

NEWSLETTER

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Sigma Network Steering Group

Editor's Introduction

Lois Rollings, Maths, Stats & Numeracy Lecturer | Middlesex University

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Welcome to the Autumn edition of the **sigma** Network newsletter.

My thanks to everyone who has found time to write and submit an article despite, I am sure, being busy preparing for the new academic year.

What shines through from the varied content in this issue is that the **sigma** Network is thriving. Amongst other articles in this newsletter you will see introductions from new members, reports of past events, details of new resources and a suggestion that 'support' is not the right word to describe what we do.

It was a pleasure to see many people in person (often for the first time) at the CETL-MSOR conference in Cardiff in September. As always, I came away feeling inspired for the term ahead and having learned so much from others.

Finally, the views expressed in these articles do not necessarily constitute recommendations from the **sigma** Steering Group or any associated parties.



NETWORK NEWS

Welcome from the Chair of the sigma-Network Steering Group

Alun Owen, Chair of sigma Network and Head of Statistics Advisory Service | Coventry University

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Dear colleagues,

I hope you all had restful summer and managed to take a break from your busy schedules and teaching commitments (at least for those of us based in the northern hemisphere ☺).

I managed to get along to the CETL-MSOR Conference in Cardiff earlier in September. As well as finally enjoying some warm (hot?) sunny weather, it was great to catch up with many new and "not so new" colleagues and friends. What struck me at the conference this year, was just how the mathematics learning and teaching community continues to be blessed with many younger and new entrants to the profession, all of whom display such passion and commitment to helping students. More importantly for us, what also struck me was how much this passion and commitment extended to sharing ideas, good practice, and even failings, to help other colleagues to do what they do but better. For me this altruism that you all display is what makes the **sigma** Network what it is, a network of colleagues networking to help each other to better help our students, so thank you all.



I believe that one of the key components to seeing our network thrive is through the regular events we try to hold at least on a monthly basis, although we may not always succeed at this. The online coffee mornings held once every two months have been well attended and have led to some very valuable discussion and

exchange of ideas. Thank you to all those that have hosted these online coffee mornings, all of whom have agreed that it is actually quite easy. If you would like to host one in the future please get in touch with me at chair@sigma.network.ac.uk. We can provide support if you need it.

I also wanted to say thank you to Andrea Cowen at the University of Bedfordshire, for collecting feedback from you about the structure and organization of the coffee mornings. This has been invaluable and we think we have responded to that, for example by introducing a “speed-dating” approach with folks in very small groups in break out rooms at the start of each coffee morning, to just say hello and just get to know each other a little. Thanks to Sue Pawley from the Open University for then showing us the way in how to organize this at the last online coffee morning at the end of July. We hope this will allow colleagues who are new to the network or who haven’t joined many of these sessions before to feel included and to also to get to know others working in the same field as them. We plan to continue with this at future coffee mornings, but if you have any feedback to offer about anything we do please do let me know at chair@sigma.network.ac.uk.

In terms of other events and workshops, please keep your eye on the Jisc mailing list and the website as we will shortly be advertising a programme of events for 2023/24. Some of the topics we already have lined up include workshops on the use of Generative AI in maths and stats support, how to help students with panel data analysis and supporting students with assessments/exams. If you would like to suggest a topic to help your own personal development, or if you would like to offer to share your ideas or good practice at a future workshop or even host a workshop (online or in-person), please do let me know at chair@sigma.network.ac.uk.

Please remember that facilitating or contributing to workshops of this nature are very much aligned with Descriptor 3 of the Professional Standards Framework for teaching and supporting learning in higher education 2023, which aligns with evidence for recognition as Senior Fellow of Advance HEA.

The Steering Group continues to work hard to guide the Network in the direction you would like it to and so I wanted to say thank you to all of those colleagues on the Steering Group for giving up their time to keep us all supported. Two members of the group had to step down this summer after many years of contributing to the group, so I wanted to thank Theresa Wege and Mary Lorimer, both from Loughborough University, for all your hard work and commitment to the Network. The Network is therefore currently inviting self-nominations to join the Steering Group to fill these two vacancies as elected general representatives. The call went out via the Membership list as you need to be a member to join the Steering group. You can become a member of the sigma Network for free by going to <https://www.sigma-network.ac.uk/apply-for-individual-membership/>. The call closes on 9th October 2023.

