

# RESEARCH

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Review of Research and Evaluation  
on Improving Adult Literacy and  
Numeracy Skills

DECEMBER 2011

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The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Business, Innovation and Skills.

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# Executive Summary

## Introduction

1. Until the results of the International Adult Literacy Survey in 1996 revealed the low levels of literacy and numeracy in the UK in comparison with other OECD countries, adult basic skills education was not a priority for the national government. Teaching basic skills to adults was marginalised and under-resourced and classes were mainly delivered by a volunteer workforce. The subsequent investigation into the perceived basic skills crisis by Sir Claus Moser's working group precipitated the launch, in 2001, of the Skills for Life strategy for England, a major government initiative to raise the language, literacy and numeracy (LLN) skills of the adult population. Skills for Life introduced a learning infrastructure including national standards, a core curriculum, materials and tests, new qualifications and professional standards for LLN teachers as well as national targets for the numbers of adults the strategy aimed to reach and the number of formal qualifications to be gained. The first systematic research programme for investigating adult literacy and literacy (ALN) was set up in 2002 with the creation of the National Research and Development Centre for Adult Literacy and Numeracy (NRDC). Thus only very recently has there been a systematic, nationally-funded attempt to professionalise practice in teaching and learning and to provide robust evidence on ALN.
2. The purposes of this literature review are threefold. First, this review summarises findings of the research from the last decade in six fields identified by the Department for Business, Innovation and Skills (BIS) as critical to its forward planning: (1) the economic, personal and social returns to learning; (2) the quality and effectiveness of provision; (3) the number of learning hours needed for skills gain; (4) learner persistence; (5) the retention and loss of skills over time; (6) the literacy and numeracy skills that are needed. Second, this review assesses this evidence base in terms of its quality and robustness, identifying gaps and recommending ways in which the evidence base can be extended and improved. Thirdly, this review attempts to interpret the evidence base to suggest, where possible, how returns to ALN learning for individuals, employers and wider society might be increased through effective and cost-effective interventions.
3. This review was undertaken by SQW, NRDC and the National Foundation for Educational Research (NFER) with additional assistance from a panel of experts from the London Knowledge Lab, the Centre for the Economics of Education and NRDC, all at the Institute of Education, London, and the National Institute for Adult Continuing Education (NIACE). It was carried out rapidly, over a period of 13 weeks between March and May 2011, in four stages: bibliographic searches and document retrieval (conducted by the NFER using keywords and search strategies devised by SQW and NRDC); review of sources and population of review templates in NVivo software; analysis of review templates and drafting of the report, including consultation with the project's panel of experts; reporting to BIS. The age range to be covered by this review was from 19 upwards, and evidence was to be drawn primarily from English-language and UK-based sources.

## Evidence

4. Since the introduction of the Skills for Life strategy in 2001, the evidence base on ALN has expanded greatly and now includes national data on ALN levels and needs (from the 2003 Skills for Life survey, with the results of a follow up survey expected in 2011); national evaluations of the impact of Skills for Life on learners and teachers; longitudinal studies on the impact of ALN in the workplace and in further education (FE); studies of relationships between teaching practices and learners progress in reading, writing and numeracy; studies on specific groups such as those perceived to be 'hard to reach' and learners with learning difficulties, and studies in particular contexts, including prisons and families. There is also an increasing body of international evidence, in particular from the United States (US), New Zealand and Australia.

There is strong evidence on the following features of ALN:

- good practice in teaching literacy and numeracy
- the benefits of embedding ALN in vocational programmes
- the positive impact on learners of working with qualified teachers
- the personal and social impact of ALN
- the need for multiple ways of engaging in learning – in class, self study, distance learning, ICT supported learning.

There is promising evidence in relation to the following features of ALN:

- blended learning - combining face to face and technology based, formal and self-study methods
- the significance of techno-mathematical literacies – a combination of ICT, literacy and numeracy skills
- the time required to make significant learning progress – often in excess of 100 hours.

5. Looking across the six areas included in this review:

- good evidence was found on adult basic skills levels, teaching and learning, and personal, social and economic returns
- limited evidence was found on skills acquisition, retention and loss, and on adults' everyday practices in literacy and numeracy, including patterns of self-study

- little evidence was found on the cost-effectiveness of ALN programmes, either as a whole or of specific delivery models and methods
- the evidence of the impact of ALN on productivity was found to be very weak; it is stronger but far from robust on further learning, and on employment and wages
- there is a lack of good evidence on information and communications technology (ICT), and on the role and impact of ICT in blended learning provision.

## Findings

### *Economic, personal and social returns to learning*

6. There is growing evidence that gaining literacy and numeracy *skills* in adulthood has a positive effect on earnings and employment. However, the acquisition of literacy and numeracy *qualifications* in adulthood has not yet been shown to be related to significant gains in earnings and employment.
7. There is insufficient UK evidence on the economic impact of literacy and numeracy *provision* in the context of FE and the workplace.
8. There is clear, convincing and statistically significant evidence that participation in ALN provision, and having higher levels of ALN, have a positive personal and social impact on individuals and communities. The personal and social impact of literacy and numeracy learning often takes time to emerge, and emerges in forms and contexts that are removed from formal learning environments.
9. Whilst there is strong evidence on the positive impact of ALN on learners' confidence, it is less clear whether improved confidence is a prerequisite of learning progress.

### *Quality and effectiveness of provision*

10. **Teachers of adult basic skills need to have both good generic teaching skills and good subject specific teaching skills.** Effective practice in literacy occurs where teachers build on learners' experience, encourage fluent oral reading, use reciprocal teaching and explicit comprehension strategies and adequate time is allowed for active reading in class. Effective practice in numeracy occurs where teachers build on knowledge learners already have and help them overcome their fear of maths, expose and treat misconceptions as a subject for discussion, promote reasoning and problem solving over 'answer getting', and make creative use of ICT. However, although much is known about what is effective in teaching and learning, these practices are often not observed in delivery.
11. Learner progress in literacy is greater where teachers have qualified teacher status, and in numeracy where teachers are qualified in maths to Level 3 or above (irrespective of qualified teacher status). Benefits for learners are associated with teachers who work full-time; nevertheless the proportion of sessional teachers in the basic skills workforce is rising.

12. The Skills for Life strategy contributed to a substantial increase in enrolment, completion and achievement in ALN. Studies have show there were worthwhile gains in numeracy for numeracy learners, and in reading for literacy learners, but not in writing for literacy learners.
13. Literacy courses tend to cost more than numeracy courses, and Entry level provision is considerably more costly than Level 1 and Level 2 provision, reflecting the greater needs of learners with the lowest skills. Longer courses tend to be delivered more efficiently than shorter courses due to fixed start-up costs. Evidence from one robust study shows that providing top-down provision on a workplace-specific basis is very expensive; as learner gains were small at best, this model of literacy delivery was demonstrated to be inefficient.
14. Retention rates and success rates are higher on vocational programmes where literacy and numeracy learning is embedded, as compared with non-embedded programmes. Results are lower, however, where a single teacher had dual responsibility for teaching vocational skills and ALN.
15. Participation in short workplace training programmes has not been demonstrated to make substantial improvements to employee literacy skills in the short term. However workplace basic skills courses reach people who are not normally involved in continuous education or training, and learners who participate in these courses voluntarily and who actively use their literacy skills at work and in everyday life continue to improve their skills and are more likely to engage in FE and training.
16. Many adults are motivated to gain new qualification and skills; many others are (also) motivated to improve their basic skills for 'self-development' – whether personal, social and/or occupational. A common aspiration is for learners to seek to 'better themselves'. Not all learners are motivated by the desire to acquire qualifications or specific skills; they may be motivated by intrinsic goals (for example, regaining confidence lost at school) along with, or instead of the extrinsic goals of career development, better wages and improved employment.
17. Learning technology may improve learner progress and achievement, and may help to attract, engage and motivate learners, but what little evidence there is on these topics is at best mixed.

### **Number of learning hours**

18. Better gains for learners seem to be associated with courses which allow for levels of participation in excess of 100 hours; learners require more time to make educationally significant progress than they generally spend in provision. For those who only need to 'brush up' existing skills, short courses are often adequate for learner gains; in contrast, learners working at a higher level may find it more difficult to achieve a qualification within the learning hours allocated to a single-year course. There is some limited evidence to show that learners who engage in self-study between classes make better progress.

### *Learner persistence*

19. Basic skills learners are more likely to withdraw from courses in the earlier stages than in the later stages; learners working at lower levels are more likely to withdraw than learners working at higher levels and learners with prior qualifications and experiences of learning are less likely to withdraw than those who have no prior experience.
20. Persistence is supported where learner progress is monitored and recognised on a regular basis, by setting and revisiting learner goals. It is therefore important that progress towards 'soft' outcomes, such as improvements in self-confidence, are recognised within a broad framework of achievement and that formative assessment recognises small steps as well as significant gains.
21. Breaking off from learning programmes can be a rational and positive response to changing circumstances. What is important in terms of learner persistence is that these breaks from learning are supported, principally by distance and blended learning, so that learners are not penalised and do not have the door to learning closed on them. However, the use of ICT needs to be well-supported as learners who encounter problems with ICT resources away from class can lose confidence and motivation.

### *Skills acquisition, retention and loss*

22. There is evidence of a **life course trend** in skills acquisition and loss, with skills improving up to early middle-age, reaching a plateau in middle age and declining in older age. **Use of literacy and numeracy skills in the workplace and in daily life helps adults retain and develop those skills.** Where it is available, workplace training can offset the loss of literacy and numeracy skills; the offer of training is, however, dependent on occupational sector and level.
23. Unemployed adults are more likely to experience a loss in skills than adults in work, and numeracy skills' loss is greater for those out of work than literacy skills' loss. The loss of numeracy skills for unemployed men is greater than for unemployed women, perhaps because women are more likely to use basic maths on a daily basis. Individuals who attain a threshold level of competency in literacy and numeracy by the time they leave school are less likely to face a decline of skills when out of work than those whose literacy and numeracy skills are poor at age 16.

### *The literacy and numeracy skills that are needed*

24. There is a lack of consensus over which ALN skills are needed, or the importance of literacy and numeracy alongside personal and technical skills in the workplace. Perceptions of skills needs vary by perspective, purpose, learner type, service provider, skill types and who needs the skill.
25. **There is growing evidence of the need amongst employees for a more complex combination of skills than in the past, including a combination of ICT and mathematical literacies.** Individuals in employment who struggle with skills in ICT or literacy or numeracy are likely to suffer losses in the other two areas. The growing range of demands and contexts for reading and writing, and for using and

manipulating numeric data, is further evidence in favour of a focus on functional skills.

26. Employers frequently cite the need for (improved) reading, writing and maths skills in the workplace, and report a significant gap between the skills levels of employees and skills needs in the workplace. However, there is much less evidence on employees' perceptions, and there is scope for the use of more refined assessment instruments to determine the skills that employers need.

## Conclusion

27. Continuing investment in improving ALN skills is required, but based on stronger evidence of which skills are required than currently exists. The forthcoming results from the Programme for the International Assessment of Adult Competences (PIAAC) will provide an indication of the UK's progress relative to international comparators, and suggest where investment should be focused.
28. There is little evidence explicitly linking the assessment of skills needs to the design and delivery of effective, efficient and economical provision leading to demonstrably cost-effective outcomes, such as improved employment, productivity, civic participation or learning progression.
29. No cost-benefit analyses of literacy and numeracy programmes have been carried out that would enable identification of the most efficient modes and models for delivering literacy and numeracy provision.
30. There has been relatively little funded work on the development of software and new e-learning techniques for adults in this field. Robust trials are required to clarify which are the effective practices in using technology for different groups of learners, and for different types of learning outcome.
31. There remains a need to establish, on the basis of rigorous cost-benefit analyses, the costs and benefits to employers of lower and higher levels of literacy and numeracy, considered separately, and in respect of small, medium and large employers in different sectors.

## Further research

32. One reason for the lack of robust evidence in several areas is the prevalence of inadequately designed studies and poor quality interventions. We need better quality interventions, and large, well designed and more sophisticated studies, that allow for the time and complex causality that connects learning interventions to their outcomes. Such studies are expensive, but they would provide a large pay off; an extensive body of reliable evidence that can be used as a solid basis for policy, development and further research.
33. Given the promising evidence on blended learning, its potential cost-effectiveness, and the increasing importance of employment and employability in ALN, it is a priority

is to develop high-quality blended programmes for employees in the workplace and other contexts, and to conduct a robust evaluation of their impact and effectiveness.

34. A priority for any future large-scale research is that it should include quality controls, particularly as these apply to teachers and teaching strategies. Past evaluations yielding negative conclusions often included very short interventions and teachers who lacked subject-specific teaching qualifications. Research design should build in an evaluation of implementation quality, to allow any assessment to distinguish between the principles of an intervention and how effectively or otherwise they were put into practice.
35. Any single large scale study should be focussed on one context within the post 19 sector. The quality of ALN teaching is generally higher than in many other post 19 contexts. If there was scope for only one future large scale longitudinal or experimental project, we recommend that it is exclusively focussed on the FE sector (though, clearly, all post 19 contexts would benefit from studies of this kind.)
36. In relation to the personal and socio-economic outcomes of ALN, longitudinal research provides as much potential as any other research design for yielding a reliable and extensive body of evidence. It is recommended that lessons are learned from the Longitudinal Study of Adult Learning (LSAL) study in the US. This is a well designed study, with a large and representative sample of a local population, repeatedly followed up over nine years, using measures for reading, writing and maths, and also a broad range of learning-related activities and practices.
37. Along with large scale research we recommend studies on a smaller scale. One strategy is to focus on a development programme of the best pedagogies and delivery methods (combining face-to-face and technology-based, formal and self-study methods), and to carry out small-scale but intensive case studies to follow individuals all the way from pre-test to intervention, to assessment, through to application in the home and workplace. Individual longitudinal case studies make it possible to explain the (un)successful features of interventions, in terms of the personal and local conditions experienced by the individual learners.
38. Evidence on skills needs often relies on learners' and employers' self report. There is a need for more robust research, including objective measures, on the literacy and numeracy skills that learners and employers actually use and need.
39. It is cost effective to exploit and build on existing data sources, including PIAAC, and, particularly if additional ALN questions were included, the British birth cohort studies.



# Introduction

## About this literature review

- 1.1 SQW and the National Research and Development Centre for Adult Literacy and Numeracy (NRDC) were commissioned by the Department for Business, Innovation and Skills (BIS) to provide a review of available literacy and numeracy evaluation and research literature. Bibliographical searches were conducted by the National Foundation for Educational Research (NFER). Additional assistance was provided by a panel of experts from the London Knowledge Lab, the Centre for the Economics of Education and NRDC, all at the Institute of Education, London, and the National Institute for Adult Continuing Education (NIACE). This review draws in the main from English-language and UK-based sources published from the year 2000 onwards. The age range covered is from 19 upwards, and English for Speakers of Other Languages (ESOL) is not addressed. The review was conducted rapidly, over a period of 13 weeks between March and May 2011.
- 1.2 The goals of this review were to appraise the evidence in terms of robustness and quality, identify gaps where these exist, and make recommendations for areas where further research is needed to strengthen the evidence base that supports policy development. This review also attempts to interpret the evidence base to determine, as far as is possible, how the economic, personal and social returns to adult literacy and numeracy (ALN) learning for individuals, employers and wider society might be increased through effective and cost-effective interventions.
- 1.3 Broadly, this review investigates the different elements a logic chain covering how the delivery of ALN skills (i.e. the funded activities) makes best use of the investment (i.e. inputs) to achieve the greatest economic, social and personal returns (i.e. outcomes) with the widest possible effects (i.e. impacts). It does so by considering six themes:
  - learning outcomes: the economic, personal and social returns to learning
  - the quality and effectiveness of provision
  - the number of learning hours needed for skills gain
  - the current culture and practice relating to learner persistence
  - the acquisition of skills and the retention and loss of skills over time
  - the literacy and numeracy skills that are needed.
- 1.4 Further details about each of these six themes, including the questions posed for the review in agreement with BIS, are set out in Table 1-1. Across these six themes, four areas are considered where they enhance our understanding of that theme: workplace and non-workplace provision; meeting the needs of 'hard-to-reach'

learners; differences between findings for literacy and numeracy; and the need for cost-effective, outcome-based approaches.

- 1.5 The findings of this review are presented in 12 chapters, each of which contains an introduction, an evaluation of the evidence base, findings and conclusions. The first two themes, learning outcomes and quality and effectiveness of provision, are split into multiple chapters to divide up an otherwise large body of material. We end the report with conclusions which bring the analysis from the preceding chapters together with recommendations for policy, practice and research.

**Table 1-1: Questions guiding the six themes under review**

Theme	Questions for the review
Learning outcomes	<p>What are the economic, personal and social returns of improving adults' literacy and numeracy skills? (Economic outcomes include getting a job, sustaining employment, progressing in employment, wage returns, increasing productivity.)</p> <p>Where do positive outcomes occur and why do they occur? That is, what is the link between the features of provision and the outcome, and how we can improve outcomes?</p> <p>How can we improve our evidence base in this area?</p>
Quality and effectiveness of provision	<p>What does the evidence tell us about current provision in terms of the amount and quality of teaching that takes place, the motivation of learners and the link to expected benefits/outcomes?</p> <p>What do we know about the most effective and efficient modes and models of engaging learners and delivering literacy and numeracy provision?</p> <p>What are the most effective pedagogical approaches and how have they been applied through different delivery models?</p> <p>What is the available evidence on the use of technology to deliver literacy and numeracy provision? To what extent is it currently used? Which types of learners use it? What is the relative effectiveness of different approaches?</p>
Number of learning hours	<p>What does the evidence tell us about the number of learning hours needed for skills gain?</p> <p>To what extent does own-time learning impact on the length of courses and the outcomes? What do we know about current practice and expectation in terms of the balance between guided (tutored) learning and own-time learning?</p>

**Table 1-1: Questions guiding the six themes under review**

Theme	Questions for the review
Persistence in literacy and numeracy learning	What does the evidence tell us about the current culture and practice relating to learner persistence and the most effective ways to keep people in learning for long enough to make significant progress?
Skills acquisition, retention and loss over time	What does the research tell us about skills acquisition and retention, why skills loss occurs and what can and has been done to reduce it?
What literacy and numeracy skills are needed?	What literacy and numeracy skills are most needed/ demanded by learners, employers and society, to support progression, employability, improved productivity and civic participation?

## Background

- 1.6 Until the results of the International Adult Literacy Survey (IALS) in 1996 revealed the low levels of literacy and numeracy in the UK in comparison with other OECD countries, adult basic skills education was not a priority for the national government. Teaching basic skills to adults was marginalised and under-resourced and classes were mainly delivered by a volunteer workforce. The subsequent investigation into the perceived basic skills crisis by Sir Claus Moser's working group precipitated the launch, in 2001, of the Skills for Life strategy for England, a Labour Government initiative to raise the language, literacy and numeracy (LLN) skills of the adult population. Skills for Life introduced a learning infrastructure including national standards, a core curriculum, materials and tests, new qualifications and professional standards for LLN teachers as well as national targets for the numbers of adults the strategy aimed to reach and the number of formal qualifications to be gained. Thus only very recently has there been a systematic, nationally funded attempt to professionalise practice in ALN.
- 1.7 Following the publication of the Moser report, the NFER was commissioned by the then Department for Education and Employment (DfEE) to carry out a review of research on adult basic skills. As that review's title makes clear, *Assembling the Fragments* (Brooks et al, 2001b) drew on an evidence base that was patchy and scattered, with large gaps in knowledge – on the scale of need, on numeracy as compared to literacy, on teaching practice, on assessment and on attainment and progress – and an absence of any intervention or training studies from the UK in the adult basic skills field.
- 1.8 The Skills for Life survey (2003) delivered robust baseline data on the scale of need in ALN in England for the first time, with important contributions also coming from a series of increasingly sophisticated surveys, including the Programme for the

International Assessment of Adult Competencies (PIAAC). As part of Skills for Life, the first systematic research programme in basic skills was established, with the creation, in 2002, of NRDC. Through the work of NRDC and other research groups, including a major contribution by the National Center for the Study of Adult Learning and Literacy (NCSALL) in the US, there has been an unprecedented progress in the growth and quality of the evidence base on basic skills. But as is evident from this review, there remain a series of significantly under-researched issues, some of which have risen in importance as a result of recent developments that include the growing number of unemployed people, and unemployed young people in particular, and the changing demands on employers, SMEs and the private sector. Although many parts of the basic skills picture have been clarified since 2001, others are still confused, and new questions have come to the fore.

## Context of this review

- 1.9 The major driver in English basic skills policy since the commissioning of the Moser report in 1998 has been the need to reduce the cost to the country of low levels of literacy and numeracy, in terms of lower incomes, reduced productivity, poorer health and expenditure on benefits and welfare services. The Skills for Life strategy grew out of the recognition that improving adult basic skills brings multiple benefits to individuals, families and the wider society. Improved literacy and numeracy skills are understood to be of crucial importance in raising Britain's standing in international measures of educational achievement and in promoting social participation and social mobility as well as fundamental to the growth of the economy and to the UK's international economic competitiveness.
- 1.10 In publishing the new skills strategy for England, *Skills for Sustainable Growth*, in November 2010, the Coalition Government made a commitment to funding provision in full for those without basic literacy and numeracy skills, and to do so within a demand-led system driven by its 'users' (learners and employers). However, given the challenging fiscal climate and the Government's focus on achieving sustainable economic growth and improving social mobility, the government needs also to identify the most economical, efficient and effective ways of delivering its commitment to basic skills training. The immediate context for this review, then, is to provide an assessment of what the evidence base has to say about where the best returns on investment of public money lie, in terms of the effectiveness and outcomes of provision, and how this area can deliver best value for money for the public purse.
- 1.11 Despite the success of the previous Government's *Skills for Life* strategy in achieving the Public Service Agreement (PSA) qualifications targets – by 2010, 3.25 million adults in England had achieved a nationally-recognised qualification – questions remain about the impact of the strategy on overall levels of literacy and numeracy and on the sustainability of the skills gains. For example, the UK Commission for Employment and Skills (UKCES) in assessing progress toward the previous Government's 2020 ambitions for skills signalled the danger that, although the skills profile of the UK is improving, other countries are improving at a faster rate. Based on current progress, UKCES predicts that the international skills standing of the UK

is unlikely to improve by 2020, let alone become world class, with the overall skills gap between the UK and higher ranked countries widening.

- 1.12 One concern for Government is therefore to ensure that there is a good match between the basic skills offer, the functional literacy and numeracy skills that individuals and employers need, and the basic skills that have been demonstrated to bring the highest economic, social and personal returns. *Skills for Sustainable Growth* signalled a move away from a centrally-determined target system where qualifications were used as a proxy for skills gain (the PSA targets set as part of Skills for Life have been abolished) towards a system that gives providers the flexibility to respond to local needs and focuses on improving the effectiveness of provision.
- 1.13 A survey is currently underway which will measure progress in tackling low literacy and numeracy by updating the findings of the 2003 Skills for Life Needs and Impact Survey. In advance of the publication of that survey (forthcoming in Autumn 2011), this review provides an assessment of several critical dimensions of basic skills provision, and of the best available evidence. This review is the first phase in a wider review process, and is designed to inform the Department's short-term policy actions and longer-term commissioning plans.

# Methodology

2.1 This chapter provides a summary description of the methodology used to carry out this review. A more detailed account of the methodology is available at Annex B.

2.2 The review was carried out in three steps:

- conducting bibliographical searches and retrieving documents
- populating the review templates
- analysing the review templates and drafting the report.

## Step 1: conducting bibliographical searches and retrieving documents

2.3 Bibliographic searches to identify literature on ALN evaluation and research were carried out by the NFER Centre for Information and Reviews. The NFER's information specialists matched database keywords to the research questions and agreed the search strategy with the review team at SQW and NRDC. The keywords comprised sets which were devised to cover concepts for each of the six themes; in addition, a set of terms devised to define the 'population' of interest to the review was incorporated into all searches.

2.4 Three types of sources were searched to ensure thorough coverage of the evidence base within the available time:

- a range of general bibliographic databases
- websites of key organisations
- publication and references lists compiled by subject experts and earlier literature reviews.

2.5 All bibliographic database searches were limited to publication years 2004-2011, with the exception of the British Education Index on which a trial search for the period 2000-2011 was carried out. This produced a volume of hits so high that a decision was taken to use the start date of 2004 on other sources. This year was chosen so that literature published as a result of the 2003 Skills for Life survey would be retrieved. In order to ensure that no important research from the period 2000-2004 was overlooked, members of the panel of experts identified significant publications as well as essential pre-2000 sources.

2.6 Bibliographic databases and organisational websites included in the search are listed in Tables 2-1 and 2-2. Websites were searched on main keywords and/or the publications/research/policy sections of each website were browsed, as appropriate.

**Table 2-1: Bibliographic databases searched**

<b>Database</b>	<b>Description</b>	<b>Search details</b>
Australian Education Index (AEI)	AEI is Australia's largest source of education information covering reports, books, journal articles, online resources, conference papers and book chapters.	searched via Dialog Datastar 16/03/11
British Education Index (BEI)	BEI provides information on research, policy and practice in education and training in the UK. Sources include over 300 journals, mostly published in the UK, plus other material including reports, series and conference papers.	searched via Dialog Datastar 04/03/11
British Education Index Free Collections	The free collections search interface of the BEI (formerly the British Education Internet Resource Catalogue) includes access to a range of freely available internet resources as well as records for the most recently indexed journal articles not yet included in the full BEI subscription database.	searched 17/03/11
Education Resources Information Center (ERIC)	ERIC is sponsored by the US Department of Education and is the largest education database in the world. Coverage includes research documents, journal articles, technical reports, program descriptions and evaluations and curricula material.	searched via Dialog Datastar 15/03/11
Elsevier Economics and Finance	Elsevier is the world's leading publisher of science and health information.	searched via Elsevier 14/03/11

**Table 2-1: Bibliographic databases searched**

<b>Database</b>	<b>Description</b>	<b>Search details</b>
Emerald	Emerald is a long established publisher with over 200 titles in the fields of management, information science and engineering.	searched via Emerald 14/03/11
Oxford Economic Papers	Oxford Economic Papers is a general journal publishing papers in a wide range of areas in theoretical and applied economics.	searched via Oxford Journals 14/03/11
PsycINFO	PsycINFO contains references to the psychological literature including articles from over 1,300 journals in psychology and related fields, chapters and books, dissertations and technical reports.	searched via Ovid SP 17/03/11
Social Policy and Practice	Social Policy and Practice is a bibliographic database with abstracts covering evidence-based social policy, public health, social services, and mental and community health. Content is from the UK with some material from the USA and Europe. Searches were carried out across the descriptors, heading word, title and abstract fields, to enable retrieval of terms both as keywords and free text.	searched via Ovid SP 17/03/11
Social Science Research Network (SSRN)	Social Science Research Network (SSRN) is devoted to the rapid worldwide dissemination of social science research and is composed of a number of specialized research networks in each of the social sciences.	searched via SSRN 11/03/11

Source: NFER



**Table 2-2: Websites of key organisations searched**

<b>Organisation</b>	<b>URL</b>
Department for Business, Innovation and Skills (BIS)	<a href="http://www.bis.gov.uk/">http://www.bis.gov.uk/</a>
Confederation of British Industry (CBI)	<a href="http://www.cbi.org.uk/">http://www.cbi.org.uk/</a>
CfBT Education Trust	<a href="http://www.cfbt.com/">http://www.cfbt.com/</a>
Department for Education (DfE)	<a href="http://www.education.gov.uk/">http://www.education.gov.uk/</a>
Excellence Gateway (Learning and Skills Improvement Service)	<a href="http://www.excellencegateway.org.uk/">http://www.excellencegateway.org.uk/</a>
IDeA (now Local Government Improvement and Development)	<a href="http://www.idea.gov.uk/">http://www.idea.gov.uk/</a>
International Labour Organization (ILO)	<a href="http://www.ilo.org/">http://www.ilo.org/</a>
National Audit Office (NAO)	<a href="http://www.nao.org.uk/">http://www.nao.org.uk/</a>
National Literacy Trust	<a href="http://www.literacytrust.org.uk/">http://www.literacytrust.org.uk/</a>
Organisation for Economic Co-operation and Development (OECD)	<a href="http://www.oecd.org/">http://www.oecd.org/</a>
Scottish Government	<a href="http://www.scotland.gov.uk/">http://www.scotland.gov.uk/</a>
Trades Union Congress (TUC)	<a href="http://www.tuc.org.uk/">http://www.tuc.org.uk/</a>
United Nations Educational, Scientific and Cultural Organization (UNESCO)	<a href="http://www.unesco.org.uk/">http://www.unesco.org.uk/</a>
US Commission for Skills	<a href="http://www.skillscommission.org/">http://www.skillscommission.org/</a>
US Office of Management and Budget	<a href="http://www.whitehouse.gov/omb/">http://www.whitehouse.gov/omb/</a>
World Bank	<a href="http://www.worldbank.org/">http://www.worldbank.org/</a>

Source: NFER

- 2.7 Three bibliographic databases produced more than 1,000 items, including more than 4,000 in the case of the Education Resources Information Center (ERIC). The NFER information specialists then carried out a manual review of these search results and selected shorter lists of items for the SQW and NRDC review team to consider. Items were selected on the basis of relevance to the research questions, pertinence to one

or more of the four cross-cutting considerations, and to the quality of the study, judged according to type (for example, randomised controlled trial, other experimental, quasi-experimental, longitudinal, case study, ethnographic study, grounded theory study) and fidelity to the research methods appropriate to that type.

- 2.8 Based on these short-listed results, the SQW and NRDC review team created a database of unique source reference; this database comprised in excess of 1600 unique entries. Each entry included bibliographic data on the source as well as information on how the source had been identified (the name of the bibliographic database, website or expert recommendation) and which of the research review's six themes the source pertained to.
- 2.9 The NRDC team reviewed each source listed and graded for importance (none, low, medium, high). Around 650 items were excluded from further review during this process; this category in the main consisted of sources that were not relevant to the research review because of the subject, cohort (e.g. school children) or geography (e.g. adult literacy in developing countries) studied. Sources prioritised as 'low' (around 435) included items that focused primarily on theoretical discussions and frameworks, items where the research review's six themes were assessed to be peripheral to the content, articles published in non-peer reviewed publications (such as sector specific magazines), publications where it would not be cost- or time-effective to retrieve the source, and minor/interim publications from research studies where more detailed or final reports were available elsewhere.
- 2.10 For many items assessed as 'medium' or 'high' priority sources, the review and grading process included online retrieval and a brief consultation of that source. Sources included in the 'medium' priority list (around 325) included some where reliable summaries were known to be available via sources already graded as high priority, publications highly relevant in subject matter but published prior to the introduction of Skills for Life, publications from small-scale studies where findings were less robust and might have limited their applicability in other contexts, items with a strong focus on pedagogy and practice, and sources that were high-quality but considered single or narrow themes (e.g. learning persistence of women domestic workers; use of Individualised Learning Plans; Virtual Learning Environments in Scotland). Those identified as high priority were those assessed to be highly relevant (focused on adults, on literacy and numeracy, on skills, on learning, and on interventions and their impact) and of high quality; the vast majority of these high priority sources were those already familiar to the research teams due to their expertise in these areas.
- 2.11 Once sources had been provisionally graded, senior members of the SQW and NRDC teams reviewed all 'high' and 'medium' priority items, taking account of notes made on the database by the first level review team, producing a slightly revised database. The Expert Panel members reviewed the list of high priority items, suggesting additions or deletions as appropriate. Additional sources were identified by members of the review team and through citations in the literature reviews included in the review. The final list included 175 high priority items. For a number of these sources, the review team drew upon reliable summaries or syntheses carried out for earlier literature reviews.

## **Step 2: populating the review templates**

- 2.12 Next a small team from SQW and NRDC reviewed the sources, completing a template for each which was stored using QSR NVivo qualitative research software. The template captured basic information, including the full bibliographic reference, the abstract, research questions and methods, and sources of evidence. In the main body of the template reviewers recorded findings pertinent to the six themes of the study, including sub-themes under 'quality and effectiveness of provision' and 'learning outcomes', and to the four cross-cutting considerations. The template was also used to record the full bibliographic reference for any significant findings drawn from other sources.

## **Step 3: analysing the review templates and drafting the report**

- 2.13 Once templates were completed for all the sources under review, these templates were themselves reviewed in order to draft findings. This analysis was carried out by a four person team from SQW and NRDC: Michael Frearson and Stuart Johnson from SQW and John Vorhaus and Jennifer Litster from NRDC. Members of the Expert Panel were also asked to comment on an early draft of the review.

# Outcomes of learning: economic returns

## Introduction

- 3.1 This chapter presents recent quantitative evidence on the economic returns to improving literacy and numeracy skills, including evidence on the following: earnings and employment; training and promotion; job-skills and job-seeking skills; and the costs and benefits to employers and to the Exchequer and of lower or higher levels of basic skills.

## Evidence

- 3.2 The study of the economic returns to learning is well developed, and this field is notable for the prevalence of well designed rigorous econometric research. There is conclusive evidence that having literacy and numeracy skills, whenever these are acquired, has a positive impact on earnings and employment. There is less evidence on the economic returns to attaining basic skills in adulthood, although most of the evidence suggests a positive impact on labour market outcomes (Patrignani and Conlon, 2011, is one example of this).
- 3.3 Two British birth cohort studies, the National Child Development Study (NCDS) and the 1970 British Cohort Study (BCS70), provide an invaluable source of data for exploring the relationship between economic and social outcomes and levels of ALN. However, owing to the small number of individuals in any birth cohort having taken ALN courses, these studies provide limited evidence on the effects of adult basic skills interventions. For this reason, use of these sources is kept to a minimum in this chapter.
- 3.4 Econometric evidence is complex; whilst technicalities are kept to a minimum, they cannot be altogether removed without also making it impossible to assess the main findings.
- 3.5 Beyond a number of general messages expert opinion is often divided, and this chapter therefore includes details from sources that do not always point towards the same conclusion.
- 3.6 Owing to the complexity of the evidence, this section includes a tabular summary of evidence on wage and employment returns to gaining or improving literacy and numeracy in adulthood.

**Table 3-1: Map of UK evidence – attaining skills in adulthood**

	<b>Impact of attaining literacy skills on earnings</b>	<b>Impact of attaining numeracy skills on earnings</b>	<b>Impact of attaining literacy skills on employment</b>	<b>Impact of attaining numeracy skills on employment</b>	<b>Comment</b>
Metcalf et al, 2009	No	No	Inconclusive	Inconclusive	High levels of attrition
Bynner and Parsons, 2006	Yes	Yes	Yes: men	Yes: women	
Machin et al, 2001	Yes: men	Yes: men	n/a	Yes: men	
McIntosh and Vignoles, 2001	Yes	Yes	Yes	Yes	Consistent results from two data sets. Employment effects small/ statistically insignificant
BIS, 2011	Yes	Yes	Yes	Yes	McIntosh 2010 is primary source. Literacy and numeracy not distinguished

## Findings

### Earnings

- 3.7 BIS (2011) reported on the economic value of government-funded qualifications provided by the post-19 FE sector. Since approaches to estimating wage returns vary, and the literature presents conflicting evidence, McIntosh (2010) identified a set of premia that are (as far as possible) consistent with each other. The wage returns from Skills for Life are assumed to increase as prior qualification levels increase. The model assumes a wage premium of 3% compared to individuals with no prior qualifications, and 5% compared to those previously qualified to Levels 1-5.

- 3.8 Metcalf et al. (2009) conducted a longitudinal study of literacy and numeracy learners taking Skills for Life courses in FE colleges leading to qualifications in 2002 and 2003. Their progress was compared with a comparison group who also had low or no literacy or numeracy qualifications, but who did not take Skills for Life courses. Between Wave 1 (2002/03) and Wave 4 (2006) learners experienced an increase in net annual earnings of £560 compared to £542 for non-learners. This small difference is not statistically significant. This study, therefore, did not find evidence of wage returns to college-based courses in literacy and numeracy. But it is not correct to infer that the study finds conclusive evidence of no wage return. Statistical significance is difficult to establish, owing to sample attrition; there is the possibility of bias brought about through sample loss; and the numbers fluctuate significantly over the period of measurement.
- 3.9 Using learner attainment information from the Individual Learner Record (ILR) between 2002/03 and 2005/06 and data on annual earnings (between 2003/04 and 2009/10), London Economics (Patrignani and Conlon, 2011) found a sizeable earnings return to gaining Skills for Life qualifications at Level 1. In the short to medium term the returns to literacy learning aims were greater than to numeracy learning aims (in excess of 7% in the first three years post completion compared to 3% for numeracy) but the returns to numeracy qualifications increased steadily over time (from 3% in year one to approximately 12% in year six). In numeracy, the earnings returns to Level 2 learning aims were 'immediate and persistent' (p. 16), starting at approximately 1.7% immediately post attainment rising to more than 13.7% at the end of seven years, while those attaining Level 2 literacy qualifications saw a negative impact on earnings for the first four years after attainment (around - 2.5%) before returns of between 2.7% and 8.8% in the fifth to seventh years post attainment. Those attaining both literacy and numeracy qualifications at Level 2 also experienced a positive return on earnings after an initial dip in the first year post attainment. In years six and seven, the earnings return of gaining both literacy and numeracy at Level 2 is approximately 10%.
- 3.10 Evidence from Bynner and Parsons (2006) drawing from the two British cohort studies points to a strong relationship between poor basic skills and income. Compared with women who had a poor grasp of literacy or numeracy at both age 21 and 34, women who had improved their literacy or numeracy by age 34 were more likely to be generally better off and to have savings and investments. Compared with men who had a poor grasp of literacy or numeracy at both age 21 and 34, men who had improved their literacy or numeracy by age 34 were more likely to own their own home, and they were less likely to be living on state benefits and to have borrowed money from a friend, family member or other source.
- 3.11 Machin (2001) assessed the impact of skills improvements between age 16 and 37 using skill measurement tests in the NCDS at age 37. Individuals who reported that their skills had improved generally earned more than those who did not believe their skills had improved. For example, males who claimed to have improved their numeracy skills earned 3% more than those who did not make such a claim. Women who claimed to have improved their numeracy skills earned 11% more than those who made no such claim.

- 3.12 Focussing on the *wage effect* of having Level 1 skills, relative to below this level, numeracy skills appear to have a greater effect on earnings than literacy skills. However when focussing on the *change* in skills between the ages of 16 and 37, literacy skills have a greater wage effect, for men at least, and if the male was initially at the upper end of the skills distribution at age 16.
- 3.13 These results suggest that for adults with very low basic skills, improving their numeracy to at least Level 1 will have a greater effect on earnings than improving their literacy. Adults who already have a good grounding in basic skills will see the greatest wage gains from further increasing their literacy rather than their numeracy skills. Thus, for numeracy the key seems to be to get skills to an acceptable level, while for literacy, the gains will go on rising as skills continue to be improved (at least for males).
- 3.14 Using data from NCDS and IALS, McIntosh and Vignoles (2001) estimated the potential impact on earnings from improving the literacy and numeracy skills of adults. The model includes controls for a range of additional factors that might be correlated with literacy and numeracy: educational level; social class and background; type of school attended as a child; variables measuring parental interest in education; region; and ability in reading and mathematics on entering school. Once these factors are controlled for the wage premium from having Level 1 or above numeracy skills is 8-10%, whilst the wage premium from Level 1 literacy skills is 2-6%. There are two notable features of these results: (1) the two data sets, which include two completely different groups of workers of different ages, show strikingly consistent results; (2) the large effect of numeracy on earnings, even after allowing for many other factors that might also influence earnings.
- 3.15 In the US, Reder (2010) found strong relationships between literacy proficiency and earnings among high school dropouts. This replicates Tyler et al.'s (2004b) finding (see below), and extends it to all high school dropouts within a population rather than just those who take GED tests. Analysis of the Longitudinal Study of Adult Learning (LSAL) shows that dropouts' basic skills can improve after they leave school. The initial level of literacy proficiency affects both the initial level of earnings and the rate of subsequent earnings growth for the individual. This suggests that literacy affects the economic return on work experience, possibly reflecting the role that literacy proficiency plays in gaining access to continuing and postsecondary education or workplace training. Literacy proficiency may also affect what individuals are able to learn and accumulate through work experience.
- 3.16 Literacy growth rates for individuals influence their earnings, both the starting level of their earnings and possibly the rate of growth of their earnings. Further analysis is required: it could be that growth in literacy proficiency is a proxy for omitted variables that influence the rates of both literacy and earnings growth – for example, non-cognitive skills and motivational and dispositional attributes (Heckman et al, 2006).
- 3.17 Evidence from the United States and Canada shows the relationship between literacy and earnings to be unidirectional, leading from literacy to earnings and not vice versa. There is no evidence of a reciprocal effect between literacy and earnings in the LSAL population. An important question is the extent to which the

effects of literacy on earnings observed in the LSAL data reflect employee productivity growth rather than selection effects. Additional research is needed to resolve this matter, but there is a body of previous cross-sectional research that suggests that literacy affects earnings through enhanced productivity. Raudenbush and Kasim (1998) analysed National Adult Literacy Survey (NALS) data and examined wage premiums for literacy skills (with education and many other variables statistically controlled) in a variety of occupations. They found larger skill premia in knowledge-intensive occupations, suggesting that it is the application of literacy skills that matters for productivity. Boothby (2002), working with the Canadian IALS data, analysed cross-sectional wage variations in terms of education and literacy skills within various occupations. Boothby found wage premia in jobs where the incumbent appeared to have more skills than the minimum required for the job, which should only be the case if literacy confers direct productivity benefits.

