sigma network for excellence in mathematics and statistics support

**Newsletter - Issue 1: December 2013**

**In this issue:**


The next phase for the **sigma** Network ..... 1
An essential funding boost for mathematics and statistics support across the disciplines ..... 2
Joe Kyle's Corner - These are not They: Students as Partners ..... 3
**sigma** funding opportunity – new centres initiative/centre enhancement initiative ..... 3
Emma Cliffe – South West and South Wales Hub co-ordinator ..... 4
Leslie Fletcher – North West & North Wales Hub co-ordinator ..... 4
CETL MSOR Conference, Coventry University, 10/11 September, 2013 (Joe Kyle) ..... 5
News from the Eastern England **sigma** Hub (David Bowers) ..... 5
Mathematics and Statistics Support at the University of Glasgow (Shazia Ahmed) ..... 6
Personal Experience as a Mathematics Support Lecturer (Aiping Xu) ..... 7
Teaching the Teachers: Statistics workshops for non-science teaching staff (Chetna Patel) ..... 8
Q&A with a Mathematics and Statistics Support Practitioner (Peter Samuels) ..... 10
The Wolverhampton Maths Support Centre (Ruth Fairclough) ..... 10
Conferences and Events ..... 11
Reports and research Publications ..... 12
Contributions ..... 12


## The Next Phase for the sigma Network


Duncan Lawson and Tony Croft, Directors **sigma** Network


We are delighted that HEFCE have agreed to funding of over £800,000 for the **sigma** Network in England over the next three years. Mathematics and Statistics Support (MSS) has proved its worth in many HEIs around the country over the last decade and more. Much has been achieved since the establishment of **sigma** as a Centre for Excellence in Teaching and Learning in 2005: support centres have been set up at many HEIs, countless thousands of students have been helped, more resources for students are available and there is a growing volume of material for staff.

The need for MSS remains as clear as ever. The 2011 ACME Mathematical Needs report indicated that whilst 330,000 new entrants to HE would benefit from having studied some mathematics beyond GCSE, in fact only 125,000 have done so.

One key purpose of the current funding for the **sigma** Network is to further develop the community of MSS practitioners. Those working in MSS have traditionally been co-operative and collaborative, offering support where they can to newcomers to the field. There has always been an openness to the sharing of resources and expertise. This is essential, because often practitioners are isolated within their own institutions – either as the only "maths specialist" in a

broad academic support service or as the only “support specialist” in a mathematics department where the primary focus is on research. The regional hubs will continue to play a key role in providing an environment in which there can be sharing of good practice and mentoring of new practitioners.

A second important goal is to reinforce the message of the value of MSS to senior colleagues within institutions. This has been gathering momentum over the last two or three years – for example, around a dozen universities mention mathematics support in their OFFA Access Agreements. However, there is a need to further consolidate the growing reputation of MSS so that it is not viewed by senior managers as a nice-to-have-luxury but an essential feature of an excellent student learning experience. We will work closely with other bodies with interests in this area, such as the Higher Education Academy and the Nuffield Foundation to ensure that issues around mathematics and statistics are prominent on the academic agenda.

Finally, part of the funding will be used to promote new developments of different kinds. There will be some money available for institutions that wish to initiate mathematics and statistics support; grants for others to develop new resources, including using resources for mobile learning; and opportunities to engage students as summer interns to contribute to the enhancement of MSS.

There is much work to be done to ensure the continued success of MSS, but we have every confidence that within the community there is the expertise, the desire and the commitment to make this happen and we look forward to working with MSS practitioners throughout the **sigma** Network to bring this about.

## An essential funding boost for mathematics and statistics support across the disciplines

David Bowers, Chair **sigma** Network

As Chair of the **sigma** Network for cross-university mathematics and statistics support, I am in regular and frequent contact with tutors in universities across the country who are committed to helping students succeed in these essential underpinning skills.