Finally just to advise that the Annual General Meeting has been moved and will no longer be held as it has in the past at the CETL-MSOR Conference. Instead this will coincide with an online Coffee Morning in November. This will include formal ratification of the Steering Group following the changes above.

That’s all folks. Have a great autumn and winter and I hope to see some of you at one or more of our upcoming events. But if you would like to get in touch with me about anything related to maths or stats support please drop me an email at chair@sigma.network.ac.uk.

With very best wishes

Alun Owen

FUTURE EVENTS

Sigma AGM and Coffee Morning

Thursday 9th November 10:30 – 12:00, Online, hosted by Coventry University.

See announcements from Alun Owen on the jscmail list. This will be held on the Engagelie platform.

The link will be circulated nearer the time.

REPORT

Feedback Following April's Coffee Morning

Anthea Cowen, Learning & Development Tutor (Mathematics & Statistics) | University of Bedfordshire

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I had attended and enjoyed a few **sigma** Coffee Mornings before nervously hosting my first one in April this year. With attendance at these events generally far below sigma membership, I was keen to hear from those who attended, and those that didn't, on their perspective on **sigma** Coffee Mornings in general as well as April's version in particular.

April's Coffee Morning:

I had run a practice meeting including Alun from Coventry to test accessibility. It went well, but the practice still didn't prevent us having a tech issue on the day of the actual coffee morning, of course! (Fortunately, it was resolved relatively quickly.)

The programme ran quite simply:

10:30 Welcome and Introductions/current topics

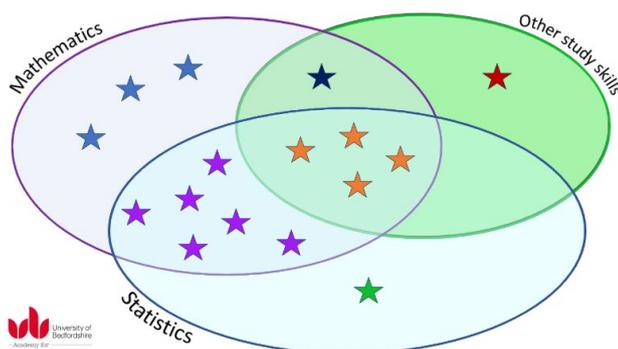
11:00 Ice-breaker activity

11:05 Whole group discussion ChatGPT/attendance/ embedding in curriculum

11:30 Breakout rooms

11:52 – 12:00 Wrap-Up

The first 30 minutes given to introductions and sharing current issues/topics was the trigger for an impromptu and very engaging demonstration of ChatGPT by Ed Southwood of Bath, before breakout rooms on a selection of current topics/issues, and the final wrap-up.



Ice-breaker: A short interactive exercise to encourage everyone to write/type on the screen and share their maths/stats/other support involvement (names anonymised).

Feedback from participants:

We had 10 responses from a total of 17 attendees of April's coffee morning. These 10 identified that their top 2 reasons for attending were from these 3 options:

- To connect with colleagues at other institutions (5 – 1st choice; 5 – 2nd choice)
- To hear about and discuss topical issues in our network (5 – 1st choice; 4 – 2nd choice)
- To get feedback on a specific topic (1 – 2nd choice)

All confirmed that they had met their objective in attending and provided favourable comments about the meeting.

Examples of free comment:

"Thanks for these events – I think they are very valuable for regular connection with the wider maths/stats support community"

"Coffee mornings are a good way to stay in touch informally"

"Thanks – this ran smoothly and was at a good pace"

Feedback from those not present in April:

We received responses from 14 who had not attended April's meeting. Workload and diary clashes prevented 11 from attending but indicated they would have attended if available. Amongst those 3 remaining, reasons for not attending included:

- finding the online setting not the best format for general chat (too contrived)
- finding conversation often dominated by a few vocal people
- not wanting to attend when there was not a clear agenda available in advance
- previously feeling unwelcome and not having had presence acknowledged

Overall Summary

Other feedback was obtained to help guide for further events, e.g. ideally at least 6 weeks' notice of event; regular reminders; advance notice of main topic; favoured days/time ("It varies" was a popular answer!). All this information was passed through to the sigma Network Steering Group and a guidance sheet produced for future hosts. Overall the impressions given were that these events already have value, and yet there are achievable ways in which we can improve them to serve a wider audience and help strengthen our connections in the network.

