
Why a Network to Support Learning and Teaching?

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Learning
Teaching
Support
Network

Leading
To
Somewhere
New

Most of us think about how we want to teach.
Many of us would like to incorporate innovations that work.
Few of us have the time to do the necessary research.

The above puts it rather crudely, but probably captures the gist of things in UK Higher Education institutions at the start of the 21st century. And this is precisely why there is a need for the new Learning and Teaching Support Network Centre in Mathematics, Statistics and OR.

As subject reviewers in the recent AQE exercise, members of the Centre have been privileged to observe the practice of mathematical education across the whole spectrum of HE institutions [in England]. It may be too ambitious to yet make a declaration on “the state of the nation” for HE mathematics teaching in the UK. Nonetheless some common themes emerge.

Diverse as we may be there are still some common issues which confront all of us:

transition -we all face the problem of devising a smooth and efficient transition into the study of mathematics at a higher level,
diagnosis and remedial support - whatever our entry requirements, many departments find themselves obliged to diagnose their intake and to take appropriate steps to help those in need,
mathematical preparedness has, of course been reported on by organisations like the LMS and others. Problems include: treating everything as linear [$(x+y)^2 = x^2+y^2$, etc], loss of invisible parentheses [$2x+3 = x^2+3$, etc], the proper display of a piece of mathematics - educating students away from “stream of consciousness” jottings [where any attempt at indicating implication is at best transferred to inappropriate use of the equals sign but more often than not absent altogether] to better reasoning which is correctly written, etc, etc, etc!!
designing programmes that allow all to develop their full potential,
embedding important skills for future careers without sacrificing the academic integrity of the subject.

Of course for a number of years researchers in mathematical education have attempted to tease out the issues surrounding just how the processes of effective mathematical education take place. Alongside this it is clear that many [all?] of us who currently deliver mathematical education in HE institutions do give considerable thought to the processes. Indeed the new Institute for Learning and Teaching and its associated qualifications will further encourage reflection and review by the individual lecturer.

Some colleagues may therefore be inclined to react to any definition of mathematical pedagogy along the lines of Moliere’s Monsieur Jourdain upon learning about prose “Good heavens, I’ve been doing that for more than forty years without realising!”

But to react as such is to deny the valuable recent research carried out by workers such as Sierpinski, Defence, Khatcherian, and L Saldanha in analysing the effectiveness of various learning strategies in university level linear algebra [1], Artigue's contributions on elementary analysis and calculus [2], and the work of Tall et al cited in Adrian Simpson's accompanying article.

An important task for the new Centre will be to form a bridge between those working at the "chalk-board/OHP" face and current developments in the theory of mathematical education. We hope to facilitate this using, amongst other devices, a team of consultant practitioners who will be aware of not only the pure pedagogical research but the pragmatic problems that face those teaching mathematics today.

The need for something like the LTSN subject centre is greater than ever. For the sake of future generations, the problems of mathematical education must be embraced by us all - not just those engaged in research. Michelle Artigue put it perfectly in her note published at the end of the last millennium:

"As mathematicians we are well aware that we can learn a great deal even from simplistic models, but we cannot expect them to give us the means to really control educational systems. So we have to be realistic in our expectations, careful with generalizations. This does not mean, in my opinion, that the world of research and the world of practice have to live and develop as separate ones—far from it. But I am convinced that finding the ways of making research-based knowledge useful outside the educational communities and experimental environments where it develops cannot be left solely to the responsibility of researchers. It is our common task." [3]

- [1] See J L Dorier (ed), *L'Enseignement de l'Algèbre Linéaire en Question*, La Pensée Sauvage, Grenoble, 1997
- [2] M Artigue, Learning and teaching elementary analysis, *8th International Congress on Mathematics Education—Selected Lectures* (C Alsina et al, eds), SAEM Thalès, Sevilla, 1996, pp15–30
- [3] M Artigue, Notices of the American Mathematical Society, December 1999

Welcome Letter from Stephen Ryrie, Secretary, Heads of Departments of Mathematical Sciences

The Heads of Department of Mathematical Sciences wholeheartedly welcome the establishment of the new LTSN for Mathematics, Statistics and Operational Research, and offer our congratulations to the former CTI Centres and the RSS Centre for Statistics Education for their successful bid.

We anticipate that the LTSN will be of great help to academic staff in universities, particularly since its aims are in tune with current national trends and initiatives in Higher Education. The importance of staff development and training has been recognised nationally through the recent establishment of the Institute for Learning and Teaching, and the emphasis placed by the LTSN on training, support and advice reflects this. QAA Subject Reviews, within both the present and the future methodologies, will continue to oblige universities to reflect on how they support their teaching staff and on how strategies for learning and teaching are developed, and so the LTSN aims to provide advice and information in these respects.

We wish Professor Blake and his colleagues well as their new task begins, and look forward to benefiting from their work as it takes shape.