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Professionalising the teaching of adult numeracy: are we there yet?

Steven Fletcher
University of Sunderland
SUNCETT

David Prinn
University of Sunderland

Abstract
Workforce development in Skills for Life (SfL) has taken on a greater significance since new overarching professional standards for teachers, tutors and trainers in the Lifelong Learning Sector (LLS) were introduced through Lifelong Learning UK (LLUK) in September 2007. This article explores the implementation of these reforms from the viewpoint of Adult Numeracy Subject Specialist teachers. A particular consideration throughout is the extent to which the Level 4 Numeracy Subject Specialist qualification offered is suitable preparation for teaching on SfL numeracy programmes at all levels, and whether the newly introduced Level 5 Diploma is a fitting replacement. Data for this article was gathered through discussions with local SfL practitioners of varying experience and expertise. They were asked to share their views on how they entered the sector and the suitability of the training they received. The discussions provided an interesting and rich dialogue and offer a perspective on the work done by the government in trying to professionalise the workforce from several different viewpoints.

Key words
Skills for Life; Numeracy; Teacher Education; Professionalising the Workforce; Continuing Professional Development.

Introduction
Workforce development in numeracy teaching began in earnest following publication of *A Fresh Start* (Moser, 1999). It was estimated that *'low numeracy skills were at least as pervasive, if not more so, than limited literacy skills'* (Hudson, 2006: p. 5). The government's SfL strategy (DfEE, 2001) began the drive to professionalise the workforce in numeracy and literacy teaching throughout the country.

A teaching qualifications framework and standards for subject specialist qualifications then followed (FENTO, 2002), which detailed the skills at Level 4 required by an adult numeracy subject specialist. The government also published *Success for All* (DfES, 2002) which reinforced the principle that all teachers in Further Education should be qualified to teach, therefore all teachers of basic skills required both a recognised teaching qualification such as a PGCE or Certificate in Education and a Level 4 qualification in their specialist subject (Literacy or Numeracy).

Good practice in SfL pedagogy is populated by widely different understandings of what it means be literate and numerate and for what purpose. Ofsted (2003) concluded that *'the FENTO standards themselves give insufficient attention to subject or occupational pedagogy'* (p. 36) and also commented that *'trainees generally start with good knowledge of their subject or occupational area. However, they have limited expertise in subject pedagogy'* (p. 34). They also recommended that training programmes should *'give substantially more attention to developing trainees' expertise in teaching their subject'* (p. 4).

The 2004 DfES Paper *Equipping our Teachers for the Future* further identified the challenge of reforming post-16 education and professionalising the workforce, and highlighted a number of strategies to improve the inadequate provision experienced by many learners, including the increased focus in Initial Teacher Education (ITE) of subject-specific pedagogy. This led to new overarching professional standards for teachers, tutors and trainers in the Lifelong Learning Sector which were introduced in September 2007 (LLUK, 2007a), replacing the 2002 FENTO standards at the same time.

LLUK developed guidance documents that specifically detailed the current subject knowledge and the professional practice that would be required of the numeracy subject specialist teachers (LLUK, 2007b), who would gain these standards through the replacement of the Numeracy Level 4 qualification, the Level 5 Diploma in Teaching Mathematics (Numeracy) in the Lifelong Learning Sector.

In this paper we provide an account of the main issues which emerged from discussions with current and potential adult numeracy specialists concerning their experiences of the relevance and suitability of Level 5 numeracy teacher training provision.

Methodology
An ethnographic approach was taken to this case study, in which selected local SfL practitioners of varying experience and expertise were asked to share their views on how they had entered the sector and the suitability of the training they received.

Initial meetings of the writers established the nature and focus of the study, and contributed to the design of the interview questions which would be used to elicit what we hoped would be thought-provoking and critical responses from participants. The questions were sent to the participants in advance. Schemes of work from either the Level 4

or Level 5 course were also sent as an aide-memoire to help participants in the research recall and consider the training they had received.

This was followed by interviews with various participants against the backdrop of the additional questions to provide a broader understanding of the issues arising. The interviews provided a series of interesting and rich dialogues which were analysed by the writers to interpret and deepen understandings of participants' perspectives on the work done by the government in trying to professionalise the workforce from several different viewpoints.

The nature of our discussions with fellow professionals, who were also interested in how teaching and learning SfL can be improved and progressed, helped add clarity and focus to our own reflections. They also supported what we believe from our own experiences of teaching and learning on these courses to be the case in terms of what needs to be done to improve standards in a sector *'currently saturated with policies'* (Coffield, 2006: p. 19) in a branch of the profession charged with the responsibility of achieving the latest target of *'95% of adults to achieve basic skills of functional literacy and numeracy by 2020'* (Leitch, 2006: p. 14).