If you haven't yet hosted a coffee morning, I would encourage you to give it a go! It is excellent to see different faces leading these events and, with everyone having something unique to bring in this world, it helps deepen the richness of our network. See you there next time 😊.

REPORT

sigma maths support tutor training workshop, Greenwich

Tony Mann, Director, Greenwich Maths Centre | University of Greenwich

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The University of Greenwich hosted an online **sigma** maths support tutor training workshop, on Tuesday 5 September 2023. While the event was timed to train postgraduate students who will be taking maths support sessions at Greenwich in the new academic year we were very happy to open the event to others through the **sigma** Network email list. We were delighted that it was attended by seven from Greenwich, four from other UK universities, three from Ireland and five from Czechia. An intensive morning of activities was led by Dick Quibell and Tony Mann from Greenwich, using materials prepared by **sigma** which are freely available on the **sigma** website, and certainly the Greenwich postgraduate attendees reported that the training session had given them confidence for their roles.

Greenwich Campus, University of Greenwich with the Royal Observatory behind (photo by permission of the University of Greenwich)



REPORT

Sigma online event: Embedding Maths & Stats Support.

Lois Rollings, Maths, Stats & Numeracy lecturer | Middlesex University

L.Rollings@mdx.ac.uk

It was a pleasure to welcome 43 colleagues from at least 24 institutions to an online event on *Embedding Maths & Stats Support* in May.

People joined from across the British Isles and we even had a couple of participants who stayed up late in Australia in order to attend. Some colleagues dropped in for just part of the meeting. This demonstrated that online events can allow more people to take part.

Presenters considered the idea of embedded support from various different angles, from embedding statistics in biology practicals to supporting staff rather than students. Speakers described their successes and the challenges they have faced. The afternoon ended with small-group discussions where participants could share their own experiences and then report back to the wider group.

Some themes which emerged were the challenges involved in engaging with subject lecturers, some of whom may also lack confidence in maths or stats, and how starting with 'allies' can help overcome any resistance. There was also some discussion of maths and stats anxiety.

My manager, who joined part of the meeting, commented:

You had really good turn out and there was such a positive feeling in the room with a good selection of presentations and people clearly identifying with the speakers and gaining new insights.

My thanks to all the speakers, several of whom fitted their presentation into a busy day – or in one case their holiday.

REPORT

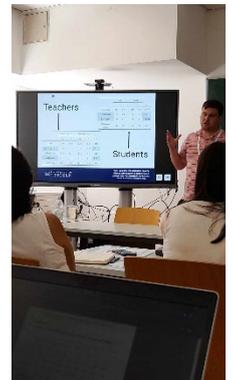
Presenting at the 13th Congress of the European Society for Research in Mathematics Education (CERME13) in Budapest, Hungary

Jamie Smith, Maths and Stats Advisor | University of Lincoln

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Over the summer, I attended the 13th edition of the biannual Congress of the European Society for Research in Mathematics Education (CERME13). The 6-day event, which included a dedicated day for young researchers (YERME), brought together over 900 researchers from across Europe to discuss the latest advancements in mathematics education.

The congress is structured according to c.30 Thematic Working Groups (TWGs) covering a range of themes that are of interest to the MSS community including *TWG8: Affect and the Teaching and Learning of Mathematics*, *TWG10: Diversity and Mathematics Education: Social, Cultural and Political Challenges*, and *TWG14: University Mathematics Education* to name only three.



In addition to my attendance, I was able to present one of my PhD papers titled "How teachers' mathematics anxiety affects their students' mathematics anxiety and mathematics confidence." This study delved into the fascinating and worrying relationship between teachers' personal anxieties surrounding mathematics and how it consequently impacts their students' mathematics anxiety and mathematics confidence.

CERME is an ideal platform for sharing this work with an engaged community of fellow researchers and practitioners in mathematics education, and I would recommend staff and PhD students consider attending in the future.



Improving Accessibility in Maths and Stats Support

Charlotte Price, Associate Professor | Coventry University

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The term 'neurodiversity' is used to describe an ever-changing and expanding group of learning and developmental differences, including dyslexia, attention deficit hyperactivity disorder (ADHD) and dyscalculia, to name just a few. In this article, we refer to students who belong to this group as 'neurodivergent'. Neurodivergent students are entering higher education at an increasing rate and, anecdotally, the number of students who engage with **sigma** Maths and Stats Support here at Coventry University, and disclose learning differences, is growing. As a support team, our awareness of 'signs' of neurodivergence is increasing, but it is clear from our conversations in-house and from discussions with colleagues in the **sigma** Network that we are in the early stages of understanding how best to support these students.