- 3.18 The relationship between literacy and earnings varies with labour market conditions. When the LSAL was being designed, there was no expectation that there would be a major recession in the Oregon economy during the study. The unexpected downturn provided an opportunity to examine the impact of a tight labour market on a low-education population. Literacy proficiency was found to have a statistically significant effect on earnings growth rates during the recession period but not during the pre-recession period. This is an example of how the relationships among skills, employment and earnings vary with prevailing labour market conditions.
- 3.19 Tyler (2004a) tested the extent to which the accumulation of basic cognitive skills, as measured by a post school maths test, mattered for young dropouts entering the 2002 labour market. Based on a sample of dropouts aged 16-18 when administered a maths test in the late 1990s, estimates indicated that a standard deviation increase in the test score was associated with 6.5% higher average earnings over the first three years in the labour market. These results provide evidence that young dropouts are not relegated to jobs where basic cognitive skills are not rewarded, and they stress the importance of skills acquisition for students who may eventually drop out.
- 3.20 Tyler et al. (2004b) used a sample of 16,300 individuals aged 19-20 in Florida. The dataset was constructed from Florida General Education Development certificate (GED) and Unemployment Insurance (UI) administrative records to estimate the relative earnings of two groups of male high school dropouts who took the GED exams in 1995: those who passed the exams, obtaining the credential, and those who failed. Estimates show greater mean quarterly earnings growth among those who obtained a GED than among unsuccessful candidates. The advantage was small in absolute terms—only about \$1,400 annually, six years after the exams—but, given the very low initial earnings of these school dropouts, it was large in relative terms, growing from zero immediately after the 1995 exams to 13%–20% six years later. Tyler et al. (2000) found that the signalling value of the GED increased the 1995 earnings of young white dropouts on the margin of passing the exams by 10 to 19 percent. The results are robust across natural experiments that use different treatment and comparison groups.



- 3.21 Using data from two large nationally representative surveys from the United States, the National Household Education Survey (NHES) and the Current Population Survey (CPS), Hollenbeck (1996) estimated the impact of workplace literacy programmes. This research found that workplace literacy programme participation increased earnings by an estimated 17% (NHES) or 11% (CPS). Part of the impact comes from the industries and occupations of participants. However, the impact remains substantial even when industry and occupation are controlled for, with the estimated increase falling to 13% (NHES) and 8% (CPS).
- 3.22 Estimates from the two data sets are inconsistent. Estimates from the NHES data set show that males receive a 20% higher earnings payoff from participation in literacy programmes than otherwise identical males who do not participate. The return is only slightly less when industry and occupation controls are added to the model. In the CPS estimates, males are shown to receive no payoff. On the other hand, from the CPS estimates, women receive a 14-17% earnings payoff that hardly changes when industry and occupation are added to the model. But from the NHES, the payoffs for women, while positive, are not statistically significant.
- 3.23 However, these positive findings should be set aside less encouraging studies. Cunha and Heckman (2007) found that, at historically funded levels, public job training programmes and adult literacy and educational programmes, like the GED, that attempt to remediate years of educational and emotional neglect among disadvantaged individuals have a low economic return and produce meagre effects for most people. The evidence suggests that for many skills and abilities, later remediation for disadvantage may be possible but is much more costly than early remediation to achieve a given level of adult performance.
- 3.24 Cameron and Heckman (1991) found that exam-certificated high school equivalents are statistically indistinguishable from high school dropouts. Both dropout and exam-certified equivalents had comparably poor wages, earnings, hours of work, unemployment experiences and job tenure. This is so whether or not ability measures are used to control for differences.
- 3.25 Jenkins et al. (2003) examined whether qualifications obtained by adults between the ages of 33 and 42 had an effect on their wages at the end of this period, controlling for a wide range of other factors. In general there were no effects on wages. The exception was men who left school with only low-level qualifications (for example, lower grade CSEs) and who acquired degrees in their 30s or early 40s. These men earned more than their peers who did not engaged with lifelong learning. The research also uncovered employment effects. Gaining a qualification between 1991 and 2000 was associated with a higher probability of being in employment in 2000 amongst women who were out of the labour market in 1991.
- 3.26 In general the wage effects found by Jenkins et al. are weak, and that is consistent with conclusions reached previously about low-level qualifications acquired in people's twenties (Machin et al, 2001). Dearden et al. (2000, 2002) and Jenkins et al. (2003) all found that sub-degree level qualifications obtained in adulthood (including basic skills awards) have, on average, no discernable positive impact on earnings.

## Employment

- 3.27 Compared to the literature on wage returns, the literature on employment returns is less well developed.
- 3.28 BIS (2011) estimates of employment premia are derived from analysis of the Labour Force Survey (LFS), combined with a series of assumptions which reflect the difficulties of measuring the employment impact of vocational qualifications. The analysis calculated the difference in employment rates for groups of individuals with different levels of previous highest qualifications. It then estimated the impact of increasing qualification levels as the differential between the employment rates at each level. For Skills for Life qualifications, the model assumes an employment premium of 1.4% as compared with individuals qualified at Level 1 or below, and a 0.3% premium for individuals qualified at Level 2 and above.
- 3.29 Patrignani and Conlon, 2011, by contrast, found more pronounced impacts on employment for Skills for Life attainment at Level 2 compared to Level 1, although all Skills for Life learning aims were found to have strong and positive employment returns. (Employment outcomes were measured in terms of the proportion of the financial year for which an individual was in employment.) Drawing on data provided by HM Revenue and Customs analysed in conjunction with the Individualised Learner Record, Patrignani and Conlon found that learners completing a numeracy learning aim at Level 1 registered a 2.1% employment boost within two years of qualification completion, increasing to approximately 6.5% by the end of year seven. Literacy learning aims were also demonstrated to have a consistently strong impact on employment, with an immediate 1.3% effect in the first year post attainment, increasing to approximately 3.2% by year 7. At Level 2, those completing numeracy courses saw an immediate 3.5% increase in employment outcomes compared to non-completers. This employment effect increases steadily over time to almost 10% after seven years. The general impact of attaining literacy learning aims at level 2 is also positive with a 4.8% impact at the end of year seven.
- 3.30 Whilst emphasising that the tests administered were short, and comparatively prone to unreliability (Meadows and Metcalf 2005, pp. 12-13), Metcalf et al. (2009) found that, for employment at Wave 4 there was not a statistically significant difference in the change in the proportions employed between learners and non-learners. The authors conclude that it can take a long time for those undertaking literacy/numeracy courses to move into paid employment. Literacy and numeracy will not of themselves deliver workplace skills but they form a foundation which people can use to gain relevant skills.
- 3.31 The study provides convincing evidence of this. The most substantial evidence of employment effects derives from the self appraisal measures, including positive changes in self esteem, perceptions of literacy and numeracy skills, and commitment to education and training. These show convincing and statistically significant patterns of improvement; there was a large and significant difference between learners and non-learners. However the results showed no significant improvements in literacy for the learners overall, and this may explain the apparent absence of labour market effects.

- 3.32 Bonjour and Smeaton (2003) analysed the outcomes for learners on Pathfinder Extension courses. The Pathfinder Extension activities included residential, intensive, highly structured and prescriptive courses, together with individual financial incentives for learners and fixed rate replacement costs. These new extension activities were found not to have any advantage over traditional basic skills courses in terms of learning outcomes, but they led to a significantly higher likelihood of employment after the course. Within the group of different extension activities, the incentive schemes for individuals appear on the whole to be the most successful in terms of the intermediate and labour market outcomes considered.
- 3.33 Bynner and Parsons (2006) looked at members of the BCS70 cohort whose literacy and numeracy skills changed between 1991 (aged 21) and 2004 (aged 34). Men who improved their literacy skills were more likely to be in full-time employment (94% compared to 81% of those whose skills were poor at 21 and remained poor). Women whose numeracy skills had improved were more likely to be in full-time employment at age 34 (43% compared to 27% whose numeracy skills were and remained poor).
- 3.34 Machin et al. (2001) found that males who improved their numeracy skills between the ages of 16 and 37 had a great probability of being employed.

### *Training and promotion*

- 3.35 Early research by Bynner and Parsons (1997) discovered that individuals with poor basic skills were less likely to receive work-place training in early employment than those who were competent at numeracy. These people were also less likely to see their earnings increase or get promotion.
- 3.36 Analysis of BCS70 cohort data (Bynner and Parsons, 2006) showed that better numeracy skills were associated with a greater likelihood of receiving work-related training. Among men born in 1970, 18% of those with poor (Entry 2 or below) numeracy received work-related training, compared to 26% of those with fair (Entry 3) skills, 31% of those with good (Level 1) numeracy and 38% of those with Level 2 or above. Among women, the pattern was less consistent. Seventeen per cent of women with poor numeracy received work-related training, as did 16% of those with fair numeracy, 22% of those with good numeracy and 26% of those at Level 2 or above. Men with poor numeracy were also much less likely to have been promoted at any time (38% versus 58%). Only one-third of women with poor numeracy had been promoted, compared to more than half of those with good skills.

### *Job-skills and job-seeking skills*

- 3.37 Evidence (as cited in MacLeod and Straw, 2010) of the impact on job search skills includes: increased confidence in applying for jobs (Hamilton and Wilson, 2005; Tett et al., 2006; White, 2003); more confidence in actually getting a job (Peters et al., 2003), and having greater aspirations for what that job might be (White, 2003; Terry, 2006); increased motivation to actively look for a job (Peters et al., 2003); and enhanced job search skills (Frontline Consultants, 2006).
- 3.38 The impact on job skills includes: working with others, more appropriate behaviour at work, and being willing and able to take on more responsibility at work (for

example, Dench et al., 2006; Evans and Waite, 2008); better timekeeping; being able to use reading skills at work; and better stocktaking skills (for example, Dench et al., 2006; Hamilton and Wilson, 2005).

- 3.39 The National Audit Office (NAO, 2009) report on Train to Gain learners identified benefits including improved work skills, self-confidence and attitude. Roughly a quarter of respondents said that their qualification had led to a pay increase, promotion, or a bonus. The vast majority (86%) of those who completed their qualification felt they had acquired skills which would help them do a better job in the future. Three-quarters (75%) felt they had gained skills to help them do their current job better.
- 3.40 Ofsted (2008) found that Train to Gain led to participants experiencing a sense of pride and fulfilment, as well as improved self-confidence. Reference is made not only to the improved knowledge and understanding of employees, but also to their increased motivation and self-esteem. The Employer Evaluation Sweep 5 Report (LSC, 2010) focuses on the last group of employers to use the skills brokerage service, which ended in March 2009. Over three-quarters (77%) reported that Train to Gain training had equipped staff with valuable job-related skills which had resulted in an increase in their performance.
- 3.41 However a Canadian study of 94 participants in adult literacy programmes (Malicky and Norman, 1994) paints a more negative picture. It found that the majority of participants believed that the programmes would improve their job opportunities, and cited this as one of the prime reasons for enrolling. However, over the course of the programmes, the participants' optimism about the employment impacts of the programmes tended to decrease. Individuals reduced their expectations about their future job prospects, and often became frustrated and discouraged. The authors found that at the end of the programmes, almost all participants returned to the same type of poorly paid, often temporary work they have engaged in before taking the literacy course.

### **Unemployment**

- 3.42 A number of UK government programmes for the young and longer-term unemployed have included basic skills courses of various types, with attendance more voluntary or less voluntary according to programme details. Wolf (2011) reported that these courses either make no significant difference, or that this approach is less effective, in terms of employment outcomes, than some others (notably those involving direct work placements). However, the results are difficult to interpret because the groups being compared often differ on important dimensions (see Lessof, et al., 2003; National Centre for Social Research, 2003).
- 3.43 Using data from the Department of Work and Pensions, Patrignani and Conlon (2011) assessed the impact of qualification attainment on benefit dependency, where the outcome measure was the proportion of time an individual was in receipt of particular benefits including Job Seekers Allowance (JSA) and/or Incapacity Benefit (IB). Their analysis found an immediate and relatively persistent impact of literacy and numeracy attainment on JSA benefit dependency and, as with their findings on employment returns, the impact was found to be stronger at Level 2

than at Level 1. Attaining a Level 1 numeracy learning aim reduced the proportion of the financial year in receipt of JSA by approximately 1.6%; the impact of attaining Level 1 literacy learning aims was greater in the short term (2.5%) though eroded by the end of the seven year period. At Level 2, the difference in JSA dependency between completers and non-completers stands at 2.2% and 2.7% for literacy only and numeracy only, while the impact of attaining both literacy and numeracy qualifications stands at 2.5%. Over the seven year period, only 25% of this reduction in benefit dependency was observed to have eroded.

- 3.44 One major evaluation of work-based learning for adults (Speckesser and Bewley 2006) used extensive controls to adjust for differences between participants and comparison populations, and found that Basic Employability Training, which offered up to 26 weeks of basic literacy and numeracy instruction, had no impact on levels of benefit receipt but did seem to increase numbers in employment 40 months later compared with a matched population. Short, occupational training ('Job-Focused Training') was more effective in reducing benefit claimant rates and slightly more effective in increasing later employment (Wolf 2011: 50). Wolf emphasises that most of these programmes lack key attributes conducive to effective learning; significant improvements in literacy skills often require considerable amounts of contact and study time.
- 3.45 An exhaustive evaluation of a training programme was carried out for US Job Corps programme (McConnell and Glazerman 2001). This is a highly intensive, often residential programme for young people (typically in their 20s) who dropped out of high school and were socially disadvantaged, and it provides both academic and vocational training over a complete year. It is expensive, but also, as evaluations have established, extremely cost-effective, with net benefits to society in the first few years of over \$17,000 per participant (2000 prices), measured by increased earnings and employment levels compared with matched non-participant groups. Just as employer-based and employer-provided training can often yield significant earnings benefits, so too can government programmes if they are structured correctly and involve volunteer learners (cited in Wolf 2011: 51).

## **Costs and benefits for employers**

### **Costs**

- 3.46 Based on a large number (6000) of interviews in the workplace, Canadian research found that numeracy errors and numeracy-related inefficiencies can affect production and lead to accidents (HRSDC, 2005). Ananiadou et al. (2003), in their NRDC review of the research on benefits to employers of raising workforce basic skills levels, summarised the evidence on cost to employers and the economy of poor basic skills. The following discussion draws on that summary.
- 3.47 Gallup was commissioned by the (then) Adult Literacy and Basic Skills Unit (ALBSU) in late 1992 to conduct a survey of employers which aimed to establish the levels of basic skills difficulties among the workforce as perceived by employers; and to quantify and describe the costs to employers of poor basic skills and the effect of these on their operation. Around one in seven (15%) of the 400 companies sampled were able to provide an estimate of costs, and all percentages are based on only those who responded. The average overall cost of poor basic

skills for a company employing 51 employees or more was £166,000 per year in 1993 figures (£208,000 in 2002 prices). The cost for smaller companies (51–100 staff) was estimated to be approximately £86,000 (£108,000) per year and for larger companies employing more than 1,000 employees around £500,000 (£626,000) per company per year.

- 3.48 As Ananiadou et al. report, these data were then used to provide an estimate of the total cost of basic skills problems to industry as a whole, i.e. all 40,000 UK companies estimated to employ 51 staff or more. Those estimates amount to a total of 4.8 billion pounds overall (equivalent to £6 billion in 2002). The authors of the original study argue that these costs are likely to be underestimated, as they do not account for costs associated with lost future business, the need for additional training because staff may be unable to cope with written material or the cost of work that needs to be re-done.
- 3.49 The Gallup/ALBSU study has been criticised because the estimated costs to the whole of industry are based on estimates given by only 15% of companies. Importantly, most companies in this study did not believe that poor basic skills led to financial losses: 71% of those surveyed said that their company had never experienced a financial loss which they felt could be attributed to poor basic skills, and a further 16% said that while this had happened, it occurred only rarely.
- 3.50 Despite its flaws, the study has nevertheless been highly influential in UK policy discussions. Ernst and Young used it in their 1993 report on the impact on the UK economy of literacy, education and training (Ernst and Young, 1993) citing the figure of £8.4 billion, a 'grossed-up estimate to take account of companies of all sizes'; however, no information is given on how they arrived at this estimate. The Moser report's figure of £10 billion may also be based on this figure, adjusted for inflation up to 1999.

## Benefits

- 3.51 In their review of research on workplace basic skills, Ananiadou et al. (2003) concluded that there was a convincing body of evidence on the positive benefits of workplace training. These benefits accrue both to employees and employers. However, there is very limited evidence with regard to the benefits of workplace *basic skills* training. Therefore projections of the value to the economy of improving basic skills tend to be extrapolations, based almost entirely on the well-documented economic benefits arising from workplace training in general. And relationships between basic skills improvements and operational effectiveness, business efficiency, retention and train ability, for example, have only rarely been tested objectively, and the wider benefits remain uncosted.
- 3.52 In one of the few high quality studies in this area, Krueger and Rouse (1994, 1998) carried out research in the US comparing outcomes for recipients/non-recipients of basic skills training. As reported in Ananiadou et al. (2003), a basic skills tuition programme was delivered to 480 low-skilled, hourly-paid workers at two mid-sized American companies (one service, one manufacturing). It ran for approximately 16 months and classes were taught on-site in five 8–12 week blocks. The programme was subsidised by the federal government, so employers only had to meet indirect costs.

- 3.53 The researchers found small, positive effects of the programme on all outcomes investigated (although note that the follow-up period was quite short). Results appeared context specific. Returns to wages were especially strong for those who undertook training with a strong company-specific focus (e.g. blueprint reading). Workers who participated in the programme had a lower absenteeism rate during the weeks in which they had classes and this effect continued for the next two months. Participation in training did not appear to make workers either more or less likely to leave the company after training.
- 3.54 As Ananiadou et al. report, the authors were not able to measure changes in productivity directly, but they did try to take indirect measures by querying participants about their own self-perceived productivity as well as about other relevant issues, such as: attitude towards their job, desire to take additional classes, satisfaction with their company and membership of community organisations. For almost all of the variables measured, differences between training programme participants and non-participants were insignificant. One exception was that training participants at both companies were significantly more likely to report that they planned to take additional classes in the future compared to non-participants. This finding is consistent with other research which has found that participation in training begets further participation, and is indicative of positive experiences employees report from education and training.
- 3.55 This study attempted to provide estimates of the rate-of-return to the employer of the training expenditure. On the basis of the actual costs incurred, based on the fact that the federal subsidy covered approximately half the costs of the training, the authors concluded that, at least in the manufacturing company, the training paid for itself but may not have done so without the subsidy. This rough estimation is based on a conservatively-estimated initial return to the training.
- 3.56 Much of the published evidence concerning the benefits of workplace basic skills training is qualitative, subjective or aspirational. The general message is that businesses that have undertaken literacy and numeracy training programmes for their employees have rated the experience highly. As Ananiadou et al. (2003) note, this is a meaningful finding: such programmes can be both disruptive and costly, so positive feedback from the employers bearing those costs suggests meaningful benefits, whether direct or indirect.
- 3.57 As reported by Payne (2002), a 1998 evaluation of workplace basic skills projects in Oxfordshire found that managers were most impressed by the programmes' impact on staff retention, confidence and interest in learning. Payne points to research by Frank (1996) and Benseman and Moore (2000); both of these studies found evidence for a wide range of benefits of workplace basic skills training, both in the workplace and in other areas of workers' lives.
- 3.58 As Wolf (2002) illustrates, training does not lead to increased turnover; in contrast, companies that offer more training appear to be better at retaining their staff. Wolf points to the positive impact of training on motivation: access to training can persuade employees that they are with a good employer who cares about their potential for advancement.

- 3.59 Basic skills training can have a positive impact on relationships between employees and employers (Dench et al., 2006; Hamilton and Wilson, 2005). Some impacts such as reduced staff turnover and enhanced workforce stability (White, 2003) may be contingent on employers themselves providing the training.
- 3.60 Ananiadou et al. 2003 cite studies identifying improvements in attendance (also noted by White, 2003; and Evans and Waite, 2008) and timekeeping (also reported in Dench et al. 2006). Increased flexibility, capacity to engage in innovative practice (Ananiadou et al., 2003) and improved use of new technology (White, 2003) are also significant outcomes of basic skills development.
- 3.61 Despite being most likely to benefit, Hartley and Horne (2006a) find that small businesses tend to place less emphasis on literacy and numeracy skills compared to medium and larger firms. Franchises in particular may have specific training but little knowledge of the literacy levels of those they employ.
- 3.62 Bassi (1994) found that about half the management representatives in her study reported that basic skills training had either moderate or significant impact on quality of output and ability to use new technology: 30% to 40% of respondents said that it had moderate or significant impact on error rates, customer satisfaction, time savings and safety.
- 3.63 In a survey of 30 Australian workplaces representing 13 industries, Pearson (1996, as reported by Ananiadou et al., 2003) found that language and literacy training was considered to have had a positive effect on five aspects of the workplace: direct cost savings; access to and acceptability of further training; participation in teams and meetings; promotion and job flexibility; and the value of training (which included issues such as worker morale, confidence to communicate etc.).
- 3.64 Asked for a quantitative estimate of savings, 70% of respondents said that their organisation had made perceptible cost savings as a result of language and literacy training in the workplace. The nature of these savings varied, but the most consistently cited ones were related to time-saving (both of supervisor and worker time) when carrying out language or literacy work tasks. The type of saving which received the second most mentions was related to more accurate and fuller completion of workplace documentation.
- 3.65 The NAO (2009) report on Train to Gain found that a majority of employers reported no difference to profit margins or sales as a result of Train to Gain, although two-thirds reported improved long-term competitiveness and roughly one half noted an increase in productivity. Ofsted (2008) found that fewer than one in ten employers surveyed had formal mechanisms in place to help assess the impact of training on business performance. Nonetheless, the majority reported that Train to Gain training and assessment had had some tangible results in terms of making their business more competitive and effective (e.g. higher qualification levels led to greater confidence amongst clients and more success in competitive tendering processes).



### Costs and benefits for the Exchequer

- 3.66 Using data from NCDS, BCS70 and the Family Resources Survey, Dearden et al. (1999) estimated the impact to the economy of eliminating poor basic skills below Level 1. For eliminating poor numeracy it was calculated that the overall earnings would increase by 3.2% (£10 billion in 2000), that there would be an increase of 1% in employment (200,000 people in 2000), and that tax receipts would increase by just under £5 billion. For literacy the increase in earnings was projected as £4 billion (1.3% increase) with a net tax receipts increase of £0.61 billion.
- 3.67 Bynner et al. (2001) estimated the total change in earnings and employment if initial Skills for Life basic skills targets are met. They also estimated what the net impact of this change in employment would be on government finances. The results suggest that if the numeracy target was met, employment would rise by over 100,000, earnings by £7.27 billion, and government finances would save £2.54 billion. If the literacy target was met, employment is estimated to rise by 45,000 and earnings by £1 billion, thus reducing government spending by £0.44 billion.
- 3.68 Looking at the impact of realising or exceeding the Leitch ambitions by 2020, Coulombe et al. (2004) estimated that if the numbers of people with below Level 1 literacy and numeracy needs was reduced to 2.7 million and 2.4 million respectively, the costs would be £800 million but there would be a net benefit of £50-70 billion over the period. It would increase the employment rate moderately by 0.15-0.25 percentage points and output per worker would be 0.47% higher in 2020.
- 3.69 BIS (2011) presented a model of Net Present Value (NPV) reflecting the allocation of FE participation funding in 2008/09. The NPV is calculated by estimating the discounted benefits from achieving a qualification over the working life of the learner, and subtracting the costs associated with undertaking the qualification. The future benefits consist of higher wages and better employment prospects for learners, as well as 'spillovers' to other individuals and employers. The costs consist of government funding and fees paid by individuals or employers, as well as output forgone during learning.
- 3.70 The table below shows the NPV of basic skills. It differentiates between 'first' qualifications, where the learner has reached this level of qualification for the first time, and 'all qualifications' where, in calculating the average, learners who already had that level of qualification are included. For both cases, estimates of the following are provided: the NPV for each qualification achieved; the NPV for each qualification started (including learners who are not successful - the model assumes no benefits from non-completions); and the NPV per £ of state funding, which is derived by dividing the total NPV for qualifications started by the government funding directed towards it. Based on aggregating the NPV according to 2008/09 funding allocations, the NPV to the economy of basic skills is estimated to be around £13bn.

**Table 3-2: Net Present Value per start, per achievement, and per £ of government funding**

First only			All qualifications		
NPV per a'ment (£000s)	NPV per start (£000s)	NPV per £	NPV per a'ment (£000s)	NPV per start (£000s)	NPV per £
27	20	23	27	20	23

Source: BIS (2011)

## Conclusion

- 3.71 There is growing evidence that gaining literacy and numeracy skills in adulthood has a positive effect on earnings and employment. However, there is insufficient UK evidence on the economic impact of literacy and numeracy provision in the context of FE and the workplace, and the acquisition of literacy and numeracy qualifications in adulthood has not yet been shown to be related to significant gains in earnings and employment.
- 3.72 Several high profile estimates of the costs and gains of basic skills to employers are the subject of significant criticism. There remains a need to establish, on the basis of rigorous cost-benefit analyses, the costs and benefits of lower and higher levels of literacy and numeracy, considered separately, and in respect of small, medium and large-scale employers in different sectors. Studies would benefit from including the role of ICT skills in their analysis.
- 3.73 There is extensive and robust evidence on the relationship between ALN and the wide-range of economic outcomes discussed in this chapter. Much less is known about the impact of basic skills interventions designed to promote these outcomes, or about the features of interventions best designed to promote them. The limited evidence yields mixed messages. It is a priority to conduct robust research on the promising features of interventions in order to establish whether and to what extent they affect earnings and employment. Further research is also required to establish whether participation in ALN is associated with improvements in skills and attitudes that serve as a foundation for improved economic outcomes, including, for example, positive changes in self esteem and a commitment to education and training. The LSAL study in the US provides an example of an innovative research design fitted for this purpose, including its measures of ALN, which, as with PIAAC, put an emphasis on learners' practices.
- 3.74 The British birth cohort studies represent a primary source of data for exploring the relationship between economic (and social) outcomes and levels of ALN. Notwithstanding the limited samples engaged in adult basic skills provision, there remains enormous potential to explore in more detail the relationships between economic outcomes and ALN, and, in particular, to explore the role of adult basic

skills in the processes and dynamics that help to shape adult trajectories and life chances.

# Outcomes of learning: personal and social returns

## Introduction

- 4.1 This chapter discusses the available evidence of the personal and social outcomes of literacy and numeracy on individuals, families and communities. After considering the evidence base, the discussion addresses the following topics: the impact of improving skills in adulthood; personal and interpersonal skills; confidence and self esteem; and social capital.

## Evidence

- 4.2 The evidence on social and personal outcomes is at least as extensive as it is for economic outcomes, but it is frequently less robust, often relying on small-scale qualitative studies and subjective measures of impact. There is extensive evidence of the relationship between ALN and learners' self esteem and confidence, and there is a similar volume of evidence on the impact of adult basic skills on individual and collective social capital. Whilst there is evidence of the impact of adult learning on such non-economic outcomes as health, social tolerance and crime, there is no reliable data specific to ALN and no such evidence, therefore, is included here. Since the British birth cohort studies provide limited evidence of the impact of adult basic skills interventions on personal and social outcomes, use of these sources is kept to a minimum in this chapter.

## Findings

### *Impact of improving skills in adulthood*

- 4.3 Brazier et al. (2010) found limited evidence on the effectiveness of education programmes aimed at reducing recidivism in young people, both in Britain and internationally (Utting and Vennard, 2000). A Canadian study (Poporino and Robinson 1992) followed offenders who had participated in Adult Basic Skills Education (ABE), and found that recidivism rates for those who completed their courses were lower (30%), as compared with those released before completing (35.5%) or who withdrew from the course (41.6%).
- 4.4 Using BCS70, Bynner and Parsons (2006) compared the outcomes of cohort members with poor numeracy skills at age 21 and who continued to have poor skills at age 34 (non-improvers), with cohort members with poor numeracy skills at age 21 but had good numeracy skills at age 34 (improvers). Their results showed that:
- female improvers were more likely to have used a computer at work (80% versus 61%) and were more likely to have access to a computer at home (83% versus 69%)

- male improvers were nearly twice as likely to disagree with the statement 'I am not at all interested in politics' (28% versus 13%)
- in terms of civic engagement, female improvers were almost twice as likely to have signed a petition or been on a rally or demonstration (31% versus 17%)
- female improvers were more likely to be involved in social or community organisations (55% versus 41%)
- female improvers were much less likely to report that they never got what they wanted out of life (12% of improvers versus 20% of non-improvers).

### **Personal and interpersonal skills**

- 4.5 In a review of evidence on ALN, NFER (Macleod and Straw, 2010) identified 17 sources with evidence of the impact of developing adult basic skills on adults' personal and interpersonal skills. Evidence tends to take the form of self report. The most commonly reported impacts were: self-confidence (Balatti et al., 2006; Cutter et al., 2004; Tett et al., 2006; Wolf, 2008) and confidence to try new things (Frontline Consultants, 2006); self-esteem, worth and image (Goodison et al., 2004; Hamilton and Wilson, 2005; Metcalf et al., 2009); belief in own ability and sense of personal achievement (Dench et al., 2006; Evans and Waite, 2008); reduced stigma and embarrassment (Frontline Consultants, 2006; Rhys Warner and Vorhaus, 2008); better physical and mental health (Metcalf et al., 2009); and a more positive attitudes towards life (Terry, 2006).
- 4.6 The impact on individuals' home and everyday lives included: feeling better able to help children with their homework, including reading with children (Evans and Waite, 2008; Frontline Consultants, 2006; Peters et al., 2003; Rhys Warner and Vorhaus, 2008); increased confidence and capabilities to undertake everyday tasks involving literacy and numeracy (Peters et al., 2003; Rhys Warner and Vorhaus, 2008; White, 2003); and greater ability to contribute to family life (Tett et al., 2006; HM Inspectorate of Education, 2005).
- 4.7 The impact on attitudes to and participation in learning included: increased confidence and/or motivation to engage or re-engage in learning (Evans and Waite, 2008; Frontline Consultants, 2006; Goodison et al., 2004; Peters et al., 2003); and increased take-up of other learning or continuation with learning (Cutter et al., 2004; Hamilton and Wilson, 2005; Metcalf et al., 2009; Rhys Warner and Vorhaus, 2008).
- 4.8 Ofsted (2003) noted that learners who completed their courses developed their interpersonal and computer skills, increased in self-confidence and self-efficacy, and improved their employment opportunities. Learners also often improved their oral communication.
- 4.9 Silver-Pacuilla (2008) examined the effectiveness of AlphaRoute, an online learning environment. Students reported an improvement in confidence and self-directedness. Learners working with the lowest two levels of materials in AlphaRoute (56% of participants) reported that the greatest benefits came from intangible competencies such as confidence and sticking with a task. Warschauer

and Liaw (2010) found that use of the 'LifeChoices' blog encouraged learners to interact with others outside their class and immediate group.

- 4.10 McIntosh (2004) examined the Skills for Life pathfinder projects carried out by DfES (2002). He found that the course participants sampled (not representative) more frequently mentioned gains to self-confidence as benefits from their training than gains in basic skills proficiencies. From a list of possible outcomes of their training, respondents reported most often that they were 'encouraged to get other qualifications' (54%), 'helping children with schoolwork' (46%) and 'being put in a stronger position to get a job' (35%).
- 4.11 Griffin (2001) examined evidence on literacy classes, reading and employment prospects. In one study (Fingeret, 1983), survey participants experienced positive changes as a result of their involvement in courses. Sixty-eight per cent felt more confident to speak out in a group, another 68% felt they had gained respect, 76% readily gave reading and writing advice to their friends, and 65% also now thought their opinions were important.

### **Confidence and self esteem**

- 4.12 Confidence and self esteem are included in the previous section as two of the most commonly reported personal benefits for adult learners. These are the subject of extensive research.
- 4.13 In NRDC's Learner Study (Rhys Warner and Vorhaus, 2008) many learners described a growth in confidence after attending a literacy or numeracy course. This related not only to what they were learning but also more widely to the literacy and numeracy practices they used at home, at work and in their everyday lives. Nearly all those who attended literacy classes mentioned the social aspect of learning and improved confidence. The social aspect was described as providing intellectual interest, structure in the day and contact with other people. Whether learners were young or old it was described repeatedly as 'getting out of the house' and 'keeping my brain alive'. Confidence was directly related by learners to improvements in their reading, writing and spelling, something people described being embarrassed about previously. Confidence also related to everyday tasks and practices, including having the confidence to cook a family meal independently and being able to read road signs and directions whilst driving.
- 4.14 In the NRDC Effective Practice Study in numeracy, Coben et al. (2007) found that, once numeracy learners overcame initial anxiety about their courses and mathematics, the courses could have positive effects on confidence and self-esteem, and enable learners to develop positive dispositions towards learning.
- 4.15 NIACE (Eldred, J., et al., 2006) described a qualitative research study into learners' and practitioners' views on the development of confidence in relation to learning. Eight Adult and Community Learning Fund (ACLF) supported projects and one other associated programme took part. One of the outcomes reported was a growth in confidence and self-esteem among learners, along with an increase in self-worth, self-assurance, happiness and well-being. One of the most notable changes was a new or enhanced ability to 'speak out' in different ways and

circumstances. Learners began to view themselves as able to take on new challenges.

- 4.16 Changes in confidence had an impact on, and were affected by, relationships with family and friends as individuals became more assertive and independent in their home environments. Parents and grandparents became more confident to support their children at school. Some learners started to confront oppressive or abusive situations. Enhanced confidence enabled people to build new friendships more easily, often at the learning centre. Enhanced confidence appeared to have a role in increased levels of community involvement on a spectrum that ranged from accessing amenities, such as local libraries, to becoming active in campaigning for change. This involvement represented a significant change for learners who had been experiencing social isolation resulting from low self-esteem, illness, caring responsibilities, cultural expectations or lack of money.
- 4.17 Studies of family learning programmes show that adult participants gain in self-confidence (Mallows, 2008; Swain et al., 2009), self-advocacy (Padak and Rasinski, 2003) and self-efficacy (Benseman and Sutton, 2005; Rodriguez-Brown, 2004), and increased confidence in ability to learn (Padak et al., 2002b). A number of sources cite improvements made to parenting skills, confidence and attitudes (Bensemann et al., 2005; Judkins et al., 2008; Brooks et al., 2008a; Ofsted, 2009). Swain et al. (2009) found that 64% of parents reported that they had become more involved with their children's school after engaging in family literacy and numeracy provision; a greater proportion (76%) reported that they had changed as a person, most expressing this in terms of gains to confidence and personal capabilities. Over half (55%) of parents had progressed to another course of education and 84% said they were thinking of taking another course.
- 4.18 Within the Army, half of respondents to a learners' survey (BSA 2007) reported that their basic skills course had given them confidence. Over half of learners also felt that basic skills training had encouraged them to take another personal development course, suggesting that literacy and numeracy programmes can enhance the confidence of Service personnel to engage with further learning opportunities. Benefits for the confidence and self-esteem of basic skills learners are also fairly widely recognised by line managers in the Army. This suggests that gains in confidence within the classroom translate, to some extent, into increased confidence in other aspects of learners' working lives.<sup>1</sup>
- 4.19 Whilst the evidence strongly suggests that ALN provision improves learners' confidence it is less clear whether improved confidence is a necessary condition of (improved) learning progress. Beder (1999) analysed the wider benefits of the 23 'most credible' adult basic skills evaluations in the US up till then, and concluded that participation in adult education had a positive effect on learners' self-image (six studies out of the eight measuring this). However, a comparison of those data with

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<sup>1</sup> An ongoing national longitudinal study of basic skills in the Armed Forces will report in late 2011. The study will include evidence of the personal and social effects of literacy and numeracy on the operational effectiveness of personnel in the Royal Navy, Army and Royal Air Force

data on progress gathered by Brooks et al. (2001a, pp. 129–130) showed no convincing correlation. Brooks et al. (2007) found that students' self-confidence and reading both improved, but that the two were not correlated, and Burton et al. (2010) had similar findings. Grief et al. (2007) found that students' writing improved, but that their confidence improved as a *result* of attending a course. This suggests that working on student's skills may itself improve self-confidence rather than vice versa.

### Social capital

- 4.20 The Centre for Literacy of Quebec (2010) reviewed studies on the outcomes of adult learning and literacy interventions in Canada (Bossort, Cottingham and Gardner 1994; Lefebvre et al 2006: 7-8), the UK (Metcalf et al. 2009; Eldred 2004,2006), Australia (McGrath 2007: Birch et al 2003) and New Zealand (Benseman and Tobias 2003; Benseman 2009). It reports that

*These studies, as well as related discussions (Sticht 1999, 2000, 2006, 2007), and literature surveys such as those produced by Benseman and Tobias (2003), Westell (2005), Gray (2006), Hartley and Horne (2006), and Salomon (2009), point overwhelmingly to social capital as an almost ubiquitous outcome of adult learning and literacy interventions internationally in the past twenty years' (p.8).*

*Social capital outcomes include communicating and becoming involved with others, whether at work or home, with the family, or in the community (p. 8).*

- 4.21 There is an increasing body of literature exploring the relationship between social capital and adult learning (e.g. Allison et al., 2006, Balatti and Falk 2002, Falk 2006, Falk et al. 2000, Field and Spence 2000, Kearns 2004, Kilpatrick 2002). In the area of adult literacy, such research is limited but growing (Balatti et al., 2006, Falk 2001, Tett et al., 2006). Course participation has been shown to present students with the opportunity to meet new people and to make new friends. Some non-English speaking background classes have been found to produce rich student networks. Balatti et al. (2007) reported that a growing body of research indicates that learning outcomes are a function of the social capital students bring to their course, and that learning can produce additional social capital outcomes for students (for example, Coleman 1988, Field 2005, Schuller et al., 2004).
- 4.22 A study of over 600 literacy and numeracy learners in Scotland (Tett and Maclachlan, 2007), a longitudinal study of adult literacy learners in California (McDonald and Scollay, 2009) and a study of community-centre based learning programmes in Australia (Raferty, 2002) all found links between participation in ALN and increased social activity and social networking. (See also Preston and Hammond [2002] on FE colleges in England and Balatti et al. [2006] on Vocational Education and Training [VET] learners in Australia). Other studies (Brassett-Grundy, 2004; McDonald and Scollay, 2009) have found that learners become better parents and nurture the literacy behaviours and educational achievements of their children: engaging with children more; becoming role model learners; becoming more involved in education in the home and community. Social capital outcomes have also been linked to better health and to social integration and



inclusion, although links to civic participation are under-studied. (See Bynner and Hammond [2004] for the conclusion that taking courses between the ages of 33 and 42 predicted greater levels of civic and political participation.)

- 4.23 Research from Australia (Balatti et al., 2006) found that the relationships and networks developed by learners in VET ‘provided them with opportunities to learn or to implement what they had learnt’ (p. 5). The review suggests that ‘a workplace programme can facilitate relationship building and networking among staff that in turn enhances their ability to acquire, apply and teach those skills’ (p. 10). These relationships and networks between staff also make for a better workplace environment, where employers have better reason to retain and retrain existing staff: workplaces that rely on teamwork are more likely to invest in training.
- 4.24 Macleod and Straw (2010) found evidence of impact relating to social wellbeing, including increased social networks and socialisation, and reduced isolation (Metcalf et al., 2009; Frontline Consultants, 2006; Rhys Warner and Vorhaus, 2008) and increased confidence to take up volunteering opportunities and engage in society (Frontline Consultants, 2006; Hamilton and Wilson, 2005).