The majority of students who need to master quantitative techniques are not studying mathematics or closely allied disciplines such as engineering. They are nurses who need to calculate drug doses accurately; or social scientists who need a sound grasp of statistics and data; or event management students who need to forecast income and profit. Just the other week I ran a workshop on statistics for performing arts students who needed to quantify the impact of dance on the self-confidence of deprived teenagers. Mathematics and statistics are all-pervasive, and all students should be entitled to support in acquiring and consolidating these skills.

That is why the three year funding to **sigma** from HEFCE is so important, and so timely. A recent study by the Organisation for Economic Co-operation and Development (OECD) found that young adults in England came 21st out of 24 developed countries for numeracy. This combination of increasing demand for maths skills and relatively weak baseline competency means that the funding will be put to good use.

Tony Croft and Duncan Lawson describe above the various elements of the **sigma** programme. My role as Chair of the **sigma** Network will be to provide a regional and national forum for those tutors working in maths and statistics support centres at universities up and down the country. Our network of regional Hubs will bring tutors and practitioners together on a local level, to share ideas and

experiences. Providing maths support is challenging and immensely satisfying, but tutors can on occasion feel isolated. The **sigma** Network will champion their role, provide training events, share resources, evaluate activities, mentor new colleagues, and articulate best practice. We will meet, drink coffee, tell jokes, vent frustrations, boast of our successes, grasp new challenges, but always with the aim that mathematical and statistical competence should not be a barrier to success for students in higher education.

## Joe Kyle's Corner - These are not They: Students as Partners

### Joe Kyle

Looking back over more than forty years of teaching university mathematics, much has changed and a great deal for the better. However, for much of that time I have listened to negative comments from (some) colleagues who are only too happy to discuss all students as if they belong to one, usually irredeemable, category - "They". Examples would be "Why can't They do any work?" or "Why don't They come to my lectures?". Now I'm not going to pretend that students are all angels, and some can be intensely frustrating but it has never been appropriate to lump all together in such a dismissive way. Working with and observing undergraduates as interns has been a most rewarding experience. I first saw this work successfully at Loughborough where the PALS scheme provides rich and powerful peer support. The few weeks I spent this summer with the interns at Birmingham were tremendously fulfilling for me and I encourage everyone to find ways to work with students as partners. They will surprise you and, I believe, bring you to regard your students in a new light: you will soon discover that not all students are "They"!

For further details of two of these projects, read the reports from an intern's perspective by Beth Low on the Cardiff Undergraduate Research Opportunity scheme and Jack Tabeart on Peer Assisted Learning at Lougborough University.

## sigma funding opportunity – new centres initiative / centre enhancement initiative

### Call Announcement Date: November 29th 2013

**sigma** – the national Network for cross-university mathematics and statistics support - is pleased to be able to offer funding to pump-prime the development of new mathematics and/or statistics support centres and the development of substantially new lines of activity within existing centres.

Available through an award from HEFCE, the funding is available to five English Higher Education Institutions for two years [up to £10,000 for 2013/2014 and up to £5,000 for 2014/2015]. The closing date for applications is **Friday 14th February 2014**. Note a second call for a further five new centres will be made later in the academic year 2013/14.

For further information, including guidance notes, key dates and the submission form, please go to http://www.sigma-network.ac.uk/news/ Informal contact about all ideas for submission is strongly encouraged. Please contact Moira Petrie.

## Emma Cliffe – South West and South Wales Hub co-ordinator

Emma has a background in mathematics, computer science and mathematics support. She has taught and supported the teaching of mathematics at higher education level for 12 years. In her current role as the Mathematics and Statistics Resource Centre Development Officer at the University of Bath Emma is responsible for developing and delivering resources, guidance and support for students with specialist mathematics support requirements across all degree programmes. This includes delivering drop-in support, study skills for mathematics sessions, an induction programme in mathematical skills and content for non-standard entry students and continuing development work in methods to support disabled students in mathematical subjects.

In addition, Emma has provided specialist academic and technical support for disabled students studying mathematical subjects for 9 years and she coordinates AccessMSORWG, a network of people with expertise and interest in access to mathematical content for disabled students.

