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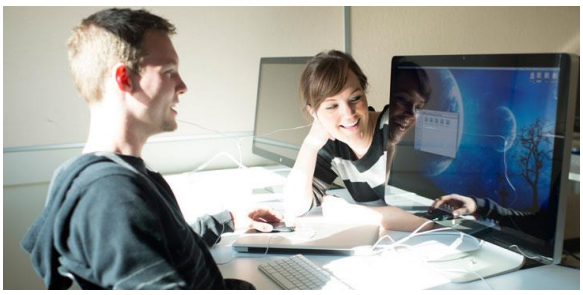
in mathematics & statistics support

MS-MAPS

Mathematics Support
Mapped Against Professional Standards

A guide to the UK Professional Standards Framework
for those working in HE mathematics and statistics support



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Welcome to MS-MAPS

Background

Since the 1990's, numerous reports have highlighted the need for additional support to be made available in higher education institutions for students who find the mathematical or statistical content of their courses challenging, *inter alia* London Mathematical Society (1995), Hawkes & Savage (2000), Institute of Physics (2011). The majority of universities in the UK now offer maths support*, of one kind or another (Perkin et al, 2013). The organisational structure, mode of delivery and range of provision varies from institution to institution, but the common thread is the commitment to help students increase their confidence and competence in quantitative work.

Staff working in mathematics and statistics support centres, or who otherwise support students to develop their mathematical skills, are also many and varied. They may be called lecturers, tutors, advisers, coaches, mentors or learning developers. They might be qualified mathematicians, or qualified in a different discipline where maths or statistics play an important part. They might be employed on academic contracts or on academic-related, administrative or support contracts - or indeed might work voluntarily. They might work full-time, part-time or occasionally. They might be hugely experienced in educational settings, or they might be postgraduate or undergraduate students just starting to acquire the pedagogical skills needed for the job.

People working in maths support are no longer "a few well-meaning, possibly eccentric, individuals" working in some kind of "cottage industry" (Kyle, 2010). They now form a well-defined community of practice, and are an integral part of department, faculty or institutional provision (Marr & Grove, 2010). As such they are entitled to, and indeed aspire to, professional recognition. Most higher education institutions offer routes to professional recognition via Fellowship of the Higher Education Academy. Staff might be supported to apply for Fellowship directly, or this might be part of an accredited in-house scheme such as a Postgraduate Certificate in Academic Practice.

The **sigma** Network exists as a professional association to support everyone engaged in mathematics and statistics support. Which is why we are now publishing MS-MAPS, a resource to assist maths support practitioners to identify and collect the evidence needed for an HEA Fellowship application (at Associate Fellow, Fellow or Senior Fellow level).

***** *In common with other* ***sigma*** *publications, we will for convenience use the phrase "maths support" to stand for support in mathematics, statistics, numeracy and wider quantitative skills in higher education.*

The UK Professional Standards Framework (UKPSF)

The UK Professional Standards Framework was developed by the Higher Education Academy (HEA) on behalf of the UK higher education sector, Guild HE and Universities UK. It claims to be a comprehensive set of professional standards and guidelines for everyone involved in teaching and supporting learning in HE (HEA, 2011). Specifically, it is taken as the basis for professional recognition and HEA Fellowship awards.

The UKPSF defines three Dimensions of Professional Practice (referred to as A, K and V), and itemises what should be evidenced within each Dimension:

Areas of Activity

A1 Design and plan learning activities and/or programmes of study.
A2 Teach and/or support learning.
A3 Assess and give feedback to learners.
A4 Develop effective learning environments and approaches to student support and guidance.
A5 Engage in continuing professional development in subjects/disciplines and their pedagogy, incorporating research, scholarship and the evaluation of professional practices.

Core Knowledge

K1 The subject material.
K2 Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic programme.
K3 How students learn, both generally and within their subject/disciplinary areas.
K4 The use and value of appropriate learning technologies.
K5 Methods of evaluating the effectiveness of teaching.
K6 The implications of quality assurance and quality enhancement for academic and professional practice with a particular focus on teaching.

Professional Values

V1 Respect individual learners and diverse learning communities.
V2 Promote participation in higher education and equality of opportunity for learners.
V3 Use evidence-informed approaches and the outcomes from research, scholarship and continuing professional development.
V4 Acknowledge the wider context in which higher education operates, recognising the implications for professional practice.

