



How can we motivate adults to engage in literacy and numeracy learning?

Future of Skills & Lifelong Learning
Evidence Review

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How can we motivate adults to engage in literacy and numeracy learning?

David Mallows and Jennifer Litster

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Contents

Executive Summary	4
1. Introduction	5
2. What do we mean by skills, competences and practices?	6
3. Supply of adult literacy and numeracy skills	7
Measuring adult literacy and numeracy levels (England)	8
International comparisons.....	9
Trends	10
Literacy and numeracy skills and education levels.....	11
Young people	11
Conclusion.....	11
4. What do adults do with their skills?.....	12
Demand for skills	12
Skills use in PIAAC.....	12
Skills use in the workplace correlates with earnings	14
Conclusion.....	14
5. Demand for learning.....	15
Participation in learning	15
Qualifications	16
Adults' motivations to learn	16
Do employers know what they need?	18
Conclusion.....	20
Practice Engagement Theory	21
Impact on proficiency.....	21
Conclusion.....	21
7. Promising approaches to the improvement of adult literacy and numeracy skills.....	22
Intensive training in the workplace: the British Army	22
Basic Skills Training in the Workplace: Norway	23
The on-line solution: Germany's open learning portal	24
Literacy.....	24
Employability and school leaving certificate	24
Life and money	24
8. Conclusions.....	25
Key messages	25
Evidence gaps	25

Executive Summary

This review is concerned with the topic of motivating adults to improve their literacy and numeracy skills. It firstly considers why literacy and numeracy are important and presents evidence that shows that in England, as in most OECD countries, the levels of literacy and numeracy skills in the working-age population are worryingly low. More specifically, the review builds on recent analysis of trends in skills levels over the life course, which demonstrates that adult basic skills can both build and diminish in employment, meaning that adults can be supported to develop their literacy and numeracy after the completion of compulsory schooling.

However, successive governments have struggled to attract adults with poor skills into learning provision. This review argues that in order to address this issue we should focus on what adults do with their literacy and numeracy, their practices, rather than what they can do, their skills. We need to better understand the literacy and numeracy demands of active engagement in society. Taking a demand-led approach, it is argued, will allow for the development of learning provision that is more responsive to adults' needs and motivations. Such learning should support adults in engaging in the practices that are important to them. We draw on practice engagement theory to show that adult basic skills programmes can directly affect students' engagement in literacy and numeracy practices, and over time, these increases in engagement with literacy and numeracy can lead to longer-term proficiency gains. We also suggest that the embedding of reading, writing and numeracy practices in a broad range of social outcomes means that such adult education programmes may have positive social, as well as educational, outcomes.

Ultimately, this review highlights that policy initiatives must understand both supply and demand sides of the equation. A narrow focus by government on qualifications may fail to engage potential learners, especially those with the fewest skills, thus further locking them into a negative spiral of weakening skills and limited motivation to improve their circumstances. This is compounded by the fact that few employers can accurately identify the literacy and numeracy demands of the workplace, or understand how it relates to their employees' qualifications, and how else they might build employees' skills in the workplace.

I. Introduction

Literacy and numeracy play an increasingly important role in the modern world, and, as a consequence, poor performance in these skills has a high price, for individuals and for societies. Yet national and international surveys over the past three decades – including the OECD's International Adult Literacy Survey (IALS, in England, 1996), the English government's Skills for Life Surveys (2003 and 2011) and, most recently, the OECD's Survey of Adult Skills as part of the Programme for the International Assessment of Adult Competencies (PIAAC, 2012) consistently show that around one in five of the adult population has poor literacy and numeracy skills. Moreover, adults with low proficiency in literacy and/or numeracy are far less likely to engage in learning than those with higher skills.

The short review considers the research question: How can we effectively raise proficiency in basic skills by motivating adults to engage in learning? In doing so it summarises current knowledge on:

- The supply of adult literacy and numeracy skills, including skills levels and trends
- Skills use
- Demand for learning and how to motivate adults to enter and persist in learning
- The impact of participation
- Evidence gaps.