Emma has been involved in South West and South Wales Hub activities and takes over from Jane White, University of Bath, as Hub co-ordinator.

## Leslie Fletcher – North West & North Wales Hub co-ordinator

During his 45 years as a university academic, Leslie Fletcher has published more than 30 papers in various branches of pure and applied maths, been head of a large department and retired twice so far! For most of the past 20 years he has delivered access-level mathematics courses entirely on-line so continues to be interested in e-learning and computer-aided assessment. He is very keen to promote sharing of learning and teaching resources, having managed t he FETLAR Open Educational Resources project in 2009-10.

Aided by a grant from **sigma** he established Liverpool John Moores University's Maths Resource and Support Centre at Easter 2012 and took over the reins of the North West and North Wales Hub in October 2013.
Between April and July 2012 he was a **sigma** Visiting Fellow at Coventry University, playing a large part in preparing the report on **sigma**'s highly-valued contribution to the National HE STEM programme. Leslie played an active role in the development of the **sigma** Network website www.sigma-network.ac.uk.

## CETL MSOR Conference, Coventry University, 10/11 September, 2013

### Joe Kyle

I always look forward to this conference. One of the attractions is the way the organisers seem to manage just the right balance between continuity and evolution: you can be sure that you will catch up on developments from those who had attended in previous years as well as making new connections with colleagues reporting on projects that are in their infancy.

Beth Low and Jack Tabeart at CETL-MSOR 2013

Two great themes dominated the meeting this year: e-Assessment and Mathematics Support and there is clearly much exciting new work underway in both areas. But I detected two different tones here: varying though the methodologies in Mathematics Support are, I had a sense of a community working together, respecting differences but agreeing on the overall direction of travel. Those in e-Assessment, however seemed to be more exercised over different means of delivery (for example) and could be missing an opportunity to maximise what they might develop as a group.

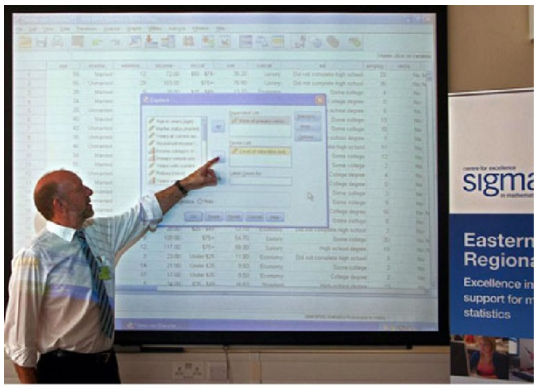
It would be outrageous to pretend that nothing else was discussed. Far from it: one of the charms of CETL MSOR is the range of topics covered and this year these included the service teaching landscape, innovative approaches to teaching, international mathematical skills, outreach, and graduate skills.

All three plenary sessions were thought-provoking and stimulating, each quite different from the others. Chris Sangwin set the scene for subsequent discussion in e-Assessment and Jeff Griffiths reminded us of the ongoing importance of Operational Research. But for me, the most rewarding session was the third plenary admirably delivered by undergraduates from Birmingham, Loughborough, and Cardiff - the venue for the 2014 meeting.

## News from the Eastern England sigma Hub

### David Bowers

As its final event for the 2012/13 year, the Eastern England Hub ran a one-day “SPSS Boot Camp” at University Campus Suffolk. This meeting was organised to address an emerging need on the part of mathematics support tutors who are less confident with statistics than other areas of mathematics and numeracy, namely how to use (and support students to use) the popular statistical software package SPSS. We covered: the SPSS interface; defining variables and coding data; producing descriptive statistics and graphs; correlation; simple significance testing; interpreting the SPSS output window.




SPSS Boot Camp

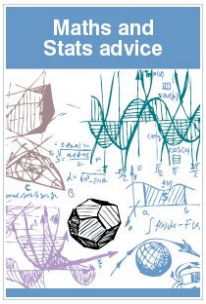
Fourteen participants from nine universities across the region and beyond registered for this intensive “boot camp” training! Feedback was extremely positive: “It was all just totally professional and absolutely pitched at the right level”. We hope to share this event across other **sigma** regions in

2013/14.

