

The implications for post-16 numeracy and  
maths of the Smith and Tomlinson reports, the  
14-19 White Paper and the Skills White Paper  
**A policy discussion paper**

**Caroline Hudson**

**Maths4Life**  
Policy report



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# Foreword

This short report aims to provide a discussion of important recent policy documents which address the *Skills for Life* sector, in particular numeracy and maths.

For a long period, post-16 numeracy and maths have been what Diana Coben, in her NRDC review of adult numeracy research and literature (2003), described as 'undertheorised and underdeveloped'. Adult numeracy has always been the poor cousin to literacy, though, since *Skills for Life* was launched in 2001, it has become a fast developing and increasingly debated field. There are more explicit and developing links with mathematics practice and terminology, creative discussion and vital collaborative efforts. We now use 'numeracy and maths' in the same breath.

We hope this report will provide a summary and update of policy developments related to post-16 numeracy and maths and stimulate more discussion in a subject which has at last become a high priority. It was the Organisation for Economic Co-operation and Development's (OECD) International Adult Literacy Survey (IALS), including 'quantitative literacy' which alerted the United Kingdom (UK) to persistent high levels of basic skills problems among adults. The government responded by establishing a working party chaired by Lord Moser. Its report, 'A Fresh Start' (1999) estimated that low numeracy skills were at least as pervasive, if not more so, than limited literacy skills. The government responded to the Moser report in 2001 by launching a major national strategy, *Skills for Life*, which gave equal weight in policy to literacy and numeracy. One of Moser's recommendations was that the DfES should carry out a national survey of need; in 2003 the results of this were published (DfES, 2003a) with startling findings. The study found that numeracy was an even greater problem than literacy in the adult population between the ages of 16–65. Nearly half of all adults' skills were classified at entry level 3 or below in the English framework of levels and qualifications. This means around 15 million people – of whom nearly 7 million were at entry level 2 or below. In addition, "Does Numeracy

Matter More?" (NRDC, 2006) reports on research by Professor John Bynner and Samantha Parsons at NRDC. Their work shows that people with numeracy skills at such low levels are likely to experience much greater problems across different aspects of their lives. Women are particularly affected. Poor numeracy skills can particularly hinder them in finding work and leading healthy, fulfilling lives. Maths and numeracy matter to adults. That this has been strongly recognised in policy development is a major step forward.

Maths4Life was established at NRDC by the DfES in August 2004. It is a consortium, led by the Institute of Education, University of London, with LLU+ at London South Bank University, King's College, University of London and other major organisations. Our aim is 'to contribute significantly and measurably to high quality, attractive numeracy and mathematics provision post-16, which responds to the needs of increasing numbers of learners'. Maths4Life draws on NRDC's research and development, is providing a 'virtual' centre for teachers and other practitioners in the field, and is linking its work to other major developments, such as the work of the Standards Unit at DfES and the newly formed National Centre for Excellence in the Teaching of Mathematics (NCETM), led by Tribal Education, a Maths4Life partner. We will provide updates to follow this report on new policy developments as they unfold.

We want as many numeracy and maths practitioners, researchers and policy developers to contribute to our work in Maths4Life. We would welcome feedback on this report. Please visit our website, or contact us at [info@maths4life.org](mailto:info@maths4life.org) to explore how Maths4Life can support your work. We look forward to working with you.

**Ursula Howard**  
**Director, NRDC and Director, Maths4Life**

# 1

# Introduction

- 1.1 During the last three years there have been four government-commissioned reports which directly impact on adult numeracy and maths within the *Skills for Life* sector. Maths4Life wants to be responsive to the current policy agenda, and to help inform the future. The aims of this document are to highlight the issues arising from the four documents, and to outline the project's response to them. The document seeks to encourage debate, and to alert the *Skills for Life* sector to issues which will undoubtedly impact on theory and practice in the near future.
- 1.2 We set out to address issues raised in the Smith Report and other key policy developments.

