.mathcentre.ac.uk/courses/medicine/pharmacycalculations/



Peer-Assisted Learning in Maths support: Perspective from student advisers

Liliane Kamalendran

Peer-Assisted-Learning Maths Adviser | University of Essex

I applied to be a Peer-Assisted-Learning Maths Advisor in the final year of my degree as I was returning to University of Essex for my MSc in Statistics. I thought this was the perfect opportunity to put into action the words that I had heard from my secondary school Maths teacher: "Do not just learn Maths, but question it!" This made my learning journey meaningful, for rather than learning long lists of formulas, I was questioning how they were constructed. Being a Maths Adviser has allowed me to share this perspective and my passion for Maths with the students I support during the 1:1 advising scheme.



Liliane Kamalendran: Peer-Assisted-Learning Maths Frontrunner Plus at the Help desk

Through running workshops and the maths arcade I have been privileged to meet others from various different departments, besides the Mathematical Science Department, who also enjoy Maths. Encouraged by the interest that was shown, I decided to start the Maths Society at The University of Essex. The aim was to unite those with a passion for maths by building a maths community through social and academic activities. This role has been a big confidence boost as I never thought I would be starting a society and I am now the President.

Overall, the Talent Development Centre (TDC) has not only allowed me to help others, but it has also helped improve my own abilities and brought them to the surface. I can now talk confidently in public, work as a team, communicate and adapt to different academic backgrounds, work independently and take initiative decisions when needed. In addition to the aforementioned skills I also learned to develop a greater sensitivity towards students from different cultures and the way they learn. Feedback from students has been overwhelmingly positive which is highly encouraging to team morale.



Study skills provision at the University of Sheffield: embedding, stand-alone or mixed approach?

Marta Emmett

Mathematics and Statistics Tutor | University of Sheffield

Most literature suggests embedding study skills in the course curriculum with the advantages of increased student retention and improvement in student's results. There are, however, some recognised disadvantages, such as: difficult implementation, academics' reluctance, a misunderstanding of the complexity of necessary skills for academic work and the fact that university-skills frameworks are mostly concerned with graduate/employment skills.

I spoke to representatives of four academic departments in the University of Sheffield (Law, Life Long Learning – DLL, Psychology and Journalism) to find out about their current provision and their preferred approaches.

In the Law school, a fully embedded approach is being pursued with a module that is delivered to all students of all three levels (started in 2015/16) – this was developed by one committed academic involving a mixture of lectures, tutorials, peer-activity, etc. DLL has a module of study skills incorporated in the Foundation year; the other two departments also have some study skills incorporated. Despite this, all four departments still recommend visiting the Study Skills and Development Centre (SSDC).

When asked whether a stand-alone or an embedded model was preferred, all four chose a mixed approach. I also asked what approach would be preferable for statistics and both DLL and Psychology chose a mixed approach. MASH (Maths and Stats Help) already collaborates directly with DLL by delivering workshops during the year (embedding). The main conclusion of this work was that there is room for a mixed approach in the universities, i.e. embedding of study skills in course curriculum, but also stand-alone provision that the students can seek individually.

However, for both study skills and statistics it is important that the embedding is done via bespoke workshops – this can be better achieved with close collaboration between the skills' centres and the academic departments.

<u>Read on for a report</u> of a recent **sigma** workshop on embedding maths support, hosted by London South Bank University.



Maynooth establishes unique role of MSC University Tutor

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Ann O'Shea Senior Lecturer / Maths Support Centre Director | Maynooth University ann.oshea@nuim.ie

Peter Mulligan Maths Support Centre University Tutor | Maynooth University peter.mulligan@nuim.ie

In August 2016, Maynooth University appointed Peter Mulligan as Mathematics Support Centre (MSC) University Tutor on a three year full-time contract. Peter brings a wealth of experience and knowledge to the table, and the MSC management are delighted to have secured his services for this unique position; the first of its kind anywhere in Ireland.