For 2013/14, we are planning a training day on using interactive mindmaps to help students visualise the connectedness between key mathematical concepts, and a “swap shop” meeting for sharing and evaluating mobile apps. We will also continue to arrange networking lunches where staff working in newer maths support centres in the region can share ideas and concerns with those who have more experience in this provision. Details of forthcoming events will be posted on the **sigma** Network website (http://www.sigma-network.ac.uk/events) , or contact Hub Co-ordinator David Bowers directly (d.bowers@ucs.ac.uk).

## Mathematics and Statistics Support at the University of Glasgow

Shazia Ahmed




Mathematics Support at Glasgow was established in May 2008 following a recommendation made by the Retention Working Group at the University. The service forms part of the Student Learning Service (SLS) within the Learning and Teaching Centre.

Initially, a Steering Group consisting of representatives from all numerate courses provided advice and guidance to the service. The Maths Adviser reported to the Steering Group three times during the first year. After this, the Steering Group was disbanded and the service now reports to the Learning & Teaching Committee along with the rest of the SLS.

There is one full-time Maths Adviser available who provides mathematics support, and when funding is available, a part-time tutor is recruited to provide statistics support. The remit of the service is to provide numeracy, mathematical and statistical support to all first year undergraduates. Support is also provided to other undergraduates studying first year level mathematics and statistics.

The service is open from 9-5 every weekday, and is based on the upper level of the McMillan Reading Room which is a centrally located building on campus, adjacent to the Library. Maths Support has two rooms at its disposal: one is the Maths Adviser’s office where 1-1 maths appointments take place, and a teaching room next door where drop-in sessions, workshops and 1-1 statistics appointments take place. The lower level of the building houses a large study space complete with student computers and printers, available from 8am-9pm Monday to Friday and from 9am-5pm on the weekends. Being independent of any school or college within the university, the McMillan Reading Room is ideal location for the Student Learning Service.

During Freshers Week, SLS staff participate in student induction and take the opportunity to distribute publicity materials. The Maths Adviser and Stats Tutor go to all the maths/stats lectures during week 2 of both semesters to further publicise the service. The reasoning behind this being that (1) too much information is give out during Induction so students forget and (2) having had a couple of weeks of lectures the maths/stats support message becomes more relevant. In addition, posters are placed in all relevant schools and admin staff from these schools keep publicity materials to hand and distribute to students when and as needed.

The Maths Support unit has its own dedicated Moodle site which consists of an appointment booking system, resources from MathCentre and HELM, and links to useful sites offering video tutorials etc. The service has very recently invested in an interactive board which is proving popular with the Maths & Stats tutors and students alike.

Over the last five years, the service has become very well established and is increasingly popular with students. A large number of 1-1 appointments are available each week, and to accommodate the growing demand, four x 2-hour long drop-in sessions are held weekly. During the exam period, drop-in sessions take place every day in the morning and afternoon to accommodate the numbers of

students. The university has recently trialled late opening and to this end a maths support drop-in session was run from 5-8pm. This was hugely popular and very well-attended. There is a possibility that this could become a regular feature. Feedback regarding maths support will be collected from students using short questionnaire on Moodle at the end of each semester.

The Maths Support unit also runs other informal activities for students in collaboration with colleagues in SLS, particularly with the Effective Learning Adviser for the College of Science and Engineering. These include maths film afternoons, where a mathematical discussion follows a maths-themed film, and a knitting group for stress relief which is attended by university staff and students.

A wish list for the maths support service would include additional staff: a permanent stats tutor and an additional maths tutor to offer support for level 2. Items on the wish list would include copies of recommended texts from the maths/stats courses, a mobile device such as a tablet, a scanning device to aid the taking of attendance and some mathematical art to adorn the walls.