What insights were gained from the research?

The following insights were gained from individual and joint thematic analysis of the data. We have used illustrative quotes to reflect key and recurrent themes in the data.

1. Too much emphasis on personal numeracy skills in the Level 4 qualification

> *"The Level 4 course came as a shock to me. I thought it would have a large focus on how to teach specific aspects of the numeracy curriculum to the likely students we would be teaching...Although I had an A Level in Maths, I was soon out of my depth with the personal numeracy skills element of the course"*
>
> (Interview)

Our research has found that SfL practitioners who had completed the Level 4 Subject Specialist course found the personal numeracy skills content of the course extremely challenging and in some cases irrelevant. Practitioners who participated in the study reported insufficient time to cover the topics defined by the standards (FENTO, 2002) in any depth and consequently found that they did not develop a deep understanding of the Level 4 topics.

The level of personal numeracy skills demanded by the standards appears to have been a barrier to many existing practitioners. Many trainees reported that they dropped out of this course in its early years when they discovered the extent of the personal numeracy skills they were expected to develop.

The extent to which personal numeracy skills are required by a teacher of adult numeracy is the subject of discussion in the literature. Coben (2003) describes her own experiences as a non-mathematics specialist who became involved in adult numeracy teaching and describes strategies she used when operating close to the limits of her competence (the well-known technique of 'keeping just one step ahead of the learners').

Data from our study suggest that the Level 4 standards placed too much emphasis on promoting high levels of personal numeracy at the cost of failing to develop a 'profound understanding' (Ma, 1999) of the numeracy that trainees were expected to teach.

2. Participants of the research would have preferred a greater focus on subject specific pedagogy in the Level 4 qualification

Respondents to our questions were unanimous in saying that developing higher level personal numeracy skills did not benefit their teaching of numeracy at lower levels.

Our research also found that trainees would have liked more time to have been spent on developing their numeracy teaching techniques which confirmed the findings of the National Research and Development Centre (NRDC) who reported that *'research suggests that many practitioners want more numeracy-specific pedagogy. In other words, they want more on how to teach and how to put ideas into practice'* (LSC, 2006: p. 3)

3. A concern was expressed in our research that developing high level personal numeracy skills does not necessarily correlate with being an effective tutor of numeracy at a SfL level

> *"On reflection, I think it is necessary for teachers of numeracy to have an in-depth knowledge of their subject at the levels they are teaching. Increasing the breadth of knowledge by studying new topics at a higher level is of little benefit when teaching at a lower level"*
>
> (Interview)

It may be a valid assumption with most subjects that it is necessary for a teacher to be qualified to a high level in their specialist subject but it is not necessarily true that developing high level personal numeracy skills will make effective basic skills numeracy teachers.

Brover argued that the most interesting question to ask about teachers' mathematics knowledge is not 'how far?' but 'how deep?' (Brover et al, 2001).

It is important to note here that in mathematics the knowledge skills and concepts developed at Level 3 and above are not merely a case of studying the same subject in more depth. Completely new concepts and topics are introduced. The assumption operating here is that trainees are able to build on a previous high level of personal numeracy which has been developed through study at lower levels.

4. Participants saw the need for a focus on the pedagogy of teaching in different contexts within working in a SfL numeracy setting

> *"There is a big challenge in teaching a topic, not just at a range of levels, but in a wide range of contexts too...As an example, I taught the same numeracy Entry Level 3 topics to such varied groups, and had to approach each so differently"*
>
> (Interview)

Another theme to emerge from our research is the vastly different complex environments in which any one particular tutor will find themselves when teaching in SfL contexts. Respondents reported that a focus on the pedagogy of different contexts on the Level 4 programme would have been of huge benefit.

5. Too much emphasis in the Level 4 programme on professionalising the existing workforce, at the expense of those new to the profession

> *"The Level 4 course seemed to be aimed at existing practitioners rather than new entrants to the profession and there was an inherent assumption that they were already competent teachers"*
>
> (Interview)

We also found that the Level 4 programme tried to satisfy two disparate target groups. The main emphasis was on professionalising the existing workforce (which perhaps explains the emphasis on personal skills at the expense of pedagogy) but the course was also attended by new entrants to the profession who may have had different requirements. Their personal numeracy skills may have already been at a high level but they lacked teaching experience. In trying to satisfy the needs of the two groups the course 'fell between two stools' and did not meet the needs of either group.

