

Senior Management Perspectives on Mathematics and Statistics Support in the Higher Education Sector in England

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Presentation

- Research aims, questions, methods (data collection and data analysis).
- Research Sample and how it was determined.
- The key literature that informed the research.
- An introduction to: the challenges Higher Education Institutions (HEIs) face; the responses to the challenges; visions for support in the future.

Research Aims

*To produce the evidence that can be used to inform the future activities of **sigma** and to offer a carefully researched analysis to HEFCE of the strategic needs and priorities of the HE sector in England with regard to learning support for mathematics and statistics as perceived by university senior managers.*

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Research Questions

The research questions addressed the following issues:

- Challenges faced by students in relation to mathematics and statistics.
- How those challenges were being addressed.
- The degree to which support was embedded and visible.
- Plans and intentions with regard to the future provision of support.
- How institutional priorities were determined.
- The external support that the universities think they will need.

Research methods

- Research aims and questions were congruent with qualitative research methods, rather than a quantitative survey approach.
- Data collected by means in-depth interviews with senior managers (typically PVCs).
- Data analysis by 'thematic induction'.
- Ethical guidelines (as recommended by BERA, 2011) were adhered to, particularly with regard to confidentiality and anonymity.

Research sample

- The sample included interviews with senior managers from twenty three HEIs.
- Within the sample there was a balance of 'high tariff', 'medium tariff' and 'low tariff' providers (UCAS, 2014).
- All of the university 'mission groups' were represented.
- The sample included a balance between those with and without a history of engagement with the **sigma** Network.

References to wider literature

Through a review of the literature the research was set in the context of:

- Changing HE system in an age of 'supercomplexity' (e.g. Barnett, 2000a, 2000b, 2011 and BIS, 2011).
- Post-16 Mathematics (e.g. Hodgen *et al*, 2012 and 2013, Hillman, 2014, Grove *et al*, 2014, and Savage and Grove, 2015).

Challenges faced by HEIs in relation to mathematics and statistics

- All of the HEIs in the sample face challenges in relation to their students' transitions into, within, and out of HE.
- The challenges are multi-faceted and not confined to the mathematical sciences and STEM disciplines – they extend to a range of subjects that make use of quantitative methods, and others in which mathematics or statistics are rarely used.
- The challenges are not restricted to undergraduate programmes of study.
- Challenges arise from the size and heterogeneity of student cohorts.
- Some students lack confidence and/or have negative attitudes to studying any form of mathematics or statistics.

Responses to the Challenges

- All HEIs recognise that failure to address the challenges they face will have an adverse impact upon student transition, experience retention, satisfaction, achievement and employability.
- Significant variations occur in MSS provision between HEIs both in terms of what is currently available to students and the stages reached in the development of that provision.
- In some HEIs support is embedded within the curriculum, and is not visible (e.g. through references to MSS on the university website or in OFFA Agreements).
- In other HEIs highly visible and comprehensive systems have been established that include support strategically embedded in the curriculum, on-line and other resources and access to one-to-one tutorial support on a drop-in basis via a MSSC.
- In such cases, MSS is part of wider systems of learning support available to students.

Visions

- Many of the HEIs recognise the need to further develop and improve the effectiveness of their MSS.
- Increasingly MSS is seen as being integral to university-wide systems of support that HEIs need to offer their students as part of their core provision.
- In terms of strategic planning MSS (along with other forms of student support) is now becoming to be seen in relation to a wider set of interrelated activities that include outreach, widening participation, recruitment, retention, achievement, and employability (i.e. 'combining fair access with success').
- The value of national collaboration with regard to on-going development of MSS was widely recognised as was the resources and expertise available to via the **sigma** Network.
- The needs of the following for CPD were identified: specialist staff working in MSS (leading to recognised professionally accredited status); staff seeking to embed MSS in the design and delivery of their curricula; and, senior managers responsible for the strategic planning of the student experience.

Case Study Higher Education Institutions

Case Study 1 Context:

- A multi-campus university that aims to: provide high quality teaching; and, develop its research capacity.
- UCAS 'low level tariff provider'; a high proportion of its students are recruited from the local region, many of them from low-income households; and, over a quarter study part-time.
- It has strong regional links to colleges and HEIs, and a number of national and international collaborations including membership of the University Alliance group, and active engagement with the **sigma** Network.



Case Study Higher Education Institutions

Case Study 2 Context:

- A multi-campus university; one of the largest in England in terms of the number of undergraduate students.
- UCAS 'medium level tariff provider'; over 90% of its students are UK residents; and, over 80% are undergraduates.
- The university has achieved a high (top twenty) position in league tables for teaching quality, which is said to be 'among the highest in the country' (QAA). Many of its research centres have been judged to be doing 'world class research' (REF).
- A member of the University Alliance and other national and international HE organisations; it has strong vocational links with the arts, business, industry, science and professional bodies; no formal involvement with the **sigma** Network.



Case Study Higher Education Institutions

Case Study 3 Context:

- UCAS 'high level tariff provider'; over 90% of its students are full-time; two thirds are international students; and, almost a half are postgraduates.
- A research-intensive university undertaking 'world-class research' across its faculties/research centres (REF).
- Very highly ranked in national and international league tables for the quality of both its teaching and its research.
- A 'global' university with many international HEI partners in relation to both research and teaching; a member of the 'Russell Group'; no formal involvement with the **sigma** Network.