Some advice for someone starting up a maths support unit would be:

1. Advertise a lot. Go to Open Days, Induction events and Freshers' Week.
2. Meet with as many members of staff teaching maths courses as possible. They are very helpful and offer great advice.
3. Make friends with admin staff in the Teaching office. They have access to all the course Virtual Learning Environments and will add your contact details there.
4. Give out bookmark/postcards to students with contact details. Other freebies like the Facts & Formulae sheets are always appreciated.
5. Maintain links with **sigma** and other networks like the Scottish Maths Support Network and the Irish Maths Support Network. The annual meetings are excellent for exchanging ideas, networking and moral support.

http://www.gla.ac.uk/services/sls/mathsandstatsadvice/

## Personal Experience as a Mathematics Support Lecturer

Aiping Xu

I have enjoyed every moment of working in the Mathematics Support Centre at Coventry for more than three years. Due to its drop-in nature I can't really anticipate what question a student might bring in next, which is actually the charming and challenging bit of this work. I prepare myself with as wide a knowledge as possible then try to pitch my answers at the right level for individual students. Here are some personal tips:

### 1. Work closely with module leaders

Study carefully their teaching materials and treat their mathematical questions in their contexts. We are there to provide extra support to their students, to those who are left behind or to those who need to be stretched further mathematically. It's useful for us to advertise our service whenever possible. However, it's vital for module leaders to mention our service when our support is most needed. Our service is two-way: we need get students to come to us and it is of the same importance that we provide them an excellent service so they'll come back next time they need support. This proves effective here at Coventry with BES (Business, Environment and Society)

students. Last year the Mathematics Support Centre attendance reached a new high (more than 8,200 visits) with 20% from BES students, compared with 11% the year before.

### 2. Listen to students, ask them questions, and understand their needs

Students have very different experiences in learning mathematics and we have the privilege to listen to their needs. They probably have things in mind when they come to us, which might be right or wrong, and it's vital for us to understand their needs so to provide tailored support. Sometimes it's harder for us practitioners to find out what goes wrong in other people's solutions than to provide our own solution. However, this greatly helps those students if we can use their work as the starting point for the guidance we offer. Encourage students to talk and engage them in discussion so they can benefit mostly from our support.

### 3. Show students my solutions and share my personal experience

I always put great effort in helping students understand their methods better. However, when there are different methods which involve solving similar questions that come into my mind, I ask students if they are interested in alternatives. If they so choose, I offer different methods and explain advantages and drawbacks of different methods whenever possible.

### 4. Be friendly and consider students' difficulties and put myself in their shoes

Depending on what we were taught and what we've practised, we may find some aspects of mathematics more difficult than others. No matter how easy or hard the question is, I stay friendly and always try to use simple language, examples or diagrams, to show students why and how they have got things wrong. After making sure students understand their questions correctly I leave them to address their questions but come back to check if they are happy with what they have achieved. I believe that to learn maths well you need firstly understand it thoroughly then do loads of practice. Practice makes perfect and you consolidate your maths knowledge through practising.

My personal experience may be different from yours but if you think mine is helpful and would like to have more details please contact me, Aiping Xu.

## Teaching the Teachers: Statistics workshops for non-science teaching staff

Chetna Patel

The Maths and Statistics Help (MASH) Centre at the University of Sheffield ran a series of workshops in statistics for members of staff from the Linguistics Department. The workshops were requested for delivery by MASH because of the approachable nature of the Centre. Deemed a fruitful endeavour because of the expected outcome of better prepared teaching staff, the workshops took place earlier this year over a period of 12 weeks. This is a brief review and reflection on the programme.

**Figure 1: Statistics Reading Group and Teaching Staff**

To ensure better understanding, the material covered basic introductory statistics topics and contextual references of statistics within linguistics research. This created two issues, one related to

matching the topics to contextual material and the other and the other was a long-term issue; transferring the learning to other analyses.

The series of workshops were especially important as we wanted to engage with non-science departments to help with the University's aim to produce numerate graduates.