The current 2011 version of the UKPSF explicitly includes mention of “supporting learning” alongside “teaching”, in recognition of the fact that it is not just traditional teachers and lecturers who are involved in facilitating student learning. This clearly opens the door for people working in a range of academic-related and learning development areas, including mathematics and statistics support, to access professional recognition for their work in supporting learning via HEA Fellowships on the basis of the UKPSF.

Fellowship of the HEA can be granted at one of four levels:

- Associate Fellow - typically for staff new to teaching or learning support, or researchers/technicians with a limited teaching role.
- Fellow - typically for established academic, academic-related or support staff with significant teaching duties.
- Senior Fellow - typically for those whose teaching or support of learning incorporates a management or leadership role.
- Principal Fellow - typically for highly experienced staff whose work demonstrates impact nationally or internationally.

However, the UKPSF dimensions (A, K, V) need to be addressed as appropriate regardless of which level of Fellowship is being applied for.

The rationale behind MS-MAPS:

Mathematics Support Mapped Against Professional Standards

Many people working in mathematics and statistics support tell us that they are being encouraged by their institutions to apply for HEA Associate Fellowship, Fellowship or where appropriate Senior Fellowship. This is not just valuable professional development and recognition for the individual, but institutions also benefit from being able to show that their staff have achieved this “kite mark” of teaching excellence. Staff might apply directly for Fellowship, or undertake an in-house HEA-accredited programme.

However, people working in maths support also tell us that they find the wording of the UKPSF very general, and find it difficult to relate the descriptors and the dimensions to the specific activities they carry out. This is sometimes compounded when the in-house mentoring that is provided for HEA Fellowship applications (for example through a central Educational Development Unit, or similar) is framed generically, with little awareness of the specifics of mathematics or statistics support.

MS-MAPS firstly identifies ten indicative areas of mathematics and statistics support activity, which (we believe) summarise the broad range of tasks that typically make up the “day job” of a person working in HE maths support:

1. Teaching and supporting student learning
2. Assessment and feedback
3. Embedding maths support and working with course lecturers
4. Working with diverse student populations
5. Evaluation of service provision
6. Contribution to project and/or development work
7. Promoting mathematics and statistics support
8. Team working and leadership
9. Developing and updating own subject knowledge
10. Developing a research-informed understanding of how students learn

MS-MAPS then takes these ten indicative areas of maths support, and breaks them down into typical tasks or activities that maths support tutors might regularly do as part of their job. These tasks are then mapped against the relevant elements of the UKPSF Dimensions (eg: A3, K2, V1, etc). Through this we hope to make clear that many day-to-day activities can in fact provide evidence towards elements of the UKPSF, provided of course that the candidate reflects appropriately and critically on the implication of this for their professional practice.

Do be aware, however, that where we suggest a mapping, this may or may not be relevant to your situation. It depends on the nature of the activity within your context and how (and indeed whether) you carry it out. Our aim is to demonstrate that many “routine” aspects of the day job can in fact contribute to an HEA application portfolio, provided the UKPSF dimensions are understood and interpreted for this context. However, the user should not

simply accept every mapping suggested, but select those that seem most relevant and that can be justified reflectively with appropriate evidence.

An example might make the above clearer…

> We suggest that the area 3 activity "Deliver workshops within departments that supplement course provision" might provide evidence against *A3: Assess and give feedback to learners*. This would be the case if, for example, you started your workshop with a quick quiz (eg: using clickers or other voting tools) to judge the baseline knowledge of the students, explained the results and adapted your workshop appropriately. If, however, your workshop was a straight pre-prepared "lecture" with little student interaction you would probably not be able to claim evidence for A3 for this.

The MS-MAPS Reverse Mapping table then looks at this the other way round. Starting from each element of the UKPSF dimensions, we suggest a range of tasks a maths support practitioner might carry out that could provide evidence against that element. The aim here is to "de-mystify" the wording of the UKPSF and illustrate what it could mean in the everyday practice of mathematics and statistics support. This can also show candidates where they might find evidence for any elements that are currently missing in their portfolio. Please note that the Reverse Mapping table does not provide an exact one-to-one correspondence to the original Mapping table. We have sought to identify the most common or representative aspects.

The MS-MAPS tables are not meant to be prescriptive, nor are they intended to be complete. Users should take them as a starting point to reflect more deeply on their own practice and identify further evidence of their professional development.