## Conclusion

- 4.25 There is clear, convincing and statistically significance evidence that participation in ALN provision, and having higher levels of ALN, has a positive personal and social impact on individuals and communities.
- 4.26 The personal and social impact often takes time to emerge, and emerges in forms and contexts that are removed from formal learning environments. There remains considerable potential to: build on the evidence base for the social returns on investment in ALN; better understand, assess and monitor personal and social outcomes; and better understand the structure of provision and the conditions for adult learning that are best suited to promoting these outcomes.
- 4.27 Whilst there is strong evidence on the positive impact of ALN on learners’ confidence and other personal outcomes it is less clear whether improved confidence is a prerequisite of learning progress. Some evidence suggests that improved skills supports improved confidence rather than vice versa. Virtuous (or vicious) cycles may also apply, whereby, for example, improved skills lead to improve confidence which in turn leads to further improvements in skills. More research is required to establish how and whether these relationships between personal outcomes and learning progress obtain.
- 4.28 As with economic returns, and assuming the introduction of an additional set of targeted questions, the British birth cohort studies could become an invaluable source of data for exploring the relationship between social and personal outcomes and levels of ALN. There remains enormous potential to explore in more detail the relationships between one or more social and personal outcomes and ALN, and, in particular, to explore the role of adult basic skills in the processes and dynamics that help to shape adult trajectories and life chances.

# Quality and effectiveness of provision: learning and learning-related outcomes

## Introduction

- 5.1 What do we know about the most effective modes and models of engaging learners and delivering literacy and numeracy provision? This chapter looks at the learning, learning-related and educational outcomes of interventions and skills' levels, as three measures of the effectiveness of provision. In addition, evidence is provided on the measures and research designs best fitted to capturing these outcomes. The evidence is considered in relation to: participation and achievement; practice and proficiency; learning gains; workplace programmes; family literacy and numeracy; offender learning; formative assessment and embedded provision.

## Evidence

- 5.2 A number of studies have identified effective approaches to promoting learner engagement and progress in literacy and numeracy at programmatic and classroom levels; however, robust evaluations of the relationship between learning interventions and educational outcomes remain thin on the ground. In general, research from the UK seeking to measure the effectiveness of literacy and numeracy provision is small-scale and conducted over a short time-scale, during which learner gains may not be apparent or remain hard to measure. Moreover, few studies are of high quality or are sufficiently well-designed to capture the complexities of the connections between interventions and outcomes. The principal sources of evidence considered below are Rhys Warner and Vorhaus (2008), Wolf and Evans (2011), Brooks (2010), Reder (2009, 2010), Benseman (2010) and Casey et al. (2006); these sources report on the most promising, largest or best designed studies in the field.
- 5.3 Rhys Warner and Vorhaus (2008) examined the impact of the Skills for Life learning infrastructure on the experiences and achievements of adult literacy, numeracy and ESOL learners. The study included two quantitative strands. In the first, data from the Learning and Skills Council's Individualised Learner Record (ILR) were analysed, looking at trends in participation and achievement between 2000/01 and 2004/05. In the second, new data were gathered from two samples of learners in 2004/05 and 2005/06, using literacy and numeracy tests, attitude questionnaires, and profiles of learners' background characteristics. A qualitative strand included six case studies in six learning sites, drawing on data from in-depth interviews, observations and focus groups.
- 5.4 There are limitations to ILR data. Numbers in the ILR represent 'learning aims' rather than individuals, whilst the Skills for Life targets were concerned with individual learners rather than learning aims. The full dataset does not permit

identification of individual learners and analysis was therefore confined to learning aims. ILR data are collected by providers and returned to the Learning and Skills Council (LSC); they are therefore dependent on whether providers interpret data fields correctly and collect data accurately. Both the LSC and practitioners in colleges have expressed concerns about the robustness of the data.

- 5.5 Wolf and Evans (2011) conducted a longitudinal study of the impact on learners and their organisations of government-funded workplace programmes designed to increase the literacy skills of employees, involving 567 learners and over 53 workplaces. The reading and writing skills of participants were tested at the start of their courses, and then a year and two years later. In-depth information was gathered on all three occasions about their jobs, learning experiences, education, attitudes to work, and aspirations. At the same time, managers, training managers and course tutors were interviewed. A sub-set of sites and learners were studied and interviewed in greater depth. The courses studied typically offered 30 hours of tuition, after which learners had no further free workplace entitlement; these courses therefore were shorter than is average for literacy (64 Guided Learning Hours in 2006/07) and numeracy courses (62 Guided Learning Hours) and well short of the 100 plus hours thought necessary for educationally meaningful learner progress to be made (see Chapter 11 of this review). The project examined whether this period has the hoped-for impact on skills, and whether it changed participants' 'learning trajectories'.
- 5.6 The Longitudinal Study of Adult Learning (LSAL) followed a population of high school dropouts for eight years. In periodic interviews, these adults were asked about a broad range of their life activities and about changes in their reading, writing and maths skills. The LSAL panel was representative of a local population for ALN education. This local target population was defined as residents of the Portland, Oregon, metropolitan area, aged 18–44, proficient (but not necessarily native) English speakers, high school dropouts (i.e. they had not received a high school diploma and were no longer enrolled in school) and had not received a General Educational Development (GED) diploma or other high school equivalent qualification. A statistically representative sample of this population was drawn, containing 940 men and women, and weighted so that population statistics could be estimated from the sample data. Six 'waves' of data were collected between 1998 and 2007. At Wave 5, about 90% of the original sample was retained in the study.
- 5.7 In an analysis disputed by New Zealand government statisticians, Benseman (2010) explores the effectiveness of workplace LLN programmes based on an evaluation of 18 workplace courses, set up by 16 companies in New Zealand. The companies covered a range of industries, locations, company sizes and organisational structures, while the courses covered a range of programme formats, duration and types of learners. The courses used either an embedded LLN approach or teaching material related to the companies' operations and the participants' jobs. The evaluation took place over three years, and quantitative and qualitative data were gathered to identify outcomes for the course participants, their workplace practices, the companies they work for and their lives outside work. Reading and writing skills were assessed using Go!, an assessment tool commissioned by NRDC experts from the NFER. A total of 491 course participants

were interviewed and assessed pre-course and 343 (69.8%) of these participants were also interviewed and assessed post-course.

- 5.8 Casey et al. (2006) explored the impact of embedded approaches to LLN on 79 vocational programmes. The courses were based in 15 FE colleges and one large training provider located in five regions of England. The 1,916 learners who took part in the research were preparing for National Vocational Qualifications (NVQ) at Levels 1 or 2 in one of five areas of learning: Health and Social Care; Hair and Beauty Therapy; Construction; Business; Engineering. The sample was selected to ensure a balance of the five vocational areas, the two levels of courses, and those with and without embedded approaches. A four-point scale was developed to differentiate courses in which LLN was not embedded, through to those that were fully embedded or integrated.

## Findings

### *Reviews of evidence on effective teaching*

- 5.9 In a literature review for CfBT, NFER (MacLeod and Straw, 2010) found that effective teaching included: recruitment and retention strategies for learners; embedded provision tailored to meet individual need; the assessment and diagnosis of need; progression opportunities for learners; inter-agency and stakeholder collaboration and coordination that includes employers in all stages; and qualified trainers with their own professional development opportunities.
- 5.10 A review of effective basic skills teaching conducted by the Basic Skills Agency (BSA, 2000) found that effective programmes have high expectations of learners' achievements and enable learners to gain credit and accreditation for their learning and enable them to move into further study if they so desire. Factors thought to correlate with better progress for learners include: provision for skills to be acquired in a range of contexts; clearly structured teaching; a learning plan for each learner; teachers who regularly assess and review progress, and adjust the length of programme to the level of skills required.
- 5.11 Benseman et al. (2005) found evidence of effective strategies in a range of educational contexts:
- in family literacy programmes, effectiveness is associated with public celebrations of milestone events and achievements, progression routes for adult learners to further learning opportunities
  - in community-based programmes, effectiveness is associated with community ownership of programmes and resources and strong collaboration between providers and communities
  - in bridging programmes, effectiveness is associated with programmes being coordinated centrally rather than run by individual academic departments

- in workplace literacy programmes, effectiveness is associated with commitment from the employer, classes scheduled during worktime, the relationship of the curriculum to real-life contexts
  - in prison-based programmes, effectiveness is found where a community-building process is incorporated, and contextualised content has been shown to increase attendance rates and levels of engagement.
- 5.12 In Hannon et al. (2003) principal among the factors associated with successful community-focused ALN provision were: holistic approaches to learning, whereby learning was aligned with learners' lives and interests; sensitivity to any prior negative experiences of education; a learning location that was fit for purpose; and having basic skills integrated into provision, without overtly labelling training as basic skills so as not to discourage potential learners.
- 5.13 On the basis of a review of major US studies Condelli et al. (2010) identified a number of promising approaches to teaching literacy and numeracy:

#### **Effective practices from the United States**

- contextualized basic skills instruction, in which skills are taught in meaningful work-related, family-related, or other individually engaging contexts
- differentiated instruction, in which career orientation and/or job training can be provided to adults at a broad range of literacy and numeracy skills
- flexible career pathways, in which adults take a set of complementary basic skills, occupational, and (in some cases) postsecondary education modules related to a particular learning goal or outcome
- innovative public-private partnerships, that break down the traditional distinction between basic skills and job-specific skills training for incumbent workers.

- 5.14 Ofsted (2007) found that the best forms of teaching were adapted to the needs of different cohorts including part-time learners, work-based learners and 14-16 year olds. In the best form of 'in class' support the subject teacher and support tutor planned the lesson together. By working together, lessons could be planned to ensure that long-term LLN skills were met as well as covering the learners' immediate needs. 'In class' support was less effective when the support tutor acted mainly as a classroom assistant, with the tutor having to focus narrowly on the task in hand rather than the development of transferable skills. Support tutors working with learners outside lessons were most effective when liaising closely with a vocational team and were familiar with the learner's programme.

### **Participation and achievement: the Skills for Life strategy**

- 5.15 The most comprehensive analysis of participation and achievement under Skills for Life focussed on the years 2001-2005. During this period there was a considerable increase in overall figures for enrolments, completions and achievements. Literacy enrolments more than doubled from 411, 187 to 934, 796, and achievements rose from 171,961 to 539, 115. Numeracy enrolments rose from 362, 340 to 686, 223, and achievements rose from 119,666 to 345, 161 (Rhys Warner and Vorhaus, 2008).
- 5.16 There were much higher rates of achievement where programmes of learning were completed, and the number of achievements as a proportion of completions rose steadily over the five-year period.
- 5.17 Overall achievements were highest for Level 1 qualifications throughout the five years. They were lowest for Entry level at the start of the five-year period in 2000/01, but Entry level figures increased substantially in 2002/03, overtaking the number of achievements at Level 2. From this year on, Level 2 achievements represented the lowest number for all three levels.
- 5.18 Women were more likely than men to achieve a qualification on literacy courses, but women were 8% less likely than men to achieve a qualification in numeracy. In literacy and numeracy courses, older learners were more likely than younger learners to complete their course and achieve a qualification (Cara et al., 2009).
- 5.19 Literacy and numeracy learners studying on Level 1 and Level 2 courses were more likely to complete their course, but less likely to achieve a qualification, as compared with those on Entry level courses. Similarly, those with prior qualifications were more likely to complete and achieve their courses as compared with those with no qualifications. (Cara et al., 2009).
- 5.20 The National Audit Office (NAO, 2008b) found that, between 2001 and July 2007, more than half the qualifications counting towards the Public Service Agreement target for Skills for Life were gained by 16- to 18-year-olds. However, the pattern of achievement was changing – the percentage of target-bearing qualifications gained by adults aged 19 years and over increased from 38% in 2000-01 to 52% in 2006-07. Fewer people participated in and achieved qualifications (or relevant learning aims) in numeracy than in literacy: 10 numeracy qualifications achieved for every 100 people with below Level 2 numeracy compared to 18 literacy qualifications. Participation was lower, with 17 numeracy course participations per 100 people with below Level 2 compared with 30 in literacy. Rates of literacy and numeracy achievement were higher in the North East and North West than in the East of England and East Midland (lowest rates literacy) and the East of England and London (lowest rates numeracy). These positions had changed little since 2004.

### **Practice and proficiency**

- 5.21 Analysis from several stages of the Longitudinal Study of Adult Learning found that, whilst there is not a clear relationship between programme participation and changes in proficiency, there is a strong relationship between programme participation and changes in practices. With many statistical controls in place, the

study found strong relationships between participation in adult education programmes and changes of engagement in literacy and numeracy practices. Programme participation influences practices rather than vice-versa. Reder (2010) also finds effects of Stage 1 engagement in literacy practices on Stage 5 proficiency ( $t=2.355$ ,  $p=.019$ ). This is consistent with practice engagement theory: more frequent reading and writing activities lead over a long period of time to greater proficiency.

- 5.22 This finding is consistent with the relationship that Purcell-Gates et al. (2004) reported between types of adult education programmes and changes in practices observed among programme participants. Purcell-Gates et al. found that adult education students from programmes that focus instruction around authentic literacy materials and practices report greater changes in their literacy practices than students from programmes not centred around authentic literacy practices. LSAL contrasted the development of literacy and numeracy practices between programme participants and non-participants, whereas Purcell-Gates et al. contrasted the development of literacy practices among participants in different types of programmes.
- 5.23 There is thus a strong chain of evidence linking programmes to increased engagement in practices, and linking practice engagement over longer periods of time to increased proficiency levels. Without measures of literacy practices, a systematic connection between programmes and proficiency is not revealed. Hence the importance of using such measures to show that increased levels of practice engagement – something that courses produce – lead to increased proficiency.

### **Learning gains**

- 5.24 Torgerson and colleagues (Torgerson et al., 2003; Torgerson et al., 2004) found just enough evidence from randomised controlled trials (all of it from the US) to demonstrate rigorously in a meta-analysis that receiving adult literacy (and numeracy) instruction does produce more progress than not receiving it.
- 5.25 However, there is also evidence that adults' average progress in literacy is modest. For the US, Sticht and Armstrong (1994) summarized evidence from over 30,000 students attending a large number of programmes, all of which had shown statistically significant gains (but, given that providers have a strong financial incentive not to report non-significant results, and an even stronger one not to report negative ones, this suggests publication bias); the gains ranged between a half and 1.5 grade levels, following amounts of instruction ranging between 1 and 229 hours. Beder (1999) appears to have set a stricter criterion for the quality of the research he summarized, and based his conclusions on two attempted national studies (one was the National Evaluation of Adult Education Programs carried out in 1990–94) and six local ones, plus a secondary analysis of data from the NALS of 1992. None of the studies reported data on writing, and only four on numeracy; all tested reading. Because of serious attrition, neither national study provided reliable data. In their re-analysis of NALS data, Sheehan-Holt and Smith (2000, p. 227) were able to compare adults 'at the lower end of the literacy skills continuum' within the survey who had participated in adult literacy provision in the previous year with directly comparable people who had not. The main finding was that 'no association

was found between participation in [basic skills] programs and literacy skills'. The local studies provided mixed results. Beder's (1999, p. 5) conclusion from all the evidence he analysed was that 'As measured by tests, the evidence is insufficient to determine whether or not participants in adult ... education gain in basic skills.'

- 5.26 The evidence for modest gains by learners in England comes from three studies. In 1998–99 Brooks et al. (2001a) measured the progress of over 1200 adult literacy students in reading and over 700 in writing. About half the reading items were drawn from the least difficult tasks in IALS (they were supplemented by even simpler tasks from British sources), and the statistical model used was that used to analyse IALS data. The average gain in reading was significant - 3 percentile points, from the 19th to the 22nd percentile on the IALS scale. The average gain in writing was tiny: an increase in the average number of words written from 19 to 21, with no significant change in sentence length, accuracy of grammar or spelling, or handwriting. In 2004–05, in the Effective Practice in Reading study Brooks et al. tracked the progress of 179 adult literacy students, and found their average gain was equivalent to about half of one IALS level. Brooks and Pilling (2009, in press) report the progress in numeracy of adult numeracy learners and in reading and writing of adult literacy and ESOL learners after three-to-six months of instruction (typically one two-hour session a week) in 2004–06. Adult literacy learners' gain in writing was non-significant; the other four gains were statistically significant, but all represented about one third of (the British equivalent of) one IALS level.
- 5.27 Reasons for the modest progress may include: low participation rates (only a few per cent of adults with poor skills are receiving instruction at any one time); low starting points; substantial numbers of students with mother tongues other than English; the fact that many tutors are on part-time, insecure contracts; relatively high dropout rates (routinely around 50% in a year); and insufficient attention to effective teaching strategies.
- 5.28 To increase the rate at which adult basic skills students advance to and succeed in college-level occupational programmes, the Washington State Board for Community and Technical Colleges (SBCTC) developed the Integrated Basic Education and Skills Training, or I-BEST. In the I-BEST model, a basic skills instructor and an occupational instructor team teach occupational courses with integrated basic skills content, and students receive college-level credit for the occupational coursework (Zeidenberg et al, 2010). A robust evaluation of this model showed that enrolment in I-BEST had a positive impact on all but one of the educational outcomes considered (persistence was not affected). The difference-in-differences (DID) analysis found that students who attended colleges with I-BEST after the programme was implemented were 7.5 percentage points more likely to earn a certificate within three years and almost 10 percentage points more likely to earn some college credits, relative to students who were not exposed to I-BEST. The DID approach allows causal inferences about the effectiveness of I-BEST. The DID findings are impressive in the light of the fact that they are based on the effects of I-BEST during their first year of implementation at the subset of colleges offering the 'treatment' examined.



## Workplace programmes

- 5.29 Wolf and Evans (2011) found that workplace basic skills courses have reached people who are not normally involved in continuous education or training. Two thirds of the participants in the sample were male, compared with only 41% and 23% in publicly funded courses available through colleges and community-based adult learning centres. Older learners were more in evidence in the sample than in other forms of adult education provision. Many of the learners in the sample had not undertaken any learning in the recent past and very few of them might have been attracted to a basic skills course at an FE college. The research identified a strong appetite for learning among many adults who have not found it possible to attend conventional classes.
- 5.30 The experience of formal learning can have a lasting effect on participants' attitudes and activities. Most of the sample had undertaken little previous, formal post-school learning. There were strong levels of learner satisfaction with the courses, and, following these, there was a statistically significant increase in the numbers undertaking additional formal learning. The large majority were more positive about education and learning, and many also reported increasing the amount they read.
- 5.31 There were major differences here between the large majority who participated voluntarily, and those who were obliged to study by their employers. This suggests that the reported changes are genuine, and that voluntary adult learning in the workplace can change learning trajectories.
- 5.32 Learners were motivated by a far wider range of factors than the wish to improve job performance, including helping children with their homework, pursuing interests outside work, learning new skills as a form of personal development. Managers were motivated largely by factors other than the desire to 'plug' skill gaps or improve productivity: the main impulse was to strengthen the psychological contract between employer and employee, to demonstrate to employees that they were valuable and valued. Managers believed the courses improved staff confidence and morale, but reported very few examples of direct impact in narrowly economic terms.
- 5.33 The short workplace courses did not, in general, have any substantial immediate impact on participants' literacy skills. Among learners for whom English was their first language, there were no statistically significant improvements in literacy attainment. Amongst ESOL learners, there were small but statistically significant gains, but it is very likely that these resulted from continued exposure to an English speaking environment. Participants' average performance continued to improve over a two year post-instruction period. Learners who used their literacy skills actively, in and out of the workplace, were most likely to show consistent gains.
- 5.34 Participation in workplace learning was correlated with higher rates of later participation in further education (FE) and training. Most of the learners were volunteers, whilst a small number were effectively forced to participate by their employers. The latter showed no increased inclination to undertake further learning or read more, whilst the former group clearly did. The changes were small and not universal, but they were statistically significant.

- 5.35 In the host organisations the research found no stable legacies or outcomes that could be ascribed to government activity, either in the form of ongoing provision or in changes in employers' training activities. These findings are consistent with those of both other researchers who have examined the institutional impact of workplace-oriented initiatives in the skills sector (Finlay et al., 2007) and of evaluations of their impact using national datasets (Abramovsky et al., 2005).
- 5.36 The context for Wolf and Evans' findings includes the following factors:
- The funding of much of the provision was short-term, including Union Learning Fund and European Fund money, whereby recipients would expect one project, or one tranche of funding.
  - Courses were short - typically 30 hours in total, and the use of quantitative targets places pressure on providers to ensure that learners are not stretched, but entered for qualifications they will pass.
  - Few individual enterprises are in a position to develop stable learning institutions. In just over two years the authors found that 14% of their sites had closed altogether. In over half, there was no manager in post who had any recollection of or knowledge about the courses which had taken place.
  - Workplace provision which uses the model tracked by Wolf and Evans is expensive. Top-down provision, on a workplace specific pattern, involves multiple contracts for each course, small groups and heavy fixed costs.
- 5.37 Benseman (2010) explores the effectiveness of workplace LLN 'Upskilling' programmes in New Zealand. 60% of course participants reported changes in how they think about themselves, especially in terms of improved self-confidence, feelings of satisfaction with their language, literacy and numeracy (LLN) skills and an increased belief in their ability to do their jobs. Of the 278 participants who were re-tested for reading at the end of their course, 86% showed an improvement in their reading scores, while the reading scores for 4% remained the same and for 10% decreased. Average reading scaled scores increased by 10.1 points out of 100.
- 5.38 The relationship between teaching hours and reading gain was not significant. A limitation of the study is that while it was possible in most cases to find out how many total teaching hours were received by each course participant, it was not always possible to measure the number of hours of learning that focused specifically on reading skills or to monitor the quality of the teaching.
- 5.39 When asked how much the course had improved their reading skills, 23% of participants reported that their reading skills had improved 'a lot' as a result of the course, 36.1% said 'a bit' and 40.9% said 'not at all'. Around two-thirds (66.1%) of participants made gains in their writing score. There was no relationship between hours of learning and degree of improvement in writing scores.

- 5.40 There was a limited amount of numeracy teaching in Upskilling. All course participants (343) were asked to self-assess their maths skills, pre- and post-course. Their average rating increased from 3.6 to 4.1 on a six point scale. Only seven numeracy learners completed pre- and post- course numeracy assessments, and they increased their average score from 12.1 to 15.3 out of 46.
- 5.41 Course participants were asked, pre-course and post-course, to rate their confidence on a 1-6 scale (1 = low) in speaking to a workmate or supervisor one-to-one; a small group; a large group; and someone they don't know, such as a new customer. There were small but consistent increases across all four workplace speaking contexts, especially in speaking one-to-one to people they don't know. Around three-quarters of participants (73%) reported that their speaking skills had improved as a result of the course, and 77% said their listening skills had done so.
- 5.42 Eighty per cent of course participants reported doing their job better as a result of the course. Those who said they were more confident about doing their job were more likely to report they were doing their job better and those who said their LLN skills had improved were more likely to report they were doing their job better. There was a positive relationship between improved reading scores and improvement in self-assessed job performance.
- 5.43 In 12 of the 18 courses supervisors rated the course participants before and after the course. Around 60% of all supervisor ratings of the participants increased. Providers reported that the most notable outcomes for their course participants were increases in personal confidence and job confidence, improved communication with other workers and a greater interest in training. These four outcomes were also in the top five outcomes reported by managers most of whom also commented that communication between management and workers had improved.
- 5.44 The following features were frequently associated with the high-impact courses.

#### **Features of high-impact courses**

All key stakeholders within the company had a clear understanding of the course purpose and processes; managers from senior level through to supervisors actively demonstrated high levels of support; provision was integrated into long-term training.

Providers supported their tutors in terms of professional support and strong planning and logistics; providers had a high level of experience of running workplace LLN; tutors were experienced in both LLN teaching and workplace programmes and had LLN-related qualifications.

Employers or providers recruited participants who closely matched the purpose of the course; course purpose and content were explained clearly to participants.

Courses were run in work time; teaching content was closely related to

companies' priorities and participants' specific learning needs.

Participants with high motivation and a sense of commitment were selected.

*Source: Benseman 2010*

### **Family literacy and numeracy**

- 5.45 Benseman et al. (2005) found that family literacy programmes with a clear focus on literacy/numeracy development are most likely to produce learning gains for parents. The more effective programmes have parents committed to improving their children's chances, have teaching sessions for parents only and children only, as well as together; have home visits; collaborate with other participating groups, to ensure programme and services integration; and have staff whose skills match the unique challenges of family literacy.
- 5.46 Brooks et al. (2008a) conducted a UK-wide and international review of family literacy, language and numeracy programmes and practices. The authors found little evidence of the impact on parents' skills, with the following exceptions:
- three studies (Family literacy demonstration programmes, Family literacy for new groups, Family literacy and numeracy in prisons) reported benefits to parents' literacy, and the two randomised controlled trials which reported a literacy finding for parents (Even Start In-Depth Study, PEFaL) showed no benefit, though Even Start did show a benefit to general education, as did the Family literacy demonstration programmes ('further study') and Early Start
  - two studies (Early Start, FLAME) reported benefit to parents' spoken language
  - two studies (Family numeracy pilot programmes, Family literacy and numeracy in prisons) reported benefit to parents' numeracy.
- 5.47 Brooks et al. concluded that, on balance, this strongly suggests that parents' skills benefited, but there is a clear need for more systematic gathering of data.

### **Offender learning**

- 5.48 The Adult Learning Inspectorate, now part of Ofsted, found (ALI, 2007) that, when the partnership between the Probation Service, the training provider and the offender is well co-ordinated, teaching of basic skills is seen as integral to the offender's total programme. Some providers give considerable support to offenders on basic skills programmes, effectively engaging them in the learning process, to the extent that some offenders continue with their training beyond the completion of their supervision order. The ALI also found little variety in the teaching methods used to engage offenders in their learning programmes. Over-reliance on handouts and paper-based information was found to be unsuited to offenders with low levels of literacy and numeracy.
- 5.49 The National Audit Office (NAO, 2008a) was critical of the quality of many Individual Learning Plans and 61% of their sample who were engaged in learning and skills

activity had no learning plan on file at all. Roughly 28% of courses started by offenders in custody within the NAO's sample were not completed.

- 5.50 A meta-analysis by Lipsey (1995) of what is effective in programmes for young people involved in offending found positive results for:
- interventions that focused on the young people's behaviour and skills (including basic skills)
  - interventions delivered in multimodal packages, for example, including elements addressing behaviour, academic skills, vocational skills and communication skills.

### **Formative assessment**

- 5.51 Formative assessment has been shown to make a significant contribution to learning gains relative to other teaching and learning strategies (Black and Wiliam, 1998, 2003). Looney (2007) reviewed European evidence on adult literacy, language and numeracy provision, drawing on case studies from nine member states (including England) and focussing on formative assessment. Looney identified the following as principal elements in a learner's journey: diagnosis of learning needs, and establishment of learners' motivations and goals; the development of strong relationships within the classroom, through dialogue and peer assessment; the use of assessment to provide information on learning, and to be used as feedback by learners and instructors to modify teaching and learning activities. Instructors develop effective questioning techniques, and set tasks and challenges at the right level to help learners address gaps; a focus on building learner autonomy, including skills for self assessment and for addressing the literacy and numeracy tasks of daily life independently; tracking of learner progress toward goals and recognition of achievement.
- 5.52 As part of an OECD review, Derrick and Ecclestone (2008) reviewed English-language evidence on formative assessment. Conclusions are based on a wide ranging, but not formally systematic review of evidence. Few sources are based on systematic research; many are small-scale studies, handbooks or other training materials designed to support teachers. The findings reported here, however, were repeated across a wide range of studies.

#### **Elements in good formative assessment**

Dialogue between teachers and learners: teachers should structure learning as far as possible as dialogue between themselves and their students.

Communication skills: teachers need continually to be evaluating, maintaining and extending their communication skills, with a particular focus on listening and understanding, and on questioning and feedback to develop learning.

Feedback and marking: feedback should focus on the task rather than the person, be constructive and practical, and be returned as soon as possible.

Developing an atmosphere conducive to learning: students should be sufficiently secure to face challenges and take risks in asking questions or advancing propositions that may reveal their lack of understanding.

Peer assessment and self-assessment: self-assessment and peer-assessment should be central elements of all learning situations.

Collaborative learning activities: collaborative discussions, tasks and activities and debate, can have benefits for many learners.

*Source: Derrick and Ecclestone 2008*

### **Embedded provision**

- 5.53 Except where a single teacher had dual responsibility for teaching vocational skills and LLN, Casey et al. (2006) found that learners on embedded courses had better staying-on rates than those on non-embedded courses, and more positive attitudes to the value of LLN study. On the embedded courses retention was 16% higher. The embedded courses also had higher success rates than the non-embedded courses. When these data are analysed by vocational level, the increase in success rates associated with embedding is particularly strong for vocational Level 2 courses, with a 26% difference between fully embedded and non-embedded courses. For learners on the fully-embedded courses, 93% of those with an identified literacy need achieved a literacy/ESOL qualification, compared to only 50% for those on non-embedded courses. On the fully embedded courses, 43% more learners achieved literacy qualifications. For learners on the fully-embedded courses, 93% of those with an identified numeracy need achieved a numeracy/maths qualification, compared to 70% for those on non-embedded courses. On the fully embedded courses, 23% more learners achieved numeracy qualifications.

### **Conclusion**

- 5.54 The Skills for Life strategy contributed to a substantial increase in enrolment, completion and achievement in ALN. There were worthwhile gains in numeracy for numeracy learners, and in reading for literacy learners, but not in writing for literacy learners.
- 5.55 Improved practice often precedes improved achievement: participation in ALN programmes leads to increased engagement in literacy and numeracy practices, and over time this can lead to gains in proficiency and achievement. Evidence from the LSAL shows that participation in ALN programmes leads to increased engagement in literacy and numeracy practices, which in turn can lead to achievement gains. Measures of engagement in literacy and numeracy practices can be used with proficiency measures to provide a framework for identifying and tracking ALN development.
- 5.56 Workplace basic skills courses can reach people who are not normally involved in continuous education or training. Learners are often motivated by a far wider range

of factors than the wish to improve job performance, and managers by factors other than the desire to fill skill gaps or improve productivity. There is conflicting evidence on whether workplace courses have any substantial impact on participants' literacy skills. In workplace provision employees require the motivation and opportunities to exercise their (improved) skills. Employers and managers therefore need to create environments that allow or encourage the use of new skills. Conditions for effective workplace learning include voluntary engagement, extensive contact and study time, and sustained formal and informal opportunities for acquiring and improving skills. These conditions were often absent in cases where research reports little impact.

- 5.57 Embedding literacy and numeracy in vocational programmes can lead to higher retention and course success rates, and increased learner achievement in literacy and numeracy qualifications. Embedded provision should be promoted and treated as the norm and not the exception for Level 1 and 2 vocational courses by policy, quality and funding agencies.
- 5.58 Adult literacy and numeracy programmes have significant positive effects. However some are not yet well understood, or they tend to be neglected in formal evaluations. This is either because, although significant, these effects are not large, or because they take a long time to emerge, or because they are a feature of adults' everyday practices which existing instruments are not yet designed to capture. Effective provision is often characterised by a whole organisation approach and commitment to ALN, qualified teachers and trainers, sustainable funding and infrastructure, and adequate time for learners to acquire and consolidate their skills and knowledge. It is a priority both to understand the full range of positive effects, and to devise programmes and evaluations that are best suited to promote and capture these benefits.

# Quality and effectiveness of provision: teaching and learning

## Introduction

- 6.1 This chapter discusses the evidence on quality and effectiveness in respect of teaching and learning practices. Effective practices in reading, writing and numeracy are identified on the basis of evidence presented in research and inspection reports. Evidence on effective delivery models is included in Chapter 5.

## Evidence

- 6.2 In England, the largest study of teaching and learning strategies in basic skills is NRDC's suite of five Effective Practice Studies exploring teaching and learning in reading, writing, numeracy, ESOL and ICT. The studies also represent the first attempt to correlate evidence on teaching strategies with measures of change in learners' attainments and attitudes. This chapter draws on the Effective Practice Studies in reading (Brooks et al., 2007), writing (Grief et al., 2007) and numeracy (Coben et al., 2007a). Each study gathered data from a sample of learners broadly representative of the national distribution, and statistical data on progress were supplemented with qualitative interview data.
- 6.3 There are limitations to the evidence provided by these studies. The amount of time between assessments is likely to have been too short for evidence of substantial progress to emerge (for example, in numeracy, only 39 hours of teaching time occurred between the first and second assessments). In reading, the assessment instrument assessed only comprehension at text level, and no data were gathered on progress in other aspects of reading. The writing study was conducted with a sample smaller than is ideal for analysis of this type. Most classes in the study were 'literacy' classes and therefore included reading, speaking and listening, as well as writing. It was a challenge to find an assessment instrument equipped to measure sensitively and validly the progress made by numeracy learners. For numeracy, robust evidence can also be drawn from NRDC's 'Maths4Life' programme, a three-year national development and research project focused on educational practices in numeracy/mathematics classrooms within Skills for Life.
- 6.4 Whilst not strictly speaking 'research evidence', and therefore to be treated with circumspection, inspection reports nevertheless provide valuable evidence on effective practices in teaching and learning, particularly in relation to staying in class, progressing and achieving. Findings in this chapter draw primarily on two recent reports from the Office for Standards in Education, Children's Services and Skills (Ofsted) *Removing Barriers to Literacy* (Ofsted, 2011a) which reported on effective approaches that might help education providers (from early years to adult learning) improve their practice in literacy and *Tackling the challenge of low numeracy skills in young people and adults* (Ofsted, 2011b) which examined the



quality of numeracy provision for post-16-year-olds in programmes up to and including Level 2 through an evaluation of programmes offered by 59 providers across England.

- 6.5 Evidence of effective delivery models is included in chapter 5 and not here because there is practically no rigorous research on the impact of specific teaching and learning practices in relation to specific models of delivery. To take one example: reciprocal teaching has been found to have positive effects on reading comprehension, but there is no evidence on the impact of using this teaching method in the context of one delivery model as opposed to another. This illustrates a large gap in the evidence base.

## Findings

### Reading

- 6.6 The NRDC Effective Practice Study in Reading (Brooks et al., 2007) is the largest study in Britain to date of the strategies used to teach reading in adult literacy classes, and marked the first attempt to correlate that evidence with measures of change in learners' reading attainment and attitudes to literacy.
- 6.7 The most frequent patterns of classroom activity observed were either a whole-class opening section followed by individual practice or entirely based on individual work. In both cases learners worked alone for substantial amounts of time – this was the most frequent grouping strategy, corresponding with silent reading as the most frequent specific teaching strategy. However, the study found that learners who spent more time working in pairs made better progress in reading, as did learners who spent less time working alone in class.
- 6.8 As this suggests, Brooks et al. (2007) found that several approaches which the literature suggests are effective in reading pedagogy were rarely seen in the classroom practices observed: encouragement of fluent oral reading; reciprocal teaching (where pairs of learners take turns to be 'tutor' and student'); explicit comprehension strategies; accurate phonics teaching; language experience approaches. Researchers concluded that in order to support learner progress, teachers should allow more time for learners to engage in 'active reading' – or reading aloud – as opposed to reading silently or non-reading activities. On average, active reading tuition occupied less than half the class time.
- 6.9 Besser et al (2004) carried out seminal exploratory research on adult learners' difficulties in reading (the first study of its kind). The study was designed to investigate areas of reading difficulty in adult literacy learning through focused observation of practice and close study of learners. The principal finding was that there appeared to be a less than perfect match between learners' difficulties and pedagogy. Whilst a wide range of strategies was being used and teaching was observed that targeted some of the identified difficulties, intensive, focused reading instruction did not comprise a significant amount of teaching time.

### Experimental research findings

- reciprocal teaching has positive effects on reading comprehension (Rich and Shepherd, 1993)
- a 'diagnostic prescriptive' approach had positive effects on reading comprehension, but not on word identification (Cheek and Lindsey, 1994)
- for inmates at a US prison, a 'community-building group process' accompanied by the SRA reading programme had a positive effect on reading (Roberts and Cheek, 1994)
- In a review of US evidence on adult reading derived from randomised controlled trials (Kruidenier, 2002b) found that:
  - phonemic awareness and/or word analysis instruction may lead to increased achievement in other aspects of reading for adult beginning readers
  - word analysis may be taught using approaches that include direct instruction in word analysis along with instruction in other aspects of reading
  - fluency (greater speed in reading aloud) may be taught to adult basic education students and fluency practice may lead to increases in reading achievement
  - providing explicit instruction in reading comprehension strategies may lead to increased reading comprehension achievement
  - combining comprehension instruction with instruction in various other components of reading may lead to increased reading comprehension achievement.

*Source: Torgerson et al. (2004)*

### Writing

- 6.10 The NRDC Effective Practice Study in Writing (Grief et al., 2007) explored effective strategies for the teaching and learning of writing. The study recruited 341 learners across 49 classes in 25 organisations and complete data were obtained for 199 learners across 40 classes in 20 organisations.
- 6.11 The study suggests that the following are features of effective teaching of writing:
- learners spend time on the composition of texts of different kinds
  - meaningful contexts are provided for writing activities

- time is given for discussion about writing and the writing task
  - individual feedback and support is provided as learners engage in composition.
- 6.12 Grief et al. (2007) also found that making links between what happens in the classroom and life outside the classroom, including the use of real materials, can enable learners to become more confident about the writing they undertake at home. However, this study found that few teachers make this link strongly; use of real materials is limited and few teachers ask learners to engage in authentic writing tasks that have a purpose and audience beyond the classroom.
- 6.13 Two significant relationships between teaching and learning suggest that in writing, a flexible approach to teaching and responsiveness to learners' concerns as they arise, as well as a willingness to 'go with the teachable moment', has a positive impact on learners' progress in writing, and also that practice that makes a strong link with the real world beyond the class may help learners to feel more confident, particularly in the everyday writing tasks they undertake at home. At the same time negative correlations were found between the use of authentic materials and tasks and changes in learners' assessment scores, and asking learners to work in collaborative groups and learners' self-reported confidence in writing in a public place or at work. The first finding runs counter to earlier research and appears to contradict the findings above. Perhaps authentic practice has a greater impact on confidence than on competence in writing? The second should be seen against evidence from the learners themselves – that they liked to work collaboratively. This is material for further development and research.

### *Literacy (evidence on both reading and writing)*

- 6.14 From a literature review, Benseman et al. (2005) identified the following factors as associated with literacy teaching likely to enhance learner gain.

#### **Factors associated with learner gains**

- sustained acts of teaching focused on learners' diagnosed needs
- clearly structured teaching using a range of methods
- learning plans related to regular assessments and reviews with learners
- explicit teaching of reading, by teachers who are well trained in the reading process, and who are skilled in identifying reading difficulties and using appropriate teaching strategies to address them
- reciprocal reading, oral reading, and strategies to increase comprehension and fluency
- assessment processes that are sensitive to four components of reading: alphabets, fluency, vocabulary and comprehension.

Source: Benseman et al. (2005)

### Inspection evidence (literacy)

- 6.15 Ofsted (2011a) identified the following factors in raising the attainment of literacy learners most at risk of not gaining the skills they need:
- teachers with high expectations for pupils' achievements in literacy
  - a rigorous, sequential approach to developing speaking and listening, and teaching reading, writing and spelling through systematic phonics
  - assessment of progress in order to determine the most appropriate programme or support, and rigorous monitoring of the impact of provision.
- 6.16 The most successful sessions were those where teachers drew on learners' experiences and ensured that learning activities were closely related to language used in everyday work and social settings. Successful providers understood the often multiple barriers facing learners from disadvantaged groups which prevented them from acquiring literacy skills. The most effective providers had at least one senior member of staff with an excellent knowledge of literacy and its pedagogy. They also visited, reflected on and adapted their curriculum, including any intervention programmes, to meet changing needs, and they taught literacy in contexts that were relevant and meaningful to their learners.
- 6.17 Across all providers, inspectors saw a wide variety of effective approaches to the teaching and learning of literacy that built on the consistent use of phonics. However, inspectors saw few instances of systematic phonics teaching in colleges and other providers of adult education and training; providers felt there was a lack of teaching materials on systematic phonics suitable for adults as most were designed for young children. The National Tests of Literacy did not assess learners' writing; as a result, these did not offer learners and providers confirmation of improvement in writing skills.

### Numeracy

- 6.18 The NRDC Effective Practice Study in Numeracy (Coben et al., 2007a) investigated approaches to the teaching of numeracy, aiming to identify the extent of learners' progress, and to establish correlations between learners' progress and teachers' strategies and practices. The study involved 412 learners and 34 teachers in 47 classes: 250 learners were assessed in pre- and post-assessments and 243 completed attitude surveys.
- 6.19 Coben et al. (2007a) found that most teachers gave clear explanations, which were much valued by learners. It was important for teachers to develop good relationships with learners and to treat and respect them as adults. Most teachers were enthusiastic, generous in giving praise, and there was a high level of mutual respect. However, few teachers incorporated learners' personal interests into schemes of work, and it was uncommon for teachers to differentiate work, make connections to other areas of mathematics, or to ask higher-order questions to encourage higher-level thinking or probe learners' misconceptions. Although

activities were often varied, there was little use of practical resources or ICT, little group or collaborative work, and it was unusual to find learners collaborating with, and learning from, each other.