Although MASH is a student support service, in this instance we took on teaching the teachers because these members of staff had recognised a need for developing their statistics skills and had resolved to begin addressing this need by setting up a reading group. Together with a Linguists lecturer and specialist in R we were happy to facilitate this learning activity.

The perceived advantage of this approach of teaching the teachers is that adding to the statistical skills of the participants, will help research output and interpretation of other research. More importantly, they will be able to provide clearer presentation of statistics teaching and better prepare their students for project work.

The programme was made up of seminars, drop in sessions, hands on workshops using the statistical software R, and discussions. Guest speakers were scheduled in over the period to inspire and further contextualise the programme.

**Reflection**

The programme was ambitious in terms of how much it sought to cover within a short period. Although there was the obvious benefit from exposure to statistical skills, software and contextual preparation, we only managed to scratch the surface. Issues related to transferability and depth of understanding still need to be addressed. Some of the staff on this programme have already made use of their learning and provide better guidelines for their student projects.

As requested, the staff were given the option to choose which of the workshops to attend. This caused problems as some decided to not attend the earlier basic sessions and found it difficult to understand the more complex sessions that followed.

Another observation was that even though this was supposed to be a reading group, there was an expectation from the participants that the sessions themselves would be enough to learn the skills necessary and the self-directed pieces of work were not carried out. This had a considerable impact on covering all the material within the period.

When MASH were approached to run these workshops, the topics to be covered and computer package to be used had already identified. Whilst MASH insisted on the introductory sessions, on reflection, further discussions should have taken place with the group on using a simpler package and for the inclusion of more foundational statistics topics before moving to the complex statistical methods. These experiences and the feedback collected (see Table 1) from the participants will be used to develop the programme for delivery at a later date.

| |
|---|
| *"Content too complex"* |
| *"I missed the introductory sessions which I later realised I needed to have gone to"* |
| *"Longer sessions with more follow-up and hands on sessions on real data"* |
| *"Admittedly I could have put more effort into studying on my own"* |
| *"I think we are much more aware of the gaps in our own knowledge and skills now"* |

Table 1 - Participants' feedback

## Q&A with a Mathematics and Statistics Support Practitioner

Peter Samuels, Birmingham City University (BCU)

**Q: Do you have a tip or is there something you do which may be of benefit to others supporting students in their learning of mathematics or statistics or to those running support centres?**

**A:** We don't have a maths support centre at BCU so I will restrict my reply to those supporting students in the learning of mathematics or statistics. The main areas I help students in are basic numeracy and applied statistics.

Students with basic numeracy queries are often quite anxious and may have had a bad experience of learning maths at school. If this is the case I firstly seek to address their attitudes towards maths learning. Also they often put themselves under too much pressure so I get them to think about trying to do things that are not too easy and not too hard and to build up to examination conditions slowly. I then encourage them to plan their learning (e.g. a realistic number of hours per week based on their other commitments, etc.) and monitor their progress so that they can gain confidence through small successes.

Applied statistics queries come in all shapes and forms. Having a course of statistical methods workshops I can refer students to is very helpful in tutorials (we are currently in the process of releasing these to  under their Community Project). We have also found it very beneficial to run courses in statistics and statistical software under Staff Development as this has raised our profile with staff and students; course attendees often recommend our services to others. The most important lessons I have learnt when re-training as an applied statistician were the differences between data types, the statistical modelling process and when to use parametric and nonparametric tests. In particular, I never knew about the robustness of parametric tests when their assumptions are violated (details will be shared in our statistical methods workshops!).

**Q: Do you have a link to a useful resource you would like to share?**

**A:** We recommend Newcastle University's site for employer numeracy tests (http://www.ncl.ac.uk/students/mathsaid/resources/numeracy/numerical.htm). We also recommend the stand alone games in *Manga High* for maths anxious students (http://www.mangahigh.com/en_gb/games) especially *Ice Ice Maybe* (estimation) and *Flower Power* (fractions, decimals and percentages).