It also provides three examples of promising approaches to motivate adults to improve their basic skills.

2. What do we mean by skills, competences and practices?

In the following discussion, it is important to be clear about what is meant by the terms skills, competences and practices. According to the European Qualifications Framework (EQF: <https://ec.europa.eu/ploteus/glossary>), 'skill means the ability to apply knowledge and use know-how to complete tasks and solve problems'. Skills can be described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).

The EQF defines a competence as 'the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development.'

Competences differ from skills in terms of scope. The term skill is used in a narrower setting, referring to the use of methods or instruments in a particular setting and in relation to defined task, while competence refers to a person's ability to use and apply knowledge and skills in an independent and self-directed way. This said, the two are not always distinguished. In the OECD's Survey of Adult Skills (PIAAC), for example, no attempt is made to differentiate between competency and skill, and the terms are used interchangeably in reporting.

The term proficiency refers to the degree of competence an individual has in a particular skill, in the case of this review, in literacy and numeracy. National and international surveys of adult literacy and numeracy measure proficiency by asking respondents to complete a number of tasks using their literacy and numeracy skills.

What distinguishes PIAAC from previous surveys is that it also measures engagement as a component of proficiency, by collecting a range of information on the reading- and numeracy-related activities of respondents at work and in everyday life. Elsewhere in the literature, engagement, referred to as 'skills use' in PIAAC, what people actually do, rather than what they can do, is often referred to as practices. This data on practices was collected because:

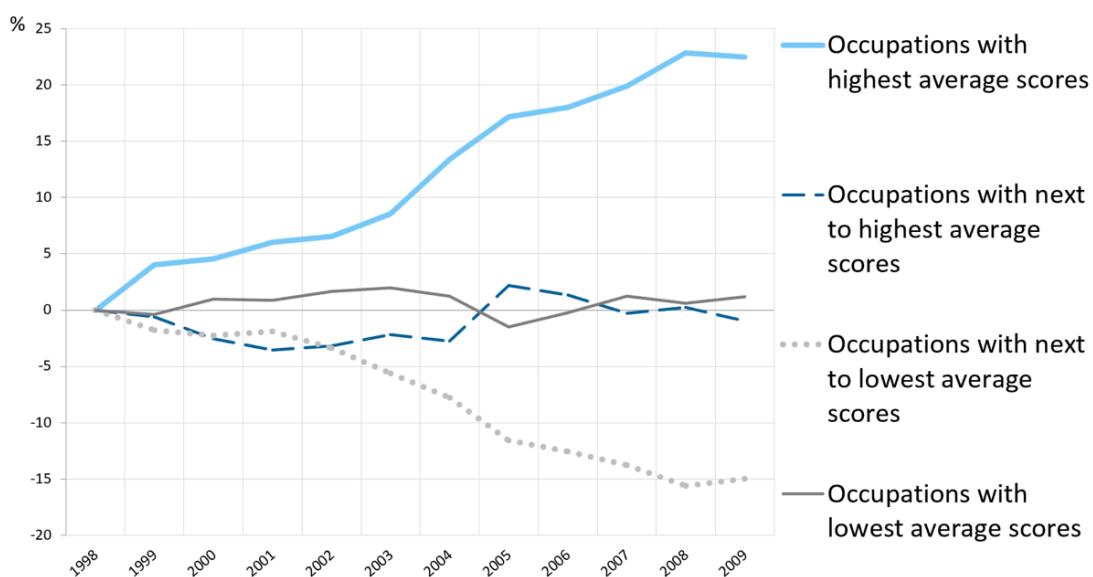
- Engagement in reading and numeracy practices are defined as important components of proficiency in literacy and numeracy.
- The type and frequency of reading and numeracy-related activities are important correlates of proficiency in the domains of literacy and numeracy.

3. Supply of adult literacy and numeracy skills

Why literacy and numeracy are important.