MS-MAPS: Mapping (indicative activity → UKPSF dimensions)

Indicative area of Mathematics and Statistics Support activity [1]	A	K	V
1. Teaching and supporting student learning			
• Provide one-to-one individual advice (through drop-ins or booked tutorials)	2, 3, 4	1, 2, 3	1
• Deliver or facilitate group workshops/lectures (eg: numerical reasoning, statistics software)	1, 2, 3, 4	1, 2, 3, 4	1
• Support student-led peer assisted learning sessions	2, 4	2, 3	1
• Online or remote support (eg: through Skype, webinars, email, blogs, discussion forums, etc)	1, 2, 3, 4	1, 2, 3, 4	1
• Create learning materials for group or individual use (paper-based, or online resources)	1, 4	1, 2, 3, 4	
• Host and facilitate informal learning sessions (eg: maths café, problem solving groups, games and puzzles, etc)	1, 2, 4	2, 3	1
• Work with faculties/departments/lecturers to identify emerging needs	1, 4	1, 2, 3	1
• Contribute to off-campus learning (eg: MOOC or other remote learning opportunities)	1,2,3,4	1,2,3,4,6	2,4

[1] NB: A5 and V3 may be possible throughout if based on research of best practice

Indicative area of Mathematics and Statistics Support activity	A	K	V
2. Assessment and feedback			
• Give feedback to students on how to improve the quality of their work (eg: accuracy, presentation, etc)	3	2, 3	1
• Help students to understand and engage with feedback given by their course lecturers	3	2, 3	1
• Informally (formatively) assess students' work during workshops or practice sessions	3	2	
• Access CPD, or read the literature, on assessment and feedback, and apply this knowledge	5	5, 6	3, 4
• Create or devise a maths diagnostic testing tool that incorporates feedback	1, 3	1, 2, 4	
• Implement maths diagnostic testing, feeding back to students and/or discussing outcomes with staff	1, 3	1, 2, 4	
• Create interactive online practice materials (eg: NUMBAS, Moodle Quiz, STACK) that offer questions and feedback for students	1, 3, 4	1, 2, 4	

Indicative area of Mathematics and Statistics Support activity	A	K	V
3. Embedding maths support, working with course lecturers			
• Deliver (or co-deliver) workshops/classes within courses as part of formal course provision	1, 2, 3	1, 2, 3, 4	1, 4
• Deliver workshops within departments that supplement course provision	1, 2, 3, 4	1, 2, 3, 4	1
• Advise course lecturers on curriculum design that incorporates maths and statistics skills support	1, 4	1, 2, 3	3, 4
• Liaise with course lecturers about the logistics of embedding maths skills support	1, 4	2, 3, 4	3
• Collaborate with course lecturers to plan embedded sessions and produce resources	1, 4	1, 2, 3, 4	1
• Facilitate targeted maths diagnostic testing on behalf of course teams	1, 3	1, 6	
• Advocate embedded maths and statistics support across the institution			2, 4
• Access CPD, or read the literature, on models of embedding, and apply this knowledge	5	2, 3	3
• Keep up to date with changes in coursework or module learning outcomes to prepare for associated questions from students	1, 4	1, 2	

Indicative area of Mathematics and Statistics Support activity	A	K	V
4. Working with diverse student populations			
• Awareness of specific learning differences (SpLD) and disabilities, applying this knowledge to tailor/adapt own practice	1, 2, 4	2, 3, 4	1, 2, 3, 4
• Awareness of cultural diversity, applying this knowledge to tailor/adapt own practice	1, 2, 4	2, 3, 4	1, 2, 3, 4
• Awareness of dyscalculia and/or maths anxiety, applying this knowledge to tailor/adapt own practice	1, 2, 4	2, 3, 4	1, 2, 3, 4
• Awareness of the needs of mature students, applying this knowledge to tailor/adapt own practice	1, 2, 4	2, 3, 4	1, 2, 3, 4
• Awareness of the maths background of non-traditional entry students, applying this knowledge to tailor/adapt own practice	1, 2, 4	2, 3, 4	1, 2, 3, 4
• Awareness of the needs of remote learners, applying this knowledge to tailor/adapt own practice	1, 2, 4	2, 3, 4	1, 2, 3, 4
• Access CPD, or read the literature, on inclusivity and diversity, and apply this knowledge	1, 4, 5	1, 3, 5,	3
• Provide CPD for colleagues on the implications of dyscalculia, maths anxiety and/or SpLD on student learning	5	1, 2, 3,	2
• Ensure accessibility of maths and statistics support resources	4, 5	3, 4	1, 2, 3
• Work in collaboration with SpLD specialist advisers, run joint advice sessions	1, 2, 4	2, 3	1, 2
• Present or teach at summer schools and other projects aimed at widening participation or aiding transition to higher education	1, 2	1, 2	2, 4