While his main role is to teach in the MSC, Peter has also taken over some administrative tasks. In addition, he plans, teaches and assesses a summer course in mathematics for mature students. He also delivers the introductory week of mathematics for the Certificate in Science programme.



L-R: Dr. Ann O'Shea (Senior Lecturer and MSC Director); Peter Mulligan (MSC University Tutor); Dr. Ciarán Mac an Bhaird (Lecturer and MSC Manager), Department of Mathematics and Statistics at Maynooth University With the exception of the MSC Manager, the MSC staff has largely comprised of postgraduate students or Departmental tutors. As these are part-time positions, it has proved challenging on an annual basis to secure a sufficient number of suitable MLS tutors. The appointment of the MSC University Tutor, championed by Professor Fiona Lyddy (Dean of the Faculty of Science and Engineering), is a significant first step towards securing a more consistent level of service for students from year to year.

The MSC in Maynooth University first opened in October 2007. Since then, it has grown significantly and now averages approximately 20,000 student visits per year. The main service that the MSC provides during term time is a drop-in centre for undergraduate students who need assistance with any aspects of

mathematics or mathematics related subjects. The MSC's services also include on demand workshops, the provision of online support as well as drop-in for second level students.

For further information see: <u>http://supportcentre.maths.nuim.ie</u>



Progression of student-led mathematics support

Hannah Crosby BSc Mathematics and Statistics student, Year 3 | University of Bath hnc27@bath.ac.uk

Within a few days of starting my undergraduate degree at the University of Bath reading Mathematics and Statistics, I became very aware of how different University level Mathematics was compared to A-level Mathematics, in terms of both difficulty and teaching styles. It was this that inspired me to get involved with MASH, the University's Mathematics and Statistics Help resources centre, to try and help others overcome the same hurdles I reached.

Amongst other activities, MASH run drop-in sessions that are specifically aimed at Year One students. This is a very large cohort (~400 students), many of who struggle with the transition to university. At Bath, we call these sessions "peer tutor drop-ins", since the tutors are all Year Two students. It is a competitive process to become a peer tutor, and all tutors receive training from MASH staff before starting.

From both attending peer tutor drop-in sessions and acting as a Peer Tutor myself during my second year, I have gained a greater understanding of the mathematics I am studying and the ways in which different people learn. It has also provided me with the opportunity to help others and build my own personal skills.

Whilst working in these drop-in sessions, it came to my attention that multiple students would be asking the exact same questions. This got me interested in a project currently being undertaken by MASH, which is funded by the University of Bath's Teaching Development Fund (TDF) and is running in collaboration with the Academic Skills Centre. During this project I am helping to produce a series of live lectures and extended videos which address common issues mathematics students have in the hope of helping large amounts of students at once.

Students can watch these on their smartphones or other devices. The project came about after we trialled it last year, when I was still a peer tutor. Now, with the TDF funding, we are able to produce more videos and live streams. I believe that this project has great potential.

This project features in more detail in the <u>'12 apps of Christmas' article</u>, later in this newsletter.



Smartphone screenshot of Hannah Crosby delivering a live streamed mini lecture to Year One mathematics students at the University of Bath



Analyse this! To get ahead Social Analytics is the new skill to have in our datadriven world

Rhys Jones Lecturer in Quantitative Methods in FE | Cardiff University JonesRC10@cardiff.ac.uk

They say that knowledge is power and never has this been more relevant while trying to get ahead in the modern world of work. Although key skills in areas such as numeracy and literacy will always be high on the tick-list of any potential employer, the ability to process and critically evaluate data is much sought after by big business.

Social Analytics is the scientific investigation of social processes using quantitative analysis. These skills are valued highly by a wide range of employers. There is a real shortage of people with these skills; it's not just being able to do the stats, it's about being able to question what others are presenting as evidence and pick apart knowledge claims.



L-R: Alan Smith, Agored Cymru; Judith Archer, Agored Cymru; Rhys Jones, Cardiff School of Social Sciences

Alan Smith from the Welsh awarding body Agored Cymru, explored this skills gap in Social Analytics alongside Cardiff University, and this work is now being developed as part of the longstanding relationship between the two organisations. This ground-breaking development means that learners can access a range of units, learning the basics of Social Analytics either through its Access to Higher Education Diploma or as free standing units that can be used on other courses.