- 6.20 Maths4Life developed a series of teaching and learning materials based on principles derived from work carried out with practitioners by Malcolm Swan, which have been extensively trialled and evaluated.

#### **Effective numeracy teaching ...**

- builds on the knowledge learners already have
- exposes and discusses common misconceptions
- uses higher-order questions
- uses co-operative small group work
- encourages reasoning rather than 'answer getting'
- uses rich, collaborative tasks
- creates connections between topics
- uses technology.

*Source: Swan 2006; Swain and Swan 2007; Ofsted 2011c.*

- 6.21 Maths4Life confirms the importance of enabling learners to think through problems for themselves. Students' algebra learning was related to the number of discussion and reflection activities and also to the manner in which these were used. Greater gains were associated with an increased use of the discussion-based resources and with student-centred approaches. No gains were made in a 'control group' where students had been taught their standard algebra curriculum in teacher-centred ways. The greatest gains were made when the discussion material had been used in student-centred ways in a sustained way. These principles were commended by Ofsted (2011c).

### **Inspection evidence (numeracy)**

- 6.22 In an evaluation of numeracy provision Ofsted (2011c) identified the following characteristics of good adult numeracy teaching.

#### **Characteristics of good adult numeracy teaching**

- planning individualised learning: good understanding of the practical application of numeracy in everyday and generic work contexts, and of the reasons why learners have returned to learning numeracy

- teaching strategies to overcome learners' fears: exploring why learners have struggled with numeracy in the past; ensuring that individualised learning programmes identify and build on the skills that learners bring with them
- addressing misconceptions and developing understanding of mathematical concepts: developing understanding of mathematical concepts beyond Level 2; ensuring that learners get to the root of any misconceptions; analysing any incorrect answers
- involving all learners and developing their independence: using different types of activity to allow learners to explore mathematical problems; using a wide range of resources, including information technology, to develop learners' ability to use their learning independently and in contexts that are relevant to them
- making numeracy purposeful: focuses on problem-solving and applying numeracy to build learners' confidence in using it in everyday situations and at work and help them understand the practical purpose and application of each mathematical concept
- assessing learners' progress: assessing the progress of learners during sessions, and adjusting teaching methods accordingly; providing constructive feedback on learners' progress in understanding individual mathematical concepts.

*Source: Ofsted (2011c)*

6.23 In an evaluation of numeracy provision, Ofsted (2011b) also identified common features of effective numeracy teaching and learning.

#### **Effective numeracy teaching and learning**

- developing learners' ability to tackle numeracy-related problems by setting them in purposeful contexts
- showing learners how to build on their previous knowledge and skills to develop their understanding
- providing opportunities for learners to work out the most appropriate approaches to problems individually and with other learners
- encouraging learners to tackle their misconceptions by analysing incorrect answers
- developing learners' conceptual understanding of numeracy through

activities which helped them reach the stage where they could explain why a specific method worked

- enabling learners to apply mathematical techniques in their training, at work or in their personal lives.

*Source: Ofsted (2011b)*

- 6.24 However, the Ofsted evaluation found that tutors did not have enough opportunities to increase their technical skills in teaching numeracy through sharing good practice and frequent access to subject-specific continuing professional development (CPD). Neither was the potential for the use of information technology exploited sufficiently in advancing learners' practical application of numeracy skills or as a resource to develop the teaching skills of vocational and specialist tutors.
- 6.25 In the most successful provision, learners developed their understanding of underlying mathematical concepts through practical and vocational applications. Teaching in numeracy was more successful where providers had developed the role of one or more well-qualified and experienced numeracy specialists to support vocational trainers in planning and delivering learning sessions.

## Conclusion

- 6.26 Teachers of adult basic skills need to have both good generic teaching skills and good subject specific teaching skills. In general terms, the best teachers will have an excellent command of both the technical aspects of their subject and the interpersonal and related skills most suited to the disparate learning and pastoral needs of adult learners.
- 6.27 For adult literacy, subject specific teaching skills include knowing how to teach phonics, oral reading fluency, comprehension and appreciation of what is read, and how to apply these and other skills to texts on both paper and screen. Effective practice in literacy builds on learners' experience, and includes encouragement of fluent oral reading, reciprocal teaching, explicit comprehension strategies and adequate time for active reading in class.
- 6.28 For adult numeracy, subject specific skills include knowing how to discuss common misconceptions, use higher order questions, use co-operative small group work, encourage reasoning, use technology and create connections between topics. Effective practice in numeracy builds on knowledge learners already have and overcomes their fear of maths, exposes and treats misconceptions as a subject for discussion, promotes reasoning and problem solving over 'answer getting', and makes creative use of ICT.
- 6.29 More than enough is known about good teaching practice in literacy and numeracy to inform development and research programmes, in which providers and other stakeholders collate, monitor, analyse, evaluate and share data on the experience of applying principles of good practice. Yet observational studies – the NRDC

studies in particular – commonly report the absence of approaches to teaching literacy and numeracy which the evidence suggests are effective. Too few intervention studies have been undertaken to determine rigorously whether teaching strategies are actually effective in raising students' achievement. There is a need for more research, including experimental studies, quantitatively to assess the effectiveness of one or more promising aspects of literary and numeracy teaching strategies.



# Quality and effectiveness of provision: the workforce, teaching qualifications and skills

## Introduction

- 7.1 This chapter explores the profile of the teaching workforce and considers evidence on the relationship between teacher qualifications, skills and learner gains. In 2007/08 there were an estimated 24,782 Skills for Life teachers in England, making up the equivalent of 10,461 FTE staff. This workforce included 9,805 teachers of literacy and 7,353 teachers of numeracy. (These figures are higher than the total number of individual teachers, due to the number of teachers who teach more than one subject specialism.) The literacy and numeracy workforce is predominately female (75%), white British (80%), middle-aged (one-third were aged between 40 and 49) and employed on part-time contracts (72% of literacy teachers and 70% of numeracy teachers). These figures represent an increase in the proportion of sessional teachers in the period between 2004/05 and 2007/08: from 39% to 53% in literacy and 39% to 51% in numeracy (LLUK, 2009).
- 7.2 After considering the evidence base, the chapter addresses the relationship between teacher qualifications and literacy and numeracy skills, and between teacher qualifications and learner gains, before considering teacher education.

## Evidence

- 7.3 Most evidence on effective practice in ALN teaching comes from research that focuses on the links between learner outcomes and pedagogy and practice; less research explores the links between learner outcomes in literacy and numeracy and teacher characteristics. In part, this is because until the early 1990s there was little teacher accreditation for ALN; far more evidence on the link between teacher quality and learner gains emerges from the compulsory schooling sector. In reviewing teacher education for adult literacy, language and numeracy teachers, Morton et al. (2006) note that research on the impact of different teacher education options on the achievement of learners has produced very limited or inconclusive results. A report of evaluations and evidence on effectiveness produced by the Basic Skills Agency in 2000 drew attention to the ways in which effective programmes make use of staff; and Brooks et al. (2001a) gathered data on teacher factors which could be correlated with learner progress; these studies, and others from New Zealand, emphasise the importance of effective initial training for tutors and comprehensive professional development programmes (Benseman et al., 2005, p. 32).
- 7.4 In England, robust and representative evidence on the literacy and numeracy workforce has been gathered in pace with the professionalisation of that workforce. A rich source of data is provided by a three-year longitudinal study ('The Teacher

Study') carried out by NRDC for the (then) Department for Education and Skills (DfES) (Cara et al., 2010). The Teacher Study used a mixed-methods design, gathering quantitative data from an initial sample of over 1000 Skills for Life teachers (including teachers of ESOL) three times between 2004 and 2007 and supplementing these data with in-depth qualitative interviews with a purposive subsample of 63 teachers. The dataset contains information on teacher characteristics, employment characteristics, exposure to the Skills for Life learning infrastructure, and attitudes towards the Skills for Life strategy, professional identity, working environment and career plans. Although the Teacher Study was conducted with a volunteer sample, data were subsequently weighted using representative data collected for Lifelong Learning UK (see below).

- 7.5 A linked study, 'The Learner Study' (also carried out by NRDC for DfES) assessed the progress of learners taught by a subsample of the Teacher Study teachers. Data from these two studies have been analysed to provide evidence of the relationship between teacher characteristics and learner progress.
- 7.6 Data on the Skills for Life workforce have been collected twice (in 2006 and 2008) for Lifelong Learning UK via a survey carried out by NRDC of all literacy, numeracy, ESOL and Key/Functional Skills providers. Responses were collected from a fifth of providers, representing 22.7% of the volume of literacy, numeracy and ESOL provision recorded by the LSC ILR. Research by LLUK has also build up the evidence base on teacher training provision by identifying current and future capacity to train literacy, numeracy and ESOL teachers.

### **Teacher qualifications and skills**

- 7.7 Several studies (mostly from the US and mostly concerning compulsory education) suggest that teacher quality is vital to student progress and achievement (e.g. Darling-Hammond, 2000; Hanushek, 1992; Sanders and Rivers, 1996), although questions have also been raised about how teacher quality should be defined, what characteristics should be used to measure it and what areas should be focused on in seeking to improve teacher quality. Proxies for teacher quality include qualifications, degree level, certification and subject area of teaching qualification. Most research on effective teaching and learning identifies the teacher/learner relationship as a highly significant factor in affecting learner outcomes (MacLeod and Straw, 2010). This may resonate particularly in ALN, where for many students, the teacher may be the only person they get to know well and who is educated, relatively knowledgeable in areas that are important to the student or who is a member of networks that could be useful to them. For many more, the teacher is a person of authority or of some standing who treats them with respect – this can be a new experience for ALN learners who have frequently had negative experiences in compulsory schooling (Balatti et al., 2007).
- 7.8 A core component of the Skills for Life strategy was to improve the quality of teaching in the sector by developing mandatory qualifications for new teachers and offering a range of induction, training and CPD courses and initiatives for teachers of literacy, numeracy and ESOL. However, the rapid increase in demand for ALN courses, and the time needed to introduce and undertake new teaching qualifications, led to concerns being expressed by the inspectorates (e.g. Ofsted, 2003) and the National Audit Office (NAO, 2004, 2008b) about the serious shortfall

in qualified and experienced literacy and numeracy teachers and about insufficient numbers of numeracy teachers in particular. Shortfalls were particularly acute in workplace learning for young people, *learn direct*, prisons, and Job Centres, learning contexts more likely to be accessed by adults with the greatest levels of need, and where there are fewer resources and lower budgets for staff training. Ofsted inspections (2006-07) found that recruiting and retaining experienced ALN teachers presented difficulties for providers, partly due to the part-time nature of many available posts.

- 7.9 In 2007/08, 48% of the Skills for Life (literacy, numeracy and ESOL) workforce was classed as fully qualified (LLUK, 2009), where fully qualified is used to denote teachers with both a generic teaching qualification, such as a Cert Ed or a PGCE and a Level 5 subject-specialist qualification. This proportion had risen from 35% of the workforce in 2005 while the proportion of unqualified teachers (those with neither a generic nor subject specialist qualification) fell from 22% to 16% in this period; these figures reflect a growth in activity aimed at supporting the development of appropriate teacher training courses and to encourage teachers to become fully qualified. Looking at qualified status in terms of subject taught, 47% of literacy teachers were fully qualified in 2007/08, more than double the proportion that were fully-qualified in 2005/06 (21%). The proportion of fully-qualified numeracy teachers also rose in this period, although less dramatically, from 29% to 43% (LLUK, 2009).
- 7.10 Data from the Teacher Study suggest that Skills for Life teachers who teach only one subject tend to be more qualified in that subject than teachers who teach more than one subject. This is particularly the case in numeracy; those teaching numeracy only were the most qualified subset of Skills for Life teachers, and it is those who teach some numeracy in addition to literacy or another subject who lack qualifications. There are implications here for the management of provision and which staff are given responsibility for teaching adult numeracy. In general, female teachers are more likely to be qualified than male teachers and ALN teachers working in FE colleges are more likely to be qualified to higher levels than teachers working in other learning contexts. Those qualified only to lower levels are more likely to be found in contexts outside of FE and Adult and Community Learning (Cara et al., 2010).
- 7.11 Although the House of Commons Public Accounts Committee (PAC) (2006) identified a skilled teaching workforce as the key to quality in learning, and evaluated the new courses for teachers as of good quality, concerns about teacher quality, and the shortage of numeracy teachers, have persisted. Research by LLUK using statistical data from the Higher Education Statistics Agency (HESA), the LSC's ILR and data on FE teacher trainee enrolments (LLUK, 2010) found that there had been a decline in the numbers of teachers in training over the preceding three years, with participants in literacy courses dropping from 1,325 to 1,190, although there was a slight increase in numeracy trainees in 2008/09. In a recent evaluation of the quality of numeracy provision for young people and adults, Ofsted (2011b) found that in the 46 providers visited who were able to provide data on teacher qualifications only 28% of teachers had the required qualifications in teaching numeracy at Level 5 or equivalent. Only one-third (15) of the 46 providers had more than half their specialist numeracy teachers with qualifications at this

level. Managers reported difficulties in recruiting qualified specialist numeracy tutors and in finding the appropriate training courses locally. In vocational learning, Ofsted inspectors observed that teaching in numeracy was more successful where the role of one or more well-qualified and experienced numeracy specialists had been developed to support vocational trainers in planning and delivering learning sessions.

### **Teacher qualifications and learner gains**

- 7.12 Studies that have looked at the contribution of teacher qualifications to student achievement and progression are inconclusive or have found no significant effect with respect to general teaching qualifications or certification status (e.g. Croninger et al., 2007). However, studies looking specifically at the subject area of teacher qualifications have found that gains in student achievement in high school for mathematics and science are associated with teachers holding a mathematics or science undergraduate or masters degree (Goldhaber and Brewer 1997, 1998, 2000; Rowan et al. 1997). Other research suggests that overqualified teachers can sometimes be less effective (Rowan et al. 2002; Croninger et al., 2007).
- 7.13 A number of quantitative studies have identified a link between teacher qualifications/skills and learner gains in ALN. Early research (pre-Skills for Life) conducted by Brooks et al. (2001a) for the Basic Skills Agency in 1998-1999 showed significantly larger gains for adult literacy course participants where tutors had qualified teacher status, and where tutors benefited from having teaching room assistants (an association, not a causal link). The average gain in reading scores between pre- and post- tests in institutions with support for all tutors was 15.8 points (on the IALS scale), compared to 11.4 points in institutions where some tutors had such support and 0.3 points in institutions where no tutors had support. The average gain in institutions where all tutors had qualified teacher status was 17.1 points, compared to 9.4 points in institutions where only some tutors had qualified teacher status. Overall, the gains observed in this study were characterised by the authors as 'undramatic but worthwhile' (p. 53), with an effective size falling a little short of that which indicates educational significance. In this study there was insufficient evidence to show that a number of characteristics were important for skills gain: tutor having a degree; tutor having a basic skills teaching qualification; years of teaching experience; management support for teachers; frequency of staff meetings; one-to-one teaching as opposed to small-group teaching.
- 7.14 Brooks et al. (2004), reviewing controlled trials of literacy and numeracy interventions, found evidence demonstrating that greater impacts are associated with trainers who have qualified teacher status, who have assistance in the classroom and/or who have high expectations of their learners.
- 7.15 NRDC's work on embedded learning (Casey et al., 2006) found that where a single teacher was asked to take dual responsibility for teaching vocational skills and ALN, the probability of learners succeeding with literacy and numeracy qualifications was much lower than when embedded courses were delivered by a team of teachers with vocational and literacy and numeracy specialisms working in combination. The benefits of embedding learning found in this study cannot be achieved by simply adding ALN to the vocational teacher's responsibilities. Rather, learners benefit

when taught by teams of staff, with their own different areas of expertise, working closely together.

- 7.16 In the NRDC's Effective Practice Study in reading, although not statistical correlations, it was found that when the nine classes that made the greatest progress were compared with the nine classes that made the least progress, it was found that the teachers in the top nine classes were all trained, and most had substantial experience, while some of those in the bottom group of classes were not trained and overall the teachers had less experience (Brooks et al., 2007).
- 7.17 Using the Teacher and Learner Studies, Cara and De Coulon (2008) examined linked datasets relating to 84 adult *numeracy* teachers: 15% were fully qualified (meaning that they hold a full generic teaching qualification and a subject-specialist qualification in numeracy); 52% were part-qualified (holding either a generic teaching or a subject specialist numeracy qualification); and 33% were unqualified. Learner progress was examined solely in relation to their teacher's subject and teaching qualifications by testing for the effect of these qualifications, individually and in combination, while controlling for other learner and teacher characteristics. This analysis showed that teachers with a qualification in maths at Level 3 or above had a highly positive and strongly statistically significant effect on learner progress, as measured between pre- and post-course tests. This was compared with learners who were taught by teachers with level 2 qualifications in maths, and did not make progress. It also showed that years of teaching experience had a positive but not statistically significant effect and that learners whose teachers were qualified to degree or postgraduate-degree level in maths had a more positive attitude towards their daily use of maths and seemed to enjoy maths more. However these learners also appeared to be less self-confident in their maths abilities once their course had ended.
- 7.18 Two conclusions were drawn from this research. Firstly, that teacher experience matters and second, that subject knowledge is important. This research strongly endorses the requirement of teachers to have Level 3 or above qualifications in numeracy (there had been dissent in the field about this requirement).
- 7.19 Benseman et al. (2005), in a comprehensive review of literature on effective LLN teaching (citing Basic Skills Agency, 2000; Benseman, 2001; G Brooks et al., 2001a; Fitzgerald and Young, 1997; Kruidenier, 2002b; Padak, Sapin, and Baycich, 2002b) identified the following factors as associated with teaching likely to enhance learner gain: appropriately skilled teachers who can identify the strengths and weaknesses learners have in speaking, reading, writing and numeracy; and full-time teachers – these are more likely to enhance learner gain, and learners benefit from the assistance of teaching assistants/volunteer tutors.
- 7.20 The BSA report *Effective Basic Skills Provision for Adults* (2000) concluded that effective programmes are ones which have limited reliance on teachers who work only 2-4 hours a week and instead should use full-time staff, with recognised qualifications in the field, to ensure better consistency of teaching methods and better use of professional development resources.

## Teacher education

- 7.21 In a review of adult literacy, ESOL and numeracy teacher education 2003-05, Lucas et al (2006) explored the experience of 28 teacher education programmes across England in the early years of the introduction of the new generation of subject-specific qualifications. The recommendations from this report fed into the 2007 review of teacher qualifications. The study includes a profile of 54 teacher educators: all were graduates and 63% also held postgraduate qualifications; 63% had more than five years' experience of literacy, numeracy or ESOL teacher education; only one had less than a single years experience; and 50% also had experience of delivering generic teacher education programmes. It describes how earlier subject-specific teaching qualifications were developed in response to the limitations of generic initial teacher training in meeting the needs of ALN teachers. These qualifications remained on the margins until the reforms introduced in post-16 teacher education from 2001 onwards, but represented the well of experience from which the teacher educators of the Skills for Life decade were drawn.
- 7.22 In reviewing research in teacher education, Morton et al. (2006) drew a number of conclusions about ALN teacher education programmes, including that they should: provide opportunities for teachers to reflect on their own beliefs and values about what and how they teach; be based on what is known about how adults learn; take into account the strong influence of context on learning and not make assumptions that knowledge learned in one context can be applied to another; not assume that raising the level of subject matter in syllabuses on its own will have an effect on practice; should take into account the process-orientated and holistic nature of teachers' knowledge, and should exploit this by using data-based case-study methods which portray to trainee teachers the richness of expert teachers' cognitions underlying their practices; should develop adequate measures of the impact of training and professional development. This review of programmes also emphasised the need for all teachers to be exposed to a wide range of professional development activities throughout their careers no matter how much experience they have, and that teachers should be encouraged to reflect critically on the factors that affect their practice and critically to have opportunities to experience the subject from the learners' point of view.

## Conclusion

- 7.23 For both literacy and numeracy there is a positive association between teacher qualifications and experience and learner progress. The recognition that learners make better progress with qualified teachers provides support for the ongoing strategy to up-skill and professionalise the workforce. Contrary to popular belief, teaching basic literacy and numeracy to adults is not something that anyone can do; having qualifications does make a difference.
- 7.24 Having started from a very low base, achieving a qualified teaching workforce in numeracy presents more challenges than literacy, although a significant proportion of both the literacy and numeracy workforce have not achieved fully qualified status. Numeracy has struggled to build momentum, not least because of a short supply of numeracy-teacher trainers. There are signs (LLUK 2010) of change in a slight growth in numeracy teacher education courses against the wider trends, but

there are still dangers that in the current context growth may be challenging to sustain.

- 7.25 Teacher shortfalls are particularly acute in learning environments most likely to be accessed by learners with the greatest needs. It should be a priority to attract, recruit and retain significantly higher numbers of teachers into ALN. However, literacy and numeracy teaching is characterised by part-time, temporary contracts and this presents challenges for recruitment and retention (Swain and Cara, 2010; Cara and Litster, 2009). Existing teachers, especially those on temporary or part-time contracts, may not feel persuaded of the benefits of improving their teaching skills or feel supported to do so (NAO, 2004). Moreover, the research evidence indicates that specific benefits to learners are associated with having teachers who are on full-time contracts.
- 7.26 There is a need for models of teacher training and professional development that emphasise both technical expertise and positive teacher qualities, and which integrate the teaching of subject and pedagogic knowledge.

# Quality and effectiveness of provision: efficiency

## Introduction

8.1 This chapter considers the available evidence on efficiency in literacy and numeracy provision, where efficiency is defined as the balance of the intervention benefits (the net outputs or outcomes) and its costs expressed in the form of cost-benefit or cost-effectiveness ratios. Efficiency is one of the three standard components of an assessment of an intervention's value for money (the others being economy and effectiveness). This chapter considers what is known about the most efficient modes and models of engaging learners and delivering literacy and numeracy provision.

## Evidence

- 8.2 The evidence base on the most efficient modes and models of engaging learners and delivering literacy and numeracy provision is extremely thin. The findings presented below are drawn from the only four sources that were applicable to this topic.. One of these reports (NAO, 2008b) is based on national administrative (ILR) data for publicly-funded provision and so provides robust evidence on the per capita cost of ALN courses. The other three sources report the findings from experimental research or research on specific types of provision. Two of these (Swain et al., 2009 and Wolf et al., 2010) are robust, based as they are on medium- or long-term studies with decent sample sizes. The third (Brooks et al., 2008b) is based on a robust approach, but with a relatively small sample and so only limited weight should be placed on its findings.
- 8.3 Overall, the evidence base does not exist to answer in full the research questions on efficiency in literacy and numeracy provision. This is a major gap in the evidence base and an area in need of attention in any future research.

## Findings

8.4 The National Audit Office (NAO, 2008b) examined the progress made by the Department for Innovation, Universities and Skills, the then Department for Education and Skills, and the Learning and Skills Council in improving adult literacy, numeracy and English language skills. Although headline figures on the costs of ALN provision in 2006/07 were provided, these were not set against the delivery mode or model. The average cost per course or per qualification varied according to the type and level of qualification. Courses in English for Speakers of Other Languages (ESOL) were typically more expensive (£1,030) than literacy courses (£510) or numeracy courses (£460); and Entry level courses were typically more expensive (£960) than Level 1 (£570) and Level 2 courses (£400), reflecting the greater learning needs of these learners. In an earlier progress report (NAO,



2004), the NAO reported that it was harder to work out the specific costs of literacy and numeracy provision where those skills are embedded in the work of vocational and other learning programmes.

- 8.5 Swain et al. (2009) presented the findings of a two-year evaluation of a family literacy programme in England, which investigated the impacts on parental skills, children's skills, family relationships, progression and social mobility. Family literacy is believed to be a particularly helpful approach for getting harder to reach people into provision, by identifying parents with literacy needs through their children (NAO, 2004). The research covered 74 family literacy courses in 42 local education authorities. The courses were either short courses (lasting 30-49 hours) or standard courses (72-96 hours). The estimated costs per participant-learning hour for the programmes evaluated in this project were £7.39 for the short courses and £6.84 for the standard ones. (These were calculated by dividing the average available funding per course by the number of participants and by the contact time.) The implication for the question of efficiency is that longer courses provide better value for money than shorter ones, a result that is primarily related to fixed start-up costs being spread over a longer time period. What should be taken into account, however, are the potential opportunity costs, particularly to the parents and children, which, assuming they are meaningful, are greater for the longer courses.
- 8.6 Wolf et al. (2010) presented findings from a longitudinal study that tracked 53 workplaces that hosted Skills for Life courses subsidised by the LSC in order to examine the impact on both the employers and the employees, particularly low-skilled workers. The study found that the model of providing top-down provision on a workplace-specific basis was very expensive as a result of the multiple contracts for each course operated, the small size of the groups and the heavy fixed costs. In terms of outcomes, learners reported high levels of satisfaction, but were found to have made at best only small gains in literacy, with no discernable effect on productivity. Together the clear finding from this study is that this model of literacy training is an inefficient one. (The learning-related outcomes of workplace basic skills provision more generally are discussed in Chapter 5).
- 8.7 Brooks et al. (2008b) described the findings of a randomised control trial (RCT) carried out in the UK to evaluate the use of financial incentives as a cost-effective method of improving attendance and attainment at adult literacy classes. The sample comprised 152 learners in 28 classes (14 in the treatment group, 14 in the control group). Learners in the treatment group received a £5 voucher for each class attended, while the control group received no financial incentive. In terms of attainment, the study concluded that the use of financial incentives had no statistically significant effect. In terms of the effect on attendance, the study found a statistically significant *reduction* in attendance associated with the financial incentives of about 1.5 sessions on average. The authors conclude that
- ... the policy of using incentives is a waste of resources and, at worst, may be counter-productive. ... The possible drain on public resources should therefore not be contemplated' (ibid, p.501).*
- 8.8 To back up this conclusion, the authors drew attention to other research which shows that rewarding activities which are inherently rewarding is demotivating and

that rewards which are contingent on engagement have a negative effect on engagement. However, several limitations of the Brooks et al. (2008b) RCT should be noted: it was a relatively small research project in terms of the sample size that offered a relatively small incentive, which was in the form of vouchers and not cash. In addition, the learners in the trial had previously attended one term of teaching and it is possible that a different effect might have been achieved for learners who were just starting. Finally, the statement quoted above represent a strong conclusion from a single small-scale study of one group of literacy learners.

## Conclusion

8.9 The principal findings from the literature review on this topic are:

- literacy courses/qualifications tend to cost more than numeracy courses, and Entry level provision is considerably more costly than Level 1 and Level 2 provision, reflecting the greater needs of these learners
- longer courses tend to be delivered more efficiently than shorter ones due to the fixed start-up costs
- one model of providing subsidised Skills for Life training for low-skilled workers has been shown to be inefficient: this was provided on a workplace-specific basis, with multiple contracts for each course operated, heavy fixed costs, small group sizes and short courses
- the use of financial incentives to learners for promoting attendance appears to be counter-productive in some cases (using a small incentive, in the form of vouchers rather than cash, with learners who had previously attended one term of teaching), although this finding is based on a single, small scale study.

8.10 The following are recommendations for where future research might focus:

- greater use should be made of the Individualised Learner Record (ILR) to explore the cost-benefit ratios associated with different modes and methods of delivery
- any future evaluation of publicly-funded programmes or projects in the area of ALN provision should include a cost-benefit analysis where possible or otherwise an assessment of cost-effectiveness
- the Department should consider commissioning research to carry out a series of cost-benefit/cost-effectiveness analyses for different modes and methods of delivery that are known (or believed) to be effective (that is, perform strongly in terms of the delivery of outcomes).

# Quality and effectiveness of provision: motivation

## Introduction

9.1 This chapter examines the available evidence on learner motivation and the ways in which motivation relates to the benefits and outcomes learners expect to gain from engaging, participating, achieving and progressing in ALN provision. Two aspects of learner motivation are considered: what motivates adults to join literacy and numeracy classes; and what motivates learners to persist with their literacy and numeracy learning. In terms of the quality and effectiveness of provision, research has shown motivation to be a strong determinant of learner enrolment, retention, and success on basic skills courses (see Gorard et al., 2004; Holland, 2002; Webb, 2006, all cited in MacLeod and Straw, 2010).

## Evidence

9.2 Learner motivation and how learners conceive that learning will be of benefit to them are complex subjects. Accordingly, the richest data on learner motivation come from qualitative studies that are sufficiently sensitive to capture learners' diverse, complex and multiple motivations. This review found a wide range of evidence on learner motivation from studies of this type. Quantitative and qualitative data on learner motivation and goals are often collected as part of studies which focus on other aspects of adult basic skills provision. Very often analysis of this evidence focuses on grouping learner motivations (for example as extrinsic or intrinsic motivations) and not on weighting motivations in terms of lowest and highest priority.

## Findings

### *Motivation to join learning programmes*

9.3 All available evidence suggests that learner motivations for improving literacy and numeracy skills are multiple and complex, reflecting the internal and external forces working on adults, and not easily reduced to economic rationalist decisions. For example, Kambouri and Francis (1994) noted that most students said they enrolled on basic skills courses to 'better' themselves (36%) and to learn specific skills; very few learners said they came to increase their self-confidence, although this was implicit in some of the specific answers given. A survey carried out for the Basic Skills Agency (2000) found that the main reasons for wanting to improve basic skills were 'to feel better about yourself/your skills' (37%); 'to be better at everyday tasks which involve basic skills' (24%); promotion at work (13%); and wanting to get a better job (17%). Sticht (2001) found that the main reasons adults gave for participating in basic skills improvement programmes were: emotional (to feel better about themselves); practical (to be better at everyday tasks involving basic skills); to improve IT skills; to obtain a qualification; because the course was near home.

- 9.4 In the research literature, motivations are most frequently grouped as extrinsic and intrinsic motivations, with many learners experiencing both extrinsic and intrinsic motivation. For example, qualitative interviews with learners carried out as part of NRDC's Learner Study (Rhys Warner and Vorhaus, 2008) found a broad range of extrinsic motivations, including goals related to gaining employment or progressing within education, where qualifications were often important to achieving these goals. (Those learning in the workplace named motivations directly associated with work included promotion, taking on voluntary roles such as Union Learning Representative and other union activities, and keeping up with new levels of work skills, such as ICT.) In contrast, most older learners who described learning for enjoyment and fulfilment did not want to take tests, although a few valued the opportunity to gain the qualifications they had not previously held. Learners also cited reasons not connected with work, such as helping children with homework, and intrinsic motivations such as overcoming embarrassment, and regaining confidence lost at school.
- 9.5 Importantly, learner motivations are not fixed and priorities can shift over the course of a learning programme. NRDC's Adult Learners Lives project (Barton et al., 2006) found that learning is affected by the 'imagined future' adults have, whereby they create and constrain what they see as possible. Adults' plans change as they see different lives for themselves, and as learners build confidence and self-esteem they begin to consider options which they did not previously feel were open to them.
- 9.6 Most research projects that have gathered data on motivation ask learners to name/choose multiple motivations (often from a pre-set list) and it can be difficult to establish a hierarchy of priority. NRDC's Effective Practice Study in Numeracy (Coben et al., 2007a) illustrated that motivations are many, intricate and often overlap. Of the 412 learners interviewed for this study, the main reason cited for embarking on the course was to get a qualification, with the second most popular response being 'to get a better job'. However, there is some dispute in the literature about how important *qualifications* and *specific skills needs* are as a motivation for learning, particularly in numeracy. Although learner motivations are broadly similar for both literacy and numeracy, NRDC's Learner Study found that many interviewees needed a maths qualification for promotion or as an entrance requirement for a higher-level course.
- 9.7 Evidence submitted to NIACE as part of their inquiry into adult numeracy learning (NIACE, 2011) led that organisation to conclude that although qualifications have value to some numeracy learners, for others qualifications may be a barrier to learning, especially given the low success rates. In contrast, a recent Ofsted report into adult literacy learning in England (2011a) found that literacy learners were motivated by working towards qualifications, and that this motivation was supported by the availability of a range of accredited routes to qualifications. Although research by NRDC and others has identified a number of reasons why adults are motivated to enrol on numeracy courses, this evidence is seldom skill- or task-specific. Some NRDC research (e.g. Swain et al., 2005) has suggested that people seldom join numeracy classes because they feel that they are lacking numeracy skills at work or in their everyday lives. Scottish research (Coben, 2005) lists factors such as peer pressure; change in personal circumstances; work-related

reasons; learning to drive; needing numeracy to pass a course entrance test; needing to improve numeracy to live independently.

- 9.8 Wolf et al. (2009) found that when learners interviewed were asked about the benefits they expected from their workplace learning, increased earnings was ranked last and increased chance of promotion second last, demonstrating that short-term gains had a low priority. Instead, learners wanted or expected to learn new skills (just over half the sample) and to be more effective in their current job and, looking back on their learning, two-thirds (66%) of the sample reported that their confidence at work had increased as a result of learning. In research drawing on some data from the same three-year project on the 'Impact of policy on learning and inclusion in the learning and skills sector' (TLRP, funded by the ESRC) Finlay et al. (2007) concurred that for employees participating in basic skills courses,

*... career development was not as prominent a motivation as might have been expected. Many of the learners simply wanted to 'brush up' on their literacy and numeracy to make up for learning they had missed out on in the past. Others were taking up learning opportunities primarily for their own personal development, confidence and interest (p. 234).*

- 9.9 Other commonly cited reasons included wanting to help children with school work and wanting to develop ICT skills.

- 9.10 In order to motivate adults who may lack awareness of their low skills to enrol on basic skills courses, marketing strategies should study and respond to specific market segments or target groups to be effective (Michael and Hogard, 1996). Inventive and varied marketing methods are required in order to increase demand for, and recruit 'hard-to-reach' learners onto, basic skills programmes. Powell et al. (2003) outlined three marketing methods that have had documented success:

- word of mouth (with information left in surgeries, community centres, etc.)
- the media (especially television - people with low skills watch more TV)
- community outreach programmes which provide information for prospective learners (particularly where the specific needs of the local community are taken into account)
- there is also evidence that marketing campaigns can de-stigmatise basic skills courses and encourage learners to enrol (Rhys Warner and Vorhaus, 2008; Frontline Consultants, 2006). Use of broadcast media has proved more successful than print media.

- 9.11 There is also some evidence that a successful approach to engaging 'hard-to-reach' groups in learning is through providers working with community and voluntary sector groups (Hamilton and Wilson, 2005). In reviewing evidence gathered by the Basic Skills Agency and others, McIntosh (2004) concludes that one of the most effective methods of recruiting learners onto basic skills courses is through personal approaches, meaning that provider outreach work and links with other agencies in the community must be well-established. Placing basic skills

courses in accessible locations is popular and helps recruit learners. This community dimension to motivation is emphasised by Strawn (2005), who argues that people living in communities where education is seen as a means of advancement are more likely to participate in formal learning themselves (cited in Tett and Maclachlan, 2007). This conclusion is also supported by the NAO (2008b), which emphasised that the engagement of 'hard-to-reach' learners could be enhanced by promoting literacy, language and numeracy skills more widely across a range of government programmes.

- 9.12 A NAO (2004) progress report on Skills for Life also highlighted the particularly effective approach to increasing demand for provision through the use of successful learners in the promotion, recruitment and support of new learners. Promoting a 'culture of learning' within the workplace appears to influence both employer and employee decisions about investment in skills development (UKCES, 2009b). An Ofsted report into the impact of Train to Gain (2008) emphasised the important role employees who have participated successfully in training can play in motivating other colleagues to take up learning opportunities, by expressing satisfaction with the experience and pride in their achievements.
- 9.13 Integrating basic skills provision into other learning activities can make courses more attractive, as can increasing the diversity of provision. This supports findings presented by the NAO (2008b), which partly attributed the slow take-up of Train to Gain courses to the lack of availability of lower-level courses. The NAO found that adults were more likely to engage with maths when it was relevant to managing finances (financial literacy), work-related learning (embedded numeracy provision) and – most popular of all – linked to helping children with maths. The names of courses, such as numeracy or basic maths, may put people off. Suggested alternatives included: 'managing money better', 'organising your time' and 'maths in your home'.
- 9.14 The evidence has led researchers to suggest that policy makers would benefit by taking a broader view of both learner motivations and the outcomes adults expect to gain from learning. Hodgson et al. (2007) argue, from data gathered through qualitative interviews with learners in a range of settings, that the New Labour government was only 'half-right' in its construction of learner motivation: 'it does not appear fully to recognise learners' motivations to improve aspects of their everyday lives and policy focuses too heavily on the economic benefits of learning' (p. 20). Learners in this study spoke of the expected outcomes of their learning in terms that point to the wider benefits of learning (confidence, independence, better parents/community members) with labour market outcomes such as employment conceived of as longer-term goals. These authors speculate that
- ... government policy does not stress the wider benefits of learning because this type of outcome does not easily lend itself to the type of quantitative measurements normally used to justify public spending and might deflect from the economically-driven focus on Level 2 qualifications associated with employability (p. 21).*
- 9.15 They argue that this dissonance between the case made by policy makers for public investment in basic skills provision and the reasons why individuals engage

in provision, and the subsequent policy focus on 'hard' outcomes (such as qualifications attainment) at the expense of softer outcomes, risks leaving disadvantaged learners behind, because they are far less able to achieve the qualifications linked to funding or performance targets.

- 9.16 Hodgson et al. (2007) draw three conclusions: a narrow definition of learner motivation based purely on personal economic benefits, coupled with a idealised sense of the power of learner agency, can lead to the undervaluing of the negative experiences at school, and the resources education providers require to remedy these; that the significance of the teacher/learner relationship has been downplayed by policy makers; and that where learners are problematised rather than the system, policy reforms fail to create the conditions that are favourable for sustained participation, achievement and progression.

### **Motivation to persist in learning**

- 9.17 Where there are issues keeping learners in provision – that is, where learners are resistant – this is often viewed as a problem of motivation (see Wedege and Evans, 2006). In qualitative interviews with 44 learners from groups prioritised by Skills for Life policy (the unemployed, prisoners and the 'hard-to-reach') on mandatory and voluntary programmes, researchers found that those who were participating in training voluntarily usually did so because of some critical incident (O'Grady and Atkin, 2006). These people had a clear idea about their shorter-term goals (usually expressed in terms of getting a qualification) and those for the longer term (usually connected to future employment or employability). For those who were on training courses as a requirement of their benefits claim or because they were in prison, their participation in courses was passive (or the course was rejected completely), and many on Job Centre Plus programmes either could not see how the programme would improve their skills or disputed their need for training in the first place. The researchers conclude that making adults attend training programmes through interventions such as directions and sanctions does not lead to full engagement and participation and can lead to increased resistance to subsequent training. Non-voluntary learners understood that these programmes rarely led to employment:

*Interestingly, learners ... reported enjoying work placements more than periods of time within a classroom setting, even if those placements appeared to be of little benefit in terms of achieving sustainable employment. It may prove beneficial for policy-makers to consider how training programmes for the unemployed could be structured in such a way to allow learners to decide their place of work and training support needs (p. 285).*

- 9.18 Research on learner persistence from the US (Comings et al., 1999) found a significant relationship between persistence and learners having specific goals as a reason for entering adult basic education programmes. Similarly, Brazier et al. (2010) in reviewing literature on education and training for young people involved in crime, found evidence that mandatory education was often viewed as a punishment. The 2009 House of Commons Public Accounts Committee report on Skills for Life noted that there were problems motivating prisoners with low basic skills to take up courses (only one in five offenders with a literacy or numeracy skills

need enrol). Although participation in learning is voluntary, there are ways of motivating prisoners to join classes and attend regularly, for example through the chance to earn privileges or embedding learning through prison activities such as prison work. Hannon et al. (2003) and Atkin et al. (2005) also report that 'concealing' basic skills training within community-focused provision for non-offender learners resulted in high learner retention, regardless of the size of the basic skills component relative to other elements.

- 9.19 Two studies, one aimed at reforming adult literacy education in the UK, US and Canada (Sticht 2001) and the other a NIACE/National Youth Agency investigation of the low take-up rate of basic skills provision among young adults (Merton 2001) have shown that informal venues are more likely to motivate potential learners to take up basic skills programmes than formal settings. Both studies found that learners preferred to learn in familiar places and were particularly in favour of learning at home with support. Swain et al. (2005) also found that numeracy students who feel vulnerable can be motivated where they are given the opportunity to work in a group setting. Learner motivation can be stimulated by learner involvement in the content and design of courses, which may be more possible in flexible/online learning than more traditional approaches.
- 9.20 Although research on some courses (Coben et al., 2007a) suggests that when numeracy is taught as part of the basic skills element of a full-time course or as part of a vocational course it can be difficult to motivate learners, NRDC's study of embedded learning (Casey et al., 2006) found that learners were less likely to drop out of a course if the basic skills element was embedded. The increase in retention was most marked for vocational classes at Level 2, with an increase of over 26% between classes with separate basic skills and those with embedded provision. Interview data support the finding, suggesting that on Level 2 courses, the embedded approach helped learners to overcome the stigma associated with having literacy and numeracy needs and helped learners cope with their vocational course. However, the impact of embedding on retention was not statistically significant for Level 1 courses. Employees often see learning at work as preferable to learning externally in a college, and workplace learning can encourage employees to develop their basic skills (Evans and Waite, 2008) motivated by the social dimension of the learning experience.
- 9.21 As noted in Chapter 8, Brooks et al. (2008b) carried out research to test the possibility that offering financial incentives might be a cost-effective way to increasing attendance and progress, finding that payment to attend adult literacy classes had an adverse affect on attendance. The literature on this topic points to the conclusion that 'external interventions crowd out intrinsic motivations if they are perceived as controlling' (Frey and Jegen, 2001, p. 594).