Indicative area of Mathematics and Statistics Support activity	A	K	V
5. Evaluation of service provision			
• Implement existing evaluation mechanisms for your maths and statistics support provision		5	
• Keep records of student visits & who uses your service to evaluate and adapt provision accordingly	4	5	3
• Devise new or modified systems for gaining user feedback (eg: social media interactions)		4, 5	3
• Evaluate the responses to service evaluation, summarise results, discuss within service team		5, 6	
• Act on results of service evaluation to modify and improve provision	4, 5	6	3
• Contribute outcome of maths support service evaluation to wider institutional quality review		6	4
• Access CPD, or read the literature, on the evaluate-review-revise cycle, and apply this knowledge	5	6	3
• Liaise with departments/lecturers to determine how students are progressing according to how they use your service		5, 6	3
• Participate in design/analysis of regional/national surveys of maths support provision	5	5, 6	4
• Disseminate and/or publish analysis of the effectiveness (or any problems) of your service provision to the wider mathematics support community	5	5, 6	3, 4
• Provide mentoring/consultancy to other institutions to evaluate their maths support provision	5	5, 6	3, 4

Indicative area of Mathematics and Statistics Support activity	A	K	V
6. Contribution to project and/or developmental work			
• Identify project (or topic appropriate for development) relevant to your maths and statistics support provision - perhaps through collaboration with other services	1, 4	1, 2, 3	3, 4
• Disseminate progress and/or outcomes of the above, both internally and externally (eg: conference presentation)	5		3
• Submit or review worksheets/materials to MathCentre or StatsTutor and/or provide feedback for materials already posted	1, 4	1, 3, 6	1, 4
• Contribute to the work of your national professional maths support network (eg: **sigma**, SMSN, IMLSN)	5		4
• Contribute to the development of new modules or programmes at course level	1,4	1,2,3,4,6	1, 2, 3, 4

Indicative area of Mathematics and Statistics Support activity	A	K	V
7. Promoting mathematics and statistics support			
• Create and/or disseminate materials in a variety of formats to promote your maths support provision and evaluate their effectiveness			1, 2
• Set up or contribute to social media or another online platform, representing your provision locally, nationally or internationally	5	4	2, 4
• Attend institutional/course meetings to represent and encourage take-up of your service			2
• Engage with students (or student union) to nurture champions for your provision at various levels			2
• Attend and promote your provision at university open days, induction weeks or outreach activities, perhaps delivering “taster” sessions	1, 2, 4	1, 2, 3,4	1, 2, 4

Indicative area of Mathematics and Statistics Support activity	A	K	V
8. Team-working and leadership [2]			
• Prioritise activities among colleagues in the light of emerging needs from students and course lecturers, within budget constraints where necessary	1, 4	2	3
• Contribute to collaborative developmental projects (eg: new resources, addressing specific needs)	1, 4	1, 2, 3, 4	1, 2
• Train or mentor colleagues to develop their own knowledge and understanding of maths support	2, 4	3, 4, 6	1, 3
• Use evidence-informed approaches and the outcomes of research to help lead and shape your service	5	6	3, 4
• Provide supervision and/or mentoring for a student project (this might include paid/bursaried summer projects) related to maths and statistics support	1, 2, 3	1, 3	1, 3
• Involvement with professional associations related to maths and statistics support at the organisational/leadership level (eg: **sigma** Steering Group, SMSN Committee, IMLSN Committee)	5	6	2, 4
• Contribute to policy relating to maths and statistics support at local, regional and/or national level	5	6	3, 4
• A record of influential publications relating to maths and statistics support	5		3, 4

[2] Leadership aspects are particularly relevant for Senior Fellowship applications