Height adjustable desks in the sigma Centre.

In an attempt to increase our knowledge in this area and to make improvements to our service provision, we are undertaking a body of work around neurodiversity. This began with a survey to explore practitioner experiences of supporting neurodivergent students with their learning in maths and statistics, and some of you may remember completing our survey earlier in the year (further updates on that project to follow soon....). More recently, we employed a student intern over the summer to review our provision and resources, focusing on our physical support centre situated in Coventry University's Library, our website and resources such as worksheets and videos. The student shared her own perspectives as a blind person who also has ADHD and anxiety.

This review has brought to light a number of areas for improvement, some small adjustments and others more significant investments that will take time (and money) to implement. In response to this, we have started to make small positive changes. This has included tidying our physical support centre to remove clutter, clearing the walls of distracting signs and posters and thinking carefully about the seating arrangement to try to provide some private spaces for anxious students to work with a tutor. As we progress with our work, we will be sharing updates with colleagues in the **sigma** Accessibility Special Interest Group with the hope of distributing our learning in this important area across the **sigma** Network.



Clean walls and no clutter

NTF Success for Alun Owen

Duncan Lawson, Director, sigma I Coventry University

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Dr Alun Owen, chair of the sigma-network, was awarded a prestigious National Teaching Fellowship (NTF) when the 2023 list was announced in August (see <https://www.advance-he.ac.uk/awards/teaching-excellence-awards/national-teaching-fellowship/winners>). As many of you will know, Alun has been one of the major drivers of the development of statistics support (as distinct from mathematics support) in the sector. Indeed, one of the reviewers of Alun's NTF application commented

It is hard to see how your commitment to raising the profile of statistical support for HE learning and teaching could be bettered in terms of reach, impact and value.

During the time of the "sigma CETL" (Centre for Excellence in Teaching and Learning), Alun worked firstly at Coventry University and then at Loughborough University – the two host institutions of the Centre for Excellence. He was instrumental in shaping statistics support at both institutions. Having spent time at Worcester University, Alun is now back in Coventry where he heads the University's Statistics Advisory Service.

Amongst Alun's achievements is the website [statstutor](https://www.statstutor.ac.uk/) <https://www.statstutor.ac.uk/> which provides a wide range of free learning resources for use by staff to support their students or by students directly. Long before COVID-19, with funding from the National HE STEM Programme, Alun piloted remote statistics support – giving online support to students at institutions where there was no stats support provision. The experience gained in this project was invaluable when lockdown hit.

Although Alun now has a national profile and spends some of his time developing resources and helping other staff across the University and across the sector improve their skills, he remains a teacher at heart. He still loves spending time working 1-1 with students to help them learn how statistics can help them be better psychologists, sports scientists, dieticians, etc. And it is clear that the students love being helped by him too. As one of them said

"In my life I have had only a handful of people who have truly inspired me, and you [Alun] are most certainly one of them."



Does our language influence the type of students attending Maths and Statistics Centres?

Sue Russell, Academic Skills Manager | University of York

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During the recent CETL–MSOR conference, I was struck by the number of occasions that presenters used the word support. At the University of York, we have tried to remove the word support from all advertising literature and presentations about the Maths Skills Centre services. I mentioned my dislike of the word support to several fellow attendees, and invariably, they asked what I used instead. ‘Advice’ and ‘guidance’ are the words that I use along with ‘boosting skills’ and ‘refresher sessions’.



Some students at the Maths Skills Centre specifically say that they need help. For them, using the word support is likely not a problem and they may use the service irrespective of the way we advertise. Conversely, I have had students at an appointment say, “No, I don’t need help; I just want to go through this”. It is these students who I feel we are not reaching if we restrict our advertising words to include the words support and help.

In discussions with colleagues, Russell group students may not be used to support, as they may not have needed it in their secondary education. Therefore, rephrasing our services may appeal more readily to them. Support also suggests a retrospective view of learning, whereas talking about ‘boosting skills’, ‘refresher sessions’, and ‘advice’ potentially sounds more proactive. We note that significantly more females attend the Centre, even considering the gender split in respective departments. The challenge is to ensure that the Maths Skills Centre services are inclusive and appealing to all students. By changing the way we advertise our services, we aim to attract a broader student base. My challenge is to open a discourse about this. Does our language influence the type of students attending Maths and Statistics Centres?