With the introduction of new standards (LLUK, 2007a) the emphasis seems to be shifting towards training new entrants to the profession with the assumption that the job of professionalising the existing workforce is now finished.

This change of emphasis is reflected in the number of students applying for the Level 5 Numeracy course. There is a significant increase in the number of students from generic Initial Teacher Education courses and a corresponding decrease in the number who are already teaching in FE Colleges and, in particular, the smaller training providers.

6. Finance is a significant factor in recruitment of numeracy subject specialists

In previous years many students on the Level 4 course and the first year of the Level 5 course had qualified for funding of their course fees. This project has now closed and there were no sources of funding for course fees available at the time of our initial analysis of the data. This may be one reason why there has been a significant drop in numbers, especially from the smaller training providers. In contrast there has been a significant increase in numbers of students from the generic Initial Teacher Education course. The introduction of an increased bursary for those training to be numeracy teachers has undoubtedly had an influence.

However, since then the Department of Business Innovation and Skills (BIS) have agreed that this course should be regarded as Initial Teacher Training and therefore is eligible for funding via grants from Student Finance (England).

7. With the new Level 5 Diploma comes a problem of barriers to entry for those wishing to teach numeracy in a SfL setting

The Level 4 certificate has been replaced by a Level 5 Diploma and there is now less emphasis on developing personal numeracy skills at a high level but there is now an entry requirement for the new Diploma. Students must demonstrate that they can apply personal numeracy skills at Level 3 before they can be accepted onto the course.

This may prove to be a considerable barrier to many applicants. NRDC research (Hudson, 2006) found that half the numeracy trainees on teacher education programmes did not have a mathematics qualification above Level 2. Our research found that the situation in the North East is even more worrying with only three applicants out of 30 having a qualification in mathematics above Level 2.

8. The need for a preparation course to aid entry to the Level 5 Diploma has in effect created an elongated version of the Level 4 certificate

Raising participants' personal numeracy skills to Level 3 is a considerable problem and it has become apparent that 'preparation' courses are required for many students before they can commence the Diploma course. In effect the Diploma course has become an elongated version of the Level 4 certificate with the personal numeracy skills (albeit at a slightly lower level) now in the preparation course.

Respondents reported that there was insufficient time in the old Level 4 course to cover the topics to the necessary depth and that the same is true of the new preparation course. There was, and will continue to be, a tendency to 'teach to the test'. There may be sufficient 'surface learning' (Biggs, 1999; Entwistle, 1988; Ramsden, 1992) for the student to meet the requirements of the entry assessment but this is not likely to have resulted in a permanent raising of standards or indeed meaningful and deep learning. The entry test may prove to be an artificial barrier which students will find a way to instrumentally circumvent rather than deeply engage with the subject.

The entry test may have initially seemed daunting to many applicants but they eventually realised that completing the preparation course had given them increased confidence in their ability to teach numeracy at lower levels. Some students have now asked for even more work on personal numeracy skills and that this should be targeted at improving their in-depth knowledge of the topics they will be teaching.

9. There is a concern regarding the lack of experienced numeracy tutors locally able to act as a mentor to those on the Level 5 Diploma

The shortage of qualified numeracy subject specialists has led to a situation where trainees and newly-qualified teachers are often expected to operate without the support of an experienced numeracy teacher. A common scenario is the qualified literacy teacher who finds that they are also expected to teach numeracy.

> *"In my job role there isn't anyone else who is familiar with SfL so it is also a good opportunity for me to talk to people who are familiar with my job role and responsibilities"*
>
> (Interview)

10. Students hoping to enter the SfL sector as numeracy specialists are benefiting from the complementary generic PGCE (PCET) programme

The preferred model for training new entrants to the profession is to deliver an integrated Initial Teacher Training course to cohorts of numeracy specialists. There is unlikely to be sufficient demand for such a course at some institutions so new entrants enrol on a one year full-time generic initial teacher training course and they also complete the Level 5 Additional Diploma in parallel. Some students commented on the benefits of this model.

> *"I found that it was extremely difficult to obtain any work without qualifications and (in many cases) it was difficult to obtain qualifications without already being employed in the sector. The only avenue available to new entrants to the profession seemed to be the model where it was possible to obtain both a generic teaching qualification and the numeracy subject specialist qualification after one year of full-time study. I would then be fully qualified and able to seek work as an Adult Numeracy teacher"*
>
> (Interview)

The Level 5 Additional Diploma course has been designed to avoid duplication with the PGCE (PCET) programme where possible and current students commented on the benefits of this.