These reports are:

Smith (2004). **Making Mathematics Count: The Report of Professor Adrian Smith's Inquiry into Post-14 Mathematics Education**, hereafter referred to as the Smith Report .

DfES (2004a). **14-19 Curriculum and Qualifications Reform. Final Report of the Working Group on 14-19 Reform**, hereafter referred to as the Tomlinson Report.

DfES (2005). **14-19 Education and Skills**, hereafter referred to as the 14-19 White Paper.

DfES et al. (2005). **Skills: Getting on in business, getting on at work**, hereafter referred to as the Skills White Paper.

## 2

# Overview

- 2.1 The discussion which follows aims to stimulate debate within the numeracy and maths community on the implications for post-16 numeracy and maths of the Smith Report, the Tomlinson Report, the 14-19 Education and Skills White Paper and the Skills White Paper. When considering the implications of these documents for post-16 numeracy, it is important to assess the likely impact of each document separately, and also of all four documents together. Moreover, what the government discards, as well as what it adopts, from Smith and Tomlinson may have implications for post-16 numeracy.
- 2.2 Overall, the documents present opportunities and challenges for post-16 numeracy. They all reiterate the importance of mathematics and, as a central strand of mathematics, functional mathematics. However, the ambitious agendas laid out in the 14-19 White Paper and the Skills White Paper are not always convergent. Together, they may create competing demands for post-16 numeracy. Not only could each White Paper result in increased numbers of numeracy learners, but there are also differences between the target groups of each White Paper. The 14-19 White Paper is concerned with young people who are largely in full-time education and training, whilst an important aspect of the Skills White Paper is raising the skills of employees. These differences in target groups raise questions about, for instance, appropriate curricula and pedagogies to teach numeracy. Their combined agendas are likely to be particularly challenging for post-16 numeracy and maths, given the continuing shortage of appropriately qualified, skilled mathematics teachers.
- 2.3 The following list summarises the central issues affecting adult numeracy and maths arising from the four reports. Together, they underline the importance of the *Skills for Life* sector within mathematics education, suggest some challenges, and pose areas of uncertainty:
- These four policy documents serve to set the agenda in numeracy and mathematics education.
  - They all reiterate the central importance of numeracy and mathematics.
  - They all stress ‘functional mathematics’. Though not yet defined, it seems that functional maths may become identified with lower-status pathways. This is in part because the government’s rejection of the Tomlinson recommendations in full may reaffirm a vocational-academic divide.
  - Challenging targets for learners’ participation and achievement suggest that the shortage of suitably qualified numeracy teachers is likely to become more acute.
  - Smith, together with NRDC evidence, suggests that the most urgent need for continuing professional development (CPD) is on subject knowledge and subject-specific pedagogies.
  - There is a key role for the newly established NCETM to provide central and distributed infrastructures to support the entire mathematics sector.
  - It is not clear from the reports what impact the emerging post-14 agenda will have on the *Skills for Life* sector, which includes adults of all ages. Policy makers and stakeholders need to work together to ensure that adult learners’ needs are met within the new approaches.

## 3

# Post-14 or post-16?

- 3.1 Tomlinson and the 14-19 White Paper raise questions about the extent to which it will be helpful to conceptualise post-16 numeracy, as distinct from post-14 numeracy. On the one hand, *Skills for Life's* public service agreement (PSA) targets are for individuals who are aged 16 or over. Post-16 is also the dividing point between pre- and post-compulsory education. However, Tomlinson and the 14-19 White Paper emphasise the increasing importance of 14-19 as a phase of education. The government's target is to raise the percentage of young people participating in education and training at age 17 from 75 per cent to 90 per cent, over 10 years. This, as the 14-19 White Paper (page 22) explicitly comments, raises questions about the usefulness of thinking in terms of pre- and post-16.
- 3.2 As part of the 14-19 reforms, some young people will access vocational education and training, through, for example, further education (FE) colleges and private training providers. This means that numeracy teachers working in colleges may be teaching learners who are under as well as over 16. There is emerging evidence (e.g. TES, 2004) that post-compulsory teachers find this expanded remit challenging, and it raises questions about appropriate CPD.