Indicative area of Mathematics and Statistics Support activity	A	K	V
9. Develop and update own subject knowledge in mathematics and statistics			
• Learn new topics in maths or statistics, to be able to support new/different groups of students	1, 2, 5	1, 2	2
• Learn new software, that may be used for mathematics or statistics in different curriculum areas	1, 2, 5	1, 2, 4	2
• Attend conferences that focus on the scholarship of maths teaching, learning and support	5	All	3
• Keep up to date with the latest developments within the maths support community	5	1, 2, 3, 5	

Indicative area of Mathematics and Statistics Support activity	A	K	V
10. Develop a research-informed understanding of how students learn			
• Access CPD, or read the literature, on pedagogy and learning styles in maths and statistics support, and apply this knowledge	5	3, 5	1, 2, 3
• Conduct research among own students on their ways of learning		2, 3, 4	1, 3
• Contribute to collaborative research projects relating to the effectiveness of maths support		2, 3, 4, 5	1, 3
• Attend in-house learning, teaching and research events	5	2, 3, 4, 5	1, 2, 3
• Attend regional, national or international conferences or networking events regarding learning and teaching	5	2, 3, 4, 5	1, 2, 3

MS-MAPS: Reverse Mapping (UKPSF dimensions → indicative activity)

UKPSF Dimension	Indicative areas of Maths Support activity
Area of Activity: **A1** Design and plan learning activities and/or programmes of study.	• Deliver and facilitate group workshops, lectures or informal learning sessions • Contribute to remote/off-campus learning courses • Contribute to new learning materials and/or provide feedback for existing materials (eg: on MathCentre or StatsTutor) • Implement a diagnostic test and/or create online practice materials for students which offer formative feedback and support • Advise and liaise with course lecturers on curriculum design that incorporates maths and statistics skills support • Be aware of specific learning differences, disabilities, cultural diversity, and the needs of non-traditional entry students and applying this knowledge to your maths support practice • Learn new topics and/or software to keep up-to-date with curriculum changes in courses you support, or to be able to support new groups of students

UKPSF Dimension	Indicative areas of Maths Support activity
Area of Activity: **A2** Teach and/or support learning.	• Provide support/advice through one-to-ones, drop-ins, workshops, seminars, lectures or online/remote sessions • Deliver workshops with/through departments that supplement course provision • Promote your provision at open days, induction weeks or outreach events, perhaps delivering “taster” sessions • Train/mentor colleagues to provide maths and statistics support • Learn new topics and/or software to keep up-to-date with curriculum changes in courses you support, or to be able to support new groups of students • Be aware of specific learning differences, disabilities, cultural diversity, and the needs of non-traditional entry students and applying this knowledge to adapt your maths support practice

UKPSF Dimension	Indicative areas of Maths Support activity
Area of Activity: **A3** Assess and give feedback to learners.	• Give feedback to students on how to improve the quality of work they produce • Help students to understand, and engage with, feedback from their lecturers • Informally (formatively) assess students' work during sessions • Provide and/or deliver (or co-deliver) workshops/classes within departments that are either formal or supplement course provision • Create or devise a maths diagnostic testing tool that incorporates feedback • Implement maths diagnostic testing and feedback to students and/or staff on outcomes • Create interactive online practice materials (eg: NUMBAS, Moodle Quiz, STACK) that offer questions and feedback for students • Provide supervision/mentoring for a student project relating to maths and statistics support

UKPSF Dimension	Indicative areas of Maths Support activity
Area of Activity: **A4** Develop effective learning environments and approaches to student support and guidance.	• Offer various forms of mathematics support to suit student needs (eg: one-to-one, drop-ins, workshops, online, remote, etc) • Work with faculties/departments/lecturers to identify emerging needs • Be aware of specific learning differences, disabilities, cultural diversity, and the needs of non-traditional entry students and applying this knowledge to adapt your maths support practice • Ensure your maths support resources are accessible • Keep records of student visits (and student feedback) to evaluate and adapt your service accordingly • Contribute to the development of best practice within the maths support community through dissemination of research/work, attendance at conferences, and/or being involved with the national networks (eg: **sigma**, SMSN, IMLSN)

UKPSF Dimension	Indicative areas of Maths Support activity

Area of Activity: **A5**
 	
Engage in continuing professional development in subjects/disciplines and their pedagogy, incorporating research, scholarship and the evaluation of professional practices.
	• Access CPD, or read the literature, on (for example)
	  ○ assessment and feedback,
	  ○ models of embedding maths support,
	  ○ inclusivity and diversity,
	  ○ the evaluation cycle,
	  ○ the pedagogy of mathematics and statistics support
	