Judith Archer, Agored Cymru's Curriculum Specialist and Development Manager for Essential Skills, says: "We are trying to encourage the inclusion of Social Analytics into lots of different courses. For example, it would be ideal as one of the subjects on

a social science course. It's good for us as it shows that Higher Education is prepared to work with us and values our skills and expertise. Cardiff University is seen as being one of the best in the UK and certainly the best in Wales."

These courses aren't just about doing more maths or stats, they are about understanding society through analysing patterns and becoming well-informed and critical citizens. The skills and concepts developed during the course will stand our students in good stead. *The units will begin this academic year and will require around 30 hours of lecture time, and count as accreditation towards a general qualification such as Agored Cymru's Access to Higher Education Diplomas.*

Links to unit specifications below:

http://www.agored.cymru/Units-and-Qualifications/Unit/CDJ969 http://www.agored.cymru/Units-and-Qualifications/Unit/CDK370 http://www.agored.cymru/Units-and-Qualifications/Unit/CDL452

More information can be found here: <u>www.agored.cymru</u>



Maths Sparks Problem Solving Workshops: Resource Booklet

Anthony Cronin

Maths Support Centre Manager, School of Mathematics and Statistics | University College Dublin, Ireland <u>Anthony.Cronin@ucd.ie</u>

Aoibhinn Ni Shuilleabhain

Assistant Professor, School of Mathematics and Statistics | University College Dublin, Ireland <u>aoibhinn.nishuilleabhain@ucd.ie</u>

This booklet is intended as a resource for educators running Maths Clubs or teaching extra-curricular content to students in their schools, colleges or universities.

The booklet was created during the 'Maths Sparks Problem Solving Workshops' series held by the UCD School of Mathematics and Statistics for secondary pupils from schools designated as disadvantaged in the vicinity of the university. Each workshop was designed by a team of undergraduate students under the guidance of academic staff and presented during the series.

The booklet includes a lesson plan and resources for each workshop, which can be used by educators in mathematics outreach events or classes. While the majority of content in these workshops is not taught at second level, the activities are designed to cultivate students' mathematical thinking and problem solving skills. The workshops are also designed to encourage a more collaborative approach to teaching and learning mathematics, where students work in pairs or groups in making sense of specific tasks. This is particularly relevant in the 'Engineering and Project Management' workshop, where your students will work in different teams to create the best proposal to win a contract.



Engaged pupils taking part in UCD Maths Sparks 2016



Maths Sparks university volunteers facilitating pupil learning

Workshop topics range from cryptography to card-tricks and we hope you will enjoy exploring these mathematical ideas with learners.

Further information on the Maths Sparks Problem Solving Workshops, sponsored by Science Foundation Ireland, can be found here: <u>https://www.ucd.ie/mathstat/mathsparks/</u>



The 12 Apps of Christmas: apps of interest

Frances Boylan

eLearning Development Officer | Dublin Institute of Technology, Dublin, Ireland <u>frances.boylan@dit.ie</u>

The 12 Apps of Christmas is a short free CPD course that has been run from the Dublin Institute of Technology (Ireland) for the last three years. Running over the first twelve consecutive weekdays of December, this course is for anyone who is interested in mobile learning, specifically the potential mobile apps hold for learning and teaching. Links to all of the resources accumulated over the three years can be found at http://www.dit.ie/the12appsofchristmasarchive/.

It was decided that the 2016 course would disseminate case studies of innovative ways in which mobile apps were being integrated by educators into their learning, teaching and assessment practices. A number of the case studies included in the course might be of interest to readers of the **sigma** Network Newsletter as they

detail how educators have been using mobile apps to support learning in the STEM subjects specifically.