## 4

# Pedagogy

- 4.1 Tomlinson is chiefly about a qualifications framework (Pring, 2005a). Though Smith highlights far-reaching concerns about the teaching of post-14 mathematics and considers pedagogy when, for instance, discussing CPD, the main foci of Smith are teacher supply and expertise, curriculum and assessment. None of the reports considered in this review address pedagogical issues in detail, though it is axiomatic that pedagogy is central to teaching and learning. Indeed, the challenges presented in implementing Smith and the 14-19 and Skills White Papers could result in key pedagogical issues in post-16 numeracy being under-emphasised, as managers, teachers and other practitioners get to grips with changes to curriculum, qualifications and assessment.
- 4.2 In contrast, ATM (2005a), for example, underlines the importance of teaching functional mathematics (once a definition has been decided), in ways which are interesting to and appropriately challenging for learners. Watson (2005) highlights the importance of exploratory pedagogies in teaching all mathematics learners.
- 4.3 Whilst the 14-19 and Skills White Papers underline the importance of functional mathematics for young people and adults, this carries different pedagogical implications for different learners. For instance, what is an appropriate pedagogy for functional mathematics for an able 16-year-old GCSE student is likely to differ from an appropriate pedagogy for an older numeracy learner who has achieved level 1 in functional mathematics, failed to achieve GCSE on a number of occasions, and is on a level 2 programme as part of *Skills for Life*. Teaching and learning strategies for adults at pre-entry and entry level will be different again. It is essential to ensure that appropriate pedagogies are developed for the full range of post-16 *Skills for Life* numeracy and maths learners. Developments should include pedagogies for numeracy and maths provision which are appropriate for learners with learning difficulties and disabilities (LDD), including dyslexia and English for Speakers of Other Languages (ESOL) learners.
- 4.4 The increased emphasis on vocational pathways within the 14-19 agenda (Tomlinson and 14-19 White Paper), and on adults' entitlement to a free first full level 2 qualification (Skills White Paper) suggests that there should be a focus on maximising the appropriateness of both curricula and pedagogy to teach embedded numeracy and maths. This approach could build as appropriate on research, including Hoyle et al. (2002) and the NRDC's work on embedded numeracy case studies (Roberts et al. 2005).

## 5

# Curriculum

## 5.1 Functional mathematics

- 5.1.1 Smith, Tomlinson, the 14-19 White Paper and the Skills White Paper all underline the importance of functional mathematics. For example, functional mathematics will be a compulsory part of GCSE mathematics and each of the three levels of the 14 occupational diplomas (14-19 White Paper). Adults with skills below level 2 have access to free numeracy provision (Skills White Paper).
- 5.1.2 The 14-19 White Paper underlines that there will be coherence in how functional mathematics is conceptualised, across all ages and sectors.
- 5.1.3 None of these documents defines in detail what is meant by functional mathematics, although, for instance, the 14-19 and the Skills White Papers equate functionality with level 2 skills. The 14-19 White Paper also cites extracts from the level 2 National Standards for numeracy, when discussing functional mathematics (pp.38-39).
- 5.1.4 Watson (2005) implicitly highlights potential issues in arriving at a consensus about functional mathematics; she points out that respondents to the Smith Inquiry differed in their understanding of what is meant by basic mathematics, depending on whether they were mathematicians, Higher Education (HE) representatives or employers. Furthermore, Watson (2005) makes problematic the concept of clear-cut hierarchies of mathematical knowledge. Whilst the National Standards for adult numeracy specify skills and knowledge in numeracy at different levels, Watson's (2005) point may have implications for redefining functionality at different levels, across all ages.