Public interest in and awareness of low literacy skills among adults began in the late 1960s and 1970s and led to a series of government-backed strategies and campaigns to improve adult literacy and numeracy levels. As technology and globalisation have continued to bring about major changes in the workplace, poor skills levels have become an increasingly urgent issue for governments aiming to increase the UK's productivity and build sustainable growth. There is growing evidence of the need amongst employees for a more complex combination of skills than in the past, including literacy, mathematical, ICT and workplace-specific skills (UKCES 2015, OECD 2013). Over the last twenty years, employment opportunities for adults without such skills have become more restricted as can be seen in Figure 1.

Figure 1: Evolution of employment in occupation groups defined by level of skills proficiency



Source: OECD, 2013.

"As the demand for skills continues to shift towards more sophisticated tasks, as jobs increasingly involve analysing and communicating information, and as technology pervades all aspects of life, those individuals with poor literacy and numeracy skills are more likely to find themselves at risk ...and countries with lower levels of skills risk losing in competitiveness as the world economy becomes more dependent on skills." (OECD 2013)

Measuring adult literacy and numeracy levels (England)

Policymakers take an active role in ensuring the supply of literacy and numeracy skills with much attention given to the supply system of education provision: teachers, training, curricula, materials, progression systems, and assessment. The key metric of supply-driven policy in post-compulsory education are the literacy and numeracy levels of 'the workforce'.

Adult basic skills became a renewed priority in 1997 with a change in government. 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 in society, and recommended that there should be a national survey of literacy and numeracy needs in England. The resulting survey, which took place between June 2002 and May 2003, assessed the literacy and numeracy skills of 8,730 randomly selected adults over five broad levels of competence (Entry level 1 to Level 2). The survey report (Williams et al., 2003) estimated that 5.2 million adults aged 16-65 in England had literacy levels below Level 1 and 6.8 million adults aged 16-65 in England had numeracy skills below Entry level 3.

£5 billion was invested between 2001 and 2008 to meet the challenge of raising adult literacy and numeracy skills (DIUS 2009, p. 4). The Skills for Life strategy was reviewed, revised and refreshed (see for example the Leitch Review [DIUS, 2007], Skills for Life: Progress in Improving Adult Literacy and Numeracy [NAO, 2008] and Skills for Life: Changing lives [DIUS, 2009]). Following the publication of the Leitch review, which recommended that by 2020, 95% of adults should have achieved functional literacy and numeracy, emphasis moved to the importance of functional skills at a time of economic challenge, with a particular focus on employability and ensuring that people have skills that enable them to find, stay and progress in work.

In Skills for Sustainable Growth (November 2010), the new Coalition Government, while supporting the ambitions of Leitch, rejected the Leitch targets in favour of encouraging local responses to local needs. The government sought to move towards a demand-led system where the 'users' (learners and employers) are the drivers of the system.

The 2011 Skills for Life survey assessed the literacy and numeracy skills of a representative sample of more than 5800 adults in England aged 16-65, 70% who were classified as working (BIS, 2012). It found a higher proportion of adults to have Level 2 literacy or above than in 2003, but no change in the proportion with literacy at Entry level 3 or below. Numeracy skills in 2011 were marked by a slight decline, with fewer adults having skills above Level 1 and a greater proportion falling below Entry Level 2.

As in 2003, the 2011 survey found adults who were employed tended to have better literacy and numeracy than those who were not. This was particularly true with regard to literacy. In literacy, part-time workers performed as well as full-time ones: the primary gap in literacy was between adults in paid labour and those who were not. In numeracy, however, full-time employees' average scores were much higher than part-time employees': the primary gap in numeracy performance was between full-time workers and everyone else, as it had been in 2003.

Looking at literacy and numeracy levels by working status, the 2011 Skills for Life survey found that, among adults who were in paid labour, 9% did not achieve government targets for functional literacy (Level 1), and 19% did not achieve government targets for functional numeracy (Entry level 3).