- Dr Cheryl Voake-Jones, MASH Coordinator and Teaching Fellow, and her team at the University of Bath, have been piloting the app <u>Periscope</u> for maths support. A detailed case study on their work for *The 12 Apps of Christmas* course can be found on the course blog <u>here</u>.
- (2) Damien Raftery and Emer McGann from the Institute of Technology Carlow (Ireland) wrote in detail about their use of the app <u>Desmos</u>, which is a free online graphing calculator. Their case study, and the comments left by the course participants, can be read <u>here</u>.



(3) UniDoodle is a polling app that was designed with STEM subjects in mind, and which allows students to quickly submit sketch-style answers via their iOS or Android

Shake it up with The 12 Apps of Christmas

device to questions asked by their teacher in class. Find out more in Séamus McLoone's case study <u>here</u>.

- (4) Alice Luby from the Dublin Institute of Technology has been using <u>Socrative</u> as a tutorial coach, which is an interesting twist on what the app was designed initially to do. Her case study can be read <u>here</u>.
- (5) <u>Nearpod</u> is a is a multiplatform, blended learning e-learning tool that allows students to engage with each other, and the lecturer, in real time, through an online presentation tool. Read <u>here</u> how Barry Ryan at the Dublin Institute of Technology has been using it with his students on Food and Pharmaceutical Sciences programmes.



FREE online Course – Improve your Numeracy Skills and Confidence

Janette Matthews Lecturer | Loughborough University J.Matthews@lboro.ac.uk

The next presentation of the successful *Numeracy Skills for Employability and the Workplace* will start on **6 March 2017.** To find out more and register, go to: <u>www.futurelearn.com/courses/numeracy-skills</u>.

Numeracy Skills for Employability and the Workplace was written for the FutureLearn platform by Janette Matthews and Tony Croft from Loughborough University. Through video tutorials and onscreen explanations supported by quizzes with detailed feedback at each stage to test your knowledge and confirm understanding, this course will help you build your mathematical confidence and prepare you for both employers' numeracy testing and using numeracy in the workplace. The course is split into three weeks which allow you to refresh skills, understand the rationale behind employers' numeracy testing and obtain plenty of practice. All materials are available on day one so you can work at your own pace, taking less time or longer than three weeks if needed. The materials also remain online and available to you indefinitely.



Students, who applying for work placements or internships and graduate roles or courses for which numeracy skills tests are a requirement, will find this course a useful preparation.

For further information see <u>www.futurelearn.com/courses/numeracy-skills</u> or contact Janette Matthews (J.Matthews@lboro.ac.uk).



Report: An audit of Mathematics Learning Support provision on the island of Ireland in 2015

Anthony Cronin Assistant Professor of Mathematics | UCD, Ireland Anthony.Cronin@ucd.ie

Report: http://imlsn.own.ie/papersreports/

This Irish Maths Learning Support Network (IMLSN) report, funded by the National Forum for the Enhancement of Teaching and Learning in Higher Education, offers the most comprehensive insight yet into the nature and extent of mathematics learning support (MLS) provision in higher education in Ireland. The report's recommendations are targeted at MLS practitioners, researchers and education policy makers.

The survey covers higher education providers in both Northern Ireland and the Republic of Ireland and has an extensive scope of questions. With a very high response rate – 30 from 31 HEIs responded – it provides the most comprehensive insight yet into MLS provision in Ireland.

The data is presented, analysed and supplemented by recommendations that are believed to be achievable in the short to medium term.

We hope that this report is of interest and benefit to you and your colleagues involved in the provision of MLS. The IMLSN desires to increase funding and support for MLS and to expand the reach of MLS in Ireland by leveraging shared experiences, continuing to conduct research into the critical issues and by learning from our **sigma** colleagues in the UK and internationally.