5.1.5 Work is in progress to establish what is meant by functional mathematics. A joint Advisory Committee on Mathematics Education (ACME) and the Qualifications and Curriculum Authority (QCA) workshop on functional mathematics has been held to begin this process.

The post-16 numeracy community must ensure that it contributes its expertise as appropriate to the current debate on functional mathematics.

## 5.2 Financial education

- 5.2.1 The 14-19 and Skills White Papers underline the importance of teaching about financial issues in relevant strands of the 14-19 curriculum, including mathematics. A consideration of what financial education may mean in relation to post-16 numeracy should be included in the debate about functional mathematics.

## 5.3 Pathways

- 5.3.1 In principle, through flexible pathways (Smith, Tomlinson and the 14-19 White Paper), learners should be able to transfer smoothly from vocational to academic and other qualifications, and take qualifications at different levels when they are ready to do so, rather than at a specified age.
- 5.3.2 In discussing Smith's proposed pathways for mathematics, Watson (2005) makes the point that these are likely to reinforce existing inequities, arguing that those learners who are least confident will be least likely to choose pathways which require confidence and, in the case of mathematics, abstraction and complexity. Disenchanted learners will be most likely to choose low status routes. Watson's (2005) point may also apply to the 14-19 White Paper.

- 5.3.3 It would be naïve to assume that Tomlinson's proposal of a unified diploma framework would result in all types of learning - academic and vocational - having equal status. However, the government's rejection of Tomlinson's diploma framework in favour of GCSEs, A levels and 14 diploma lines in key occupational areas (the 14-19 White Paper), will probably help reaffirm the academic-vocational divide which Tomlinson sought to address. In short, occupational diplomas will probably have a lower status than, for instance, A levels. It is stated that functional mathematics will be part of all relevant 14-19 qualifications (14-19 White Paper). However, it is likely that functional mathematics will be identified with lower-status, vocational pathways. This will probably carry implications for the status of post-16 numeracy and maths and *Skills for Life* numeracy learners.
- 5.3.4 If pathways are to be flexible in practice, as well as in principle, information about pathways and within this, about numeracy and maths provision, must be presented in ways which are intelligible to the learner and which enable him/her to plan for his/her progression.

#### **5.4 Information and Communications Technology**

- 5.4.1 Smith, Tomlinson and the 14-19 and Skills White Papers underline the importance of ICT in the teaching and learning of mathematics. This is also emphasised in research (e.g. Hoyle et al. 2002; Hoyle, 2005). This raises issues about ICT and numeracy in relation to, for instance, resources, curriculum, pedagogy and CPD.
- 5.4.2 Smith notes the variation in ICT resources across institutions. This highlights the importance of ensuring that there are appropriate levels of ICT resources in all contexts in which post-16 numeracy is taught.
- 5.4.3 Hoyle et al.'s (2002) argument that ICT and mathematical skills are interdependent in workplace learning raises questions about appropriate curricula to integrate ICT and numeracy, as part of workplace learning and pre-employment programmes.

- 5.4.4 Mellar et al. (2004) found that there were few examples of the effective use of ICT in the teaching and learning of literacy, language and numeracy (LLN). This suggests that it is important to develop subject-specific pedagogies for integrating ICT into post-16 numeracy and maths teaching, and to enable numeracy teachers to incorporate these into their practice, through CPD.
- 5.4.5 The White Paper 21st Century Skills – Realising Our Potential (DfES, 2003b) made a commitment to recognise ICT within the *Skills for Life* Strategy, alongside LLN. The DfES has been working with partners to develop an ICT user skills strategy intended to equip people over time with the skills they need to function effectively in an increasingly ICT-dependent society. The 2005 White Paper introduced the requirement for functionality in ICT as well as in English and maths for all school leavers.