## Conclusion

- 9.22 Learner motivations can be broadly categorised into five groups: *motivation by requirement* (e.g. it is a requirement to get the qualifications to fulfil work criteria [e.g. needing certification] or to retain benefits); *work-related motivations* (as an aid to gaining employment or better employment and moving out of low paid work);



*educational motivations* (to make educational progress, ranging from wanting a qualification or to help children with homework to wanting to go to university or correct an educational trajectory that stopped due to poor school experiences); *motivation related to closed personal goals* (to improve literacy and numeracy skills and so gain confidence in these skills – but not as a means to anything else); and *motivation for wider personal development* (the wider benefits of learning, such as wanting to increase confidence and make more of a contribution to society, to becoming more independent and successful, to have better health, to be better parents and community members).

- 9.23 Learner motivations are complex and many learners have diverse and multiple reasons for wanting to improve their literacy and numeracy skills. Learner motivations are not fixed. As people with shifting priorities and circumstances dip in and out of learning, so their goals are flexible and change as their circumstances change, sometimes unpredictably (Barton et al., 2006). Most research which gathers data on learner perspectives on motivation is either small-scale or focuses on specific programmes of learning (e.g. workplace provision), so it is not possible to be definitive about which motivations (or even types of motivations) carry higher priority with literacy and numeracy learners. It seems reasonable to concur with Brooks et al.'s earlier research review (2001b) – that adults are principally motivated to improve their basic skills for 'self-development', be this personal, social or occupational.
- 9.24 Both in terms of engaging adults with low literacy and numeracy skills to improve these skills and supporting the progress of ALN learners towards achievement it is crucial that learner motivations are understood by policy makers. Where learners, employers, providers and policy-makers share an understanding of learner motivations and the barriers to accessing learning, responsive learning opportunities can be created, in turn encouraging both participation and retention (Taylor et al., 2006). Learners are de-motivated by sanctions and financial incentives to learn, and many prefer home-based, work-based and embedded approaches to improving their literacy and numeracy skills. The benefits and outcomes of learning as focused on in policy should be in step with the benefits and outcomes that learners are motivated to achieve.

# Quality and effectiveness of provision: technology

## Introduction

- 10.1 This chapter considers the evidence on the use of technology in delivering literacy and numeracy provision, considering the extent to which technology is used, the types of learners using technology, and the relative effectiveness of different approaches. Whilst most of the available evidence on the use of learning technology in literacy and numeracy is reviewed here, there are additional references throughout this review.
- 10.2 In this chapter the term 'learning technology' is used to refer to the information and communication technologies of interest. The Association for Learning Technology (ALT) defines learning technology as 'the broad range of communication, information and related technologies that can be used to support learning, teaching, and assessment'<sup>2</sup>. Becta, the UK government agency that (until its closure in March 2010) led the national drive to ensure the effective and innovative use of technology throughout learning, employed the following definition:
- ... technology-supported learning/e-learning ... includes the application of learning technologies across the learning process from assessment of organisational and individual need to delivery of learning, learner support, management and administration, and formal and informal learning (Becta, 2010, p. 9).*
- 10.3 This chapter is set in the context of a recent paper submitted to BIS by the ALT and the ESRC/EPSRC-funded Technology Enhanced Learning (TEL) programme (ALT and TEL, 2010). That paper responded to a number of questions posed by BIS concerning whether, how and in what circumstances e-learning is effective, as well as the strength of the evidence base. It provides an insightful discussion of a similar set of questions to those posed here, but within a broader framework (compulsory, post-compulsory and tertiary education). A selection of the findings on the benefits or drawbacks of learning technology is presented in.
- 10.4 ALT and TEL (2010) pointed to the distinction needed between (i) learner performance, (ii) other aspects of the learning experience, and (iii) organisational efficiencies, as three ways in which to measure the benefits of learning technology. As this chapter focuses on ALN provision, we limit our attention to the first and second of these, but not the third, which is concerned with institutional-level effects.

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<sup>22</sup> <http://www.alt.ac.uk/about-alt/what-learning-technology> [accessed 12 May 2011]

**Table 10-1: Selected findings on the benefits (or drawbacks) of learning technology, from ALT and TEL (2010)**

<b>Theme</b>	<b>Finding</b>	<b>Page</b>	<b>Source</b>
Diminishing returns of innovation	Once integrated into the mainstream the enhancements associated with the introduction of specific learning technologies can often diminish or disappear.	5	Authors
Learner performance	In higher education (HE), courses that involve online learning - in whole or part - are associated with better learner performance on average than face-to-face instruction. This finding is attributed to learners having more control over their learning process and taking more time to complete and reflect on tasks than in face-to-face situations.	7	US Department of Education (2009) - meta-analysis of 52 studies undertaken in the period 1996-2008
Retention	On the other hand, 'face time' with faculty and peers is essential to learners feeling included and integrated into the academic environment, with knock-on effects for their retention and attainment.	13	Lotkowski, Robbins and Noeth (2004) - review of more than 400 studies from the US
Learner performance	Direct benefits to learners from e-learning projects (at HE level): improvements of around 10% in pass rates; improvements in learning style, insight and/or reflection; enhancement of skills, employability and/or confidence; enhanced satisfaction, motivation, attendance and/or confidence; enhanced recruitment through greater accessibility or opening up of new markets.	10-11	JISC-funded ALT, HEA and JiscInfonet CAMEL Tangible Benefits of e-Learning Project (2005) - review of 35 studies

**Table 10-1: Selected findings on the benefits (or drawbacks) of learning technology, from ALT and TEL (2010)**

<b>Theme</b>	<b>Finding</b>	<b>Page</b>	<b>Source</b>
Learner performance	E-learning (at HE level) can enhance active, self-directed learning, particularly where learners use technology to locate their own material and for collaborative work, formative assessment and discussion with peers.	11	JISC (2007) Transforming and Enhancing the Student Experience Through Pedagogy (TESEP) Project
Organisational efficiencies	Integrated information systems on an institution-wide basis can create significant cost efficiencies in core business processes (curriculum design and review, timetabling, marketing of courses, collection of marketing and quality information) and learners can benefit from more personalised approaches in the choice of learning and delivery method.	7	JISC/SFC e-Learning Transformation Projects - 12 large-scale institutional projects funded over a four-year period
Additional demands of learning technology	Technologies provide new opportunities for learning, but also make new demands on teachers and learners. In the case of learners, learners require some new as well as many traditional learning skills. For teachers, many technology-supported tasks take longer, at least initially.	12 and 14	Authors
Access	Many learners would have little or no access to learning opportunities without the support of technology. This is applicable to those with physical access difficulties and also learners who have had negative experiences with conventional education, who may benefit from the opportunity to use their own familiar devices, networks and/or learning spaces to access learning.	12	Authors

**Table 10-1: Selected findings on the benefits (or drawbacks) of learning technology, from ALT and TEL (2010)**

Theme	Finding	Page	Source
Assessment	Technology can support assessment in several ways: freeing up staff to focus on setting effective assessment tasks and giving effective feedback; allowing assessments to be more uniform and fair; allowing students to practice assessment tasks and perhaps choose the time of their assessment; allowing assessors to learn from each other and standardise good practice.	12-13	Nicol, D. (2008) for Quality Assurance Agency, Scotland
Retention	Technology can help retention where technology reduces staff time spent on other activities, allowing them to spend more time with learners - giving personalised feedback and other forms of close interaction.	13	Re-Engineering Assessment Practices in Higher Education (2010)

Source: derived from ALT and TEL (2010)

## Evidence

- 10.5 ALT and TEL (2010) state that ‘there is a very large body of knowledge which could constitute a UK evidence base’ on the questions of whether, how and in what circumstances learning technology is effective. The development of this evidence base has been through the Joint Information Systems Committee (JISC), the Research Councils, the Higher Education Academy (HEA), Becta, the funding bodies and others. For example the JISC, in the form of the e-Learning Innovation Programme, has supported an ongoing programme of pilots and development projects, all of which have been evaluated. In addition, the TEL programme has made substantial contributions, as did Becta in *inter alia* the FE sector, while ALT continues to review the evidence from a practitioner point of view.
- 10.6 The evidence base on the effectiveness of the use of learning technology in ALN provision, however, remains thin. There are few rigorous evaluations of the impact of using learning technology to support the delivery of literacy and numeracy, whether in FE, workplaces or other learner contexts. MacLeod and Straw (2010), for instance, reported that evidence on how adults develop their basic skills through flexible learning, including access to the internet, is poor. This is partly because there has been relatively little funded work on the development of software and new e-learning techniques specifically for basic skills learners. Where learning

technology has been used it is largely because teachers develop their own ways of using standard software tools.

## Findings

- 10.7 According to Powell et al. (2003), there are three main ways in which learning technology is used in ALN provision: to attract people to learn basic skills; to overcome traditional barriers to learning through flexible provision; and to aid tuition/instruction and learning. In an analysis of adult numeracy classes in England, Mellar et al. (2004) found that learning technology was most often used as a complement to instruction, with learners using computers to practise skills taught in class. In a similar review of the use of learning technology in adult numeracy classes in Scotland, Coben et al. (2007b) found that most teachers used learning technology as a delivery mechanism and a complement to instruction, while the use of technology as an instructional tool, with ICT integrated into class teaching, was on the increase.

### *Enabling learner progression*

- 10.8 Learning technology in ALN provision may improve learner progress and achievement, although the evidence for this is at best mixed (Torgerson et al., 2004; MacLeod and Straw, 2010). Torgerson et al. (2004) reviewed research investigating whether learning technology enables adult learners to make better progress. Of the 16 randomised control trials reviewed, ten had no clear result or results which were not statistically significant, two showed ICT to have a negative effect compared with conventional teaching methods and four showed ICT to have a positive effect.
- 10.9 Ruthven and Hennessy (2002) suggest four ways in which the use of learning technology is beneficial for numeracy provision in the classroom, where ICT is an aid to learning:
- improving the ambience and feel of classroom activity
  - helping learners to correct errors and to experiment with possibilities
  - enabling subordinate tasks (such as drawing graphs) to be carried out easily, rapidly and reliably
  - accentuating particular features through images and effects.

#### **Examples of using technology to support literacy and language learning**

- podcasts: allowing students to record their speech in a range of genres, as well as encouraging students to actively interpret what they have read
- digital storytelling: for sharing experiences and providing an opportunity to

practice grammar, pronunciation and oral delivery

- blogs: helping learners develop more colloquial forms of language and providing them with a tool for discussing different ideas
- text-scaffolding software: which gives learners clickable access to digitised speech reading of phrases within pieces of text
- speech recognition software: used as a way of improving pronunciation
- social network sites: allowing students to find others to help them in their language development.

Source: Warschauer and Liaw (2010)

### Flexible delivery

10.10 Learning technology also has the potential to make learning more flexible in terms of how, when and where it takes place. This flexibility is particularly valued in the workplace. Finlay (2007) presented findings from work-based learning, where ICT packages met a need for learners wishing to progress on sites at which suitable on-site learning was not available. One important advantage for the workers was that they could learn at times that were suitable for them.

10.11 The flexibility offered by the use of learning technology – in particular internet learning – also gives it the potential to reach a large number of learners with a high degree of efficiency. *learndirect* is a prime example: since 2000, more than 2.75 million people have completed a *learndirect* course, and *learndirect* is currently the largest contributor to the Government's skills targets (Ufi/*learndirect*, 2010).

### Engaging and motivating learners

10.12 Learning technology is also used to attract adults to literacy and numeracy provision. One purported benefit is that learning technology helps to engage learners. The literature reviewed in Brooks et al. (2004) suggests that ICT acts as an incentive that attracts learners into learning, a finding that echoes Powell et al. (2003). Atkins et al. (2005) found that basic skills courses marketed under the guise of ICT training have the ability to engage more learners (and also more employers), as they perceive the training to be more relevant to them. Although an early study by Gorard et al. (2003) concluded that learning technology did not make adult learners in Wales any more likely to engage or re-engage with learning, the rapid increase in home access to the internet and technological advances may have invalidated this finding.<sup>3</sup> Take for example, the success *learndirect* has had in attracting adult learners. Ufi/*learndirect* (2010) reported that ICT, particularly some recent innovations including social media such as Twitter, Facebook and YouTube, online interactive games designed to improve literacy and numeracy skills, and a

<sup>3</sup> UK household internet access has continued on its recent rising trend. The ONS Living Costs and Food Survey suggests that between 2008 and 2009, there was a five percentage point rise in the proportion of all households with an internet connection. Cited in 'Evaluation of Home Access Programme: draft final report' (SQW for Becta/DfE, March 2011)

number of applications for iPhones, has increased learner engagement and generated highly positive feedback.

- 10.13 Greater engagement in learning is related to a second purported benefit of the use of learning technology reported in a number of studies (Evans and Waite, 2008; Benseman et al., 2005; Hamilton and Wilson, 2005; White, 2003), namely an increase in the motivation of learners, contributing to their persistence in learning. One particular study is worthy of special attention. The NRDC Effect Practice Study in ICT (Mellar et al., 2007) developed and tested the effectiveness of ICT-based teaching strategies, using ICT designs targeted at literacy, numeracy and ESOL learning objectives. In total, 150 students took part in the evaluation phase of the study, and 80 completed both pre- and post-tests (after 40 hours of class time). Most learners found the use of ICT motivating. This was particularly the case with mobile technologies, which enabled greater flexibility in teaching, with tutors taking advantage of the mobility of the technology to move outside the classroom.
- 10.14 Similarly, a report for CfBT found that adults were motivated by the flexibility that learning technology has to support their numeracy learning (Hinman and Fletcher, 2008). They valued the instant responses and feedback that ICT applications provide, as well as the fact that they are enabled to develop transferable skills. MacLeod and Straw (2010) presented further research evidence which suggests that flexibility helps to motivate learning by:
- Creating individualised and relevant learning packages (Arenas, 2008; George and Luke, 1995; Holland, 2002)
  - Creating packages that match and work with individual learning styles (George and Luke, 1995; Holland, 2002)
  - Combining a range of technologies (Crawley and Attewell, 2001)
  - Making it possible to deliver learning in 'bite-size chunks' (Crawley and Attewell, 2001).
- 10.15 A third benefit claimed for the use of learning technology is the improvement it brings to learners' self-confidence. Silver-Pacuilla (2008) presents analysis of qualitative data which suggests that Computer Assisted Instruction (CAI) is effective in comparison with conventional teaching methods, and contributes to an increase in learners' motivation and confidence levels.
- 10.16 A fourth benefit of the use of learning technology is that it has the potential to attract 'hard to reach' learners. This can come, for instance, the use of quizzes and games for those less inclined to use worksheets and books, and by reducing reading content for those who prefer a pictorial approach (Coben et al., 2007b). Similarly, the NRDC Effective Practice Study in ICT (Mellar et al., 2007) found that learning technology has the ability to change the focus of the learning experience, which may be beneficial for adults who have struggled in the past with conventional educational models. Tutors referred to learners 'managing information' rather than learning, and 'browsing and scanning' rather than reading as comprehension,



signalling the need for new skills to improve learners' use of technology in addition to traditional literacy and numeracy skills (see Chapter 2). In one example, a task previously conceptualised as writing short sentences was changed to an exercise in relating image to text.

- 10.17 In contrast, there is also evidence that the use of learning technology is less suited or even de-motivating for some learners. Traxler (2004) suggested that mobile learning is not appropriate for every learner, simply because they may be resistant to technology or they may prefer other forms of learning. Mellar et al. (2007) found that learners with less confidence in using ICT at the start of the course were more likely to drop out. MacLeod and Straw (2010) report that older learners are more likely to be in this position, and we know that the digital divide continues to exclude older people and also those on low incomes more than others from access to technology. Earlier research by NRDC (Atkin et al., 2005) suggested that *learndirect* courses were not suitable for learners with very low basic skills levels who also were in need of face-to-face support, and that flexible and internet learning with no other tutorial support is unsuited to some learners because of the high degree of learner autonomy required.

## Conclusion

- 10.18 According to ALT and TEL (2010) there is a very large evidence base on whether, how and in what circumstances learning technology is effective. While this statement may hold good in general terms, it is not the case in the ALN sector. Given the rate of development of ICT, this is clearly an area worthy of future research focus.
- 10.19 Based on the limited evidence (often based on individual sources rather than a body of work), the following conclusions can be drawn:
- learning technology may improve learner progress and achievement, but the evidence is at best mixed
  - learning technology can make learning more flexible in how, when and where learning takes place. Such flexibility is particularly valued in the delivery of workplace provision and also underlies the success (in terms of enrolments at least) of *learndirect*
  - a small body of evidence that suggests that learning technology helps to attract, engage and motivate learners. Learners (and also employers) are more likely to perceive basic skills training to be relevant where it is marketed under the guise of ICT training. Other evidence suggests that mobile technologies, including applications for iPhones, online interactive games and social media are motivating many learners
  - learners value the flexibility that the use of ICT offers, along with the opportunity for instant feedback and the ability to engage in non-conventional exercises such as quizzes, games, and pictorial approaches to learning

- the value of technology for ALN is conditional on the learners' existing ICT skills. Learners with poorer ICT skills are more likely to drop out if their acquisition of these skills is unsupported
- although learning technology is potentially attractive to 'hard-to-reach' learners and to those who have not benefitted from conventional educational models, it may represent a barrier to learning for older learners and those on low incomes without access to technology and the internet at home.

10.20 These findings suggest that ICT skills and basic skills may benefit from simultaneous development. Mellar et al (2007) reported that learners in the NRDC study improved in almost all cases in both literacy/ESOL skills and ICT skills and confidence. This lends support to the claim in the Moser Report (DfEE, 1999) that 'learners who use ICT for basic skills double the value of their study time acquiring two sets of skills at the same time'.

10.21 In the light of the rate of development of ICT, including mobile technologies, and the potential to support learning and learning progress, it is recommended that robust trials are conducted to clarify which are the effective practices in using technology for different groups of learners, and for different types of learning outcome.

# Number of learning hours

## Introduction

- 11.1 This chapter considers the relationship between learning hours and skills gain, and discusses the available evidence on the level of participation required for adults to make meaningful gains in their literacy and numeracy skills.
- 11.2 Learning hours can be measured as tuition time, commonly referred to as Guided Learning Hours (GLH), meaning teacher/learner contact time/time spent in formal learning; self-study (self-directed or own-time learning) and 'time on task', that is a combination of formal and self-directed learning. For learners on formal programmes of learning, participation can be thought of as a measure of hours of participation per month (intensity) and months of engagement per year (duration). Courses in literacy and numeracy vary in length, from short duration 'brush-up' courses designed to accredit or update existing skills, to intensive courses in residential settings, to courses spanning the duration of an academic year or more.
- 11.3 Research from the US (Comings et al., 2003) suggests that meaningful improvements in adult literacy require a 'threshold' level of participation in an adult literacy programme, and that sporadic participation may well make little difference to learner progress. In the UK, not all learners will achieve their learning aim by the end of a one-year course and some take several years to progress by one level on the National Qualifications Framework (NQF).
- 11.4 In order to calculate the length of time it takes for learners on programmes of study to make gains in literacy and/or numeracy, data are required (at the very least) on the following:
- skill level at time of course start (recognising that learners on the same basic skills course can start at very different levels; many classes are 'mixed-ability')
  - number of contact hours/GLH (recognising that course intensity and duration vary a great deal, so evidence gained on courses that last for 30 hours cannot be generalised to courses of a longer duration) and other course variables (for example regularity and frequency of contact)
  - course attendance levels (recognising that literacy and numeracy learners face different barriers to learning which affect their attendance patterns)
  - number of hours spent on own-time learning, and the nature of literacy and numeracy practices in learners' own time learning (an important but little understood element)
  - interim/end of course skill level (i.e. if skills gain rather than achievement [in terms of certification] is to be measured, then the sensitivity of assessment instruments is

critical; a number of studies considered in this review refer to the possibility that research instruments can be insufficiently sensitive to capture modest skills gains).

## Evidence

- 11.5 Overwhelmingly, the available evidence on learning hours explores the relationship between GLH (i.e. teacher/learner contact hours) and learner outcomes. This review found no UK studies on *learner progress* that made substantial use of data on the self-study that adults engage in, either while taking courses or when not taking courses.
- 11.6 In the UK, the National Adult Learning Surveys gather some data on self-directed learning, including type of learning engaged in, motivations for engaging in self-directed learning, use of ICT, and outcomes of learning, but it is not possible to extract findings from these data on self-directed literacy and numeracy learning. In the US, the LSAL (a six-wave panel study launched in 1998 gathering data from an initial sample of around 1000 adults living in Portland, Oregon) found that panel members who participated in both programmes and self-directed learning were more likely than those who participated in neither or in just one type of learning, to attain a GED.
- 11.7 At a national level in England, the ILR provides some data on the amount of time adult basic skills learners take to progress. Individual Learner Record data can be used to calculate the number of months between enrolment (or achievement) at one level of the NQF and enrolment (or achievement) at a higher level. The data can be used to work out the average number of GLH learners experience, but these refer only to teacher/learner contact hours. No data are gathered via the ILR on self-study hours (Adams et al., 2010). Data from the ILR can be used to calculate relationships between learning hours and achievement in terms of passing a course, but not between learning hours and the gain of a specific skill.
- 11.8 The ILR reveals huge variation in the number of GLH for different basic skills courses, levels and learners. For example, the weighted average GLH may show the mean for a course to be 56 GLH and, while most learners may complete a course in less time, others will take upwards of 450 hours. Analysis of 2006/07 ILR data shows that the average GLH for all literacy qualifications was 64 hours and for numeracy was slightly lower at 62 hours. The overall achievement rates in the sample were 69% for literacy and 70% for numeracy. Entry level courses had more average GLH than higher-level courses: for literacy it was 83 GLH for Entry level courses, 58 for Level 1 and 54 for Level 2; for numeracy the GLH were 74 for Entry level, 58 for Level 1 and 54 for Level 2 (Cara et al., 2009).
- 11.9 Cara et al. (2009) point out that the ILR dataset in its current form cannot provide reliable evidence of the time it is likely to take learner cohorts to progress from one Skills for Life level to another, as identified by subject area, Skills for Life level and learner profile. It is possible, however, to use a combination of ILR and HESA data, along with the technique of 'fuzzy matching', to analyse the time taken for learners to move from Entry level to Level 1, and from Level 1 to Level 2. It would also be

possible to undertake a similar analysis of the time taken by those entering education to achieve an Entry level qualification.

- 11.10 In lieu of comprehensive, national data that can be analysed to provide evidence on the relationship between learning hours in total and skills gain, findings presented in this chapter draw heavily on individual studies. The vast majority of evidence on the relationship between learning hours and skills gain comes from studies of literacy courses and *not* numeracy courses.
- 11.11 This review found no systematic attempt to collect data on what is expected of learners in terms of own-time learning by course providers and practitioners. Moreover, knowledge about the amount of GLH learners need to make educationally significant progress is not secure, although it seems likely that learners require more time than they generally spend in provision. Knowledge about the culture of self-study is also poor, with little evidence on what activities adults undertake in their own time to improve literacy and numeracy skills and even less evidence on how this own-time learning impacts on progress and achievement.

## Findings

- 11.12 One issue to consider where studies report that a large number of GLH are required before meaningful learning (in terms of skills gain) takes place is that most learners do not receive this level of tuition. For example, research from the US has produced figures of 100-150 hours to progress by one grade level, whilst most adults find it difficult to attend even 75 hours within one year. This is where evidence on the impact of hours of self-study is important. In fact, as Brooks et al. (2008b) point out, in England many learners 'attend only one or two sessions, and within three months approximately 50% of those officially registered have dropped out' (p. 494). The same study cited figures from Peters et al. (2004) showing 53% of learners on the Job Seekers' Allowance literacy and numeracy project did not complete, and from NRDC's Learner Study (Rhys Warner and Vorhaus, 2008) showing the non-completion rate for a one-year ALN course in the academic years from 2000/01 to 2004/05 was just under 30% (completions rose from 71% of enrolments in 2000/01 to 73% in 2004/05).
- 11.13 The evidence base for individual studies in the UK starts with the *Progress in Adult Literacy* study carried out by NFER in 1998-99 for the BSA (Brooks et al., 2001a). This found that one of the few factors to correlate with progress in reading was the number of hours of literacy tuition learners received between pre- and post-assessments: the largest average improvement was shown by the subset of learners who had received 51-60 hours of tuition. Benseman et al.'s (2005) review of the literature on effective practice in LLN teaching concludes that programmes which allow for levels of participation in excess of around 100 hours of tuition are associated with gains for learners, particularly learners who have low levels of basic skills. Notably, all the robust studies reviewed by Benseman et al. (including the NFER research for the BSA) followed literacy learners not numeracy learners, and no studies made use of data on self-study. They found that evidence from research on the effect of intensity of provision and regularity was weaker, although one study

suggested that learners made *less* gain when they received *more* than nine teaching hours per week.

- 11.14 In reviewing a number of studies from the US, Comings et al. (2009) concluded that 100 hours of instruction is the point at which a majority of adult students are likely to show educationally significant progress, and, therefore, it serves as a benchmark that identifies an effective programme. That is, if the majority of students persist for 100 hours or more each year, the programme is probably having a measurable impact on at least half of its students. After 150 hours of tuition, the probability of improving by one grade level is 75%. These findings have been read across to the UK context by researchers at NRDC (for example, Lopez et al., 2007, QIA; 2008). However it should be noted that this is a broad and untested application.
- 11.15 Adams et al. (2010) analysed ILR data from 2000/01 to 2006/07 to examine progress for Skills for Life learners (literacy, numeracy and ESOL) measured by subsequent learner enrolments in the same skill at a higher level after an initial enrolment or achievement at Entry level or Level 1. Time taken was calculated using the starting dates and achievement dates. This study found that around 30% of the 3.4 million adults who enrolled for Skills for Life learning aims in the FE sector in this period enrolled at least twice in the same subject. Of those who enrolled more than once in a skill between 2000/01 and 2006/07, and whose first enrolment was at Entry level or Level 1, 59% in numeracy and 48% in literacy progressed to a higher-level enrolment. Of the two million adults who achieved in Skills for Life between 2000/01 and 2006/07, 60% achieved once, and 25% (of the two million) achieved twice in the same subject. Around 150,000 learners in numeracy and 160,000 in literacy progressed to a higher-level enrolment and around 50,000 learners in numeracy and 60,000 in literacy gained a higher-level achievement in the same skill. Although researchers found that the range in time intervals for progression was large (ranging from one month to more than six years) the largest group took twelve months to move from achieving at Level 1 to achieving at Level 2. In both literacy and numeracy, those who progressed to a higher-level enrolment from Entry level were more likely also to progress to a higher-level achievement than those who progressed to a higher level enrolment from Level 1.
- 11.16 Research undertaken by NRDC as part of its suite of Effective Practice Studies (Coben et al, 2007a) found that numeracy learners made statistically significant progress between two assessments administered (an average gain of 9% in test scores, but with a wide range of average gains between different classes) with 39 GLH in between, although this research also found no correlation between the number of hours of tuition and the progress made. The Effective Practice Study on writing (Grief et al., 2007) found that modest progress was made in the minimum 50 hours of attendance between pre- and post-treatment assessments, but concluded that demonstrable progress in writing – particularly free writing – cannot be achieved quickly. In reading (Brooks et al., 2007), modest progress was made between the first and second assessments but no progress between the second and the third (with 30 hours of tuition minimum between assessments). This research also found that learners who reported more self-study between classes made better progress. This is consistent with findings from the LSAL (Reder and Strawn, 2001).

- 11.17 A recent review of family literacy courses by Swain et al. (2009) evaluated the effectiveness of two 'types' of family literacy courses, those characterised by the research team as short (involving 30-49 contact hours) and standard (72-96 contact hours). Although each type of course was shorter than the course length associated in research from the US about time taken to progress or make meaningful gains, parents were found to make statistically significant gains in writing and also gains in reading (although the latter were not statistically significant). The researchers speculate that in reading a ceiling effect may have taken place as the average scores of some parents were high at the enrolment, leaving little room for further improvement within the range of the assessment instruments used in the research. Research by the Centre for Research on the Wider Benefits of Learning (Feinstein et al., 2003), notes that changes in attitudes and behaviours in mid-adulthood tend to be rare, and so any progress at this time is notable, particularly when spread across this many parents. The average proportion of parents achieving a qualification on a short course was 56%, and 71% on standard courses. Parents on standard courses also exhibited a greater amount of individual change than parents on shorter courses in their perceptions of their children's literacy activities, and in their perceptions of themselves and their children as learners.
- 11.18 Intuitively we might presume, as research on family literacy programmes suggests, that longer courses lead to more gains, but this is not necessarily the case. In literacy and numeracy learning, adults with low levels of basic skills are more likely to be placed on longer courses (as opposed to courses targeted at those who need to brush up) but may nonetheless struggle to complete and to achieve when returning to education. Cara et al. (2009) analysing ILR data found, for literacy and numeracy learners, that the larger the number of GLH, the less likely learners were to complete their course, and the longer the course (as measured by GLH) the less likely literacy and numeracy learners were to achieve. They divided courses in the ILR into five bands by number of GLH: 1. 10-30 GLH (short sharp courses); 31-60 GLH (mean literacy and numeracy); 61-120 (mean ESOL); 121-180 and 181-300. The first band of short courses was characterised by low withdrawal and high achievement. Furthermore, a clear trend toward lower achievement for longer courses is seen for Level 1 and level 2 courses. However, learners on Entry level courses have higher achievement rates on courses in the 121-180 GLH range. Analysis by age is far more complex, with the youngest learners gaining higher rates of achievement on shorter courses, but with other age groups doing best on courses of 121-180 GLH. Cara et al. (2009) suggest that, at higher levels, the jump between one level and another may prove too large for some learners to achieve within a single year.
- 11.19 Research in this area has to consider how much learning adults are prepared to engage in. A survey of people with basic skills needs conducted by MORI for the Basic Skills Agency (2000) found that the majority (92%) were willing to spend at least one hour a week in programmes, with over half prepared to devote eight or more hours weekly (56%). The length of programme that the majority would be willing to undertake varied greatly. Approximately a quarter of those who would consider getting help would prefer a course of 10 weeks and a third would want the course to run for a year. In the US, the LSAL (Reder and Strawn, 2001) found that substantial numbers of learners (a third of those who had never participated in

programmes and almost half of those who had) in the survey population engaged in self-directed learning efforts to improve their basic skills (such efforts were separate to any 'homework' engaged in as part of a formal programme). Counter to what was expected, learners with lower levels of skills were more likely to participate in self-study. Researchers found evidence of a complex and fragmented process of participation, and point out that participation is measured differently from learner and programme perspectives (self-report versus administrative data).

## Conclusion

- 11.20 Looking across the available evidence, results vary as to how much time is needed to make educationally significant progress. This is unsurprising given the different levels learners start at, the different courses that they join, and the different definitions of what is meant by progress and achievement (i.e. is it about passing a test, progressing to the next level, or gaining a specific skill?). However, the existing evidence does indicate that if learners (especially those working at lower levels) require upwards of 100 hours of hours of instruction to make significant educational progress, they need more time than they generally spend in provision. (It is worth remembering that those with basic skills needs have had a decade or so of compulsory schooling and not made enough progress to become functionally literate or numerate.) This finding has implications for short duration courses, such as the 10 week course a quarter of adults would prefer. Tuition would need to be intensive (10 hours per week) to offer sufficient hours of instruction but, as Benseman et al. (2005) speculate 'more intensive programmes are logically a more effective way of ensuring minimum amounts of tuition' (p. 41).
- 11.21 Furthermore, as Brooks (2010) points out, implicit in these measures of instruction hours is the assumption that all classroom time is spent on literacy (or numeracy) activities when this is not the case: for example, Brooks et al. (2007) in the Effective Practice Study in reading found that only 37% of class time was spent on active reading instruction. This suggests there may be scope for teaching practitioners to increase the proportion of GLH focused on active instruction within existing GLH resource levels.
- 11.22 More evidence is needed on what adults do in their own time to improve literacy and numeracy skills, and how these activities impact on their persistence with and progress in any formal learning they engage in. If learners are to increase the time spend on task by engaging in self-study, thus increasing their potential to make educationally-significant progress, then not only must programmes adapt to allow for and support this self-study; consideration should also be given to how this self-study is measured and credited (Comings et al., 2000). Brooks (2010) notes that although findings from LSAL show a link between self-study and better progress, the self-study effect from British evidence (see Brooks et al., 2007) is much weaker. This may be a reflection of contextual differences between the UK and the US, where the GED represents an important and recognised target, for which there is no British equivalent.



11.23 Although it is clear that one route to increasing time-on-task for basic skills learners would be by using technology to support self-study, this review found no substantive research on what works and does not work in improving learner outcomes in this regard.

# Persistence in literacy and numeracy learning

## Introduction

- 12.1 This chapter considers evidence on the policies, programmes and practices that have been shown to be effective in keeping adults in literacy and numeracy learning long enough to make significant progress. The focus is on ‘learner persistence’; however it should be emphasised that although education providers and other agencies engage in practices or have developed an institutional culture designed to keep adults in learning, the term ‘persistence’ still has little currency in the UK adult learning sector (Lopez et al, 2007: p. 6).
- 12.2 The largest study of persistence in basic skills learning to date, conducted in the US by MDRC and the National Center for the Study of Adult Learning and Literacy (NCSALL), defined ‘persistence’ in the following way:

*Adults staying in programs for as long as they can, engaging in self-directed study or distance education when they must stop attending program services, and returning to program services as soon as the demands of their lives allow.*

- 12.3 Persistence, then, is associated with the trajectory of learners, whether or not they are engaged in formal training or education. Importantly, persistence is not the same as learner ‘retention’, which is organisation-focused and often used as a measure of provider accountability. In contrast, persistence extends over a lifelong and life-wide learning journey and includes periods outside formal education, with a broad definition of participation that extends beyond participation in a specific programme of learning.
- 12.4 As discussed in Chapter 11, available evidence suggests there is a gap between the hours of instruction adult learners receive in the course of a learning programme and the time they require to make meaningful progress and to achieve their learning goals. Furthermore, drop-out rates in adult basic skills courses can be high: in 2006/2007 100,000 learners studying literacy, numeracy and ESOL dropped out, and 190,000 failed to achieve (Cara et al., 2009). This represents a waste of resources, time and potential.
- 12.5 Supporting learner persistence is a means by which adult learners are encouraged and assisted to continue their participation in learning, not by increasing the length of programmes of instruction but through increasing time-on-task and engagement. Persistence focuses on supporting learners in learning programmes for as long as they are able to attend and also keeping adults engaged in meaningful learning through means such as self-directed study and distance learning, so they are more able to re-enter formal learning when their circumstances permit.

## Evidence

- 12.6 Evidence gathered specifically on the persistence of adult basic skills learners is drawn principally from the US where MRDC/NCSALL carried out a pioneering multi-phase (2000-2003) Literacy in Libraries Across America (LILAA) initiative designed to help library-based literacy programmes increase the persistence of adult learners. Participating libraries were granted resources to develop and implement persistence strategies that included improved instruction, more varied and more extensive social supports, and technology upgrades. The study followed a set of adult literacy students in nine branches of five libraries to understand the factors that influenced their participation in formal programmes and their self-directed efforts to improve their basic skills or prepare for the GED tests. Researchers were able to make a detailed examination of persistence levels and patterns and of achievement trends.
- 12.7 The MRDC/NCSALL study is the largest and most systematic study of learner persistence, however it is important to note that features of the learning programmes it followed may limit the extent to which its findings are applicable to basic skills education and training provision and programmes in the UK. The US project examined literacy programmes only, and programmes which were delivered in libraries, mainly by volunteer tutors, on a one-to-one basis and in small groups, where programmatic funding was not dependent on learner retention. The vast majority of learners in the libraries included in the MRDC/NCSALL study were from non-white backgrounds (unlike literacy and numeracy learners in England) and generally had an older demographic profile than Skills for Life learners.
- 12.8 Evidence on persistence can also be drawn from the LSAL, which followed a statistically representative sample of about 1,000 high school dropouts from Portland, Oregon over eight years, collecting data in six waves between 1998 and 2007. Researchers looked at changes in the panel's assessed literacy skills, changes in their personal and family economic circumstances, their educational goals and informal and self-directed learning activities, and their decisions about entering, staying in, or re-entering basic skills and other educational programmes. The LSAL was able to examine patterns of participation and had the advantage of following its sample regardless of whether they were engaged in formal education activities or not.
- 12.9 In England, NRDC, working with partners from NIACE and Tribal Education, carried out a two-year project (2006-2008) on learner persistence in basic skills for the Quality Improvement Agency (now the Learning and Skills Improvement Service, LSIS). The Motivating Learners to Persist, Progress and Achieve project (PPA project) investigated how the learner-centred concept of 'persistence' developed by NCSALL could be used to support adults to successful learning in the context of the English system. In its first year, the project added to the evidence base on persistence, collecting quantitative and qualitative data through interviews, observations, focus groups, questionnaires and analysis of management information system (MIS) data in 30 research sites. These sites covered a broad range of provider settings but the sample was not a representative one and, given the timescales involved, the project was able to offer only a cross-sectional snapshot rather than a longitudinal study. Development activities, including

information exchanges, ICT workshops, action-research and the creation of persistence plans for increasing organisational support, took place in around 50 sites. In the study's second year, these activities were intensified in 14 sites where a number of strategies identified in the first year were evaluated. National ILR data was examined (see Cara et al, 2009: some findings from this data report are also summarised in Chapter 11 above).

- 12.10 This NRDC study was limited in four respects: its findings were not based on a representative population of either basic skills providers or basic skills learners; evidence was gathered over a short period of time; data were gathered only from adults who were actively engaged in basic skills learning and not from those who had either not engaged or who had dipped out of formal provision; and researchers did not gather data on learners' home practices/self-study in literacy and/or numeracy. Although initiatives for improving learner persistence were trialled in the second years, these were not systematically evaluated.
- 12.11 In terms of evidence on learner persistence, it is important to note that in addition to projects that take persistence as their principal subject, the component parts of learner persistence (engagement, motivation, retention, study support, flexible delivery, progression and so forth) are the subject of a great many research projects.

## Findings

### *Barriers to persistence*

- 12.12 Evidence from both the US and from the UK suggests that learners who drop out are not markedly different demographically from learners who stay in learning (Martinez and Munday, 1998; Comings et al., 1999). However, research by MDRC/NCSALL on literacy programmes offered in US libraries suggests that immigrants, learners over the age of 30, and learners with teenage or grown up children were more likely to persist. Based on a literature review of research on models of adult learning, Tusting and Barton (2003) found that non-completion of courses was not simply linked to external factors but actually linked to student experience of college. The quality of students' learning experience was the most significant factor associated with completion rates. Kambouri and Francis (1994) found that those who left basic skills provision experienced poorer weekly attendance than those who persisted, and that attendance was therefore crucial when learners decide whether to stay in a class or not.
- 12.13 Analysis of ILR data carried out as part of NRDC's PPA project (Cara et al., 2009) showed that half of basic skills learners who were going to withdraw did so by the time one third of the course had been completed. In literacy, learners aged 16-18 were most likely to persist with learning at the beginning of a course, and learners aged 19-24 the least. By the time the course was half-way through, the 16-18 age group became the most likely group to withdraw; older learners aged 55+ also tended to drop out half way through the course. In numeracy, those on Entry level courses were more likely to withdraw in the first half of the course than Level 1 learners, who were more likely to withdraw than Level 2 learners. Once the half way point was passed the likelihood of learners completing the course was very

similar, regardless of level. The same pattern was observed for literacy, although less strongly, but learners on day literacy courses stayed longer before withdrawing than those on evening courses.