- On behalf of the IMLSN

Anthony Cronin, Jonathan Cole, Maura Clancy, Cormac Breen, Diarmuid Ó'Sé

It's no secret that us maths folk love a good maths joke. A little unseasonal but here's one that got a lot of attention on the sigma Twitter page just before Christmas:



Follow the **sigma** Network on Twitter to keep up to date on current events, upcoming workshops and other relevant info, plus the odd joke of course: @sigmahubs



Creating Maths Resources at the University of Bradford

Helen McHattie Maths Adviser | University of Bradford <u>h.l.jackson@bradford.ac.uk</u>

Development of in-house resources started nearly 8 years ago. Initially the lead maths adviser felt it wasn't necessary, due to the wealth of resources already available online. However, we became frustrated with hard to navigate websites, overly formal styles, broken links etc. More specifically, I wanted to write resources in the way that I would speak, and explain things, to my students, covering key points and augmenting lecture materials (such as lecturers notes, **math**centre resources etc).

I started with Refresher sheets – booklets explaining topics fully, and including examples and practice questions. These were well received and widely used, but I started to realise that the main barrier, for many students, is that they feel overwhelmed by, what seems to be, endless notes and numerous concepts to learn about every topic. Often they don't know enough to know where to start.

I think I wrote the very first summary sheets as much for myself as the students, to try and organise my thoughts. As I shared them with students I realised that they really appreciated seeing the key points of a topic condensed down to 2 or 3 manageable pages. I often see great relief as they realise that the topic isn't too overwhelming after all. It seems to change their attitude and empower them to have a go themselves. After working through a summary sheet with a student I often hear "is that it? I can't believe I was so worried and it's actually so easy".

As a team we feel it's important for us to keep control of these resources as we have learned that resources are not static. I frequently update them to keep them relevant and also correct and improve them as necessary.

We are more than happy for anyone else to use them and if they can be of use to any other learners then we would be pleased – hence the open access on our website. We have about 50 summary sheets (most are available online) and about 20 in development.

http://www.bradford.ac.uk/academic-skills/resources/maths/

If you've created some resources that you think will help others, why not share them via this newsletter or via the **math**centre/**stats**tutor community project?

http://www.mathcentre.ac.uk/courses/mathematics-support-centre/community-projectresources/

http://www.statstutor.ac.uk/communities/



Mathematics and Statistics Support in the Age of "Big Data" – Monday 13 March 2017, University of Essex

Hansa Bissoondeeal Mathematics and Statistics Tutor | University of Essex hobiss@essex.ac.uk

Mathematics and Statistics Support in the Age of "Big Data"

Date:13th March 2017Location:University of Essex

Increasing quantification of the Humanities and Social Sciences means that it is no longer just STEM students who need mathematical skills; students in those areas also need to be able to confidently deal with data and statistics. The **sigma** Network and the University of Essex invite you to explore how HE maths support provision can respond to the demands of "Big Data".

The event will be introduced by two authoritative speakers – Richard Skeggs (ESRC Business and Local Government Data Research Centre) and Simon Gallacher (Nuffield Foundation). Participants will then share their own experiences of how they are supporting students in their quantitative skills. All participants should go away with new insights, ideas and action plans for enhancing their own maths and statistics support provision.

Please note that this is a free event starting at noon, including light lunch and refreshments. To reserve your place, please email Hansa Bissoondeeal (<u>hobiss@essex.ac.uk</u>) by 3rd March 2017. A programme and travel information will be sent out nearer the time.





IMA Mathematics 2017 conference – Thursday 23 March 2017, London

Pam Bye

Conference Support Officer | Institute of Mathematics and its Applications <u>conferences@ima.org.uk</u>

IMA Mathematics 2017 conference

Date:23rd March 2017Location:Mary Ward House, London, WC1H 9SN

Mathematics 2017 is the eleventh in the series of annual IMA conferences to promote mathematics. This series aims to demonstrate to both mathematicians and non-mathematicians the many uses of modern mathematics. We hope that the audience will have mathematicians, those who work with mathematicians in policy forming roles, and anyone who has an interest in developments in the applications of mathematics.

Further information at:

http://ima.org.uk/conferences/conferences_calendar/ima-mathematics-2017.html

A puzzle to work your brain cells (or your students')...

There are 1000 lockers in a corridor and 1000 students. Each student enters the corridor in turn.

Student 1 opens all 1000 lockers – or to put it another way, they open all lockers labelled with a number that is a multiple of 1.