	• Reflect on the above, apply to own practice and assess the impact
	
	• Analyse and disseminate the effectiveness of your service provision to the wider maths support community
	
	• Contribute to the development of the maths support community through dissemination of research/work, attendance at conferences, and/or being involved with the national networks (eg: **sigma**, SMSN, IMLSN)
	
	• Have a record of influential publications relating to maths and statistics support
	
	• Attend conferences focusing on the scholarship of maths teaching, learning and support, keeping up-to-date with the latest developments
	
	• Attend in-house, regional, national and/or international conferences regarding general teaching and learning, applying what you learn to your practice

UKPSF Dimension	Indicative areas of Maths Support activity
Core Knowledge: **K1** The subject material.	• Create learning materials for group or individual use (paper-based, or online resources) • Design maths diagnostic tests or interactive online practice materials • Work with faculties/departments/lecturers to embed maths skills support • Keep up to date with changes in coursework or module learning outcomes to prepare for associated questions from students • Teaching at summer schools and other projects aimed at widening participation • Submit or review worksheets/materials to MathCentre or StatsTutor and/or provide feedback for materials already posted • Contribute to the development of new modules or programmes • Contribute to collaborative developmental projects (eg: new resources, addressing specific needs) • Provide supervision and/or mentoring for a student project (including paid/bursaried summer project) related to maths and statistics support • Learn new topics in maths or statistics, to be able to support new/different groups of students, and/or learn new software that may be used for mathematics or statistics in different curriculum areas • Attend conferences that focus on the scholarship of maths teaching, learning and support and keeping up-to-date with the latest developments within the maths support community

UKPSF Dimension	Indicative areas of Maths Support activity

Core Knowledge: **K2**
 	
Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic programme.
	• Offer various forms of mathematics support to suit student needs (eg: one-to-one, drop-ins, workshops, online, remote, peer-assisted, etc)
	
	• Offer online or remote support (eg: through Skype, webinars, email, blogs, discussion forums, etc) and/or contribute to off-campus learning
	
	• Create learning materials for group or individual use (paper-based, or online resources)
	
	• Host and facilitate informal learning sessions (eg: maths café, problem solving groups, games and puzzles, etc.)
	
	• Work with faculties/departments/lecturers to embed maths skills support
	
	• Give feedback to students on how to improve the quality of their work (eg: accuracy, presentation, etc) and/or help students to understand and engage with feedback given by their course lecturers
	
	• Informally (ie formatively) assess students' work during workshops or practice sessions
	
	• Design maths diagnostic tests or interactive online practice materials
	
	• Awareness of:
	  ○ specific learning differences (SpLD) and disabilities,
	  ○ dyscalculia,
	  ○ maths anxiety,
	  ○ cultural diversity,
	  ○ mature students,
	  ○ remote learners,
	  ○ non-traditional entry students,
	and applying this knowledge to tailor/adapt own practice

Core Knowledge: **K2** (continued…) Appropriate methods for teaching, learning and assessing in the subject area and at the level of the academic programme.	• Access CPD, or read the literature, on assessment and feedback, inclusivity and diversity and apply this knowledge • Provide CPD for colleagues on the implications of dyscalculia, maths anxiety and/or SpLD on student learning • Work in collaboration with SpLD specialist advisers, run joint advice sessions • Participate in access summer schools and other projects aimed at widening participation • Contribute to the development of new modules or programmes • Prioritise activities among colleagues in light of emerging needs from students and course lecturers, within budget constraints where necessary • Contribute to collaborative developmental projects (eg: new resources, addressing specific needs) • Learn new topics in maths or statistics, to be able to support new/different groups of students and/or new software, that may be used for mathematics or statistics in different curriculum areas • Attend conferences that focus on the scholarship of maths teaching, learning and support and keeping up-to-date with the latest developments within the maths support community; attend in-house learning and teaching events; attend regional and national conferences or networking events regarding learning and teaching • Conduct research among own students on their ways of learning