## The Wolverhampton Maths Support Centre

Ruth Fairclough

The Wolverhampton Maths Support Centre was set up by the Mathematics department in April 2012, using matched **sigma** funding. We set this up as part of the University's ``Skills for Learning'' centre where literacy based support has been offered for a number of years. The Mathematics Support Centre is located in the Library of the main campus 11am – 4pm Tuesday to Thursday, and Wednesday afternoons in one of the satellite campuses, (where most of the engineers are based). The Centre is staffed by Maths postgraduate students (who are trained) and maths academics. There is also a small statistical consultancy service available by appointment.

The motivation for setting up the centre was the increasing number of non-mathematics students

coming to us directly asking for help. We did this out of the goodness of our hearts, but felt it would be better to have a proper support centre to refer students to. The majority of students who come to the centre are non-mathematics students, such as Nursing, Pharmacy, Business and Engineering.

The usual marketing material is completed – it is prominent on our website, only 2 clicks away from the homepage (http://www.wlv.ac.uk/Default.aspx?page=30285). Lecture shouts are done in Freshers Week and publicity material is given out. We have found word of mouth the best way of marketing the Centre; in fact we can't market the Centre any more than this, as we don't have the capacity to help any more students than we currently do.

Students who attend are asked to fill out feedback sheets---this feedback is nearly 100% positive.

The most interesting request we have had was one of the first students we had. She was an undergraduate forensic science student who asked for help with some statistical analysis for her undergraduate project. She arrived with a Lever arch folder full of detailed chemical analysis of … condom lubricants! She was there for about 2 hours and it was very difficult to supress the giggles whilst trying to figure out how she was going to see if there was a difference between strawberry or chocolate flavoured Mates!

The challenges of the support centre are many, instilling confidence in students who did not expect to study mathematics in their courses, putting right mathematical techniques that had incorrectly learned (or dare I say been taught). There are also the inevitable day to day challenges of the administration – getting our postgraduate students paid and issues to do with rolling over funding from one financial year to the next.

The most useful resource is our staff, including the postgraduates; getting this right is the most important aspect of setting up a Maths Support Centre: good staff working out of a broom cupboard is more likely to succeed than lousy staff in a shiny purpose built room.

If we had a £1,000 windfall we would spend it on extending the service, especially to satellite campuses.

## Conferences

**Diversity: challenges and opportunities-enabling and supporting mathematics learning in a diverse student population**
The 8th Annual Irish Workshop on Mathematics Learning and Support Centres - Friday 31 January 2014.
Call for Contributions: deadline **19 December 2013**.
There is no charge to register for this event. For further information, please go to the webpage for this conference.

**HEA STEM Annual Learning and Teaching Conference 2014: *Enhancing the STEM Student Journey***
30 April -1 May 2014, University of Edinburgh
Registration is open now at the online booking page. Submissions are being invited for the conference poster competitions (for undergraduates, postgraduates and staff). The template for poster submissions is available online and the deadline for submissions is **Friday 24 January 2014**.

## Events

**HEA STEM (Maths, Stats & OR): Extending Approaches to Learning in the Mathematical Sciences Using Clickers: Concept Testing and Different Approaches to Feedback**
Thursday 13 February 2014, Plymouth University
For further information and to book a place, please go to the events page for this workshop.

**HEA STEM (Maths, Stats & OR): Workshop for Postgraduate Students who Teach Mathematics, Statistics and Operational Research**
Friday 28 February 2014, International Centre for Mathematical Sciences, Edinburgh
For further information and to book a place please go to the online events page for this workshop.

**HEA (Scotland): CfE Tackling Transition Events Series – Mathematics and Statistics in STEM Disciplines**
Wednesday 22 January 2014, University of Glasgow
There is no charge for attending this event. For further information and to book a place please go to the online events page.

## Recent reports and research publications

This regular column lists recent publications relevant to mathematics and statistics support practitioners. Where available, links are provided. If you are aware of any publications that may be of interest to this community, please will you send them to J.Matthews@lboro.ac.uk. It is our intention to compile a bibliography which will be available from the **sigma** Network and **math**centre websites.