Student 2 closes lockers labelled 2, 4, 6, 8, \dots – all lockers labelled with a number that is a multiple of 2.

Student 3 opens changes the state (opens lockers that are closed, closes lockers that are open) of lockers 3, 6, 9, 12, ... – all lockers labelled with a multiple of 3.

Student 4 changes the state of lockers 4, 8, 12, 16, ... and so on until all 1000 students have walked through the corridor.

Question: How many lockers are open at the end?

You can easily find the answer and a proof online (no peeking). Or maybe the real question would be what are the chances of this experiment working in real life?!



Dyscalculia, Numeracy and Maths Anxiety – Wednesday 12 April 2017, Loughborough University

Clare Trott Mathematics Support Tutor | Loughborough University <u>C.Trott@lboro.ac.uk</u>

Dyscalculia, Numeracy and Maths Anxiety

Date:12th April 2017Location:Stewart Mason Building, Loughborough

A one-day conference to be held on Wednesday 12th April 2017. The focus of the day will be issues associated with **maths anxiety** and an exploration of the mathematical learning difficulties associated with **dyscalculia** within the FE/HE strand. There will be keynote presentations as well as workshop sessions and case studies. The keynotes will address Maths Anxiety and Assessing Dyscalculia.

Keynote Presentations:

- Brief Interventions for maths anxiety
 Professor David Sheffield
- The assessment of dyscalculia and maths learning difficulties
 - Peter Jarrett, Lead Assessor/Practitioner

There will also be a range of parallel **workshop sessions** and some **case studies**:

a. Maths and statistics anxiety in higher education – Ellen Marshall and Victoria Mann, University of Sheffield

b. Strength and Knowledge: developing self-realisation and perceived limit breakthroughs in mathematics students - Catriona Grove/Luke Hyland, Northampton College

c. Practical Strategies to Support Students with Dyscalculia/Maths Learning Difficulties in Higher

Education - Anne McLoughlin/Kate Davies, Edgehill University

d. From Engineering to Fine Art: supporting dyscalculic students – Hilary Maddocks, Loughborough University

e. Dyscalculia in the Workplace – Simon Drew, Loughborough University

Case Studies: Victoria Mann and James Ruffell

Accessibility: Special Interest Group

Cost: £160, credit card only

All rooms have disabled access and disabled car parking is available

Further details and booking:

 $\underline{http://store.lboro.ac.uk/browse/extra_info.asp?compid=1\&modid=2\&deptid=267\&catid=118\&prodid=395$

<mark>Dyscalculia</mark> Numeracy MathsAnxiety



Statistics Special Interest Group (SIG) event: 'Resource in a day' – Friday 21 April 2017, Birmingham City University

Ellen Marshall Statistics Tutor | University of Sheffield ellen.marshall@sheffield.ac.uk

Alun Owen Lecturer | De Montford University <u>alun.owen@dmu.ac.uk</u>

Statistics resource in a day event

Date:21st April 2017Location:Millennium Point building, Birmingham City University

The **stats**tutor Communities project <u>http://www.statstutor.ac.uk/communities/</u> allows academics to submit their resources to statstutor once peer reviewed so that they can be used in other Maths Support centres. Whilst many of us have resources we use with students, finding and collaborating with reviewers can be a barrier to sharing these resources.

After an introduction to submitting suitable resources, this event will concentrate on three aspects with delegates working in small breakout groups:

- 1. Potential Authors and Reviewers working together to finalise resources you may already have in draft form so that they are ready for submission to **stats**tutor
- 2. Creation of new resources for techniques not listed on statstutor e.g. Multivariate techniques
- 3. Modifying existing SPSS or R based resources to cover a different software package e.g. SAS or STATA

A spreadsheet showing a list of resources which need reviewing and also suggestions for new resources can be found <u>here</u>.

- If you have resources which need reviewing then do please add a row to the spreadsheet.
- If you are happy to review or create a new resource, add your initials to the relevant box on the spreadsheet.