#### **5.5 Relevance**

- 5.5.1 Underpinning an increased focus on vocational learning 14-19 and mathematics embedded in vocational learning (14-19 and Skills White Papers) are assumptions about relevant learning for different groups of learners. Whilst there is evidence that some learners prefer practical, work-related activities (Hurry et al. 2005; McNeil and Dixon, 2005), at the same time it is important that post-16 numeracy learners are not patronised or stereotyped, and that, as Watson (2005) points out in relation to school students, numeracy learners are enabled to articulate what they would like to learn and how. It will be important to examine relevance in relation to post-16 numeracy, asking questions such as who decides what is relevant and how, and the extent to and ways in which perceived relevance may constrain or facilitate numeracy learning.

## 6

# Assessment

- 6.1 Smith underlines the need for coherence between mathematics qualifications. The 14-19 and Skills White Papers state that the functional strand of GCSE will be the same as the *Skills for Life* qualifications. Respondents to the Smith Inquiry highlighted concerns that adult numeracy qualifications were child-centred. Ensuring that questions on functional mathematics are appropriate for pre- and post-compulsory learners is not necessarily straightforward. It will be important for the post-16 numeracy community to ensure that the *Skills for Life* numeracy qualifications are appropriate for adult learners.
- 6.2 It could be argued that because Smith, Tomlinson, the 14-19 White Paper and the Skills White Paper all highlight the importance of functional mathematics, its status is raised. On the other hand, the possible assessment structure for functional mathematics may suggest issues about the value of functional maths. At GCSE, a learner's achievement in functional mathematics will be recognised, even if the rest of mathematics GCSE is not achieved. This suggests (e.g. ATM, 2005b) that, with a separation between the functional strand of GCSE and the rest of GCSE mathematics, functional mathematics will be seen as the curriculum for low achievers. This could carry implications for the status of post-16 numeracy, especially as the 14-19 White Paper (p.36) explicitly states that alternative qualifications, such as *Skills for Life* qualifications, will be used with those who are unable to access a full GCSE.
- 6.3 Smith and the 14-19 White Paper point to the role of formative assessment in teaching and learning. Those involved in post-16 numeracy and maths could consider how most appropriately to build on the developments in Assessment for Learning that have taken place at school level. Developments will also be able to draw on the NRDC's current research and development work on formative assessment carried out in conjunction with the University of Exeter and the Learning and Skills Development Agency (LSDA). NRDC is also contributing as the UK partner in an OECD study of formative assessment in adult basic skills in a number of different countries.

## 7

# Teacher supply and development

## 7.1 The supply of appropriately skilled mathematics teachers

- 7.1.1 There are no national data on the current or likely shortfall of post-16 numeracy teachers.
- 7.1.2 Smith had access to more data, albeit of often questionable quality, on mathematics teachers in maintained schools than on teachers in colleges.
- 7.1.3 Though precise numbers are not known, DfES evidence to the Smith Inquiry highlighted that progress with *Skills for Life* could be undermined by the shortage of competent teachers of adult numeracy and maths (Smith 2.27).
- 7.1.4 The increased focus on functional mathematics as part of the 14-19 agenda (14-19 White Paper) and the skills agenda (Skills White Paper), and the target for increasing the participation rate of young people in post-17 education and training from 75 per cent to 90 per cent over the next 10 years (14-19 White Paper 11.19) together suggest that the shortage of appropriately qualified post-16 numeracy teachers is likely to become more acute. When compared with Smith's analysis of the shortage of mathematics teachers, including Smith's view that the shortage could get worse, the DfES' projection (14-19 White Paper, 11.21) that the 14-19 changes will not create major staffing issues could be interpreted as optimistic.
- 7.1.5 Smith (2.15) makes the point that data on mathematics teachers in all sectors should be systematically collected and analysed, to inform policy making. It is planned that Lifelong Learning UK will collect national data on LLN teachers. It seems important that evidence from national data is used systematically, to inform planning for post-16 numeracy.