Hi All

William Kay, Lecturer in Statistics Support | Cardiff University

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I work at Cardiff University as a Lecturer in Statistics (Teaching and Scholarship) in the School of Biosciences. In my role I am responsible for designing and delivering the teaching and assessment of statistics to Y1 and Y2 undergraduates (510 and 460 students, respectively), three Master's level courses (~90 students) and the SWBio Doctoral Training Programme (45 PhD students). The teaching format I employ typically consists of week-long intensive courses comprising lectures and computer-based practicals in a "lecture-workshop" format (see Medeiros Mirra et al., 2023).



I also lead statistics sessions within laboratory and field-based settings, as well as deliver statistics training to students on Week-Long Research Experience placements. In addition to formal teaching, I provide statistics support (through drop-in data clinics and 1-to-1 sessions) to students and colleagues.

I am not a statistician by training. My background is in ecology and it's safe to say my relationship with statistics started out poorly. As a biology undergraduate I used to fear and loathe statistics, always considering myself "not very good at it". This feeling continued through my Master's studies. I regularly remind students of this history, and reassure them that the penny will eventually drop for them too; they need only be persistent in their learning and have faith! For me it wasn't until my PhD that I started to feel even moderately competent with statistics - hopefully I am able to teach students to learn and gain confidence more quickly than I did...



My main areas of scholarship and pedagogic research are around the concept of statistics anxiety and how to mitigate and overcome this in our students. More broadly I am interested in what makes for an effective learning environment for learning statistics, including understanding the effectiveness of statistics support at drop-in clinics. I am currently involved in research projects that involve assessing the landscape of statistics tuition in UK HE institutions, incorporating "Stat-astic Thoughts" into statistics lectures, and designing a new "Statistics Shorts" video series to support statistics learning. I am also working on innovative teaching approaches, such as embedding statistics tuition in biology practicals and assessments. I was extremely pleased to win the 2023 *UK and Ireland Mathematics and Statistics Support Networks Award for Excellence* at this year's CETL-MSOR Conference.

INTRODUCING

Hello to all!

Luis A. Sanchez A, Lecturer in Statistics Support | Coventry University

ae2436@coventry.ac.uk

Greetings everyone!,

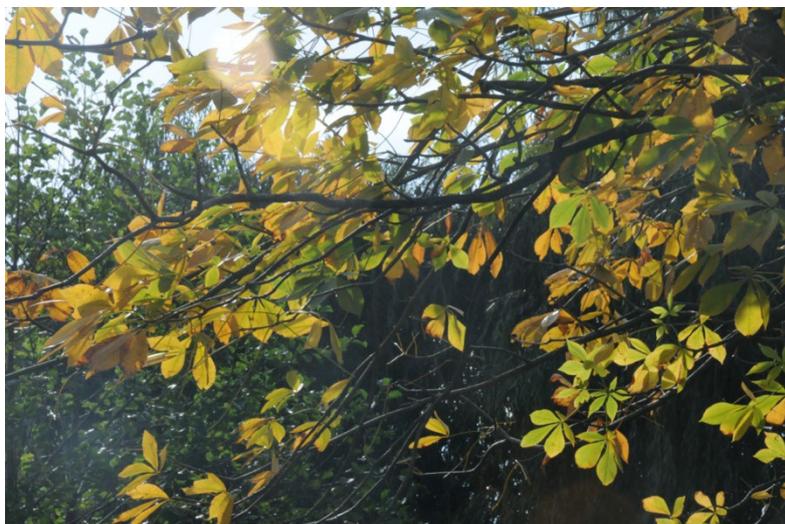
I am Luis A. Sanchez A., currently working in the sigma centre at Coventry University since June of 2023. My academic foundation was laid at The University of Sheffield, where I earned my PhD in Economics in 2023. During this time, I committed 2 marvellous years to help students with statistics queries at MASH in my University, a period that was crucial in refining my skills on this matter.

Currently, at sigma, my primary responsibilities encompass assisting students and esteemed colleagues with stats inquiries of various levels of difficulty, and on the creation of educational materials, fostering an environment of growth and continuous learning.

Outside my professional realm, I have an affinity for learning how to code in Python, reading about artificial intelligence, experimenting with diverse things, and immersing myself in a journey to know interesting places in the UK. Additionally, I am into teaching myself how to draw. My current literary companion is Thinking, Fast and Slow, a book about behavioural economics.