During the day we will also have a general meeting of the statistics special interest group which will include discussion about improvements to **stats**tutor.

Register for the event here.



PAST EVENTS

Maths Support through Embedded Classes – Wednesday 16 November 2016

Mohamed Mehbali

Learning Development Advisor – Maths | London South Bank University <u>mehbalim@lsbu.ac.uk</u>

As a part of the Centre for Research Informed Teaching (CRIT), Skills for Learning hosted a free sigma Network event - 'Maths Support through Embedded Classes' at London South Bank University (LSBU) on the afternoon of Wednesday 16th November 2016.

The event enabled a number of LSBU lecturers who are involved in teaching or supporting maths, statistics and academic skills. Professor Shân Wareing, Pro Vice Chancellor (Education & Student Experience) opened the event, followed by Dr Saranne Weller, the Head of CRIT, who welcomed the participants and highlighted the importance of the service in the Learning Development arena. Delegates who attended were mostly from universities in the South–East of England.



L-R: David Bowers, Chair of the **sigma** Network; Prof. Jon Warwick, the first Keynote speaker; Dr Lesley Roberts, the second Keynote speaker & Head of Skills for Learning; Mohamed Mehbali, the event organiser

There were two Keynote speakers; Jon Warwick, Professor of Educational Development in the Mathematical Sciences, and Dr Lesley Roberts, Head of Skills for Learning. They both pointed how maths support was delivered through various stages and demonstrated the experience of embedded classes at LSBU.

Dr Cheryl Voake–Jones, Mathematics & Statistics Help coordinator and Teaching Fellow at the University of Bath, gave the third presentation. This was followed by three other communications, presented by the delegates from Brunel University, Middlesex University and University of East London. Participants were pleased to share their respective experiences on support provision through embedded approach. Later, the keynote speakers posed some questions for discussion. Delegates were split into small groups to discuss



David Bowers talks to the audience at the end of the event

these questions. Next, thoughts and ideas were exchanged within the audience. Lastly, the **sigma** Network Chair, David Bowers, showed a brief overview of the Network's activities and resources, followed by a summary and closing of the event.

The audience enjoyed the meeting and were willing to engage in further networking. According delegates' evaluation forms, participants' feedback, **sigma** members and organisers reported that was a successful event.



PAST EVENTS

Learning Support in STEM – Thursday 12 January 2017

Ellen Marshall Statistics Tutor | University of Sheffield <u>ellen.marshall@sheffield.ac.uk</u>

Victoria Mann SpLD Tutor | University of Sheffield

Learning support in STEM

Date:12th January 2017Location:University of Sheffield

The 'Learning support in STEM' conference was jointly organised by the MASH centre and Specialist Learning Difference (SpLD) service at the University of Sheffield and took place on the 12th January 2017.

This one-day conference brought together a range of academics and practitioners working in learning support to discuss learning differences, innovative teaching and collaborative working. Speakers at the event included Claire Trott, Emma Cliffe and Dylan Griffiths who all specialise in providing inclusive maths and SpLD support as well as experts in other areas of accessible or innovative teaching. Many of the interactive workshop sessions encouraged practitioners with different specialisms to share knowledge and teaching methods.

The event was attended by 70 delegates, including many from the **sigma** Network, and received very positive feedback on the collaborative nature of the event as well as the range and quality of the presentations. The need for maths study skills and inclusive teaching within the maths support setting was addressed as well as issues facing students with dyscalculia, dyslexia and autism. The key note speakers discussed academic writing for STEM subjects (Amanda French), using games to enhance student learning (Nicola Whitton) and providing successful maths support for students with dyscalculia and dyslexia (Claire Trott). The videos of the three key note speakers and other presentations from the day can be accessed via https://drive.google.com/drive/folders/0B7xPmCOE5TLoYzVqZIZzSURLVEE?usp=sharing

Have you organised or attended an event that you want people to know about?

Why not write it up for the next newsletter?

See <u>http://www.sigma-network.ac.uk/sigma-newsletters/</u> for full details on how to submit an item.