7.1.6 There is concern about recent announcements that the data gathering system for staff in the learning and skills sector co-ordinated by the Learning and Skills Council (LSC) - the Staff Individualised Record or 'SIR' - is not to be continued. Whilst the SIR had scope for improvement, it offered the only means of recording data on staff in post-16 mathematics.

7.1.7 Smith suggests a range of incentives for teacher recruitment and retention. Incentives such as 'golden hellos' have been implemented across sectors. There is scope to explore further the role of incentives in the recruitment and retention of post-16 numeracy teachers.

## 7.2 Professional development -initial teacher training

- 7.2.1 Smith's suggestion, endorsed by the ATM (2005b), of exploring the development of qualifications to teach mathematics at different levels has important implications for post-16 numeracy and maths teachers. In principle, post-16 numeracy and maths teachers may teach from pre-entry to level 2; this covers a wide range of skills. It is likely that some people who may feel confident about teaching numeracy at, say, entry level may not be comfortable about teaching at level 2, and that this may discourage them from teaching numeracy and maths. 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.

### 7.3 Professional development - continuing professional development

- 7.3.1 Respondents to the Smith Inquiry indicated that mathematics teachers in FE colleges had more limited access to appropriate CPD than teachers in maintained schools. Smith (p.112) stipulates that all teachers of adult numeracy and maths should receive CPD.
- 7.3.2 Smith recommends that CPD should encompass subject knowledge, subject-specific pedagogies and general pedagogic skills.
- 7.3.3 Smith uses data on the qualification level of mathematics teachers in maintained schools to argue that the most urgent need is for CPD on subject knowledge and subject-specific pedagogies.
- 7.3.4 Early evidence from NRDC research indicates that, of a sample of 113 numeracy trainees on teacher education programmes, the highest mathematics qualification of just over 50 per cent of the sample was level 2. Only 17 per cent had a level 4 mathematics qualification; however, 90 per cent of the numeracy trainees were qualified to level 4 or above, and some of the sample may have had a mathematics-related level 4 qualification. Whilst these interim findings should be treated cautiously, they indicate a need for CPD on subject knowledge and subject-specific pedagogies for post-16 numeracy and maths teachers.
- 7.3.5 If qualifications were developed to teach post-16 numeracy and maths at different levels of the National Standards, then CPD on subject knowledge should be tailored to relevant levels.
- 7.3.6 Smith does not consider the point that post-16 numeracy and maths teachers potentially work with very diverse groups of learners, from, for instance, 16-year-old school leavers to offenders and refugees and asylum seekers. CPD on working with different *Skills for Life* learners (Hudson, 2003, 2004) could help strengthen the practice of post-16 numeracy teachers.
- 7.3.7 As part of the 14-19 agenda, it may be helpful for post-16 numeracy and maths teachers to receive CPD on working with 14-16 year olds.
- 7.3.8 The increased emphasis on vocational education and training 14-19 (14-19 White Paper), the entitlement of all adults to a free first full level 2 qualification (Skills White Paper) and the focus on work-based learning (Skills White Paper) underline the importance of ensuring that vocational teachers who are involved in teaching embedded numeracy have an appropriate understanding of numeracy. This carries implications for CPD.
- 7.3.9 There is concern that numbers of unqualified teachers in the post-16 *Skills for Life* sector could be growing. This suggests there is a need for more pre-service teacher education than is currently available. At present programmes of CPD are delivered to many teachers who lack an initial grounding in educational principles, subject knowledge and subject-related pedagogical understanding. The need to begin the process of educating teachers before they work with students remains a key issue.
- 7.3.10 Smith underlines that the NCETM and the nine regional centres (see overleaf) should have a central role in CPD for mathematics teachers.

