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Review of *QMaSC: A Handbook for Directors of Quantitative and Mathematics Support Centers* edited by Grace Coulombe, Mary B. O'Neill, and Michael Schuckers (2016)

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Abstract

Grace Coulombe, Mary B. O'Neill, and Michael Schuckers (Eds). *QMaSC: A Handbook for Directors of Quantitative and Mathematics Support Centers*. (Tampa FL: USF Libraries – Tampa Library, 2016). http://scholarcommons.usf.edu/qmasc_handbook/

The over thirty different authors of this handbook, all of whom are experienced in supporting learning in mathematics and quantitative disciplines, provide a useful perspective on the practical issues that affect the running of a learning support centre, as well as the problems of working within a complex institution of higher education. The handbook contains information on leadership and management, how to maintain community interactions, managing staffing (including hiring and training), and sections on assessment and issues related to starting a new centre. It concludes with ten case studies in which various support centres in different types of institutions and with different missions are described in detail.

Keywords

quantitative, mathematics, learning support center, handbook

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Cover Page Footnote

Vera Frith is the coordinator of the Numeracy Centre, a unit within the Centre for Higher Education Development at the University of Cape Town. Her primary interests are the quantitative literacy development of university students and the appropriate curriculum for this purpose.

QMaSC: A handbook for Directors of Quantitative and Mathematics Support Centers represents an impressive collaborative project by over thirty different authors, all of whom are experienced in supporting learning in mathematics and quantitative disciplines. It provides a refreshingly down-to-earth perspective on practical issues that affect the running of a learning support centre, as well as subtle problems of working within a complex institution of higher education. For example, the unpleasantly familiar concerns of dealing with fluctuating or shrinking budgets, competing for space and securing faculty “buy-in” emerge strongly, especially from the ten revealing case-studies. On a lighter note, the suggestion in the first chapter, “Effective management,” that occasionally providing cookies for staff has a beneficial effect is also very familiar, although at our university the currency is generally muffins.

I think it is a good idea for me to begin my reflections on this book with a disclaimer. As a South African, I am not familiar with the academic context in the United States and so my views may be seen to be the result of a lack of this understanding. I feel the reader also needs to know that my perspective is that of a person responsible for a university unit that is fully dedicated to the teaching of quantitative literacy (numeracy) and promoting QL in curricula across the university and which has no involvement with supporting students in mathematics courses. However, I trust that this background could mean that my views may also be of interest as offering a different perspective, and one that may be relevant to the readers of the *Numeracy* journal.

My experience is of being appointed to a newly-created “Numeracy Centre” at Cape Town University in 1999 (fortunately, not at that time as its co-ordinator) and having to ‘make it up as we went along’. The QMaSC handbook is intended to provide support to people who find themselves in this kind of position and such a book would have been an enormously welcome resource at that time, as well as at the time I took over as head of the unit (which thanks to the previous co-ordinator was very much better established by then). For example, when I reflect on our long and sometimes painful process of evolving a tutor-recruitment and training programme, it strikes me how useful it would have been to be able to draw on the experience amply shared in this handbook.

The handbook begins with a section on leadership and management, which covers topics like strategic planning, addressing diversity, use of technology, managing staff and dealing with math anxiety. The following section on community interactions, deals with the sometimes difficult tasks of coordination with the administration, with faculty and with other units, including other learning support centres. It also discusses the need for promotional material and a virtual presence. I found the section on staffing, hiring and training particularly useful and thought the chapter entitled “Practice and mentoring” particularly interesting. There are also sections covering centre assessment and issues related to starting a

new centre (such as designing a suitable space and recruiting a director). A nice feature of these chapters is that many include examples of documents, such as evaluation forms and training materials, as appendices. However, as most authors point out, the centres in different institutions have different goals and structures (and budgets) dictated by the particularities of their institutions, so all the advice in the handbook is of necessity rather general in nature. The book concludes with ten case studies in which a variety of support centres in different types of institution and with different missions are described in detail. These descriptions would be particularly useful for people running similar centres to affirm what they are doing right and to obtain ideas about how to do things differently.

There is, however, a concern that constantly bothered me while reading this book. My concern does not necessarily reflect on the value of the book itself for the purposes it is intended, but it did somewhat undermine my belief (largely bolstered by reading the *Numeracy* journal) that universities and colleges in the United States were far ahead in terms of integrating quantitative literacy into their curricula. It constantly struck me that the centres described in the handbook were in general far more concerned with supporting learners in mathematics and other science courses, than with promoting quantitative literacy across the curriculum. It was also clear that in many cases the quantitative requirements in the curriculum still consisted of having to complete a mathematics or other overtly quantitative course. Reading this book gave the impression that not much progress has been made since Carol Geary Schneider (2001: 104) wrote in *Mathematics and Democracy* more than fifteen years ago,

It is time to give up on the stand-alone general education mathematics requirement. The great majority of colleges and universities, whether research- or teaching-oriented, still insist that most students take such a course (usually selected from a limited menu of options) as a requirement for graduation. But very little is actually accomplished through this traditional approach to quantitative reasoning and we must fundamentally rethink it.