- 12.14 The ILR data show that basic skills learners with prior qualifications were more likely to complete and achieve on their current course compared with those with no prior qualifications, so persistence may be associated with having more experience as a learner, and with learning how to learn. This indicates that if 'inexperienced learners' receive sufficient support and attention to get them through to a first qualification, at whatever level, this could put them on the path to lifelong learning.
- 12.15 Similarly, the MDRC/NCSALL study found that adults who had previously engaged in basic skills education, self-study, or vocational skills training were more likely to persist than those who had not. Evidence from the LSAL highlights the image of a learner engaging in episodes of participation and self-study, linked together and focused on the same goal. According to Snape et al. (2004), individuals in the 2001 NALS who carried on learning over time were more likely than those who subsequently stopped learning to have engaged in taught and self-directed learning as well as vocational and non-vocational learning. A similar pattern appeared in the Pathways in Adult Learning Survey (PALS, 2003), where long-term learners were more likely to be involved in a wider range of different types of learning than new learners. These data suggested that people who continue to learn over time engage in a wider breadth of activities than those who do not.
- 12.16 Chapter 9 of this review showed that adults have multiple, complex and highly personal motivations for participating in and persisting with their basic skills learning. Literacy and numeracy learners often attend classes to attain personal and social goals as well as to gain functional and cognitive skills (Kambouri and Francis, 1994). For adult learners, persistence is linked to maintaining these goals as the context changes, and developing tools that can help that learner to move from one set of circumstances to another. A substantial body of evidence supports the theory that learners are most likely to drop out of formal learning for reasons related to their personal circumstances (Kambouri and Francis, 1994; BSA, 2000; Tomoana and Heinrich, 2004; Barton et al., 2006). These barriers to formal engagement include funding-related reasons (childcare, travel costs) and other reasons (for example, social constraints). Researchers have classified barriers to participation and persistence in four groups (NALA, 1998; Litster, 2007):
- dispositional: negative attitudes to learning
  - informational: lack of appropriate information
  - institutional: the rules of procedures of provision, including onerous application forms, negative associations with traditional classroom settings
  - situational: the barriers that arise in everyday life, such as insufficient time, childcare issues, financial issues.

- 12.17 One influential study from the US (Meader, 2000) suggests that numeracy and literacy learners may be affected differently by barriers to persistence, with numeracy learners mainly facing dispositional and academic barriers.
- 12.18 Another approach to understanding barriers to skills development suggested by NIACE (2004) involves identifying 'structural and situational' barriers. These barriers include time constraints that may prevent individuals from undertaking skills training; the financial cost of training; the lack of relevant training opportunities near the home and issues over accessing childcare (Newton et al., 2005). A House of Commons report into barriers to FE participation also noted extrinsic barriers faced by particular groups. Research by CRISIS (2006) identified three broad types of barriers to homeless people's participation and persistence in learning and skills development in general, which may also apply to other 'hard-to-reach' cohorts:
- personal barriers: including those related to substance misuse, low confidence and self-esteem, negative experiences of learning
  - service barriers: lack of priority given to learning and skills by some homelessness agencies and their staff, the inability or unwillingness of some mainstream providers to respond appropriately to the needs of homeless people
  - funding barriers: the fragmented approach taken by each of the potential funders of learning and skills work with homeless people may lead to narrow outcome targets that learning providers find difficult to satisfy when working with homeless people, which in turn result in a reluctance among mainstream providers to focus resources on homeless people and a subsequent reduction in funding for specialist provision.

### *Provider support*

- 12.19 The MDRC/NCSALL persistence study identified as the first (of four) supports to persistence (Comings et al., 1999) the need to manage the positive and negative forces (the barriers) that help and hinder persistence, by identifying these forces, prioritising those that have the most significant effort, and deciding which ones can be managed (by being made weaker or stronger, depending on whether these are negative or positive forces). With reference to strengthening positive forces, the literature suggests that learners who develop a learning identity are more likely to persist (St Clair, 2006). For providers this can mean supporting self-efficacy – the second of four supports to persistence identified by MDRC/NCSALL (Comings et al., 1999) – through building the feeling in adults that they can be successful learners, through regular recognition of learner progress, and by using successful adult learners as role models.
- 12.20 A number of studies (including important work by NIACE on 'Catching Confidence', Eldred et al, 2006) have stressed the importance to learner persistence of recognising soft outcomes within a broad framework of achievement and a system of formative assessment which recognises small steps. Research on formative assessment for the OECD (Derrick and Ecclestone, 2008) stresses the importance to progress of scaffolding, so that learners have challenges at the right level of difficulty, and of tailoring learning to the individual learner's needs (which implies the need for a broad repertoire of teaching methods and substantive expertise).

The third and fourth supports to learner persistence identified by MRDC/NCSALL were that learners establish a goal, and that progress is made by learners towards this goal, a process supported by measuring progress, but not necessarily by the same measures that are used for programme goals in terms of accountability (Comings et al., 1999). By acknowledging gains already made, flexible and innovative assessment can support learner persistence when adults 'drop out' of formal programmes (NAO, 2004).

- 12.21 In addition to building self-efficacy and self-confidence, research shows that assistance with childcare, transport and access to social services can make a difference to learner persistence, and there is some (albeit more tentative) evidence to suggest that persistence is supported where providers are aware and manage the critical periods when learners are more likely to withdraw or to fail; when pastoral care is provided; when there are adequate financial resources and facilities and where there is administrative leadership (Benseman et al., 2005, citing Comings et al., 1999; Eldred, 2002; B. A. Quigley and Uhland, 2000; Yaffe and Williams, 1998). With respect to critical periods for withdrawal, Quigley (2000) identifies the first three weeks of a course as vital, thus emphasising the role that induction and orientation processes have to play in supporting persistence. Appropriate placement supports learning (Martinez, 2001) whereas poor, inadequate or inappropriate information, advice and guidance (IAG) can cause students to withdraw (Lopez et al., 2007). Many basic skills learners will have had negative school experiences, so the transition to the learning environment must be handled sensitively.
- 12.22 Effective IAG occurs where potential learners are aware of all the learning possibilities and the best match is made between learning needs and the learning offer. Sustained attendance in a learning programme appears to depend upon the appropriate level of support available, in accordance with learners' needs – particularly during the early stages after enrolment – and the efforts made by the providers to link the learning programme to the outcomes desired by learners (Taylor et al., 2005). In reviewing the evidence on widening adult participation in learning, Taylor et al. cite an evaluation of the then Department for Education and Skills' Adult Guidance Pilots (Tyers et al., 2003) which found that in-depth guidance offered as a complement to traditional IAG had a positive impact for 'hard-to-reach' groups, with successes including qualifications gains for those with no prior qualifications and a quarter of those who had been unemployed for less than six months moving into work. The main lessons learnt from these pilots were that the needs of the target group should be understood; families and communities of clients should be considered as well as the individual; advisers need to be clear about what they are offering; and provision should be flexible and tailored to need. MacLeod and Strawn (2010, citing Hillage et al., 2006) point to evidence from the evaluation of the Employer Training Pilots (ETPs) which suggests that adults engaged in work-based learning who receive IAG services are more likely both to be satisfied with the learning programme and to progress to further learning.
- 12.23 The MRDC/NCSALL persistence project (Porter et al., 2005) identified five learning pathways for the programme participants it studied:

- long-term pathway: learners who are active in programmes for an extended period, and who often participate in computer-assisted instruction or self-study as well as class
- mandatory pathway: learners required to attend programme
- tryout pathway: learners who participate short-term but face barriers that are at least temporarily insurmountable, or, students who do not have a clear goal to sustain their motivation
- intermittent pathway: learners who join and leave a programme several times. Breaks in participation are often caused by a personal crisis, and students return when the problem has passed
- short-term pathway: learners who participate intensely but briefly to accomplish a specific goal.

12.24 This research suggested that the challenge for education providers is to value the outcomes that are reasonable for each pathway. For example, helping an adult on a 'tryout' pathway to make decisions not to join services but with a plan to join in the future is, for that learner, the best possible outcome. Turning them away or making them join a class and then fail is not a good outcome.

#### **Strategies education providers could adopt to encourage learner persistence**

- information-gathering strategies: the more providers know about their learners, the more programmes can respond to the needs of learners
- support strategies: including, pastoral support; child care facilities; help with transportation; referral procedure for using external agencies
- operational strategies: including extended opening hours; flexible and drop-in and off-site classes; improving access to ICT
- programmatic strategies: including the curriculum changes, recruiting students in innovative ways, redesigning tutor training, redesigning student and tutor orientation.

*Source: Porter et al. (2005)*

### **Programme support**

12.25 Condelli et al. (2010) drew on the work of MRDC/NCSALL and LSAL data to make recommendations about how programmes for ALN learners should be designed:

- build persistence in adult learners so that they stay in programmes and engage in self-directed learning activities for much longer periods of time



- gather data and build accountability around longer-term outcomes
- develop community-wide learning support systems that strengthen collaboration among educational providers and social service and community-based organisations to meet learners' needs
- utilise technology to increase system capacity, coordination, and effectiveness.

- 12.26 The times and locations of literacy and numeracy programmes (Frontline Consultants, 2006; Rhys Warner and Vorhaus, 2008) can affect participation. In 2004, the NAO (2004) reported that many courses were insufficiently flexible to support learner persistence (for example, in being scheduled at times that clashed with out-of-school hours). Programmes and delivery should be able to adapt to the personal circumstance and learning styles of individual learners. However, one finding highlighted by the PPA project (Lopez et al., 2007) was that flexibility is not best for all cohorts of basic skills learners: for some, especially learners thought of as 'at risk', routine and structure are essential to successful learning.
- 12.27 Ofsted (2007), in evaluating the provision of direct learning support for literacy, language and numeracy in colleges found that retention rates for courses where learners received learning support were higher than for those learners who received no support. Many of the learners receiving support reported that they would have dropped out of college had it not been for the extra support they received and Ofsted cited examples of learners at colleges starting but then leaving their courses owing to inadequate support.
- 12.28 In terms of learner persistence, it is important to consider ways in which programmes, as well as providing classes, can be designed to support self-study. This would enable ALN programmes to serve more learners (since many adults self-study who never come to formal classes), attract new learners to classes (since some adults who self-study might later attend classes), and increase the overall persistence of adult literacy learning (since many adult learners engage in self-study and attend classes at different points in time) (Reder and Strawn, 2006). Research from both the UK and US stresses that, for learners, dropping out of learning programmes can be a rational and positive response to changing circumstance. What is important in terms of learner persistence is that these breaks from learning are supported, principally by distance and blended learning, so that learners are not penalised and do not have the door to learning closed on them. For example, one development project carried out by NRDC as part of its work of the PPA project (QIA, 2008), looked at ways in which learners who had taken a break from formal studies due to pregnancy were supported in their learning by continuing to have access to college resources, including online learning and phone tutorials. This was a very small initiative, but an example nonetheless of how time out of formal provision can be incorporated into the learning journey.
- 12.29 Programmes need to support adults who dip in and out of provision as their ability to participate fluctuates in line with their multiple identities and sometimes chaotic lifestyles (see Porter et al., 2005). Reports from the NAO and the House of Commons Public Accounts Committee have highlighted this issue with particular

reference to two groups of learners: those who start employment before their course of learning has finished or who move in and out of work; and prisoners, who face problems maintaining continuity in learning. Some problems could be addressed by better coordination between government agencies and stronger collaboration between government agencies, providers and employers.

- 12.30 The PPA project (Lopez et al., 2007) found that although ICT is seen as a potentially motivating resource for learners, access, ICT-literacy and time pressures are all potential barriers to the use of ICT as part of self-study. Learners who encounter problems with ICT resources away from class can lose confidence and motivation. This raises the question of the extent of provider and practitioner involvement and responsibility, especially where learners are using learning platforms and blended-learning options to support their studies. Learning platforms are useful for already motivated, independent learners, but the support of e-tutors is critical, as are clear progression routes. Teachers who were surveyed in this research all recommended BBC Skillswise to learners (an indication that teachers are making suggestions to learners where there is a realistic chance of take-up) but there is little information on if and how teachers and learners follow up on these recommendations.

### *Practice*

- 12.31 NRDC's PPA project (Lopez et al., 2007) highlighted the importance of good teachers and good teaching to learner persistence. Even where learners are learning outside formal provision or settings, they do not want lonely learning - some degree of structure and support is still necessary. Providers wishing to set up flexible opportunities to learn outside the classroom (for example, via mobile or on-line technologies, self-study or peer study), and practitioners wishing to set learning tasks outside the classroom, should be aware of the possible constraints and barriers learners face. Some groups of learners may be able to access more opportunities to learn outside the classroom than others, for example older learners or those with greater financial stability. Access to technology for learning at home and also learner access to technical support for on-line learning require sustainable resources. Many learners, sometimes those most in need of supplementary support, may face intense personal demands on their time outside the classroom due to family, settlement or employment responsibilities. From the practitioner perspective, self-directed learning has to be managed with care. Researchers often found that teachers were reluctant to give learners homework in case it made learners anxious, and that teachers were very aware of the barriers learners could face when engaging in self-study. In general, there was a perception that adequate systems (whether provider systems or systems within the wider community) are not yet in place to support self-study.

### *Policy support*

- 12.32 NRDC's PPA study suggested that the funding system in operation at that time could work against both learner choice and learner persistence by prioritising supply over demand. The Skills for Life funding system followed qualifications not learners, and was at odds with the philosophy of lifelong and life-wide learning, and with the realities of what it takes for adults to persist with their learning. The demands of a target-driven system are not always in keeping with the philosophy of

an organisation or its teachers toward adult learners. It was suggested by this study that persistence could be supported by funding mechanisms that were aligned more effectively with learner motivation. A broader definition of what constitutes achievement would allow for more funding of smaller steps and stepping stones achievement. This point was also made with reference to provider organisations (Lopez et al., 2007): where providers are forced to focus on targets, the offer may not be in line with what learners need or want. With particular reference to adult basic skills, there may be insufficient opportunities available at lower levels

## Conclusion

- 12.33 There is no research from the UK that has followed a sample of adults with low basic skills over a sufficiently long period of time long to enable clear patterns of persistence to emerge. It is thus not obvious which adult learners will persist, or whether provider strategies for supporting learner persistence have any impact. Most of the available evidence suggests that a number of different forces impact on adults' abilities to stay in formal learning programmes and that only some of these forces can be influenced by programmatic, provider and practitioner actions.
- 12.34 The key to learner persistence is that breaks in engagement in formal learning are supported by other learning opportunities and supports for learning, and that overall learning provision is flexible and responds to individual learners' needs. This said, there is very little evidence from the UK about the learning practices of adults who 'dip out' of formal learning. Providers rarely gather data on learners who do not complete their courses, and it remains unclear where responsibility lies for supporting learners' self-study beyond formal or provider-based instruction.

# Skills acquisition, retention and loss

## Introduction

13.1 This chapter considers the evidence on skills acquisition, retention and loss. It examines the research literature on skills retention, including what adults need to do to retain or improve the skills they have gained, why skills loss occurs and what can and has been done to reduce it. The scope of interest extends beyond guided learning hours to informal and own-time learning (for example when using ICT) and in the context of mentoring and peer learning.

## Evidence

13.2 The evidence base on the question of skills acquisition, retention and loss is very thin. The chapter focuses on the available evidence for how skills use, particularly in employment, aids skills retention. It also considers two studies where participants in literacy programmes were followed up roughly two years after course completion. The evidence base does not exist, however, to address adequately the issue of skills retention and loss. No evidence was found that would shed light on the role that national tests might play in skills acquisition (with learners learning how to pass the test rather than learning lasting skills) or on how different modes of learning (e.g. informal, own-time learning, mentoring and peer learning) might contribute to the acquisition of skills that are then retained over time.

## Findings

- 13.3 There is a theory that skills acquisition, retention and loss follows a 'lifecourse' trend, whereby skills increase in early middle age – perhaps as a result of honing skills needed in employment – which then plateau before declining again at older ages. Some evidence on this is presented in Rashid and Brooks (2010) on both literacy and numeracy skills.
- The findings from the Skills for Life survey (Williams et al., 2003) show a decrease in the proportion with low literacy skills (note skills, not qualifications levels) between 16- to 19-year olds and the next age band, 20-24 (17% to 13% at Entry level), followed by an increase through the older age groups – from 35-44 (15%) to 45-54 (19%) to 55-64 (22%). Rashid and Brooks (2010) report that a similar pattern was apparent across the age range 22 to 74 in the results of the Older and Younger survey conducted in 1993-94 by the Basic Skills Agency (1995).
  - Data from the 1996 International Adult Literacy Survey (IALS) (Carey et al. 1997) showed an improvement in skills levels (in England) from the youngest age group (16-25) to the next two (26-35 and 36-45), after which it plateaus and then declines, particularly after age 55. It is noteworthy, however, that the IALS data show a

slightly different pattern for literacy skills, in which there is only marginal increase in skills levels from the youngest age groups to the middle ages, before they decline substantially over the age of 45, but particularly after 55.

- 13.4 One possible explanation for this 'lifecourse' trend is that over time cohorts of similarly-aged individuals have left the school system with higher or lower average skills levels. In other words, the findings above, which are taken at a single point in time, merely reflect the skills levels held at the point that each cohort left the school system. Rashid and Brooks (2010) argue against this explanation on the basis that the 'inverted U-shape' of the 'lifecourse' trend has been found in surveys conducted years apart. Rashid and Brooks (2010) do not, however, offer an alternative explanation in full; they suggest that the up-slope in early middle age may result from honing skills in employment, but they do not offer an explanation for the down-slope experienced at older ages. There might be a neurological explanation for this (that is, related to the ageing process) or it might be explained by reduced usage of those skills.

### ***The effect of (un)employment on skills acquisition, retention and loss***

- 13.5 One area for which there is a small body of evidence is the way in which individuals retain or improve skills if they are used in employment, but equally may lose them if they are not used, for example, in periods of unemployment. Drawing on data from the 2003 Skills for Life survey, Williams et al. (2003) found that people are more likely to lose their numeracy skills if they are employed in jobs that do not require their use. They observed that only 30% of those working in routine occupations with a good maths pass achieved Level 2 or above in the numeracy test, compared to 63% of those working in higher managerial/professional occupations. The report also speculates that young men with very low numeracy do not improve these skills as they get older, but those with medium-low or medium numeracy skills do improve with age. This is probably associated with available occupations: individuals with even medium-low numeracy may have much broader work options than those with very low numeracy.
- 13.6 A similar finding was reported in St Clair et al. (2010) from the findings of a survey of a random sample of 19,927 adults in Scotland carried out in 2009 with the purpose of producing a national literacy profile for Scotland. St. Clair et al. found a strong correlation between an individual's literacy practices in the workplace and their literacy score. Patterns observed include that those scoring more highly in the document literacy test were far more likely to read or use information from computers frequently in the workplace. However, particular occupational types present greater opportunities for computer use than others: for example, 94% of those in managerial and professional occupations use computers frequently compared to 39% of routine and semi-routine workers. The authors speculate that 'demands for the use of literacies at work may strengthen an individual's capabilities in those areas' (ibid, p. 40): in other words, literacy skills will be retained and developed through their use in the workplace. The report does not ask whether the opposite is true – that lack of use leads to skills loss. This question was addressed by another study reported by Bynner and Parsons (2000).

- 13.7 Bynner and Parsons (2000) examined data from NCDS to see whether people's literacy and numeracy skills get worse if they are out of paid employment and test the hypothesis that employment provides the opportunity to practise and develop skills.. The main findings were:
- In general time out of the labour market does indeed have an adverse effect on literacy and numeracy through adult life. However, the impact of time out of paid employment on literacy and numeracy in adulthood (at age 37) is strongest when the skills are poor at 16. This suggests that once a certain level of literacy or numeracy has been attained at school, skills are not much weakened by absence from paid employment.
  - Adults who are out of work lose their skills, but this loss tends to be more acute, and to start sooner after loss of employment, for numeracy skills than for literacy. This can create a vicious circle, in which poor numeracy contributes to limited employment, which leads to poorer numeracy, which makes it harder to find and keep employment.
  - Time out of paid employment is linked to a decline in numeracy skills, but this occurs to a lesser degree in women than men. For men, the decline in numeracy skills in unemployment was particularly acute for those who had poor skills to start with (at age 16), so that they see their skills decline sooner and to a greater extent. Bynner and Parsons propose that this difference between men and women is explained by the more diverse roles often demanded of women out of the workplace in, for example, the role of child carer, household management and providing home-based education support for children, which involve the use of reading skills and basic maths on a near daily basis.
  - Other factors were found to influence the extent to which skills declined during periods of unemployment. One such factor was socio-economic status, with the basic skills of those brought up in more disadvantaged circumstances more adversely affected by being out of work. A second influential factor was participation in work-related training in adulthood, which offered a degree of protection against the adverse effects of time out of the labour market.
- 13.8 According to the authors, the policy implication of the findings is that those out of employment need to be helped to retain their numeracy and literacy in order to ensure they do not fall behind those in employment who are able to exercise their skills, and so increase their chances of gaining employment.
- 13.9 Using UK and US datasets, Bynner et al. (2010) undertook a comparative study to explore the relationship between employability and access to and use of ICT, literacy and numeracy. The study found that employment and ICT use support the development of literacy proficiency – that is, the development of literacy proficiency is aided by time spent in employment and exposure to ICT. The study also found evidence of a virtuous circle, whereby enhanced skills work together with employment experience to reinforce prospects further. However, a vicious circle is also evident: a lack of ICT access and use, together with poor literacy, damaged employability prospects, leading to marginalisation in the labour market and a

subsequent and further loss or erosion of skills. These findings underline the policy implication drawn above, that numeracy and literacy support is needed for those out of employment or on the margins of the labour market in order to reduce the risk of further marginalisation.

### **Skills retention following literacy programmes**

- 13.10 Brooks et al. (1997) presented the findings of a study that followed up with parents and children who had participated in the BSA's Family Literacy Demonstration Programmes in 1994 and 1995. These 12-week family literacy courses took place in areas of multiple deprivation in Cardiff, Liverpool, Norfolk and North Tyneside. The original evaluation of the programmes (Brooks et al., 1996) showed that they had been highly effective in boosting the parents' literacy, the parents' ability to help their children to learn to read and write, and the children's language and literacy.
- 13.11 A total of 154 parents and 237 children were re-contacted in 1997 (that is, 43% of the parents and 60% of children who participated in the original evaluation), between 20 and 34 months after finishing the programme. Parents were interviewed about their literacy, as well as about further courses undertaken and about their employment. (They were not tested on their reading and writing skills as they had been in the original evaluation.) Of the 154 parents re-contacted, 133 (86%) thought that their own reading and writing were continuing to benefit greatly or to some extent from the programme. The report's wider conclusions are very positive about the continuing benefits for both parents and children and so the implication is that this represents a high rate of skills retention for these parents. The report does not, however, offer a benchmark with which to compare this figure. Also, the research does not explain what it was about the programme – the mechanisms operating in particular contexts – that led to the programme's success (in that it was apparently delivering positive outcomes two- to three-years later). It is important to add that the question of the parents' skills retention was not a stated aim of the research and so this should not be understood as a criticism of the research as a whole. It does, nevertheless, serve to highlight some lessons for how future research – which is needed in this area – should be carried out.
- 13.12 In their longitudinal study of the impact on learners and their organisations of government-funded workplace programmes designed to increase the literacy skills of employees, Wolf and Evans (2011) tested the reading and writing skills of participants at the start of their courses, and then a year and two years later. Their evidence suggests that learners' reading performance a year and two years after the course experienced only a very small average gain in performance; but that for native English speakers the improvement did not reach conventional statistical significance levels. Larger improvements were observed among ESOL (English as a Second Language) learners. These improvements may simply reflect longer time in an English-speaking environment.
- 13.13 Again, there are limits to the lessons that can be drawn from this study on the question of skills retention. The courses studied typically offered just 30 hours of tuition, after which learners had no further free workplace entitlement. This is substantially less than the 100 hours that evidence suggests is required (see Chapter 11). Consequently we have reason to think that these programmes were not effective in helping learners to acquire literacy skills, much less retain those

skills. It, therefore, offers further lessons for future research in this area: namely, that any research should focus on teaching modes, methods and approaches for which there is existing evidence of its (likely) effectiveness.

## Conclusion

- 13.14 Skills acquisition, retention and loss appears to follow a 'lifecourse' trend, whereby, on average across a population, skills increase in early middle age, then plateau before declining again at older ages. The maxim 'use or lose it' appears to apply in the case of literacy and especially numeracy skills, and it is clear that the workplace provides opportunities for individuals to retain and develop their literacy and numeracy skills, but particular occupations present greater opportunities than others. Conversely, time out of employment tends to result in the loss of literacy and numeracy skills, particularly for men and also for numeracy compared with literacy. The rate of skills loss during periods of unemployment is particularly strong for individuals with lower levels of ability when they left school. By reaching a threshold level of literacy or numeracy skills, an individual becomes less susceptible to skills loss in times when those skills are used less, such as unemployment.
- 13.15 The workplace literacy programmes examined in Wolf and Evans (2011) performed poorly in terms of skills retention, but other evidence suggests the programmes delivered inadequate numbers of learning hours for the learners to acquire the skills in the first place. However, evidence on why skills retention and loss occur and what can and has been done to reduce it is generally very thin. This is a major gap in the literature on ALN provision and is thus an area in need of attention in future work. In particular, it would be instructive to understand which teaching modes, methods and approaches are more or less effective in enabling adult learners to acquire skills that are retained over time. Exploring the lifecourse trend in skills retention and loss and finding an explanation would provide a useful focus for future research, so that suitable interventions can be designed to redress the decline experienced (by some at least) from the middle ages onwards.



# What literacy and numeracy skills are needed?

## Introduction

- 14.1 This chapter considers the evidence on ALN skills needs in order to address a series of related questions. Which literacy and numeracy skills are needed to improve workforce productivity and organisational performance? Are these the same skills that adults need to enter employment? What does the available evidence tell us about the literacy and numeracy skills adults need to progress in learning and contribute to society? Are the literacy and numeracy skills employers and individuals say they want the same ones government should invest in? Are some skills more important than others?
- 14.2 The chapter begins by evaluating the evidence base, before discussing the findings under the following headings: the scale of skills needs; assessing skills needs; demand for literacy and numeracy provision; the skills needed for employment and social participation.

## Evidence

- 14.3 The evidence base on skills needs is generally robust, and can draw on research conducted in England, Scotland, the USA and Australia. Large-scale surveys of individuals and employers – some randomised, scaled up and weighted to reflect all employment sectors in the economy – provide the most reliable primary sources for skills needs, supplemented by smaller-scale qualitative research. There is a lack of consensus on the precise literacy and numeracy skills that adults need in many socio-economic contexts, however it is anticipated that the follow-up Skills for Life Survey (report expected in Autumn 2011) and the Programme for the International Assessment of Adult Competencies (PIAAC) will go some way to remedying this.
- 14.4 There plenty of evidence concerning the basic skills employers and individuals currently need for employment. These skills needs are likely to change over time as the nature of work evolves and different occupations and employment sectors respond to changing work practices and technological advances. It should also be noted that skills needs assessments are variable and reporting of employer skills needs generally lacks sophistication.
- 14.5 Less is known about the literacy and numeracy skills adults need for civic engagement and social participation. In addition, it is clear that basic skills are a pre-requisite for progression in learning, but little evidence was found on the particular ALN skills needed to support this progression.
- 14.6 Areas where more evidence is required include the following:

- how to improve measures for assessing the literacy and numeracy skills of adults at different life stages and in different life circumstances and with different skills development needs
- how literacy and numeracy skills relate to other workplace skills (such as a positive approach and personal skills) and how these skills come together to improve productivity and performance in the workplace
- understanding why there is less demand for, and supply of, adult numeracy provision when adult numeracy skills are generally weaker than literacy skills
- how to create demand for learning provision amongst low-skilled adults who perceive that their numeracy and literacy skills need no improvement
- how changing work practices and advances in technology will impact on the literacy and numeracy skills that adults require if they are to sustain and progress in employment and avoid digital exclusion
- how the education and training system can accelerate progress towards improving literacy and numeracy skills for those entering the labour market and those already in it.

## Findings

### *The scale of skills needs*

- 14.7 The Moser Report (DfEE, 1999) identified Level 1 literacy and Entry Level 3 numeracy as the standards necessary for adults to function at work and society in general, and recommended that there should be a national survey of literacy and numeracy need in England. The resulting survey, which took place between June 2002 and May 2003 under the auspices of the then Department for Education and Skills (DfES), assessed the literacy and numeracy skills of 8,730 randomly selected adults aged between 16 and 65 over five broad levels of competence (Entry level 1 to Level 2). The survey report (Williams et al., 2003) estimated that 6.8 million adults aged 16-65 in England had numeracy skills below Entry level 3. This compares with 5.2 million adults in England with literacy levels below Level 1.
- 14.8 Thus adult literacy levels in England were found to be higher than numeracy levels: the survey found 53% of respondents achieved a lower level in numeracy than in literacy, while only 10% had a higher numeracy level than literacy level. Moreover, international surveys, such as the OECD's International Adult Literacy Survey (IALS) and the Adult Literacy and Life Skills Survey (ALLS), using similar (but not directly comparable) techniques to the Skills for Life survey, showed that 'while many other countries have a large number of adults with low basic skills, the UK lies in the bottom half of the OECD' (Leitch, 2006: 43).
- 14.9 The previous Government's 2001 Skills for Life strategy set targets to improve the basic skills levels of 2.25 million adults by 2010, with an interim target of 1.5 million adults by 2007. In 2006 Lord Leitch recommended that by 2020, 95% of adults

should have achieved functional literacy and numeracy (an increase on estimated 85% literacy and 79% numeracy in 2005). The previous Government's 2009 *Skills for Life: changing lives* strategy accepted the Leitch targets and updated the 2001 Skills for Life strategy, and aimed to improve the literacy skills of 597,000 adults and the numeracy skills of 390,000 adults by 2011.

- 14.10 However, in reviewing the Leitch 2020 targets in 2009, the UKCES indicated its belief that the numeracy target would not be met, with an expected outcome of between 88% and 90% of UK adults achieving functional numeracy by 2020 (UKCES, 2009a). Using data that is available on the qualification levels of flows of young people into the labour market and using a comparable methodology to that used by the Leitch Review team, UKCES estimated that the basic skills of the working age population are improving. Since 2005, the proportions of the population with functional literacy skills was estimated by the UKCES to have edged up to just above 86% in 2008 (i.e. just less than 14% had poor literacy skills) and the proportion with functional numeracy skills had increased to 81% (i.e. 19% had poor numeracy skills). However, this incremental improvement between 2005 and 2008 (0.5 percentage points per annum in numeracy and just under 0.6 percentage points per annum for literacy) should be viewed in the context of longer trends showing little change in overall literacy standards since 1948 (Brooks 1998). Thus the need to improve ALN skills levels remains.

### **Skills needs assessment**

- 14.11 Adults' literacy and numeracy skills levels and development needs are identified through a wide range of different assessment processes and instruments, resulting in some researchers calling for improvements in assessment practices and the introduction of standardised tests to provide better benchmark and monitoring data. NRDC research for BIS in 2009 on entry-point levels for Skills for Life learners showed that teachers in England assess the performance of their learners in different ways and at different times, including at entry (skills screening, initial assessment, diagnostic assessment), formative assessments during learning programmes, and summative assessment. Though the previous Government introduced (and made freely available) screening, initial and diagnostic tools based on the national standards, there are many different initial assessment tools available in paper and online forms. This contrasts with standardised initial assessments carried out in other countries and with standardised summative assessment tests in England, and makes comparative analysis difficult. Instead of measuring numeracy competence through the achievement of approved qualifications, NIACE (2011) recommends that the government adopt 'a revised assessment system to measure the competence of adults using sample surveys focusing on "real-life" numeracy activities' (p. 6) in order to capture adult skills needs at different life stages and in different circumstances. Improved diagnostic and initial assessment would inform improved provision and better outcomes.
- 14.12 Several studies illustrate consequences of not having standardised initial assessment tests. The (former) Adult Learning Inspectorate (2007) criticised the inconsistent results emerging from the 'Fast Track' method often used for assessing offenders' learning needs, and called for more comprehensive initial assessment techniques specifically designed for those who have complex and multiple learning needs. A government review of evidence on skills in the labour

market (DfES/DWP, 2007) identified a need for better diagnostic tools to identify those unemployed or economically inactive people who would benefit from participation in skills training and up-skilling to a level where they can obtain sustainable employment. The National Audit Office (NAO 2004) and the House of Commons Public Accounts Committee (2006) have highlighted the problem of assessing and identifying the literacy and numeracy skills needs of those who are not routinely assessed (e.g. those who do not claim benefits or who are in employment). Such people do not have their needs assessed unless they approach a learning provider and they may not recognise their need for skills improvement.

- 14.13 A later NAO report (2008b) noted that skills brokers carry out analyses of overall training needs at an organisational level while providers carry out detailed analysis of individual employees' skills needs, and suggested that skills brokers could improve their ability to identify possible Skills for Life needs by focusing more on the needs of employers. When assessing the impact of Train to Gain on workforce skills, Ofsted (2008) found evidence of employers not recognising workforce skills deficits or their implications for productivity. The Public Accounts Committee (2006) also found that employers need help in identifying needs and helping individuals in their workforce to overcome any stigma about needing help with literacy or numeracy.

### ***Demand for literacy and numeracy provision***

- 14.14 As the previous discussion shows (and the NAO affirmed in 2008), there remains a greater need to improve adult numeracy than literacy skills because literacy skills are poorer, but the need to improve both persists. Moreover, there is evidence to suggest that both ALN skills exhibit a life course trend (Rashid and Brooks, 2010; Beach 2003), in which there tends to be improvement of skills into early middle age, followed by a plateau in middle age and eventual decline (albeit not necessarily by age 65). Yet this need has not translated into a higher demand for numeracy courses or a greater supply of these courses (Carpentieri et al., 2009). For example, follow-up research on those who contacted a helpline set up as part of the Gremlins publicity campaign found that about half of those who called did not take action to improve their skills, and in particular that those aged over 55 were less likely than younger adults to see the Gremlins campaign as being relevant to them (PAC, 2006). St Clair et al. (2010) found that actual ALN skills needs in Scotland are associated with age, but also that in reading and writing men more often describe their skills as moderate or poor compared to women (the difference between genders is far less for numeracy). People in more routine jobs were less satisfied with their literacy skills whatever their level of actual skills, suggesting that perceptions of skills improvement need also varies by occupation.
- 14.15 Thus demand for ALN skills improvement is shaped by measurable differences in actual skills levels for adult numeracy and literacy, but also by adults' perceptions of their actual skills levels and development needs at different ages. Yet overall, adults today need stronger basic skills than adults of the same age in the past in order to sustain employment, progress in learning and participate in society, even if some are not yet aware of this need. As Lord Leitch (2006; 33) observed: 'Skills that were once seen as high level are increasingly seen as basic skills'. However,

as St Clair et al. (2010: 36) and others (including Sticht 2005) also point out, adults' continuing satisfaction with their literacy and numeracy skills

*... creates an interesting issue in the provision of support - if people are happy with their skills level upgrading may not be a priority even if there are objective reasons to think it might be helpful.*

- 14.16 In the 2003 Skills for Life survey, respondents with poor numeracy tended to rate their skills much higher than their tested competence (Carpentieri et al, 2009), and this gap between perceived and assessed skills was larger for numeracy than literacy (Bynner and Parsons 2006). Generally adults were more likely to overestimate than underestimate their ability: 41% of those with Entry level skills in literacy said they were 'very good' at reading, and women and older respondents were more likely to overestimate in this way. Respondents were less confident about their numeracy than their literacy, but the majority still felt their skills were either very good (49%) or fairly good (43%) (Williams et al. 2003). Yet when respondents were asked about their competence in specific mathematical operations rather than numeracy in the abstract, they exhibited less confidence. NRDC (2009b) notes that individuals assess their own skills in terms of what they need in everyday life (Baxter et al. 2006); with regard to numeracy, this is something Coben (2003) theorises as 'invisible maths' (i.e. maths that people do but regard as common sense rather than maths). The need for numeracy skills improvement is thus sometimes perceived by individuals to be less important than reading and writing (Cobden et al. 2007b), and can be compensated for by the use of calculators and computers; socially, poor numeracy is less stigmatised than weak literacy (DfEE, 1999).
- 14.17 NRDC research (e.g. Swain et al., 2005, cited in NRDC 2009b) suggests that people seldom join numeracy classes because they feel they are lacking numeracy skills for work or in their everyday lives. Scottish research (Coben 2005) identifies other factors, such as peer pressure, changed personal or employment circumstances, and needing numeracy skills for a particular purpose (such as passing a driving test, or moving into independent accommodation) as more important factors. O'Grady and Atkin (2006) found that learners attending literacy or numeracy courses voluntarily tend to do so because of some critical life event, such as marital breakdown, or children starting school or leaving home. Prisoners who attend classes voluntarily do so in order to be able to communicate with their families by writing letters, or to use the time to make up for previous educational failure. These findings highlight the importance of the context of motivation (for more on this see Chapter 9) where the drive to learn is not the learning experience itself but the need to effect some form of change.

### **What literacy and numeracy skills do adults actually need?**

#### **... to secure and sustain employment**

- 14.18 The UKCES (2009: 9-10c) defines 'employability skills' as 'the skills that must be present to enable an individual to use the more specific knowledge and technical skills that their particular workplaces will require'. Drawing on an international review covering twenty years of research, the authors conclude that although there is little agreement about what employability skills comprise, the ability to use

number, language and technology are central to most definitions of the functional skills required for employment:

- using numbers effectively: measuring, recording measurements, calculating, estimating quantities, relating numbers to the job
- using language effectively: writing clearly and in a way appropriate to the context, ordering facts and concepts logically
- using IT effectively: operating a computer, both using basic systems and also learning other applications as necessary, and using telephones and other technology to communicate.

14.19 According to the UKCES scheme, these functional skills are supported by ‘a foundation of Positive Approach’ (i.e. being ready to participate, make suggestions, accept new ideas and constructive criticism, and take responsibility for outcomes) and are exercised in the context of four personal skills (self management, thinking and solving problems, working together and communicating, and understanding the business).

14.20 Given that ‘employability skills’ include personal attitudes and personal skills as well as functional skills covering literacy, numeracy and ICT, there is some debate over the relative importance of literacy and numeracy *vis a vis* these other attributes for employment. Hull (1997) challenges the idea of a basic skills crisis on the grounds that literacy and numeracy are somewhat less important to employers than these other skills, a view supported by some employer survey results (e.g. Atkinson and Williams, 2003; Bracey, 2006; Condelli, 2010) in which employers rate personal skills such as punctuality and reliability as of greater importance than literacy and numeracy. Yet doubts remain over whether employers are sufficiently aware of the literacy and numeracy skills levels their employees possess to be able to judge that it is these skills, rather than employees’ personal attitudes and skills or their technical competence, which require further development (NRDC 2009b).

14.21 Nevertheless, the literature does suggest that weak literacy and numeracy skills limit adults’ ability to secure and sustain employment. In England, a recent review of skills in the labour market (DfES/DWP, 2007) found that almost one quarter (23%) of repeat Job Seekers Allowance (JSA) claimants had no qualifications and 17% reported literacy or numeracy problems, and that the basic skills screening used in Job Centres identified 14% of JSA claimants with a basic skills need. The 2003 Skills for Life survey asked respondents to judge their own abilities in reading and writing English and maths ‘in everyday life’. Half of those who assessed themselves as having ‘below average’ or ‘poor’ skills (4% of the sample) felt it had affected their job prospects. Respondents were slightly more likely (7% of the sample) to report that their writing was below average or poor, and a similar proportion (8%) felt their maths was below average or poor, but these people very rarely felt that this had an impact on their job prospects. The authors of the report speculate that people who assess themselves as having below average or poor skills tend to take jobs that require low basic skills only and develop coping strategies; they may not realise the impact that their low skills are having on their employment options (Williams et al., 2003). Thus whilst it is recognised that literacy

and numeracy skills are needed for employment, individuals and employers remain unclear about how important these skills are relative to other personal and technical skills for entering and sustaining employment.

### ... to improve productivity

14.22 The literacy and numeracy skills employers require of their workforce have been the subject of a number of surveys of employer perceptions of workforce skills. It is important to emphasise that the results reflect the views of employers, rather than what employees themselves think about the literacy and numeracy skills they need to be productive. Brooks et al. (2001b) summarised the results of surveys collecting employer perceptions of employees basic skills needs in the workplace during the 1990s, including the following:

- A large-scale study Atkinson and Silsbury (1993) conducted in 1991-1992 in England and Wales covering 1.3 million jobs in 24,000 establishments, found 10% of respondent employers regarded their employees' basic skills to be 'just adequate or worse' (particularly for low skilled workers), and nearly one in four reported that job applicants' basic skills were 'just adequate or worse' (across all occupations).
- A large-scale survey conducted by Gallup for the ALBSU in 1992 (ALBSU, 1993), involving telephone interviews with 400 personnel/training managers in firms with 51 or more employees, using a randomly selected sample grossed up and weighted to be representative for the UK, found employers perceived one in seven manual workers had difficulties with reading, one in six difficulties with verbal communication, one in five difficulties with numeracy, and more than one in four with poor writing skills.
- In 1993 Frank and Hamilton (1993) surveyed 73 companies in the north-west of England, and found that the vast majority of respondents recognised the need for reading, writing and mathematical skills in all but a small percentage of manual jobs, yet most (61%) did not see there is a need for basic skills training for their workforce.