## 8

# Infrastructure

## 8.1 National Centre for Excellence in the Teaching of Mathematics

- 8.1.1 The Smith report highlighted the need for a national and regional support infrastructure which would encourage interaction across the whole mathematics sector, disseminate research findings and deliver CPD. It has been stipulated by the Secretary of State that the remit of the NCETM and the nine regional centres must cover all ages, including post-16 numeracy provision. It will be an important priority to ensure that the NCETM takes on board the priorities for post-16 numeracy teaching.
- 8.1.2 Smith stipulates that formal, collaborative links should be made between the NCETM and the NRDC.
- 8.1.3 The NCETM, led by the Tribal Group, is to be launched in April 2006.

## 8.2 Implementing the 14-19 strategy

- 8.2.1 The success with which the 14-19 agenda is implemented will depend in part on effective partnerships between stakeholders such as schools, colleges, employers, private training providers and the funders of education. The Nuffield 14-19 Review underlines that arrangements for 14-19 are complex and fluid. There are key issues in partnership arrangements, largely related to sharing resources and expertise. Issues are exacerbated by the often-competing discourses of collaboration and competition which seem a hallmark of New Labour's educational policy (Pring, 2005a, b; Hayward et al. 2004). Managers of post-16 numeracy should assess the extent to which a possibly fragmented 14-19 infrastructure may impact negatively on arrangements for numeracy and maths, and ensure that planning for post-16 numeracy is proactive about existing and future constraints.

## 8.3 Timescale

- 8.3.1 The overall timescale for implementing the 14-19 agenda is, as Tomlinson recommended, 10 years (14-19 White Paper). However, the first four occupational diplomas are scheduled for 2008. It is intended that functional mathematics will be implemented in 2010. It may not be unreasonable to suggest that these timescales are challenging and that they will carry implications for post-16 numeracy. In particular, during the transitional period 2008–10 it is unclear which examinations adults will take.

# 9

# Role of Maths4Life

## 9.1 Strategic role of Maths4Life

9.1.1 Maths4Life, in conjunction with the NCETM, is well placed to take a major role in shaping the policy agenda in post-16 numeracy and maths, including functional maths and CPD. In its developing role at the centre of the adult numeracy and maths community it can seek and disseminate views across a broad range of post-16 activities. Maths4Life could lead a wider discussion of the implications for post-16 numeracy of the four policy documents considered in this report through the Maths4Life website or other appropriate contexts. Maths4Life sees the following as its main strategic priorities arising from the four policy documents:

- Maintaining the focus on functional maths.
- Professional development issues, and in particular, subject-specific pedagogy.
- Developing strategic and operational relationships with the NCETM.

## 9.2 Next steps

Maths4Life will address its strategic priorities as follows:

### 9.2.1 Functional maths

The project consortium includes many experts in the fields of curriculum development, pedagogy and assessment. Members sit on the relevant existing committees which will be instrumental in developing and implementing approaches to functional maths. In addition, the project team is seeking meetings with bodies such as the DfES and the Qualifications and Curriculum Authority (QCA) to ensure its voice is heard throughout the development process.

### 9.2.2 Professional development

As part of its work on improving teaching and learning in numeracy and mathematics, the project is developing models of professional development. This includes approaches to developing mathematical thinking in learners and teachers alike, as well as examining dissemination models including mentoring, subject coaching and traditional face-to-face training courses. Maths4Life will work with the NCETM to embed such approaches on a regional basis.

### 9.2.3 NCETM

If Maths4Life is to be sustainable beyond its current lifespan (August 2004 – March 2007) it is essential that its findings and approaches are widely disseminated within the numeracy and maths community. Maths4Life will liaise with the NCETM from its inception to ensure it has a major profile in the new centre's strategic direction. Additionally, Maths4Life will develop a phased approach to ensuring the centre of the maths community moves from Maths4Life to the NCETM.

### 9.2.4 Engaging the numeracy and maths community

Maths4Life will seek the views of the numeracy and maths community, and keep it informed of developments, through its website [www.maths4life.org](http://www.maths4life.org).



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