### Reports

Willets, D. (2013) Robbins revisited: Bigger and better higher education. London: The Social Market Foundation http://www.sigma-network.ac.uk/wp-content/uploads/2013/10/SMF_Robbins_Revisited_17_10_13_WEB.pdf

### Research publications

Shazia Ahmed, Jane Joy, and Deirdre Moriarty: (2013) *An Evaluation of the Use of a Nursing Medication Formula Card as an Educational Tool*. MSOR Connections 13(1), 41-44. DOI: 10.11120/msor.2013.13010041

Brendan Cooney (2013) *To investigate the potential of emerging e-Learning technologies to enhance online support for students of mathematics*, RMIT: Learning and Teaching Investment Fund final report, http://mams.rmit.edu.au/p73kv5mszr2t.pdf

Tony Croft, Shazia Ahmed, Verity Aiken, Leslie Fletcher, Michael Grove, Andrew Mead, Chetna Patel, and Robert Wilson: (2013) *Offering Training to Postgraduates who Tutor in Mathematics Support Centres*. MSOR Connections 13(1), 3-7. DOI: 10.11120/msor.2013.13010003

Chrystalla Ferrier. (2013) *A Multifaceted Approach to Numeracy Support for Life Sciences Students*. MSOR Connections, Volume 13, Issue 2: 24-30. DOI: 10.11120/msor.2013.00013

Janette Matthews, Tony Croft, Duncan Lawson, and Dagmar Waller. (2013) *Evaluation of mathematics support centres: a literature review.* Teaching Mathematics Applications. first published online September 3, 2013 doi:10.1093/teamat/hrt013

Ní fhloinn, E., Bhaird, C. M., & Nolan, B. (2013). *University students' perspectives on diagnostic testing in mathematics*. International Journal of Mathematical Education in Science and Technology, (ahead-of-print), 1-17., DOI:10.1080/0020739X.2013.7905

Nilsson, Galina and Luchinskaya, D. (2012*) Provision of maths support for student in higher education institution*s, The 40th Annual Congress of the Nordic Educational Research Association:

March 8-10, 2012, Copenhagen, http://urn.kb.se/resolve?urn=urn:nbn:se:hv:diva-4859

Nilsson, Galina and Luchinskaya, Elena. (2012) *Do We Deliver Effective Maths Support for Students?* The European Conference on Educational Research 2012: Cadiz, 18-21 September 2012 http://urn.kb.se/resolve?urn=urn:nbn:se:hv:diva-4860

Barbie C. Panther, Samantha Black, Jo-ann Larkins (2013) *Preparing students for university mathematics through a maths readiness workshop*. Proceedings of the Australian Conference on Science and Mathematics Education, Australian National University, Sept 19th to Sept 21st, 2013, page 57, ISBN Number 978-0-9871834-2-2.

Glynis Perkin, Tony Croft and Duncan Lawson. (2013) *The extent of mathematics learning support in UK higher education—the 2012 survey*. Teaching Mathematics Applications first published online August 30, 2013 doi:10.1093/teamat/hrt014

Matthew Taylor, Ollie Bond, Callum Anderson and Andrew Kennedy. (2012) *Summer internships in sigma-sw*. MSOR Connections 12(1), 23-27. DOI: 10.11120/msor.2012.12010023

C. Trott, S. Drew &, and H. Maddocks. (2013) A Hub Service: *Extending the Support Provided by One Institution to Students of Other Local Institutions*. MSOR Connections 13(1), 18-23. DOI: 10.11120/msor.2013.13010018

Cheryl Voake, Lisa Taylor and Rob Wilson. (2013) *Transition difficulties from FE to HE – What is the situation and what can we do about it?* MSOR Connections, Volume 13, Issue 2: 6-14. DOI: 10.11120/msor.2013.00014

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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. Please contact Janette Matthews (J.Matthews@lboro.ac.uk). The deadline for the next edition is 15 February 2014.

For more information, visit http://www.sigma-network.ac.uk
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