A bit more about my personal journey: Previous to this marvellous PhD journey, I worked in Mexico city as an economic consultant, where I developed skills on data management and the passion to explain complicated things in an easier manner.

Thank you for allowing me to share a bit about myself. I am excited to be part of **sigma** network, an amazing group of brilliant people dedicated to the same things I love, teaching, learning and statistics.



Statistics Shorts

William Kay, Lecturer in Statistics Support | Cardiff University

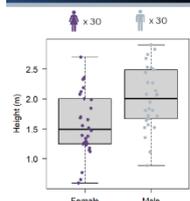
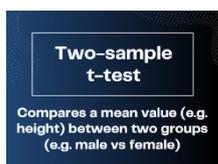
kayw@cardiff.ac.uk

Statistics is a key skill for bioscience students, but for this demographic learning statistics is notoriously challenging; many students suffer from "statistics anxiety" (Onwuegbuzie and Wilson, 2003). Tackling this (major) barrier to learning is hence a priority.

Screencast tutorials have been shown to be an effective tool to enhance student learning of statistics by promoting participation (Lloyd & Robertson, 2012), although classically such video tutorials are long (≥ 10 mins), which may not maximise engagement; evidence suggests that the proportion of time spent viewing such videos decreases with increasing video length (Durt, 2020; Seo et al., 2021). Video tutorials less than 10 minutes in length – including "Shorts" or "Reels" of no more than 90 seconds (as seen on popular social media platforms) – are perceived as entertaining (Guo et al., 2014).



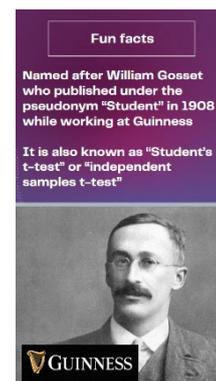
The mobile launch page



T-test screenshot

In preparation for some undergraduate statistics tuition that I am delivering this academic year, I have created a bank of "Statistics Shorts" to use as teaching aids. These address various themes drawn from student feedback: (i) interpreting outputs of statistical tests; (ii) explaining key R functions; (iii) explaining statistical tests; and (iv) configuring RStudio for accessibility. The first of my "Statistics Shorts", which I unveiled at this year's CETL-MSOR 2023 conference, can be viewed on YouTube: [Two-Sample t-Test using R | Statistics Shorts](#). In this short I introduce the t-Test alongside the necessary code to implement it in R. My plan is to integrate these "Statistics Shorts" into formal teaching or provide them as a complementary learning aid. I intend to assess their ability to mitigate statistics anxiety, promote engagement, and enhance student performance.

I was very pleased to receive positive feedback at the CETL-MSOR conference, and would welcome any further feedback from the rest of the **sigma** Network – please do watch the video, it will only take (exactly) 60 seconds of your time! My intention is to make this bank of "Shorts" open-access. If there are colleagues who would like to trial their use as part of their own statistics tuition, please do get in touch. I would welcome collaboration on an Educational Intervention Trial. For those interested in preparing similar materials, I used [Canva](#) to create the video and animations, and [Audacity](#) to record the voiceover – both are software platforms that can be used freely.



Each video contains a Fun Fact

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RESOURCES

Zero to Hero - From negative numbers to calculus: a self study short course for students returning to maths.

Ed Southwood, MASH coordinator and Teaching Fellow | University of Bath

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Written with distance students starting an Applied Economics MSc in mind, [Zero to Hero](#) refreshes students mathematical knowledge from negative numbers to calculus. It is designed to be done in bite sized chunks, each section contains written explanations with examples, a short (less than 5min) video and interactive Numbas questions. It's written in quarto (very similar to markdown) and the source can be found here: <https://github.com/BathMASH/zero-to-hero/tree/vimeo>

