Introduction

Doctoral students are under increasing pressure to publish in journals whilst they are in the process of researching and writing up their theses [1]. However, most PhD students only receive limited training in academic writing either indirectly through feedback from their supervisors or as part of a basic training course in research methods in the first year of their studies. Such a level of provision in writing training can be inadequate, especially for students with weaker writing skills, whose first real exposure to academic criticism of their writing may come from an anonymous review of their first attempt at writing a journal article or conference paper. This can be a very discouraging and emotionally damaging experience which can inhibit such students from becoming confident communicators within their chosen research community.

In response to this, and at the request of some of their own students, sigma in conjunction with the Mathematics Education Centre (MEC) at Loughborough University set up a series of intensive writing workshops for its mathematics education PhD students. Through these workshops they aimed to create a safe environment for students to collaborate, ask questions and experiment with writing techniques in order that they could build confidence as scholarly writers. The workshops were also attended by some external mathematics education PhD students.

The participating students took part in activities guiding them through the process of planning, drafting, revising and reviewing papers. The training was facilitated by Dr. Peter Samuels, a mathematics education subject specialist from sigma at Coventry University and Dr. Mary Deane, an academic writing specialist from Coventry University’s Centre for Academic Writing (CAW) [2]. They were assisted by Rakesh Bhanot, a writing specialist from Coventry University who has historical links with the mathematics education research community, Dr. Erik Borg, an academic writing specialist from CAW and Liz Willis, academic co-ordinator of the HEA Engineering Subject Centre [3].

Method

The majority of mathematics education doctoral students begin their PhDs as mathematics rather than education specialists (or both), but need to become fluent researchers in both areas. Mathematics specialists tend to have weaker than average writing skills and hence require more training and encouragement to write fluently.

As a writing specialist, Deane’s remit is to support and improve the teaching of writing at Coventry University. Her approach to writing pedagogy is based on Monroe’s
premise that “language and learning are vitally connected” [4], p. xi and the writing as a “complex, heterogeneous activity” that is “integral to thinking” [4], p. xiii. The complexity of relationships between writing and cognition mean that attention to writing strategies is a vital part of the training to which doctoral candidates are entitled. Deane’s role is to promote good practice in this area by fostering debate about the features and requirements of academic writing within a disciplinary context. She works to support subject specialists in teaching writing to their research students as part of a programme of Writing in the Disciplines (WiD) [5] initiatives at Coventry University, inspired by Monroe’s pioneering practice at Cornell University.

WiD is a pedagogical approach to teaching writing based on collaboration between disciplinary academics and writing specialists [4]. Together, they examine aspects of the writing culture within a discipline and design ways of enhancing students’ opportunities to practice and acquire the range of capabilities they need to succeed at university and beyond. According to Bean, it is vital to embed writing instruction within disciplinary teaching because:

“Integrating writing and other critical thinking activities into a course increases students’ learning while teaching them thinking skills for posing questions, proposing hypotheses, gathering and analyzing data, and making arguments.” [6], p. 1.

CAW runs a programme of WiD initiatives supporting staff and students at Coventry University. It also provides feedback and advice through one-to-one writing consultations available to students and staff from any discipline. Unlike these one-to-one writing consultations, WiD work is sustainable because it involves staff development, so disciplinary specialists become writing specialists and help all their students perform well in writing related activities, such as publication.

The writing workshops took place through the sigma and MEC PhD Training Group [7] – an informal group for training its doctoral students in research methods and other related skills necessary for effective postgraduate research. The group holds meetings approximately every 2 months and comprises of students from different universities and at different stages of their PhD programs. The prior formation of the group and its training aims made it an ideal forum for a WiD intervention.

The philosophy and ethical approach adopted by the facilitators of creating a safe environment for developing professional academic writing skills was influenced by the Non-Violent Communication (NVC) movement [8], and especially Dannahy’s use of NVC in mathematics teaching [9]. The facilitators worked with a small group of students which enabled them to be responsive to feedback, and to work with individuals on a one-to-one basis.

**The first workshop**

The first workshop took place in June 2007 with the main aim of encouraging the students to appreciate the elements involved in formal writing, such as for academic journals. The workshop covered:

- abstract writing;
- critical thinking, including specific guidance on evaluation criteria for mathematics education articles taken from [10] – see Table 1; and,
combining external sources.

Each of these topics was underpinned by activities and examples taken from the mathematics education context. The students were each asked to provide an example of academic writing relevant to their research. The range of articles provided encouraged a discussion on academic genres.

The training was well received by the students, whilst feedback indicated that:

1. The workshop did not cover all the relevant skills involved in academic writing so further training was needed;
2. There had been insufficient time allocated to writing within the workshop; and,
3. The critical thinking session had been helpful but could have been contextualised further.

The second workshop

The second workshop took place in December 2007 and focused on argumentation and critique writing. The critique writing training centred on a brief contemporary book review taken from an international mathematics education journal [11] – see Fig 1. The students were asked to provide either extracts of their own writing or an extract relevant to their research written by another author, along with a brief critique – an example extract is given in Fig 2.

One-to-one feedback was provided by the facilitators to the students who provided extracts of their own writing as an incentive to encourage greater openness. More time was allocated for writing than in the first workshop. The students stated that they had planned to accomplish at the beginning of the writing session and provided a brief account of their progress at the end.

Again, feedback from the participating students was generally very positive.

The third workshop

The third workshop was held in June 2008 in response to a specific need identified by some of the PhD Training Group students who were in the process of organising their own conference in mathematics education (this process was itself being run as a group training exercise).

In order to provide effective and efficient feedback, the students had decided to review abstract submissions to their conference, rather than full papers and therefore needed specific training in this area. This training was facilitated by Samuels who included examples of abstracts written with a standard structure – see Fig 3. He was assisted by Liz Willis who spoke about her experiences of reviewing abstracts for an engineering education conference and who provided real examples of submitted abstracts in a similar subject area to the PhD students.

Conclusions

This paper reports a WiD initiative in the field of mathematics education targeting PhD students. It addresses the challenges faced by contemporary students and offers strategies for embedding explicit writing tuition into an existing training program. The WiD work explored here demonstrates how academic writing instruction can be blended with the critical approaches required within a specific subject area. The authors feel confident that other PhD students would benefit from a similar opportunity.

WiD collaborations bring together subject specialists with writing specialists, combining the authority to teach disciplinary content with attention to writing instruction. The result can be confident, articulate students who have developed the skills needed to communicate effectively in their professional practice.
are aware of the steps needed to succeed within their disciplinary context. Feedback from this cohort of students revealed their appreciation for the strategies they were taught and it is hoped that this kind of intervention will encourage junior researchers in mathematics education to persevere in their academic writing and become more proficient and skilful practitioners.

The authors worked with a cohort of doctoral students at a variety of stages, from early in their doctoral research to nearing completion. However, these students all share the common pressure to publish. But such pressure is not only a factor of their experience prior to gaining their doctorates and their first academic post: the demand for publication activity increases as an integral aspect of an academic career. The methods reported here are therefore relevant to the students’ productivity and ability to progress for the whole of their academic lives.

References