UKPSF Dimension	Indicative areas of Maths Support activity
Core Knowledge: **K3** How students learn, both generally and within their subject/disciplinary area(s).	• Offer various forms of mathematics support to suit student needs (eg: one-to-one, drop-ins, workshops, online, remote, peer-assisted, etc) • Create learning materials for group or individual use (paper-based, or online resources) • Host and facilitate informal learning sessions (eg: maths café, problem solving groups, games and puzzles, etc) • Work with faculties/departments/lecturers to embed maths skills support • Give feedback to students on how to improve the quality of their work (eg: accuracy, presentation, etc) and/or help students to understand and engage with feedback given by their course lecturers • Access CPD, or read the literature, on models of embedding maths support, inclusivity and diversity, and/or the pedagogy of mathematics and statistics support • Awareness of: specific learning differences (SpLD) and disabilities, and/or dyscalculia and maths anxiety, and/or cultural diversity, applying this knowledge to tailor/adapt own practice • Awareness of the needs of: mature students and/or remote learners, applying this knowledge to tailor/adapt own practice • Awareness of the maths background of non-traditional entry students, applying this knowledge to tailor/adapt own practice • Provide CPD for colleagues on the implications of dyscalculia, maths anxiety and/or SpLD on student learning • Ensure accessibility of maths and statistics support resources • Work in collaboration with SpLD specialist advisers, run joint advice sessions

Core Knowledge: **K3** (continued…) How students learn, both generally and within their subject/disciplinary area(s).	• Submit or review worksheets/materials to MathCentre or StatsTutor and/or provide feedback for materials already posted • Contribute to the development of new modules or programmes • Contribute to collaborative developmental projects (eg: new resources, addressing specific needs) • Train or mentor colleagues to develop their own knowledge and understanding of maths support • Provide supervision and/or mentoring for a student project (including paid/bursaried summer project) related to maths and statistics support • Attend conferences that focus on the scholarship of maths teaching, learning and support and keeping up to date with the latest developments within the maths support community; attend in-house learning and teaching events; attend regional and national conferences or networking events regarding learning and teaching • Conduct research among own students on their ways of learning

UKPSF Dimension	Indicative areas of Maths Support activity
Core Knowledge: **K4** The use and value of appropriate learning technologies.	• Deliver or facilitate technology-enabled group workshops/lectures • Offer online or remote support (eg: through Skype, webinars, email, blogs, discussion forums, etc) and/or contribute to off-campus learning • Use appropriate technology to create learning materials for group or individual use • Design maths diagnostic tests or interactive online practice materials, perhaps incorporating feedback • Ensure accessibility of maths and statistics support resources • Devise new or modified systems for gaining user feedback (eg: social media interactions) • Set up or contribute to social media or another online platform, representing your provision locally, nationally or internationally • Learn new software, that may be used for mathematics or statistics in different curriculum areas • Attend conferences that focus on the scholarship of maths teaching, learning and support. Attend in-house learning and teaching events. Attend regional and national conferences or networking events regarding learning and teaching. Reflect specifically on use of learning technologies.

UKPSF Dimension	Indicative areas of Maths Support activity
Core Knowledge: **K5** Methods of evaluating the effectiveness of teaching.	• Access CPD, or read the literature, on assessment and feedback, inclusivity and diversity, and/or pedagogy and learning styles in maths and statistics support, and apply this knowledge • Implement existing evaluation mechanisms for your maths and statistics support provision • Keep records of student visits to your provision to evaluate and adapt your service accordingly • Devise new or modified systems for gaining user feedback (e.g. social media interactions) • Evaluate the responses to service evaluation, summarise results, discuss within service team • Liaise with departments/lecturers to determine how students are progressing according to how they use your service • Participate in design/analysis of regional/national surveys of maths support provision • Disseminate and/or publish analysis of the effectiveness (or any shortfalls) of service provision to the wider mathematics support community • Attend conferences that focus on the scholarship of maths teaching, learning and support and keeping up to date with the latest developments within the maths support community. Attend in-house learning and teaching events. Attend regional and national conferences or networking events regarding learning and teaching. Reflect specifically on evaluating effectiveness