The screenshot shows a web page for '8 Quadratics'. On the left is a navigation menu with 13 items: Welcome, 1 Negative numbers, 2 Algebraic expressions, 3 Expressions with brackets, 4 Fractions, 5 Solving equations, 6 Reading mathematics, 7 Straight line graphs, 8 Quadratics (highlighted), 9 Indices, 10 Differentiation, 11 Exponential functions, 12 Logarithms, and 13 Further differentiation. The main content area is titled '8 Quadratics' and contains the text: 'Quadratics often appear in mathematics, they occur when you have something squared, like x^2 . They produce 'U' shaped graphs that can be either way up (depending on the sign of the x^2 term), and, a powerful formula is known that we can use to solve them.' Below this text is a graph of the parabola $y = x^2$ on a coordinate plane. The x-axis ranges from -10 to 10, and the y-axis ranges from 0 to 20. The parabola opens upwards with its vertex at the origin (0,0). To the right of the graph is a 'Table of contents' with links: 'Expanding pairs of brackets', 'Factorising pairs of brackets', 'Solving Quadratics', and 'Simultaneous equations'. There are also links for 'View source' and 'Report an issue'.

RESOURCES

Augmented Reality Manipulatives for Mathematics Education

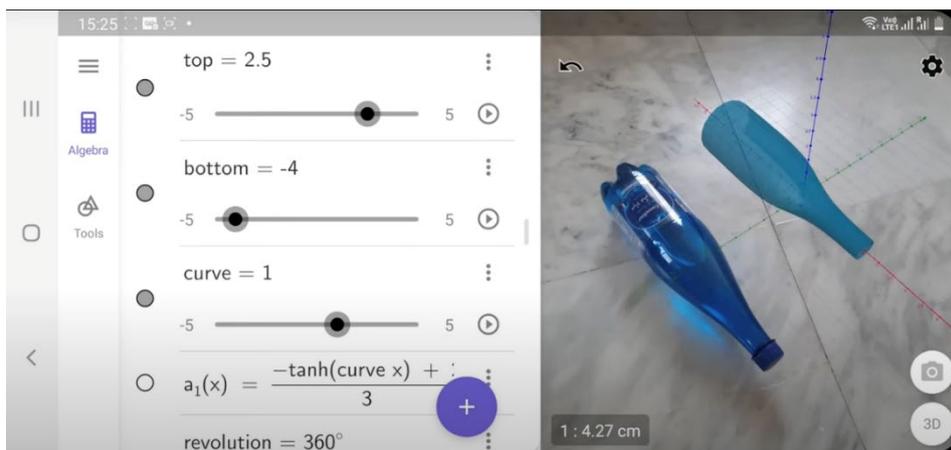
Dan O'Brien, Researcher

danielvadimbrien@gmail.com

I am co-founder of a UCL-based special interest group who collectively research the impact of XR (extended reality) in mathematics education. This is an exciting, highly innovative and rapidly evolving area of digital technology that includes augmented reality (AR), which is a technology that superimposes virtual images onto a real view of the learner's environment. Last October, we presented a suite of GeoGebra 3D AR applets we created at the ATM Conference, to showcase interactively how these can be used as teaching resources – our subsequent article was published in *Mathematics Teaching* issue MT287 (viewable here:

www.atm.org.uk/write/MediaUploads/Journals/MT287/11.pdf; podcast interview with editor Tony Cotton available on [Spotify](#) and [Apple Podcasts](#)). Perhaps surprisingly, many participants subsequently fed back that they would adopt this technology.

Although AR technology is already being used in various formats at Higher Education level – such as the [AR Sandbox developed at UC Davis](#), which has been used to teach fluid dynamics – there is likely to be a significant increase in usage due to the free availability of AR manipulatives within apps that can be accessed and run via smartphones and tablets (such as GeoGebra 3D). A potential example is our AR Bottle applet (www.geogebra.org/m/ras7qpur#material/dzf8qwnu), which straddles Further Mathematics A' Level and undergraduate calculus in utilising volumes of revolution and hyperbolic functions, while situating these concepts in a familiar context.



According to undergraduates surveyed in research I presented at the CETL–MSOR Conference 2022, mathematics–specific digital technology was rarely used by their mathematics (service) teachers. Given recent recommendations from the Royal Society’s Mathematics Futures Programme (<https://royalsociety.org/-/media/policy/projects/maths-futures/educational-technology-mathematics-education.pdf?la=en-GB&hash=54C4864BEEA8E62119FF7604DBA29F29>), this is likely to change – and adoption of XR tools in particular feature among their recommendations. Hopefully, **sigma** members can lead the way with this in universities – where the widespread accessibility of AR apps could in turn make mathematical concepts more accessible to undergraduates.



Steering Group Membership 2023/24

Alun Owen, Coventry University (Chair)

Emma Cliffe, University of Bath (Vice-chair Technical)

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