14.23 In addition, the large-scale Skills Needs in Britain surveys conducted during the 1990s asked employers with more than 25 employees whether they believed a significant gap existed between the skills that their current employees had those needed to meet their business objectives. The National Skills Task Force (1997) used the results to argue that significant numbers of employers thought their employees lacked basic literacy and numeracy skills. However Robertson (1997) has challenged this conclusion. By averaging the findings from surveys conducted in 1994, 1995 and 1996, he showed that only 4% of respondent employers felt that their business objectives were impeded in this way, although 11% did express concern about employees' 'general communication skills', a finding Brooks (2001b) suggests could be taken as evidence of a larger employer concern over oracy in the workplace.

14.24 More recently, employer surveys conducted by the Confederation of British Industry (CBI, 2008, 2009, 2010) have continued to report employer concerns about basic skills weaknesses amongst their employees. The findings are based on large-scale

surveys of CBI members at senior executive level (735 employers in 2008, 581 in 2009, 694 in 2010) with results weighted to reflect all employment sectors. The CBI has used the survey results to argue that many employers are concerned about poor basic skills which affect their employees' ability to perform everyday tasks, including being able to draw out information from basic texts and compose coherent written communications, and the ability to work through basic arithmetic and percentage problems, such as calculating change or working out the reduced price of an item on sale. In 2008 over one third of employers were reported to have expressed concern about their employees' basic literacy and numeracy skills: 41% were concerned about literacy skills and 39% about numeracy skills. For employers expressing concern, the quality of written English (in particular constructing properly spelt sentences with accurate grammar) was the major literacy concern (72%), whilst for numeracy, spotting errors and rogue numbers was the main shortcoming (68%). Similar results were found in 2009, when 40% of employers were reported to have experienced problems with the basic numeracy and literacy of their workforce, particularly amongst employers in the retail and manufacturing and more so for literacy than numeracy. By 2010 employers expressed greater concern about employee literacy (52% of employers) and numeracy (49%), particularly in larger organisations employing over 5,000 people (77% and 69% respectively).

- 14.25 A note of caution should be sounded regarding these results. The annual CBI education and skills surveys offer employers limited options for reporting their basic skills concerns, and different levels of employer concern are conflated in the reports. For example, the 2009 survey offered employers only three valid responses to the question 'Do you have literacy, numeracy or IT skills problems in your current workforce?' (no / yes, to some extent / yes, to a significant extent), and results for both positive responses are conflated in the finding that 'forty percent of employers report problems with basic literacy and numeracy of their workforce'. It is worth noting that most employers (60%) said they experienced no such problems, and that an indeterminate number who did report literacy and numeracy problems regarded them to be insignificant.
- 14.26 There is little direct evidence demonstrating the contribution basic literacy and numeracy skills make to productivity, either in isolation or in combination with personal and technical skills. Employers responding to the CBI surveys routinely express concern about the impact of poor basic skills on business performance: in 2008, for example, 40% of respondents reported poor customer service and 34% lower productivity, and these were linked to basic literacy and numeracy skills deficiencies. Results from the earlier 1993 survey of employers by Gallup for ALBSU showed that employers thought problems with basic skills impact on how well employees undertook their duties at all levels. Around a quarter of respondent employers reported that that basic skills problems affected all blue-collar workers, and even for managerial/professional staff the proportion was as high as 14% of employers. Almost two-fifths (39%) of employers felt the need to offer basic skills training because their employees were considered to have inadequate skills for the job, in oral communication skills (71%), numeracy (61%), writing (56%) and reading (41%). Training offered by small employers (with five or more employees) reported in the 2001 Learning and Training at Work survey was concentrated in IT (40% of



employers) and working with others (37%), with only 11% offering basic numeracy learning and 10% basic literacy training.

- 14.27 These findings indicate the sorts of basic literacy and numeracy skills employers say want their employees to have, and some are prepared to invest in providing. However employers tend to group basic literacy and numeracy skills with other functional and personal skills (oracy, ICT, working together) in their perceptions of employees non-technical or job-specific skills needs, making it difficult to isolate basic literacy and numeracy skills and apportion their contribution to productivity.

### ... to respond to changing work practices

- 14.28 Changing work practices and more fluid organisational structures and flattened hierarchies place greater demands on employees and require higher skills levels overall (Moore and Benseman, 2003). In the 2008 Scotland Employer Skills Survey (Futureskills Scotland, 2008), one in five Scottish workplaces reported a skills gap with around 8% of all employees considered not proficient in their jobs. The identified skills gaps were partly attributed to changes in the workplace, including new technologies, products and services. Around one fifth of these Scottish employers reported that their employees lacked literacy (21%) and numeracy (20%) skills, yet higher proportions cited problems with oral communication (44%) and written communication (33%) (Carpentieri and Vorhaus, 2010). The implication of this is that employers regard adult basic skills as being increasingly important, but not in isolation.

- 14.29 Although not new, these changes are wide ranging. Three quarters of respondent employers reported by Frank and Hamilton (1993) highlighted an increase in the need for basic skills in manual jobs over the previous five years, and Atkinson and Spilsbury (1993) found that nearly half of employers in their sample reported the increasing importance of oral communication skills and also basic skills related for working with ICT (Brooks et al. 2001b). In a more recent study of techno-mathematical literacies in the workplace, Hoyles et al. (2010) found that employees working at intermediate skill levels across a range of industry sectors now require a more complex combination of skills (mathematical, ICT and workplace-specific) than they did in the past, and more complex skills than those taught as part of employee training. Research by Bynner et al. (2008a) looking at ICT, literacy and numeracy skills in employment found that individuals in the UK and the US struggling in any one of these areas are likely to suffer losses in the other two areas (Carpentieri and Vorhaus 2010). In 2006, Lord Leitch (2006: 33) observed the rapid expansion in the need for IT skills across all occupations and sectors:

*This rise has not been concentrated in traditionally high skilled jobs. Even in those occupations traditionally thought of as low skilled there has been dramatic growth in the use of IT. These changes mean that even traditionally low skilled jobs are requiring an increased level of skill – these jobs are not immune from the rising demand for skills seen elsewhere.*

- 14.30 The need for new basic skills for computer and internet use is worthy of particular attention and further research, given the remarkable expansion of general access to ICT over the past decade. The ONS Living Costs and Food Survey shows that by 2009, 71% of UK households had an internet connection, up from 20% in 2000.

Young teenagers today have an average of six media devices in their bedrooms, and use of social media is fairly universal among young adults and expanding rapidly among older adults (ALT, 2010). The evidence on technology for learning ALT assembled for BIS in 2010 also shows that young people and adults are strongly influenced by their experience of learning with technology at school 'where there are only a few embryonic signs of criticality, self-management and meta-cognitive reflection'.<sup>4</sup>

- 14.31 This suggests many adults will need continuing skills development throughout adulthood if they are to develop and maintain current ICT literacy skills levels. Warschauer and Liaw (2010) identify these new skills in the following terms: multimodal communication, collaborative writing, language analysis and structure, online networking, and one-to-one mobile computing. Increasingly, adults will require additional skills such as these in order to engage with online learning platforms for improving traditional literacy and numeracy skills as well as other forms of learning, and for accessing public and private digital information. Potentially, this additional skills requirement may present a barrier to adult learners already struggling with more traditional literacy and numeracy skills.

### **... to participate in society**

- 14.32 Alongside the impact of literacy and numeracy skills on economic participation through employment and productivity, the broader contribution basic skills make to social participation and social capital is beginning to be recognised. For example, skills such as 'oral communication' are being positioned alongside 'working with others' and 'continuous learning' in social capital frameworks, and the OECD's key competencies include social/soft skills such as the ability to relate well to others, the ability to cooperate and the ability to manage and resolve conflicts, for which communication skills are an essential requirement (Centre for Literacy, 2010). Less theoretically, basic skills have also been shown to provide practical support for people at risk of (continuing) social exclusion. Basic skills enable homeless people to live independently, using numeracy skills for money management and communication skills for dealing with agencies, and to participate in and benefit from social networks and professional services (Crisis, 2006). Basic skills have also been shown to help to help prisoners complete their offending behaviour programmes and to communicate with their families by writing letters (O'Grady and Atkin 2006).
- 14.33 The 2003 Skills for Life survey included evidence showing how basic skills are used in every day life by people operating at different skills levels. The results demonstrate that adults with lower levels of literacy and numeracy were less likely to be confident in helping their children with reading, writing and maths (Williams et al. 2003), thereby potentially creating wider impacts on the next generation of young learners.

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<sup>4</sup> 'Web 2.0 technologies for learning at KS3 and KS4: learners' use of Web 2.0 technologies in and out of school' (Becta, June 2008), cited in ALT (2010)

### Helping children with reading, writing and maths: Skills for Life survey 2003

#### **Reading**

There were no differences in help given between parents from Entry level 3 to Level 2 or above, as 95% or more of these parents helped their children. Only lower levels of literacy seemed to deter parents from helping. However, there were differences in terms of how confident they felt in giving the help, with parents feeling more confident the higher their literacy level, and a particular jump in confidence between Entry level 2 or below (26% helped and were very confident) and Entry level 3 (59% helped and were very confident). Nevertheless, even at Entry level 2 or below, the majority of parents (56%) felt at least fairly confident in helping their child with reading.

#### **Writing**

The majority of parents also said they helped their children with writing. However, help was less likely to be given with writing than with reading, especially among those with lower literacy levels. Indeed, only one in two parents (48%) classified at Entry level 2 or below helped their children with writing, compared with 63% giving help with reading. Furthermore, whereas there had been no difference in the provision of reading help among parents from Entry level 3 to Level 2 or above, slight differences could be seen for writing, with the proportion of parents giving help increasing from 89% at Entry level 3 to 95% at Level 2 or above.

#### **Maths**

Although parents tended to be more confident helping with reading and writing than with maths, at the lower achievement levels, a slightly greater proportion of parents gave help with maths (55% of those with Entry 1 or lower level numeracy skills) than in writing (48% at Entry 2 or lower level literacy skills).

*Source: Williams et al. (2003)*

- 14.34 In order to capture some of these everyday skills applications, the NIACE Inquiry on Adult Numeracy Learning has called for a new approach to understanding adult numeracy, one that focuses less on improving skills levels and procedural skills and more on developing thinking, understanding and behaviour in relation to mathematics. It is argued that broader definition of numeracy is needed to emphasise its contribution towards 'a stronger and more equitable society and economy', and a change in how numeracy competence is measured to focus on 'real life' numeracy activities rather than the achievement of approved qualifications (NIACE, 2011).

## Conclusion

14.35 The preceding discussion has revealed a lack of consensus over which ALN skills are needed, or the importance of ALN alongside other personal and technical skills. Perceptions of skills needs vary by perspective (e.g. overarching framework versus workplace establishment); purpose (e.g. for employment versus social participation); learner type (e.g. those with profound and complex learning needs versus technical or managerial ability); service provider (e.g. offender services versus Job Centres); skill types (e.g. traditional literacy and numeracy versus emerging technological literacies), and; who needs the skill (employer or individual). There is little evidence explicitly linking the assessment of skills needs to the design and delivery of effective, efficient and economical provision leading to demonstrably cost-effective outcomes, such as improved employment, productivity, civic participation or learning progression.

14.36 Weighing up the balance of evidence leads to the following conclusions:

- Employability skills include using numbers, language and ICT effectively. The utility of these functional skills is related to a positive approach to participation, new ideas and constructive criticism, and to personal skills such as self management, thinking skills and working together. What remains to be understood is the relative priority of literacy and numeracy within the set of employability skills, and the conditions under which combinations of these skills are most effective.
- Employers frequently cite the need for (improved) reading, writing and maths skills in the workplace, and report a significant gap between the skills levels of employees and skills needs in the workplace. However, there is much less evidence on employees' perceptions, and there is scope for the use of more refined assessment instruments to determine the literacy and numeracy skills that employers say their employees need.
- There is growing evidence of the need amongst employees for a more complex combination of skills than in the past, including mathematical, ICT and workplace-specific skills. New skills may include multimodal communication, collaborate writing, online networking and one to one mobile computing.
- Skill levels are related: individuals in employment who struggle with skills in ICT, literacy or numeracy are likely to suffer losses in the other two areas.

14.37 At the same time, some skills needs are clear and uncontested. The lives of adults at or below Level 2 in literacy and numeracy are far more likely to be characterised by disadvantage, including poor family circumstances, limited educational achievement and low aspirations. Evidence repeatedly shows the increase in options and opportunities that go along with a relatively basic competence in literacy and numeracy, particularly once adults get over the threshold of Entry Level 2 (see, for example Parsons and Bynner 2007). There is increasing evidence of the contribution of ICT skills to literacy and numeracy demands in social and employment contexts, including in particular a combination of ICT and mathematical literacies in the workplace. And the growing range of demands and contexts for reading and writing, and for using and manipulating numeric data, is further evidence in favour of a focus on functional skills.

- 14.38 Whilst there is considerable potential to improve the reliability and sensitivity of instruments for assessing skills levels, there is extensive experience to be drawn upon from previous national UK studies, including the Skills for Life Survey, the NRDC Effective Practice Studies and the Learner Study. The most sophisticated set of instruments for assessing adult competencies are included in the Programme for the International Assessment of Adult Competencies (PIAAC), designed to gather data on literacy, numeracy, ICT and other cognitive and workplace skills. PIAAC includes an emphasis (also recommended by NIACE) on the assessment of 'real life activities' and will include information from respondents about the use of work skills in their jobs. The UK is participating in PIAAC and is in a strong position to learn about the design, use and effectiveness of the assessments.
- 14.39 The evidence suggests there is room for improvement in how adult's skills are assessed and development needs identified to ensure they receive the most effective provision and (where appropriate) employer support leading to the best outcomes.

# Conclusion

## Introduction

- 15.1 This review has sought to assess the quality of the evidence on ALN and to identify the most effective and promising provision. Chapter 15 draws together the main messages under the six themes relating to ALN provision, identifies where the evidence is robust, promising, or weak, and presents conclusions and recommendations for policy, practice and research.
- 15.2 When reading this chapter it is necessary to keep in mind the context prior to the launch of the Skills for Life Strategy in 2001. Very few teachers were trained or possessed subject specific teaching qualifications, and there were no national qualifications or standards. The field was under-researched: the first systematic research programme in the UK was not set up until 2002. It is only very recently, then, that there has been a systematic, nationally funded attempt to professionalise practice and provide robust evidence on ALN.
- 15.3 Wherever possible we indicate the scale of investment and inputs, on the one hand, and the range of related ALN activities and outputs on the other. However the evidence base as a whole is uneven: there are many significant gaps and there are very few robust cost benefit analyses. Therefore, whilst cost-benefit commentary is provided where the supporting evidence allows, one message to emerge from this review is the need for more systematic data.

## Overarching conclusions

- 15.4 Continuing investment in improving ALN skills is required, based on stronger evidence of which skills are required than currently exists. The forthcoming results from the Programme for the International Assessment of Adult Competences (PIAAC) will provide an indication of the UK's progress relative to international comparators, and suggest where investment should be focused.
- 15.5 There is little evidence explicitly linking the assessment of skills needs to the design and delivery of effective, efficient and economical provision leading to demonstrably cost-effective outcomes, such as improved employment, productivity, civic participation or learning progression.
- 15.6 No cost-benefit analyses of literacy and numeracy programmes have been carried out that would enable identification of the most efficient modes and models for delivering literacy and numeracy provision.
- 15.7 There has been relatively little funded work on the development of software and new e-learning techniques for adults in this field. Robust trials are required to clarify which are the effective practices in using technology for different groups of learners, and for different types of learning outcome.

- 15.8 There remains a need to establish, on the basis of rigorous cost-benefit analyses, the costs and benefits to employers of lower and higher levels of literacy and numeracy, considered separately, and in respect of small, medium and large employers in different sectors.

## Assessing the evidence

- 15.9 The last comprehensive review of ALN in the UK was published in 2001 – Brooks, G. et al, *Assembling the Fragments*. More recently NFER conducted six reviews of the international evidence on a range of themes related to adult basic skills (CfBT 2010). The evidence base now includes the 2003 Skills for Life survey, on ALN levels and needs, with the results of a follow up survey expected shortly; national evaluations of the impact of Skills for Life on learners and teachers; longitudinal studies on the impact of ALN in the workplace and in FE; studies of relationships between teaching practices and learners progress in reading, writing and numeracy; studies on specific groups such as those perceived to be ‘hard to reach’ and learners with learning difficulties, and studies in particular contexts, including prisons and local communities. There is also an increasing body of international evidence, in particular from the US, New Zealand and Australia.
- 15.10 The volume and quality of ALN evidence has greatly increased over the last 10 years, and there are significant areas in which the evidence base is robust and good practice well established. However, there remain many areas on which the evidence is either weak or non-existent, including those in which some of the most promising and innovating developments can be found.

### The evidence base

There is strong evidence on the following features of ALN:

- good practice in teaching literacy and numeracy
- the benefits of embedding ALN in vocational programmes
- the positive impact on learners of working with qualified teachers
- the personal and social impact of ALN
- the need for multiple ways of engaging in learning – in class, self study, distance learning, ICT supported learning.

There is promising evidence in relation to the following features of ALN:

- blended learning - combining face to face and technology based, formal and self-study methods
- the significance of techno-mathematical literacies – a combination of ICT,

literacy and numeracy skills

- the time required to make significant learning progress – often in excess of 100 hours.

### ***Economic, social and personal outcomes***

15.11 Compared to the literature on wage returns, the literature on employment returns is less well developed. Although there is good evidence on the economic returns to attaining basic skills in adulthood, there is a lack of evidence on whether and how far formal ALN provision contributes to these returns, and on whether ALN qualifications are related to economic benefits. There remains a need to establish, on the basis of rigorous cost-benefit analyses, the costs and benefits to employers of lower and higher levels of literacy and numeracy, considered separately, and in respect of small, medium and large scale employers. Whilst there is evidence of the impact of adult learning on such non-economic outcomes as health, social tolerance and crime, there is no reliable data specific to ALN.

### ***Quality and effectiveness of provision***

15.12 Studies of the relationship between teaching practice and progress in literacy and numeracy are often too short for evidence of substantial progress to emerge. Where the time between pre- and post- tests is short, current assessments may be insufficiently sensitive to measure small gains. This review found no evaluations of the cost-effectiveness of measures taken to professionalise the basic skills workforce. No cost-benefit analyses of literacy and numeracy programmes have been carried out that would enable the Department to identify the most efficient modes and models for delivering literacy and numeracy provision. There are few rigorous evaluations of the impact of using learning technology to support the delivery of literacy and numeracy, whether in Further Education, workplaces or other learning contexts. There has been relatively little funded work on the development of software and new e-learning techniques for adults in this field.

### ***Number of learning hours***

15.13 Data on learning aims collected as part of the LSC's ILR can be used to calculate the relationship between learning hours and achievement in terms of qualification gain but not in terms of actual skills gain. For the most part, measures of time spent in formal learning calculate the number of contact hours between learner and teacher and not the class time spent engaged in specific areas of learning. There is very little evidence on the own-time learning that adults engage in, either while on a literacy or numeracy course or when not taking courses. No UK research on learner progress makes substantial use of data on self-study so there is even less evidence on how own-time learning impacts on progress and achievement. There is no substantive research on how technology can be used to support self-study in literacy and numeracy. There is also a lack of evidence on the relationship between learning hours and numeracy skills gain.



## **Persistence**

15.14 In the UK, no large-scale research project has followed the learning journeys of adults who leave literacy and numeracy provision. Most of the evidence on learner persistence comes from the US, and there are limits to its application in UK contexts. Provider strategies to encourage learner persistence have been identified and trialled, but these have not been rolled out on a large scale and they have not been systematically evaluated.

## **Skills retention and loss**

15.15 Evidence is required on the extent to which gaining a literacy or numeracy qualification represents a gain in competence. Evidence is also required on the extent to which the competences gained as a result of participation in literacy or numeracy programmes are retained and developed. There is no evidence on the practices that adults engage in – in formal, informal or own-time learning, at work, or in their everyday lives – that can help them to retain or improve the literacy or numeracy skills they have gained.

## **Literacy and numeracy skills needs**

15.16 There remains a lack of consensus on the precise literacy and numeracy skills that adults actually need in many socio-economic contexts, although the Programme for the International Assessment of Adult Competences (PIAAC), and the current survey of ALN in England, will go some way to remedying this. Additional evidence gaps include:

- how measures for assessing the literacy and numeracy skills of adults in different life stages and circumstances and with different skills development needs can be improved
- how literacy and numeracy skills are related to personal skills, and to a positive approach to participation, problem solving and communication, so as jointly to function most effectively in the workplace
- why there is less demand from individuals for and supply of adult numeracy provision when adult numeracy skills are weaker than literacy skills
- how the profile of skills needs and levels varies by type and scale of workplace and employer
- how to create demand for learning provision amongst adults who perceive that their numeracy and literacy skills need no improvement
- the implications of changing work practices and advances in technology for new literacy and numeracy skills, if adults are to sustain employment and avoid digital exclusion
- how the education and training system can accelerate progress towards improving literacy and numeracy skills for those entering the labour market and those already in it.

## Recommendations

15.17 In this section we make recommendations for provision/policy and for research in relation to each of the six themes covered in this review.

### *Economic, social and personal outcomes*

#### **Recommendations for provision/policy**

15.18 Recent attempts to identify and measure the social returns to learning, including the Social Return on Investment (SROI) approach, should be further developed and refined specifically in relation to ALN. There is scope to improve the recording of personal and social returns, in contexts including not only FE but also the workplace, the secure estate, family literacy and numeracy, and adult and community learning. Providers should be encouraged to recognise a multiplicity of outcomes, including those that support adults in their role as parents, citizens and employees.

#### **Recommendations for research**

15.19 ALN has a significant socio-economic impact, including the skills gained in adulthood. At the same time too little is known about the impact of ALN interventions. Given the significance of ALN – especially in the UK by comparison with many other European countries – there is a need to identify the factors and processes that explain its impact – and in particular the extent to which high quality interventions can make a difference to learners' socio-economic prospects.

15.20 There is substantial evidence on the impact of ALLN on personal, attitudinal and social outcomes. These are not only valuable in their own right, they often play a significant role in contributing to further economic and social outcomes. The significance of these outcomes needs to be better understood, using instruments better equipped for this task than many of those used in the past.

15.21 Further research is required to establish whether participation in ALN is associated with improvements in the skills and attitudes that serve as a foundation for improved socio-economic outcomes – including, for example, positive changes in self-esteem and a commitment to education and training.

15.22 With the addition of supplementary questions on ALN, the British birth cohort studies represent data sources of great potential; in particular, to explore the relationships between one or more socio-economic outcomes and ALN, and the role of adult basic skills in the processes and dynamics that help to shape adult trajectories and life chances.

## *Quality and effectiveness of provision*

### **Recommendations for provision/policy**

15.23 The sector should continue to work towards achieving a fully-qualified workforce, and in particular to increasing the number of qualified numeracy teachers. Research evidence on what works in literacy and numeracy pedagogy should continue to be disseminated throughout the sector, and incorporated into curricula and formative assessment. Embedded provision should be promoted and treated as a standard option and not as an exception for Level 1 and 2 vocational courses. Evidence on blended learning programmes is sufficiently promising to support the development of programmes for employees in the workplace and other contexts. A broad range of motivational factors should be catered for in the context of strategies for learner engagement, persistence and achievement.

### **Recommendations for research**

15.24 Regular data should continue to be gathered on the characteristics of the adult basic skills workforce, including data on employment type and qualifications status. Robust trials are required to identify effective practices in using technology for different groups of learners, and for different types of learning outcome. Given the need for provision that is cost-effective, and that also provides adults with multiple ways of engaging in learning in any one programme, it should be a priority to conduct a robust evaluation of the impact and effectiveness of blended learning programmes.

## *Number of learning hours*

### **Recommendations for provision/policy**

15.25 If learners are to increase time spent on task by engaging in self-study, thereby increasing their potential to make progress, programmes must adapt to allow for and support this self-study. Consideration should therefore be given as to how this self-study is measured and credited. Adult learners will require teacher support if own-time learning is to be effective; consideration should be given to what level of support can be provided by a workforce that is largely employed on a part-time basis. Learners need more time and varied opportunities to learn than many formal programmes allow, including programmes in FE and the workplace. The length of workplace interventions in particular is often less than is necessary to promote significant and sustained learning progress.

### **Recommendations for research**

15.26 Research is needed to establish the amount of self-study and own-time learning adults would be willing or able to engage in. Many adults already face significant barriers in finding the time to attend classes given family and work commitments. A longitudinal study of adult learners could be used to capture data on the literacy and numeracy self-study practices of those in learning and out of learning; consideration needs to be given to how data on self-study are reported and measured.

## *Persistence*

### **Recommendations for provision/policy**

15.27 Persistence could be better supported if funding mechanisms recognised programmes that included distance, self- and ICT-supported learning.

### **Recommendations for research**

15.28 A longitudinal study represents the best opportunity to identify and analyse data on the learning journeys of adult basic skills learners, including time spent on learning and learning related tasks outside a formal learning environment.

## *Skills retention and loss*

### **Recommendations for provision/policy**

15.29 Inspections and programme evaluations should include attempts to assess whether and how far learners retain skills over time, and how far qualifications are geared towards promoting underpinning literacy and numeracy skills.

### **Recommendations for research**

15.30 It should be a priority to gather longitudinal evidence on skills retention and loss over time.

## *Literacy and numeracy skills needs*

### **Recommendations for provision/policy**

15.31 Despite years of investment, UK ALN skills are still falling behind those of many of our competitor nations. Continuing investment is required, based on stronger evidence of which skills are required than currently exists. The forthcoming results from PIAAC will provide an indication of the UK's progress relative to international comparators, and will suggest where investment should be focused.

### **Recommendations for research**

15.32 Develop assessment instruments to measure the literacy and numeracy skills of adults in different life stages and circumstances. Identify how literacy and numeracy skills are related to positive dispositions and personal skills, and how these collectively function most effectively in the workplace. Identify and support the new techno-mathematical literacies required by changing work practices and advances in technology.

## **Future research priorities**

15.33 Whilst the evidence base has greatly expanded and increased in quality over the last 10 years, there remain critical areas in which there is too little evidence on which to support firm recommendations for provision and policy. In this final section we recommend a research strategy that is best designed to overcome this, building on lessons learned from the most significant research studies on ALN. The strategy includes the need for well designed and high quality studies, focussed on high quality interventions, using both large scale and small scale research designs.

### ***The need for high quality studies***

- 15.34 The frequent lack of robust evidence is explained by the prevalence of inadequately designed studies and poor quality interventions. We need a higher incidence of high quality interventions and large, well designed and more sophisticated studies. These studies should allow for the time and complex causality that connects learning interventions to their outcomes. They are expensive but they provide a pay off with a large body of reliable evidence that can be used as a solid basis for policy, development and further research.
- 15.35 A priority for any future large scale research project is that it includes quality controls, particularly as these apply to teachers and teaching strategies. Past evaluations yielding negative conclusions often included very short interventions and teachers who lacked subject specific teaching qualifications.
- 15.36 Any single well designed study on a large scale should be focussed on one context within the learning and skills sector. Since the quality of ALN teaching in FE is generally higher than it is in many other post 19 contexts we recommend that, if there were scope for just one future large scale longitudinal or experimental research project, then it should be exclusively focussed on the FE sector (though, clearly, all post 19 contexts would benefit from studies of this kind.)
- 15.37 Evidence on skills and needs often relies on self report. There is a priority for research that includes both subjective and objective measures, in order robustly to identify the literacy and numeracy skills that learners actually use and need.
- 15.38 It is cost effective to exploit and build on existing data sources, including PIAAC, and, particularly with the inclusion of additional ALN questions, the British birth cohort studies.

### ***A research strategy: large- and small-scale studies***

- 15.39 With limited resources and time constraints we recommend a research strategy that includes both large- and small-scale studies. Post-19 contexts present significant challenges in the way of conducting robust large-scale research; longitudinal research has at least as much potential as any other research design for yielding a reliable and extensive body of evidence.
- 15.40 To improve the evidence base on whether ALN provision produces socio-economic and educational returns it is recommended that lessons are learned from the LSAL study in the US. This is a well designed longitudinal study, with a large and representative sample of the target population, repeatedly followed up over nine years, using measures not only for reading, writing and maths, but also a broad range of learning related activities and practices. By the penultimate stage of data collection about 90% of the original sample had been retained.
- 15.41 An alternative to a longitudinal study is a randomised control trial, involving disadvantaged low skill adults, and randomly allocating them to a high quality literacy or numeracy intervention.

- 15.42 Along with one or more large scale studies we recommend studies on a smaller scale. One strategy is to focus on a development programme of the best pedagogies and delivery methods (combining face-to-face and technology-based, formal and self-study methods), and to carry out small-scale but intensive case studies to follow individuals from pre-test to intervention, to assessment, to application in the home and workplace. Individual longitudinal case studies make it possible to explain the (un)successful features of interventions, in terms of the personal and local conditions experienced by the individual learners. Once these conditions are properly understood it is possible to mount a larger scale study under controlled conditions.
- 15.43 There is also a need for further research into the effectiveness of one or more promising aspects of literary and numeracy teaching strategies. Robust trials are required to identify which technologies work most effectively in specific learning contexts, and which groups of learners are likely to benefit most. These could build on small and innovative studies that have already been completed.

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## Annex B: Detailed methodology

B.1 This annex describes in detail the methodology used to carry out this Rapid Review. The Rapid Review was carried out in three steps:

- conducting bibliographical searches and retrieving documents
- populating the Rapid Review templates
- analysing the review templates and drafting the report.

### Step 1: conducting bibliographical searches and retrieving documents

B.2 The first stage, the bibliographic searches, was carried out by the NFER Centre for Information and Reviews. A search strategy was devised by NFER, in collaboration with SQW and NRDC, to identify literature on adult literacy and numeracy evaluation and research. This involved the NFER's information specialists matching database keywords to all the research questions and agreeing the search strategy with the review team at SQW and NRDC. The keywords comprised sets which were devised to cover concepts for each of the six themes of the review.

B.3 The precise search strategies used with each of the bibliographic databases (in terms of the keywords used and, in some cases, the combinations of keywords) are specified in detail at the end of this annex. The search strategy for each database reflects the differences in database structure and vocabulary. Smaller sets of keywords were used in the more specialist databases. In addition, a set of terms was devised to define the 'population' of interest to the review. This population set was used as an exclusion criterion and was incorporated into all the searches.

#### Population set – *exclusion criteria*

Preschool education, nursery school education, nursery school pupils, early childhood education, infant school education, infant school pupils, primary education, primary secondary education, primary school pupils, middle school education, middle schools, intermediate grades, junior high schools, high schools, secondary education, secondary school pupils, sixth form education, sixteen to nineteen education, infants, children, young children, preschool children, early adolescents and adolescents.

B.4 The search used three types of search source to ensure thorough coverage of the evidence base:

- a range of general bibliographic databases
- websites of key organisations

- publication and references lists of subject experts and earlier literature reviews.
- B.5 All bibliographic database searches were limited to publication years 2004-2011. The one exception to this was the British Education Index on which a trial search was carried out. This trial search covered the period 2000-2011 and produced a volume of hits that was so high that the decision was taken to limit the start date on other sources to 2004 in reflection of the resources available for the review. This year was chosen so that literature published as a result of the International Adult Literacy and Lifeskills Survey would be retrieved. To complement this, the Expert Panel members were asked to identify significant publications between 2000 and 2004 so that the search covered the entire period agreed with BIS. In practice, the Expert Panel members also identified significant sources from before 2000 as well.
- B.6 The bibliographic databases and organisations' websites that were included are listed in Tables B-1 and B-2. It was decided in the course of the project to substitute two of the databases that were initially proposed – ASSIA and Social Care Online – which were replaced with economics sources in order to better facilitate the identification of documents pertaining to the research questions on the cost-effectiveness and efficiency of adult learning provision. In addition, the list of websites initially identified was supplemented by suggestions from the review team. These websites were searched on main keywords and/or the publications/research/policy sections of each website were browsed, as appropriate.

**Table B-1: The bibliographic databases included in the search strategy**

Database	Description	Search details
Australian Education Index (AEI)	AEI is Australia's largest source of education information covering reports, books, journal articles, online resources, conference papers and book chapters.	searched via Dialog Datastar 16/03/11
British Education Index (BEI)	BEI provides information on research, policy and practice in education and training in the UK. Sources include over 300 journals, mostly published in the UK, plus other material including reports, series and conference papers.	searched via Dialog Datastar 04/03/11
British Education Index Free Collections	The free collections search interface of the British Education Index (BEI) (formerly the British Education Internet Resource Catalogue) includes access to a range of freely available internet	searched 17/03/11

**Table B-1: The bibliographic databases included in the search strategy**

Database	Description	Search details
	resources as well as records for the most recently indexed journal articles not yet included in the full BEI subscription database.	
Education Resources Information Center (ERIC)	ERIC is sponsored by the United States Department of Education and is the largest education database in the world. Coverage includes research documents, journal articles, technical reports, program descriptions and evaluations and curricula material.	searched via Dialog Datastar 15/03/11
Elsevier Economics and Finance	Elsevier is the world's leading publisher of science and health information.	searched via Elsevier 14/03/11
Emerald	Emerald is a long established publisher with over 200 titles in the fields of management, information science and engineering.	searched via Emerald 14/03/11
Oxford Economic Papers	Oxford Economic Papers is a general journal publishing papers in a wide range of areas in theoretical and applied economics.	searched via Oxford Journals 14/03/11
PsycINFO	PsycINFO contains references to the psychological literature including articles from over 1,300 journals in psychology and related fields, chapters and books, dissertations and technical reports.	searched via Ovid SP 17/03/11
Social Policy and Practice	Social Policy and Practice is a bibliographic database with abstracts covering evidence-based social policy, public health, social services, and mental and	searched via Ovid SP 17/03/11

**Table B-1: The bibliographic databases included in the search strategy**

Database	Description	Search details
	community health. Content is from the UK with some material from the USA and Europe. Searches were carried out across the descriptors, heading word, title and abstract fields, to enable retrieval of terms both as keywords and free text.	
Social Science Research Network (SSRN)	Social Science Research Network (SSRN) is devoted to the rapid worldwide dissemination of social science research and is composed of a number of specialized research networks in each of the social sciences.	searched via SSRN 11/03/11

Source: NFER

**Table B-2: The websites included in the search strategy**

Organisation	URL
Department for Business, Innovation and Skills (BIS)	<a href="http://www.bis.gov.uk/">http://www.bis.gov.uk/</a>
Confederation of British Industries (CBI)	<a href="http://www.cbi.org.uk/">http://www.cbi.org.uk/</a>
CfBT	<a href="http://www.cfbt.com/">http://www.cfbt.com/</a>
Department for Education (DfE)	<a href="http://www.education.gov.uk/">http://www.education.gov.uk/</a>
Excellence Gateway	<a href="http://www.excellencegateway.org.uk/">http://www.excellencegateway.org.uk/</a>
IDeA (now LG Improvement and Development)	<a href="http://www.idea.gov.uk/">http://www.idea.gov.uk/</a>
International Labour Organisation (ILO)	<a href="http://www.ilo.org/">http://www.ilo.org/</a>
National Audit Office (NAO)	<a href="http://www.nao.org.uk/">http://www.nao.org.uk/</a>

**Table B-2: The websites included in the search strategy**

Organisation	URL
National Literacy Trust	<a href="http://www.literacytrust.org.uk/">http://www.literacytrust.org.uk/</a>
Organisation for Economic Co-operation and Development (OECD)	<a href="http://www.oecd.org/">http://www.oecd.org/</a>
Scottish Government	<a href="http://www.scotland.gov.uk/">http://www.scotland.gov.uk/</a>
Trades Union Congress (TUC)	<a href="http://www.tuc.org.uk/">http://www.tuc.org.uk/</a>
United Nations Educational, Scientific and Cultural Organization (UNESCO)	<a href="http://www.unesco.org.uk/">http://www.unesco.org.uk/</a>
US Commission for Skills	<a href="http://www.skillscommission.org/">http://www.skillscommission.org/</a>
US Office of Management and Budget	<a href="http://www.whitehouse.gov/omb/">http://www.whitehouse.gov/omb/</a>
World Bank	<a href="http://www.worldbank.org/">http://www.worldbank.org/</a>

Source: NFER

- B.7 The results of the search strategy are shown in Tables B-3 and B-4. Three of the bibliographic databases produced more than 1,000 items, including more than 4,000 in the case of the Education Resources Information Center (ERIC). The NFER information specialists then carried out a manual review of these search results and selected shorter lists of items for consideration by the SQW and NRDC review team. The basis for selection was the relevance of the items to the research questions and pertinence to one or more of the four cross-cutting considerations.
- B.8 Based on these short-listed results, the SQW/NRDC review team created a database of unique source references. The review team then graded the importance of each source (none, low, medium, high) for the purposes of the review. The Expert Panel members were then asked to review the list of high priority items – suggesting additions or deletions as appropriate. In addition, relevant sources were also identified by members of the SQW/NRDC review team and also through citations in the reviews that were included in this Rapid Review. The following lists the numbers of high priority items identified in these ways:
- expert panel members – 19
  - review team members – 45
  - cited in a review – 83 (including 53 which were not identified elsewhere).
- B.9 The final list included 175 high priority items, drawing on a database of over 1,600 unique items. In the case of a portion of these sources, the review team relied

upon the summaries or syntheses that had been carried out for earlier literature reviews.

**Table B-3: Items found and selected from the bibliographic database searches**

<b>Database</b>	<b>Items found</b>	<b>Items selected by NFER for consideration</b>	<b>Items identified as high priority for this review</b>
Australian Education Index (AEI)	2109	291	5
British Education Index (BEI)	1661	405	38
Education Resources Information Center (ERIC)	4365	376	16
PsycINFO	10	9	0
Social Policy and Practice	36	13	2
British Education Index Free Collections	7	7	0
Elsevier Economics and Finance	331	8	0
Emerald	230	11	0
Oxford Economic Papers	58	3	3
Social Science Research Network (SSRN)	123	29	2

Source: NFER and SQW

**Table B-4: Items found and selected from the websites of key organisations**

<b>Organisation</b>	<b>Items selected by NFER for consideration</b>	<b>Items identified as high priority for this review</b>
Department for Business, Innovation and	7	2

**Table B-4: Items found and selected from the websites of key organisations**

<b>Organisation</b>	<b>Items selected by NFER for consideration</b>	<b>Items identified as high priority for this review</b>
Skills (BIS)		
Confederation of British Industries (CBI)	15	0
CfBT	6	4
Department for Education (DfE)	42	11
Excellence Gateway	24	1
IDeA (now LG Improvement and Development)	10	0
International Labour Organisation (ILO)	32	2
National Audit Office (NAO)	8	4
National Literacy Trust	6	1
Organisation for Economic Co-operation and Development (OECD)	14	1
Scottish Government	20	2
Trades Union Congress (TUC)	8	1
United Nations Educational, Scientific and Cultural Organization (UNESCO)	1	0
US Commission for Skills	7	0
US Office of Management and Budget	1	0
World Bank	10	1

Source: NFER and SQW



## Step 2: populating the Rapid Review templates

- B.10 The literature review itself, the second stage, involved a small team of reviewers reviewing the sources and completing a template for each source. A copy of the template is presented in Table B-5. The templates were completed and then stored using QSR NVivo qualitative research software, which was also used at the analysis and report writing stage. The template captured basic information about each source, including the full bibliographic reference, the abstract, key research questions and research methods and sources of evidence. The core of the template was used by the reviewers to record all findings relating to any of the six themes of the study, including the sub-themes under 'quality and effectiveness of provision' and 'learning outcomes'. After each thematic section of the template, there was also space for adding 'significant citations', where the reviewer recorded the full bibliographic reference for any significant findings drawn from another source.
- B.11 In addition to capturing the findings against the six themes (what literacy and numeracy skills are needed, quality and effectiveness of provision, etc), the reviewers also identified where those findings pertained to one or more of the four cross-cutting 'considerations' that BIS required the review and recommendations to take account of. These considerations were:
- workplace vs non-workplace provision
  - meeting the needs of 'hard-to-reach' learners
  - the difference between literacy and numeracy
  - cost-effective, outcome-based approaches to skills provision (any evidence of approaches that are demonstrably cost-effective).
- B.12 These were captured by using the coding functionality within NVivo to code any appropriate text to one or more of the four cross-cutting considerations.