In fact, in a recent review by Joel Best (2016: 1) of the book *The Math Myth, and Other STEM Delusions* by Andrew Hacker, it is once more necessary to repeat that "... we should shift from emphasising math to promoting numeracy."

However, in the chapter entitled "Course collaboration models," Eric Gaze describes how Quantitative reasoning (QR) courses are steadily increasing in number and attracting more and more students. He describes this as a movement of "maths for everyone else" and points out that most college students do not major in a STEM field. Given that this is the case, it would have been useful if the chapters in the handbook included more information relevant to the support of students in these kinds of quantitative literacy courses. For instance, there is a lot of very useful information about the qualities of a good tutor and how to train tutors to develop these qualities, but the focus remains on helping students to solve mathematical problems and to do homework for mathematical courses.

While there is obviously much here that is relevant to tutoring students in quantitative literacy courses, our experience (e.g., Frith 2012) is that there are significant differences in the skills required. Tutors we employ are often experienced in tutoring for mathematics or physics courses and yet during training we see that they can be quite unskilled in teaching simple quantitative concepts applied in context. Lynn Steen (2001: 108) said "... numeracy is not so much about understanding abstract concepts as about applying elementary tools in sophisticated settings," and it is the elementary nature of the mathematical tools which sometimes baffles our tutors. It takes time for a physics or mathematics postgraduate student to develop the skill to explain how to do a calculation involving rates without merely resorting to cross-multiplication - and in fact to understand the difficulty that such a problem can present to many of our students. I felt that discussion of issues like these that specifically concern the teaching of QL was lacking in the handbook, and, in the context of "maths for everyone else," I suspect these issues are not foreign to many learning support centres in U.S. colleges and universities.

There are a few themes that emerged repeatedly throughout the handbook and which resonated with the experiences in our Numeracy Centre. For example, several authors stressed the need to collect and analyse data to support arguments for the existence or expansion of services by a centre and for reviews and accreditation purposes. However, they do not in my opinion sufficiently discuss how such data might be analysed to produce strong arguments in support of their services, in the light of the fact that there are so many complexly interacting factors that impact on student success or failure. In a review of the Numeracy Centre a few years ago my experience was that it was very difficult to produce data-based arguments that convincingly persuaded colleagues that our unit is successful. In one of the chapters of the handbook the author mentions there was a small percentage increase in graduation rate since the inception of their centre, but how can one be sure that this increase could not be ascribed to some other factor or factors?

Another theme that emerged was the importance to a support centre of having sufficient space and the significance of the placement of that space on the campus. It was striking how strongly it came across that apparently small changes in situation and the nature of the space could impact significantly on students' willingness to make use of the services that centres provide. Given the expense of employing tutors, it would be a good idea for institutions to take note of this evidence and realise that saving money on space may not be good economy in the long term.

Perhaps the most important issue, especially for a unit that has a staff development or a curriculum development role, is the need for building ongoing and wide-reaching relationships with many other agents in the institution. Various

authors stress the need to build relationships with senior administrators, with faculty teaching relevant courses, and with other learning support units (such as writing centres) as well as to engage in collaborations when appropriate. There is very little advice on how to establish or maintain these relationships in an environment where colleagues may not be interested in change, or are defensive, or even hostile. This message about the importance of building relationships widely across the institution is one that I find particularly convincing, as well as uncomfortable, as it is so easy to become swallowed up in the day-to-day business of teaching that these more strategic activities are neglected. For instance, Tom Roby in his case study about the quantitative learning centre at the University of Connecticut, mentions that although their mission includes working with faculty in quantitative disciplines, the immediate demands of administering the peer-tutoring programme limits the attention that can be given to this line of work. In our case, although it is part of our mission to assist faculty with integrating QL into their teaching, we are sometimes reluctant to spread the word too widely in the institution, in case it should stimulate a demand for our services that we do not in fact have the resources to provide. Nevertheless the need for maintaining community interactions is an important theme in the handbook and reading this has made me think about how I am not doing this adequately and stimulated me to think more seriously about this issue.

The great strength of this handbook is that it describes what running a centre involves in concrete terms and in such a way that it stimulates self-reflection as well as giving the reader ideas about how to do things differently. For example, in our Numeracy Centre we focus on teaching students directly (in courses and workshops) and on working with staff and learning materials, but we have always felt that we do not have the capacity to provide any walk-in tutoring services. But reading this handbook has made me question that assumption. For this reason alone I think it is a valuable resource for anyone who has responsibility for running a quantitative learning support centre.

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