UKPSF Dimension	Indicative areas of Maths Support activity
Core Knowledge: **K6** The implications of quality assurance and quality enhancement for academic and professional practice with a particular focus on teaching.	• Evaluate the responses to service evaluation, summarise results, discuss within service team • Act on results of service evaluation to modify and improve provision • Contribute outcome of maths support service evaluation to wider institutional quality review • Access CPD, or read the literature, on the evaluate-review-revise cycle, and apply this knowledge • Liaise with departments/lecturers to determine how students are progressing according to how they use your service • Participate in design/analysis of regional/national surveys of maths support provision • Disseminate and/or publish analysis of the effectiveness (or any shortfalls) of service provision to the wider mathematics support community • Submit or review worksheets/materials to MathCentre or StatsTutor and/or provide feedback for materials already posted • Contribute to the development of new modules or programmes • Train or mentor colleagues to develop their own knowledge and understanding of maths support • Use evidence-informed approaches and the outcomes of research to help lead and shape your service • Contribution to policy relating to maths and statistics support at local, regional, and/or national level • A record of influential publications relating to maths and statistics support • Attend conferences that focus on the scholarship of maths teaching, learning and support and keeping up to date with the latest developments within the maths support community

UKPSF Dimension	Indicative areas of Maths Support activity

Professional Values: **V1**
 	
Respect individual learners and diverse learning communities.
	• Awareness of
	  ○ specific learning differences and difficulties (SpLD),
	  ○ cultural diversity,
	  ○ dyscalculia and/or maths anxiety,
	  ○ the needs of mature students,
	  ○ the maths background of non-traditional entry students,
	  ○ the needs of remote learners,
	applying this knowledge to tailor/adapt own practice when planning and delivering 1-1 support sessions or lectures/workshops
	
	• Access CPD, or read the literature, on inclusivity and diversity, and apply this knowledge
	
	• Work in collaboration with SpLD specialist advisers, run joint advice sessions
	
	• Participate in access summer schools and other projects aimed at widening participation
	
	• Ensure accessibility of maths and statistics support resources
	
	• Provide CPD for colleagues on the implications of dyscalculia of maths anxiety on student learning
	
	• Create and/or disseminate materials in a variety of formats to promote your maths support provision
	
	• Learn new software applications to be able to support students from different backgrounds
	
	• Collaborate with course lecturers to plan embedded sessions and produce resources

UKPSF Dimension	Indicative areas of Maths Support activity
Professional Values: **V2** Promote participation in higher education and equality of opportunity for learners.	• Participate in access summer schools and other projects aimed at widening participation or aiding transition to higher education • Create and/or disseminate materials in a variety of formats to promote your maths support provision • Set up or contribute to social media or other online platforms to represent your provision locally, regionally or nationally • Engage with students or the student union to nurture champions for your provision at various levels • Host informal learning sessions to encourage participation and engagement (eg: maths café, problem solving groups)

UKPSF Dimension	Indicative areas of Maths Support activity

Professional Values: **V3**
 	
Use evidence-informed approaches and the outcomes from research, scholarship and continuing professional development.
	• Access CPD, or read the literature, on topics such as:
	  ○ assessment and feedback,
	  ○ embedding academic skills,
	  ○ inclusivity and diversity,
	  ○ service evaluation and impact,
	  ○ pedagogy and learning styles,
	and use this to inform own practice in maths support
	
	• Advise lecturers on curriculum design that incorporates maths and statistics support
	
	• Devise new or modified systems for gaining user feedback, and evaluate the responses
	
	• Keep records of student visits to quantify and evaluate the uptake of your maths support provision
	
	• Publish the analysis of the effectiveness of your service provision to the wider maths support community
	
	• Attend conferences that focus on the scholarship of maths teaching, learning and support
	
	• Contribute to policy relating to maths and statistics support at local, regional, and/or national level

UKPSF Dimension	Indicative areas of Maths Support activity
Professional Values: **V4** Acknowledge the wider context in which higher education operates, recognising the implications for professional practice.	• Collaboration with course lecturers on developments in curriculum design that incorporates and embeds mathematics and statistics skills support • Awareness of the needs of non-traditional students, adapting provision accordingly • Awareness of the maths support needs of widening participation students, organising provision accordingly • Contribute the outcomes of the maths support service evaluation to wider institutional quality review • Identify project or development work relevant to maths and statistics support through collaboration with other services (for example, initiatives relating to employability) • Engage with a national maths support network (eg: **sigma**, SMSN, IMLSN) • Contribute to policy relating to mathematics and statistics support at local, regional or national level

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References and further reading

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Further resources for mathematics and statistics support are available at:

www.sigma-network.ac.uk

www.mathcentre.ac.uk

www.statstutor.ac.uk

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