> *"I found it to be advantageous as the two linked together well and I didn't feel as though as I was doing things twice"*
>
> (Interview)

> *"Many advantages, especially the ability to use work on one activity in PGCE and then being able to use it for the Level 5 also has meant it is much more manageable trying to do both courses. Indeed without that opportunity it would be too risky that the work would be overwhelming"*
>
> (Interview)

Conclusions based on the research

Our research points to the shortcomings of the old Level 4 course and it appears that the Level 5 Diploma is a more suitable replacement.

The new standards are creating issues for capacity building in numeracy teaching. Smith (2004) found that progress with SfL could be undermined by the shortage of competent teachers of adult numeracy and mathematics and that the shortage could get worse.

Whilst it is possible that many students with a mathematics qualification no higher than Level 2 will make excellent numeracy teachers, in an ideal world there would be a steady supply of students qualified to Level 3 or above in mathematics who wish to be trained as adult numeracy teachers but in reality very few are coming forward. There needs to be a concerted campaign to recruit candidates of the necessary calibre if the targets of Leitch (2006) are to be met.

> ***'There are fewer numeracy teachers (under 6,100) than literacy teachers (over 9,300), although the Department plans to increase the number of numeracy teachers.*** *To do so, it should adopt new approaches to recruitment, for example, targeting graduates of programmes with substantial maths content and increasing the availability of specialist training routes including distance learning'*
>
> (PAC, 2009: p. 5)

The question we need to pose is not 'How do we persuade teachers to specialise in numeracy?' Increased training bursaries seem to be having a positive effect in that area. The real problems are 'How do we persuade people with a

mathematical background to go into teaching?' and if we could solve that problem, 'How do we persuade them to teach in the Lifelong Learning Sector instead of secondary schools?'

Smith (2004) suggested that it may be worth exploring the possibility of developing qualifications to teach mathematics at different levels as some people who may feel confident about teaching numeracy at Entry Level may not be comfortable about teaching at Level 2. *'Developing a more targeted approach to qualifying practitioners to teach numeracy and maths at different levels of the National Standards may encourage more people to teach post-16 numeracy and maths'* (Hudson: 2006, p. 13). Personal numeracy skills and subject-specific pedagogy could then be tailored to relevant levels.

The targets set by Leitch (2006) will inevitably lead to a concentration of effort on achieving 'functional numeracy' which is regarded as being equivalent to Entry Level 3. This gives us an opportunity to concentrate subject knowledge and pedagogy on either Entry Level or on Level 1 and 2. This would be analogous to the split between mathematics in secondary schools (Level 1 and 2), which is usually delivered by a mathematics specialist, and primary schools (Entry Level) which is usually delivered by a teacher who is not a mathematics specialist. Despite this lack of mathematics specialism in primary schools there has been an increase in attainment in recent years.

> *'It is entirely reasonable to suggest that the changes introduced into the pedagogy of mathematics and the support networks for teachers as a result of the National Numeracy Strategy were the major contributory factors in bringing about this improvement'*
>
> (Williams, 2008: p. 19)

The Williams *Independent Review of Mathematics Teaching in Early Years Settings and Primary Schools* (2008) considered the minimum requirements for admission to Initial Teacher Training courses which is currently a grade 'C' in Mathematics at GCSE.

> *'While this demonstrates a basic understanding of the subject, it does not constitute in itself "deep subject knowledge"'*
>
> (ibid: p. 9)

> *'The panel considered the idea of raising the required entry level to a grade 'B' at GCSE, or perhaps to some form of Level 3 qualification at either AS or A-level. Reluctantly, it has concluded at this interim stage in the review that in the immediate future, this strategy would be inadvisable given the risk of falling enrolment of trainee teachers'*
>
> (ibid: p. 10)

The Williams review concluded that *'it is unrealistic to seek to improve competence levels in mathematics teaching in primary schools by placing higher hurdles in front of trainee teachers as they enter their training course'* (ibid: p. 12) yet that is precisely what has happened in the Lifelong Learning Sector.

The high levels of personal numeracy skills required by the entry requirements for the Level 5 Diploma may be a barrier to entry for many trainees and still do not guarantee the depth of subject knowledge required to produce a good numeracy teacher.

Recommendation

Our main recommendation to the policy community is that it may be worth considering whether it would be possible to introduce a qualification with a lower initial entry requirement to attract trainees who may be comfortable and only qualified to teach at Entry Level in the early stages of their initial professional development of their specialist field. They could then be given the opportunity when ready to 'top up' this qualification through Continuing Professional Development which concentrates on the subject knowledge and pedagogy required to teach at Levels 1 and 2.

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