**Table B-5: A copy of the template used to capture information on each source for the Rapid Review**

Template section	Required contents of each section
Full bibliographic reference	Use the Harvard referencing system.
Abstract or summary	Where an abstract is provided, simply copy and paste it here. Otherwise provide a short summary of the source.
Reviewer / Date of review	
Reason for rejection	If, when reviewing the source, the

**Table B-5: A copy of the template used to capture information on each source for the Rapid Review**

Template section	Required contents of each section
	reviewer decides that the source is not relevant, s/he should explain the reason for this decision. Otherwise this should be left blank.
Glossary	All acronyms used within the template and their expanded versions.
Key research questions	i.e. those addressed by the source.
Research methods and sources of evidence	<p>If primary research specify quantitative, qualitative or mixed methods.</p> <p>If secondary research specify data source (e.g. LFS) or published source (e.g. lit. review).</p> <p>Identify the research methods used, e.g. RCT, (non RCT) experimental study, quasi-experimental study, case study, ethnographic study, grounded theory study.</p> <p>Where relevant, specify:</p> <ul style="list-style-type: none"> <li>• sample and population</li> <li>• whether or not causality is claimed.</li> </ul> <p>State if any of these details are absent.</p>
What literacy and numeracy skills are needed	What literacy and numeracy skills are most needed / demanded by learners, employers and society (to support progression, employability, improved productivity and civic participation)?
Significant citations – skills	Significant citations from which the findings above are derived. The full citation should be given.
Quality and effectiveness of provision - adult learning - teaching - quality - effectiveness	What does the research tell us about current provision in terms of the amount and quality of teaching that takes place, the motivation of learners and the link to expected benefits / outcomes?

**Table B-5: A copy of the template used to capture information on each source for the Rapid Review**

Template section	Required contents of each section
<ul style="list-style-type: none"> <li>- efficiency</li> <li>- motivation</li> <li>- technology</li> <li>- other and cross-cutting</li> </ul>	<p>What do we know about the most effective and efficient modes and models of engaging learners and delivering literacy and numeracy provision?</p> <p>What are the most effective pedagogical approaches and how have they been applied through different delivery models?</p> <p>What is the available evidence on the use of technology to deliver literacy and numeracy provision? To what extent is it currently used? Which types of learners use it? What is the relative effectiveness of different approaches?</p> <p>Where possible, the findings should be placed under one of the following headings: adult learning; teaching; quality; effectiveness; efficiency; motivation; technology. Otherwise please place findings under the 'other and cross-cutting' heading.</p>
Significant citations - provision	Significant citations from which the findings above are derived. The full bibliographic reference should be given.
Number of learning hours	<p>What does the evidence tell us about the number of learning hours needed for skills gain?</p> <p>To what extent does own-time learning impact on the length of courses and the outcomes? What do we know about current practice and expectation in terms of the balance between guided (tutored) learning and own-time learning?</p>
Significant citations – learning hours	Significant citations from which the findings above are derived. The full citation should be given
Learning outcomes - economic	What are the economic, personal (including progression) and social returns

**Table B-5: A copy of the template used to capture information on each source for the Rapid Review**

Template section	Required contents of each section
<ul style="list-style-type: none"> <li>- personal</li> <li>- social</li> <li>- other and cross-cutting</li> </ul>	<p>of improving adults' literacy and numeracy skills and how can we improve our evidence base in this area?</p> <p>Where possible, findings should be separated for economic, personal and social returns. Otherwise please place findings under the 'other and cross-cutting' heading.</p> <p>Where do positive outcomes occur and why do they occur? (i.e. the link between the features of provision and the outcome, and how we can improve outcomes. Economic and personal outcomes include getting a job, sustaining employment, progressing in employment, wage returns, increasing productivity.)</p>
Significant citations - outcomes	Significant citations from which the findings above are derived. The full citation should be given.
Skills acquisition and retention / loss over time	What does the research tell us about retention rates, why skills loss occurs and what can and has been done to reduce it?
Significant citations - retention	Significant citations from which the findings above are derived. The full citation should be given.
Persistence in literacy and numeracy learning	What does the research tell us about the current culture and practice relating to learner persistence and the most effective ways to keep people in learning for long enough to make significant progress?
Significant citations - persistence	Significant citations from which the findings above are derived. The full citation should be given.

Source: SQW

## Step 3: analysing the review templates and drafting the report.

- B.13 The third stage of the Rapid Review entailed reviewing the review templates, from which the review team then drafted the findings sections of this Rapid Review. This analysis was carried out by a four person team from SQW and NRDC: Michael Frearson and Stuart Johnson from SQW and John Vorhaus and Jennifer Litster from NRDC. Members of the Expert Panel were also asked to comment on an early draft of the review.

## Keywords used for each bibliographic database

- B.14 Below we present the precise search strategies used with each of the bibliographic databases in terms of the keywords used and, in some cases, the combinations of keywords. The search strategy for each database reflects the differences in database structure and vocabulary. Smaller sets of keywords were used in the more specialist databases. Throughout, the abbreviation 'ft' denotes that a free-text search term was used, the symbol \$ denotes truncation of terms and the symbol ? is used as a wildcard to accommodate variant spellings. NEAR finds words within a five-word range either before or after the first search term. Ti, Ab restricts the search terms so that they are only found in the title and abstract fields. Terms were not automatically 'exploded' to search on all narrower terms in those databases offering this facility. However, wherever possible, narrower terms were included in the search string.

### *Australian Education Index (AEI)*

#### **Skills set**

- #1 Adult basic skills
- #2 Adult literacy
- #3 Adult numeracy (ft)
- #4 Adult literacy and numeracy (ft)
- #5 Adult literacy numeracy (ft)
- #6 Adult literacy language
- #7 ALAN. Ti, Ab
- #8 ALLN (ft)
- #9 ALNE (ft)
- #10 Basic skills
- #11 Communication skills
- #12 Core skills (ft)
- #13 Essential skills (ft)
- #14 Foundation skills (ft)
- #15 Functional literacy
- #16 Functional reading
- #17 Functional English (ft)
- #18 Functional numeracy (ft)
- #19 Functional mathematics (ft)
- #20 Key competences (ft)
- #21 Literacy
- #22 Literacy skills (ft)

- #23 Mathematics skills
- #24 Numeracy
- #25 Numeracy skills (ft)
- #26 Oracy (ft)
- #27 Reading skills (ft)
- #28 Study skills
- #29 Upskilling (ft)
- #30 Workplace based literacy (ft)
- #31 Workplace based numeracy (ft)
- #32 Workplace based skills (ft)
- #33 Writing skills
- #34 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33

### **People requiring the skills set**

- #35 Adult learners (ft)
- #36 Adults
- #37 Businesses (ft)
- #38 Disabilities
- #39 Disaffected (ft)
- #40 Disengaged (ft)
- #41 Early school leavers (ft)
- #42 Employers
- #43 Employees
- #44 Hard to reach learners (ft)
- #45 Individuals (ft)
- #46 Job applicants
- #47 Job seekers (ft)
- #48 Labour market
- #49 Learners (ft)
- #50 Learning difficulties (ft)
- #51 Learning disabilities (ft)
- #52 NEET\$ or 'not in education, employment or training' (ft)
- #53 Education employment near training
- #54 Offenders (ft)
- #55 Social partners (ft)
- #56 Society (ft)
- #57 Special educational needs (ft)
- #58 Unemployed (ft)
- #59 Unions
- #60 #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or #57 or #58 or #59
- #61 #34 and #60

### **Adult learning set**

- #62 Adult and community education (ft)
- #63 Adult basic education
- #64 Adult education
- #65 Adult education curriculum
- #66 Adult learning

- #67 Adult learners (ft)
- #68 Adult secondary education (ft)
- #69 Basic skills training (ft)
- #70 Blended learning (ft)
- #71 Community learning and development (ft)
- #72 Community education
- #73 Embedded learning (ft)
- #74 Family learning (ft)
- #75 Family literacy language (ft)
- #76 FLLN
- #77 Flexible learning (ft)
- #78 Further education
- #79 General educational development (ft)
- #80 GED (ft)
- #81 GED program?s (ft)
- #82 Lifelong learning
- #83 Literacy education
- #84 Literacy program?s (ft)
- #85 Second chance education (ft)
- #86 Skills for Life (ft)
- #87 Train near Gain (ft)
- #88 Union learning (ft)
- #89 Vocational education
- #90 Workplace learning (ft)
- #91 Work based learning (ft)
- #92 #62 or #63 or #64 or #65 or #66 or #67 or #68 or #69 or #70 or #71 or #72 or #73 or #74 or #75 or #76 or #77 or #78 or #79 or #80 or #81 or #82 or #83 or #84 or #85 or #86 or #87 or #88 or #89 or #90 or #91
- #93 (#34 and #92) not #60

### **Teaching set**

- #94 Adult education teachers (ft)
- #95 Adult educators
- #96 Adult literacy tutors
- #97 Delivery systems
- #98 Delivery models (ft)
- #99 Distance education
- #100 Educational methods
- #101 FE teachers(ft)
- #102 FE trainers(ft)
- #103 Informal learning (ft)
- #104 Nonformal education
- #105 Nontraditional education
- #106 Instructional design
- #107 Instructional methods (ft)
- #108 Off the job training
- #109 On the job training
- #110 Pedagogy (ft)
- #111 Teaching process
- #112 Teaching methods

#113 #94 or #95 or #96 or #97 or #98 or #99 or #100 or #101 or #102 or #103 or #104 or #105 or #106 or #107 or #108 or #109 or #110 or #111 or #112

#114 (#34 and #113) not (#60 or #92)

#### **Quality set**

#115 Assessment

#116 Continuing professional development (ft)

#117 CPD (ft)

#118 Costs

#119 Educational quality

#120 Initial teacher training (ft)

#121 Preservice teacher education

#122 Teacher qualifications

#123 Teacher quality (ft)

#124 Teaching quality (ft)

#125 Teacher mobility

#126 Teacher turnover (ft)

#127 #115 or #116 or #117 or #118 or #119 or #120 or #121 or #122 or #123 or #124 or #125 or #126

#128 (#34 and #127) not (#60 or #92 or #113)

#### **Effectiveness set**

#129 Achievement rate (ft)

#130 Effective approach\$ (ft)

#131 Evaluation

#132 Impact

#133 Success rate (ft)

#134 Teacher effectiveness

#135 #129 or #130 or #131 or #132 or #133 or #134

#136 (#34 and #135) not (#60 or #92 or #113 or #127)

#### **Efficiency set**

#137 Cost analysis (ft)

#138 Cost benefit analysis (ft)

#139 Cost effectiveness

#140 Educational economics

#141 #137 or #138 or #139 or #140

#142 (#34 and #141) not (#60 or #92 or #113 or #127 or #135)

#### **Motivation set**

#143 Aspiration

#144 Individual learning accounts (ft)

#145 ILA (ft)

#146 Learner aims (ft)

#147 Learning aims (ft)

#148 Learner educational objectives

#149 Learner goals (ft)

#150 Learning goals (ft)

#151 Motivation

#152 Learning motivation

#153 Learner motivation (ft)

#154 Learner support (ft)

#155 Learning support (ft)



- #156 Self motivation
- #157 Sponsors (ft)
- #158 #143 or #144 or #145 or #146 or #147 or #148 or #149 or #150 or #151 or #152 or #153 or #154 or #155 or #156 or #157
- #159 (#34 and #158) not (#60 or #92 or #113 or #127 or #135 or #141)

### **Technology set**

- #160 Computer assisted learning (ft)
- #161 Computer assisted teaching (ft)
- #162 Computer mediated communication
- #163 Computers
- #164 Distance learning (ft)
- #165 E learning (ft)
- #166 ICT
- #167 Information technology
- #168 Information and communication technology (ft)
- #169 Independent learning (ft)
- #170 Internet
- #171 Internet learning (ft)
- #172 Learning technology (ft)
- #173 M learning (ft)
- #174 Mobile learning (ft)
- #175 Online learning (ft)
- #176 Video conferencing (ft)
- #177 Virtual learning environment\$ (ft)
- #178 VLE (ft)
- #179 Web 1(ft)
- #180 Web 2 (ft)
- #181 Web 3 (ft)
- #182 #160 or #161 or #162 or #163 or #164 or #165 or #166 or #167 or #168 or #169 or #170 or #171 or #172 or #173 or #174 or #175 or #176 or #177 or #178 or #179 or #180 or #181
- #183 (#34 and #182) not (#60 or #92 or #113 or #127 or #135 or #141 or #158)

### **Learning hours set**

- #184 Attention span
- #185 Engaged time (ft)
- #186 Flexible progression
- #187 Guided learning hours (ft)
- #188 Home study
- #189 Independent study
- #190 Instruction hours (ft)
- #191 Intensive courses (ft)
- #192 Learning time (ft)
- #193 Own time learning (ft)
- #194 Self paced courses (ft)
- #195 Self study (ft)
- #196 Study time (ft)
- #197 Supported self study (ft)
- #198 Time factors (learning)
- #199 Time off task (ft)
- #200 Time on task

- #201 Tutored learning
- #202 #184 or #185 or #186 or #187 or #188 or #189 or #190 or #191 or #192 or #193 or #194 or #195 or #196 or #197 or #198 or #199 or #200 or #201
- #203 (#34 and #202) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182)

### **Learning outcomes set**

- #204 Absenteeism
- #205 Benefit\$
- #206 Confidence
- #207 Earnings (ft)
- #208 Educational benefits
- #209 Educational mobility
- #210 Educational outcomes (ft)
- #211 Employability (ft)
- #212 Employee productivity (ft)
- #213 Employment
- #214 Employment level
- #215 Employment potential
- #216 Employment status
- #217 Health benefits (ft)
- #218 Human capital
- #219 Human resource development (ft)
- #220 Income
- #221 Outcomes
- #222 Outcomes of education
- #223 Productivity
- #224 Qualifications
- #225 Return on investment (ft)
- #226 Salaries
- #227 Self esteem
- #228 Self confidence
- #229 Self efficacy
- #230 Social capital
- #231 Social cohesion (ft)
- #232 Social inclusion (ft)
- #233 Social integration
- #234 Social return (ft)
- #235 Social return on investment (ft)
- #236 Staff retention (ft)
- #237 Wages
- #238 Workforce performance (ft)
- #239 #204 or #205 or #206 or #207 or #208 or #209 or #210 or #211 or #212 or #213 or #214 or #215 or #216 or #217 or #218 or #219 or #220 or #221 or #222 or #223 or #224 or #225 or #226 or #227 or #228 or #229 or #230 or #231 or #232 or #233 or #234 or #235 or #236 or #237 or #238
- #240 (#34 and #239) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182 or #202)

### **Skills acquisition, retention and loss set**

- #241 Cognitive processes
- #242 Cognitive style
- #243 Learner characteristics (ft)

- #244 Learner fatigue (ft)
- #245 Learning loss (ft)
- #246 Skill\$ application (ft)
- #247 Skill\$ atrophy (ft)
- #248 Skill\$ fade (ft)
- #249 Skill\$ loss (ft)
- #250 Skill\$ retention (ft)
- #251 Skill\$ utilization (ft)
- #252 #241 or #242 or #243 or #244 or #245 or #246 or #247 or #248 or #249 or #250 or #251
- #253 (#34 and #252) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182 or #202 or #239)

### **Persistence set**

- #254 Academic persistence
- #255 Access to education
- #256 Access to learning
- #257 Attendance
- #258 Barriers to learning (ft)
- #259 Completion (ft)
- #260 Cost\$ of learning (ft)
- #261 Course completion rate (ft)
- #262 Disadvantaged learners (ft)
- #263 Dropouts
- #264 Adult dropouts
- #265 Financial incentives (ft)
- #266 Flexible progression
- #267 Hard to reach learners (ft)
- #268 Learner autonomy (ft)
- #269 Learner persistence (ft)
- #270 Learner retention (ft)
- #271 Learning journey (ft)
- #272 Non completion (ft)
- #273 Outreach (ft)
- #274 Outreach program?es
- #275 Participant satisfaction
- #276 Participation
- #277 Persistence
- #278 Personal autonomy
- #279 Progression (ft)
- #280 Satisfaction (ft)
- #281 'Stick with it' (ft)
- #282 Study habits
- #283 #254 or #255 or #256 or #257 or #258 or #259 or #260 or #261 or #262 or #263 or #264 or #265 or #266 or #267 or #268 or #269 or #270 or #271 or #272 or #273 or #274 or #275 or #276 or #277 or #278 or #279 or #280 or #281 or #282
- #284 (#34 and #283) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182 or #202 or #239 or #252)

### **British Education Index (BEI)**

#### **Skills set**

- #1 Adult basic skills
- #2 Adult literacy
- #3 Adult numeracy (ft)
- #4 Adult literacy and numeracy (ft)
- #5 Adult literacy numeracy (ft)
- #6 Adult literacy language
- #7 ALAN. Ti, Ab
- #8 ALLN (ft)
- #9 ALNE (ft)
- #10 Basic skills
- #11 Communication skills
- #12 Core skills (ft)
- #13 Essential skills (ft)
- #14 Foundation skills (ft)
- #15 Functional literacy
- #16 Functional reading
- #17 Functional English (ft)
- #18 Functional numeracy (ft)
- #19 Functional mathematics (ft)
- #20 Key competences (ft)
- #21 Literacy
- #22 Literacy skills (ft)
- #23 Mathematics skills
- #24 Numeracy
- #25 Numeracy skills (ft)
- #26 Oracy (ft)
- #27 Reading skills (ft)
- #28 Study skills
- #29 Upskilling (ft)
- #30 Workplace based literacy (ft)
- #31 Workplace based numeracy (ft)
- #32 Workplace based skills (ft)
- #33 Writing skills
- #34 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33

#### **People requiring the skills set**

- #35 Adult learners (ft)
- #36 Adults
- #37 Businesses (ft)
- #38 Disabilities
- #39 Disaffected (ft)
- #40 Disengaged (ft)
- #41 Early school leavers (ft)
- #42 Employers
- #43 Employees
- #44 Hard to reach learners (ft)
- #45 Individuals (ft)
- #46 Job applicants
- #47 Job seekers (ft)

- #48 Labour market
- #49 Learners (ft)
- #50 Learning difficulties (ft)
- #51 Learning disabilities (ft)
- #52 NEET\$ or 'not in education, employment or training' (ft)
- #53 Education employment near training
- #54 Offenders (ft)
- #55 Social partners (ft)
- #56 Society (ft)
- #57 Special educational needs (ft)
- #58 Unemployed (ft)
- #59 Unions
- #60 #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or #57 or #58 or #59
- #61 #34 and #60
- Adult learning set**
- #62 Adult and community education (ft)
- #63 Adult basic education
- #64 Adult education
- #65 Adult education curriculum
- #66 Adult learning
- #67 Adult learners (ft)
- #68 Adult secondary education (ft)
- #69 Basic skills training (ft)
- #70 Blended learning (ft)
- #71 Community learning and development (ft)
- #72 Community education
- #73 Embedded learning (ft)
- #74 Family learning (ft)
- #75 Family literacy language (ft)
- #76 FLLN
- #77 Flexible learning (ft)
- #78 Further education
- #79 General educational development (ft)
- #80 GED (ft)
- #81 GED program?s (ft)
- #82 Lifelong learning
- #83 Literacy education
- #84 Literacy program?s (ft)
- #85 Second chance education (ft)
- #86 Skills for Life (ft)
- #87 Train near Gain (ft)
- #88 Union learning (ft)
- #89 Vocational education
- #90 Workplace learning (ft)
- #91 Work based learning (ft)
- #92 #62 or #63 or #64 or #65 or #66 or #67 or #68 or #69 or #70 or #71 or #72 or #73 or #74 or #75 or #76 or #77 or #78 or #79 or #80 or #81 or #82 or #83 or #84 or #85 or #86 or #87 or #88 or #89 or #90 or #91 or #92

#93 (#34 and #92) not #60

### Teaching set

#94 Adult education teachers (ft)

#95 Adult educators

#96 Adult literacy tutors

#97 Delivery systems

#98 Delivery models (ft)

#99 Distance education

#100 Educational methods

#101 FE teachers(ft)

#102 FE trainers(ft)

#103 Informal learning (ft)

#104 Nonformal education

#105 Nontraditional education

#106 Instructional design

#107 Instructional methods (ft)

#108 Off the job training

#109 On the job training

#110 Pedagogy (ft)

#111 Teaching process

#112 Teaching methods

#113 #94 or #95 or #96 or #97 or #98 or #99 or #100 or #101 or #102 or #103 or #104 or #105 or #106 or #107 or #108 or #109 or #110 or #111 or #112

#114 (#34 and #113) not (#60 or #92)

### Quality set

#115 Assessment

#116 Continuing professional development (ft)

#117 CPD (ft)

#118 Costs

#119 Educational quality

#120 Initial teacher training (ft)

#121 Preservice teacher education

#122 Teacher qualifications

#123 Teacher quality (ft)

#124 Teaching quality (ft)

#125 Teacher mobility

#126 Teacher turnover (ft)

#127 #115 or #116 or #117 or #118 or #119 or #120 or #121 or #122 or #123 or #124 or #125 or #126

#128 (#34 and #127) not (#60 or #92 or #113)

### Effectiveness set

#129 Achievement rate (ft)

#130 Effective approach\$ (ft)

#131 Evaluation

#132 Impact

#133 Success rate (ft)

#134 Teacher effectiveness

#135 #129 or #130 or #131 or #132 or #133 or #134

#136 (#34 and #135) not (#60 or #92 or #113 or #127)

### Efficiency set

- #137 Cost analysis (ft)
- #138 Cost benefit analysis (ft)
- #139 Cost effectiveness
- #140 Educational economics
- #141 #137 or #138 or #139 or #140
- #142 (#34 and #141) not (#60 or #92 or #113 or #127 or #135)

#### **Motivation set**

- #143 Aspiration
- #144 Individual learning accounts (ft)
- #145 ILA (ft)
- #146 Learner aims (ft)
- #147 Learning aims (ft)
- #148 Learner educational objectives
- #149 Learner goals (ft)
- #150 Learning goals (ft)
- #151 Motivation
- #152 Learning motivation
- #153 Learner motivation (ft)
- #154 Learner support (ft)
- #155 Learning support (ft)
- #156 Self motivation
- #157 Sponsors (ft)
- #158 #143 or #144 or #145 or #146 or #147 or #148 or #149 or #150 or #151 or #152 or #153 or #154 or #155 or #156 or #157
- #159 (#34 and #158) not (#60 or #92 or #113 or #127 or #135 or #141)

#### **Technology set**

- #160 Computer assisted learning (ft)
- #161 Computer assisted teaching (ft)
- #162 Computer mediated communication
- #163 Computers
- #164 Distance learning (ft)
- #165 E learning (ft)
- #166 ICT
- #167 Information technology
- #168 Information and communication technology (ft)
- #169 Independent learning (ft)
- #170 Internet
- #171 Internet learning (ft)
- #172 Learning technology (ft)
- #173 M learning (ft)
- #174 Mobile learning (ft)
- #175 Online learning (ft)
- #176 Video conferencing (ft)
- #177 Virtual learning environment\$ (ft)
- #178 VLE (ft)
- #179 Web 1(ft)
- #180 Web 2 (ft)
- #181 Web 3 (ft)

#182 #160 or #161 or #162 or #163 or #164 or #165 or #166 or #167 or #168 or #169 or #170 or #171 or #172 or #173 or #174 or #175 or #176 or #177 or #178 or #179 or #180 or #181

#183 (#34 and #182) not (#60 or #92 or #113 or #127 or #135 or #141 or #158)

### **Learning hours set**

#184 Attention span

#185 Engaged time (ft)

#186 Flexible progression

#187 Guided learning hours (ft)

#188 Home study

#189 Independent study

#190 Instruction hours (ft)

#191 Intensive courses (ft)

#192 Learning time (ft)

#193 Own time learning (ft)

#194 Self paced courses (ft)

#195 Self study (ft)

#196 Study time (ft)

#197 Supported self study (ft)

#198 Time factors (learning)

#199 Time off task (ft)

#200 Time on task

#201 Tutored learning

#202 #184 or #185 or #186 or #187 or #188 or #189 or #190 or #191 or #192 or #193 or #194 or #195 or #196 or #197 or #198 or #199 or #200 or #201

#203 (#34 and #202) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182)

### **Learning outcomes set**

#204 Absenteeism

#205 Benefit\$

#206 Confidence

#207 Earnings (ft)

#208 Educational benefits (ft)

#209 Educational mobility (ft)

#210 Educational outcomes (ft)

#211 Employability (ft)

#212 Employee productivity (ft)

#213 Employment

#214 Employment level

#215 Employment potential

#216 Employment status

#217 Health benefits (ft)

#218 Human capital

#219 Human resource development (ft)

#220 Income

#221 Outcomes

#222 Outcomes of education

#223 Productivity

#224 Qualifications

#225 Return on investment (ft)

#226 Salaries



- #227 Self esteem
- #228 Self confidence (ft)
- #229 Self efficacy (ft)
- #230 Social capital (ft)
- #231 Social cohesion (ft)
- #232 Social inclusion (ft)
- #233 Social integration
- #234 Social return (ft)
- #235 Social return on investment (ft)
- #236 Staff retention (ft)
- #237 Wages
- #238 Workforce performance (ft)
- #239 #204 or #205 or #206 or #207 or #208 or #209 or #210 or #211 or #212 or #213 or #214 or #215 or #216 or #217 or #218 or #219 or #220 or #221 or #222 or #223 or #224 or #225 or #226 or #227 or #228 or #229 or #230 or #231 or #232 or #233 or #234 or #235 or #236 or #237 or #238
- #240 (#34 and #239) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182 or #202)

#### **Skills acquisition, retention and loss set**

- #241 Cognitive processes
- #242 Cognitive style
- #243 Learner characteristics (ft)
- #244 Learner fatigue (ft)
- #245 Learning loss (ft)
- #246 Skill\$ application (ft)
- #247 Skill\$ atrophy (ft)
- #248 Skill\$ fade (ft)
- #249 Skill\$ loss (ft)
- #250 Skill\$ retention (ft)
- #251 Skill\$ utilisation (ft)
- #252 #241 or #242 or #243 or #244 or #245 or #246 or #247 or #248 or #249 or #250 or #251
- #253 (#34 and #252) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182 or #202 or #239)

#### **Persistence set**

- #254 Academic persistence
- #255 Access to education
- #256 Access to learning
- #257 Attendance
- #258 Barriers to learning (ft)
- #259 Completion (ft)
- #260 Cost\$ of learning (ft)
- #261 Course completion rate (ft)
- #262 Disadvantaged learners (ft)
- #263 Dropouts
- #264 Adult dropouts
- #265 Financial incentives (ft)
- #266 Flexible progression
- #267 Hard to reach learners (ft)
- #268 Learner autonomy (ft)

- #269 Learner persistence (ft)
- #270 Learner retention (ft)
- #271 Learning journey (ft)
- #272 Non completion (ft)
- #273 Outreach (ft)
- #274 Outreach program?es
- #275 Participant satisfaction
- #276 Participation
- #277 Persistence
- #278 Personal autonomy
- #279 Progression (ft)
- #280 Satisfaction (ft)
- #281 'Stick with it' (ft)
- #282 Study habits
- #283 #254 or #255 or #256 or #257 or #258 or #259 or #260 or #261 or #262 or #263 or #264 or #265 or #266 or #267 or #268 or #269 or #270 or #271 or #272 or #273 or #274 or #275 or #276 or #277 or #278 or #279 or #280 or #281 or #282
- #284 (#34 and #283) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182 or #202 or #239 or #252)

### **British Education Index Free Collections**

- #1 Adult literacy and numeracy (ft)
- #2 Adult literacy
- #3 Adult numeracy (ft)
- #4 Adult basic skills (ft)
- #5 Basic skills
- #6 Adult education
- #7 Adult learners (ft)
- #8 Adult learning (ft)
- #9 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8

### **Education Resources Information Center (ERIC)**

#### **Skills set**

- #1 Adult basic skills
- #2 Adult literacy
- #3 Adult numeracy (ft)
- #4 Adult literacy and numeracy (ft)
- #5 Adult literacy numeracy (ft)
- #6 Adult literacy language
- #7 ALAN. Ti, Ab
- #8 ALLN (ft)
- #9 ALNE (ft)
- #10 Basic skills
- #11 Communication skills
- #12 Core skills (ft)
- #13 Essential skills (ft)
- #14 Foundation skills (ft)

- #15 Functional literacy
- #16 Functional reading
- #17 Functional English (ft)
- #18 Functional numeracy (ft)
- #19 Functional mathematics (ft)
- #20 Key competences (ft)
- #21 Literacy
- #22 Literacy skills (ft)
- #23 Mathematics skills
- #24 Numeracy
- #25 Numeracy skills (ft)
- #26 Oracy (ft)
- #27 Reading skills (ft)
- #28 Study skills
- #29 Upskilling (ft)
- #30 Workplace based literacy (ft)
- #31 Workplace based numeracy (ft)
- #32 Workplace based skills (ft)
- #33 Writing skills
- #34 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33

#### **People requiring the skills set**

- #35 Adult learners (ft)
- #36 Adults
- #37 Businesses (ft)
- #38 Disabilities
- #39 Disaffected (ft)
- #40 Disengaged (ft)
- #41 Early school leavers (ft)
- #42 Employers
- #43 Employees
- #44 Hard to reach learners (ft)
- #45 Individuals (ft)
- #46 Job applicants
- #47 Job seekers (ft)
- #48 Labour market
- #49 Learners (ft)
- #50 Learning difficulties (ft)
- #51 Learning disabilities (ft)
- #52 NEET\$ or 'not in education, employment or training' (ft)
- #53 Education employment near training
- #54 Offenders (ft)
- #55 Social partners (ft)
- #56 Society (ft)
- #57 Special educational needs (ft)
- #58 Unemployed (ft)
- #59 Unions
- #60 #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or #57 or #58 or #59

#61 #34 and #60

**Adult learning set**

#62 Adult and community education (ft)

#63 Adult basic education

#64 Adult education

#65 Adult education curriculum

#66 Adult learning

#67 Adult learners (ft)

#68 Adult secondary education (ft)

#69 Basic skills training (ft)

#70 Blended learning (ft)

#71 Community learning and development (ft)

#72 Community education

#73 Embedded learning (ft)

#74 Family learning (ft)

#75 Family literacy language (ft)

#76 FLLN

#77 Flexible learning (ft)

#78 Further education

#79 General educational development (ft)

#80 GED (ft)

#81 GED program?s (ft)

#82 Lifelong learning

#83 Literacy education

#84 Literacy program?s (ft)

#85 Second chance education (ft)

#86 Skills for Life (ft)

#87 Train near Gain (ft)

#88 Union learning (ft)

#89 Vocational education

#90 Workplace learning (ft)

#91 Work based learning (ft)

#92 #62 or #63 or #64 or #65 or #66 or #67 or #68 or #69 or #70 or #71 or #72 or #73 or #74 or #75 or #76 or #77 or #78 or #79 or #80 or #81 or #82 or #83 or #84 or #85 or #86 or #87 or #88 or #89 or #90 or #91 or #92

#93 (#34 and #92) not #60

**Teaching set**

#94 Adult education teachers (ft)

#95 Adult educators

#96 Adult literacy tutors

#97 Delivery systems

#98 Delivery models (ft)

#99 Distance education

#100 Educational methods

#101 FE teachers(ft)

#102 FE trainers(ft)

#103 Informal learning (ft)

#104 Nonformal education

#105 Nontraditional education

#106 Instructional design

- #107 Instructional methods (ft)
- #108 Off the job training
- #109 On the job training
- #110 Pedagogy (ft)
- #111 Teaching process
- #112 Teaching methods
- #113 #94 or #95 or #96 or #97 or #98 or #99 or #100 or #101 or #102 or #103 or #104 or #105 or #106 or #107 or #108 or #109 or #110 or #111 or #112
- #114 (#34 and #113) not (#60 or #92)

#### **Quality set**

- #115 Assessment
- #116 Continuing professional development (ft)
- #117 CPD (ft)
- #118 Costs
- #119 Educational quality
- #120 Initial teacher training (ft)
- #121 Preservice teacher education
- #122 Teacher qualifications
- #123 Teacher quality (ft)
- #124 Teaching quality (ft)
- #125 Teacher mobility
- #126 Teacher turnover (ft)
- #127 #115 or #116 or #117 or #118 or #119 or #120 or #121 or #122 or #123 or #124 or #125 or #126
- #128 (#34 and #127) not (#60 or #92 or #113)

#### **Effectiveness set**

- #129 Achievement rate (ft)
- #130 Effective approach\$ (ft)
- #131 Evaluation
- #132 Impact
- #133 Success rate (ft)
- #134 Teacher effectiveness
- #135 #129 or #130 or #131 or #132 or #133 or #134
- #136 (#34 and #135) not (#60 or #92 or #113 or #127)

#### **Efficiency set**

- #137 Cost analysis (ft)
- #138 Cost benefit analysis (ft)
- #139 Cost effectiveness
- #140 Educational economics
- #141 #137 or #138 or #139 or #140
- #142 (#34 and #141) not (#60 or #92 or #113 or #127 or #135)

#### **Motivation set**

- #143 Aspiration
- #144 Individual learning accounts (ft)
- #145 ILA (ft)
- #146 Learner aims (ft)
- #147 Learning aims (ft)
- #148 Learner educational objectives
- #149 Learner goals (ft)

- #150 Learning goals (ft)
- #151 Motivation
- #152 Learning motivation
- #153 Learner motivation (ft)
- #154 Learner support (ft)
- #155 Learning support (ft)
- #156 Self motivation
- #157 Sponsors (ft)
- #158 #143 or #144 or #145 or #146 or #147 or #148 or #149 or #150 or #151 or #152 or #153 or #154 or #155 or #156 or #157
- #159 (#34 and #158) not (#60 or #92 or #113 or #127 or #135 or #141)

### **Technology set**

- #160 Computer assisted learning (ft)
- #161 Computer assisted teaching (ft)
- #162 Computer mediated communication
- #163 Computers
- #164 Distance learning (ft)
- #165 E learning (ft)
- #166 ICT
- #167 Information technology
- #168 Information and communication technology (ft)
- #169 Independent learning (ft)
- #170 Internet
- #171 Internet learning (ft)
- #172 Learning technology (ft)
- #173 M learning (ft)
- #174 Mobile learning (ft)
- #175 Online learning (ft)
- #176 Video conferencing (ft)
- #177 Virtual learning environment\$ (ft)
- #178 VLE (ft)
- #179 Web 1(ft)
- #180 Web 2 (ft)
- #181 Web 3 (ft)
- #182 #160 or #161 or #162 or #163 or #164 or #165 or #166 or #167 or #168 or #169 or #170 or #171 or #172 or #173 or #174 or #175 or #176 or #177 or #178 or #179 or #180 or #181
- #183 (#34 and #182) not (#60 or #92 or #113 or #127 or #135 or #141 or #158)

### **Learning hours set**

- #184 Attention span
- #185 Engaged time (ft)
- #186 Flexible progression
- #187 Guided learning hours (ft)
- #188 Home study
- #189 Independent study
- #190 Instruction hours (ft)
- #191 Intensive courses (ft)
- #192 Learning time (ft)
- #193 Own time learning (ft)
- #194 Self paced courses (ft)

#195 Self study (ft)  
 #196 Study time (ft)  
 #197 Supported self study (ft)  
 #198 Time factors (learning)  
 #199 Time off task (ft)  
 #200 Time on task  
 #201 Tutored learning  
 #202 #184 or #185 or #186 or #187 or #188 or #189 or #190 or #191 or #192 or #193 or #194 or #195 or #196 or #197 or #198 or #199 or #200 or #201  
 #203 (#34 and #202) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182)

### **Learning outcomes set**

#204 Absenteeism  
 #205 Benefit\$  
 #206 Confidence  
 #207 Earnings (ft)  
 #208 Educational benefits (ft)  
 #209 Educational mobility (ft)  
 #210 Educational outcomes (ft)  
 #211 Employability (ft)  
 #212 Employee productivity (ft)  
 #213 Employment  
 #214 Employment level  
 #215 Employment potential  
 #216 Employment status  
 #217 Health benefits (ft)  
 #218 Human capital  
 #219 Human resource development (ft)  
 #220 Income  
 #221 Outcomes  
 #222 Outcomes of education  
 #223 Productivity  
 #224 Qualifications  
 #225 Return on investment (ft)  
 #226 Salaries  
 #227 Self esteem  
 #228 Self confidence (ft)  
 #229 Self efficacy (ft)  
 #230 Social capital (ft)  
 #231 Social cohesion (ft)  
 #232 Social inclusion (ft)  
 #233 Social integration  
 #234 Social return (ft)  
 #235 Social return on investment (ft)  
 #236 Staff retention (ft)  
 #237 Wages  
 #238 Workforce performance (ft)  
 #239 #204 or #205 or #206 or #207 or #208 or #209 or #210 or #211 or #212 or #213 or #214 or #215 or #216 or #217 or #218 or #219 or #220 or #221 or #222 or #223 or #224 or #225 or #226 or #227 or #228 or #229 or #230 or #231 or #232 or #233 or #234 or #235 or #236 or #237 or #238

#240 (#34 and #239) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182 or #202)

### **Skills acquisition, retention and loss set**

#241 Cognitive processes

#242 Cognitive style

#243 Learner characteristics (ft)

#244 Learner fatigue (ft)

#245 Learning loss (ft)

#246 Skill\$ application (ft)

#247 Skill\$ atrophy (ft)

#248 Skill\$ fade (ft)

#249 Skill\$ loss (ft)

#250 Skill\$ retention (ft)

#251 Skill\$ utilization (ft)

#252 #241 or #242 or #243 or #244 or #245 or #246 or #247 or #248 or #249 or #250 or #251

#253 (#34 and #252) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182 or #202 or #239)

### **Persistence set**

#254 Academic persistence

#255 Access to education

#256 Access to learning

#257 Attendance

#258 Barriers to learning (ft)

#259 Completion (ft)

#260 Cost\$ of learning (ft)

#261 Course completion rate (ft)

#262 Disadvantaged learners (ft)

#263 Dropouts

#264 Adult dropouts

#265 Financial incentives (ft)

#266 Flexible progression

#267 Hard to reach learners (ft)

#268 Learner autonomy (ft)

#269 Learner persistence (ft)

#270 Learner retention (ft)

#271 Learning journey (ft)

#272 Non completion (ft)

#273 Outreach (ft)

#274 Outreach programmes

#275 Participant satisfaction

#276 Participation

#277 Persistence

#278 Personal autonomy

#279 Progression (ft)

#280 Satisfaction (ft)

#281 'Stick with it' (ft)

#282 Study habits



#283 #254 or #255 or #256 or #257 or #258 or #259 or #260 or #261 or #262 or #263 or #264 or #265 or #266 or #267 or #268 or #269 or #270 or #271 or #272 or #273 or #274 or #275 or #276 or #277 or #278 or #279 or #280 or #281 or #282

#284 (#34 and #283) not (#60 or #92 or #113 or #127 or #135 or #141 or #158 or #182 or #202 or #239 or #252)

### **Elsevier Economics and Finance**

- #1 Adult literacy and numeracy (ft)
- #2 Adult literacy (ft)
- #3 Adult numeracy (ft)
- #4 Adult basic skills (ft)
- #5 Basic skills (ft)
- #6 Adult education (ft)
- #7 Adult learners (ft)
- #8 Adult learning (ft)

### **Emerald**

- #1 Adult literacy and numeracy (ft)
- #2 Adult literacy (ft)
- #3 Adult numeracy (ft)
- #4 Adult basic skills (ft)
- #5 Basic skills (ft)
- #6 Adult education (ft)
- #7 Adult learners (ft)
- #8 Adult learning (ft)

### **Oxford Economic Papers**

- #1 Adult literacy and numeracy (ft)
- #2 Adult literacy (ft)
- #3 Adult numeracy (ft)
- #4 Adult basic skills (ft)
- #5 Basic skills (ft)
- #6 Adult education (ft)
- #7 Adult learners (ft)
- #8 Adult learning (ft)

### **PsycINFO**

- #1 Adult literacy and numeracy (ft)
- #2 Adult literacy (ft)
- #3 Adult numeracy (ft)
- #4 Adult basic skills (ft)
- #5 Basic skills (ft)
- #6 Adult education
- #7 Adult learners (ft)
- #8 Adult learning (ft)
- #9 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8

### **Social Policy and Practice**

- #1 Adult literacy and numeracy (ft)
- #2 Adult literacy (ft)
- #3 Adult numeracy (ft)
- #4 Adult basic skills (ft)
- #5 Basic skills (ft)

- #6 Adult education (ft)
- #7 Adult learners (ft)
- #8 Adult learning (ft)
- #9 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8

***Social Science Research Network (SSRN)***

- #1 Adult literacy and numeracy (ft)
- #2 Adult literacy (ft)
- #3 Adult numeracy (ft)
- #4 Adult basic skills (ft)
- #5 Basic skills (ft)
- #6 Adult education (ft)
- #7 Adult learners (ft)
- #8 Adult learning (ft)

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