Table 1: Literacy and numeracy levels of employed adults in England

<i>Literacy/numeracy level</i>	<i>% at this level, literacy</i>	<i>% at this level, numeracy</i>
Level 2 or above	61	25
Level 1	28	32
Entry level 3	6	24
Entry level 2	2	14
Entry level 1 below	3	5

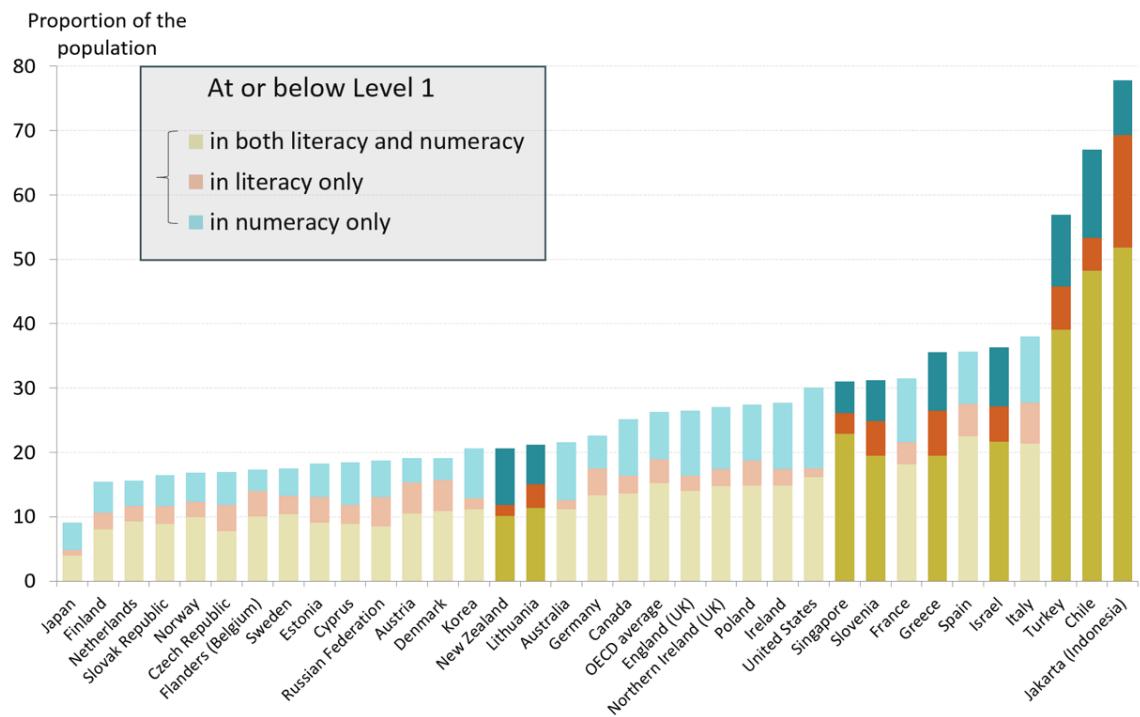
Source: Skills for Life survey 2011, page 163.

International comparisons

The Survey of Adult Skills (PIAAC) assessed the proficiency of adults in literacy, numeracy and problem solving in technology-rich environments. In addition, the survey collected a range of information on the reading-related activities of respondents, the use of information and communication technologies at work and in everyday life, and on a range of generic skills. In the first round of PIAAC 166 000 adults aged 16-65 were surveyed in 24 countries and sub-national regions. In England, 5,131 adults participated in the survey between August 2011 and March 2012, a response rate of 59 per cent. The first results of PIAAC were published by OECD in 2013. England's performance in literacy was not significantly different from the OECD average. However, performance in numeracy was significantly below the OECD average with 24% of adults, around 8.5 million people, scoring at or below level one in numeracy compared to the OECD average of 19.0%.. .

The most important message from PIAAC is that a sizable proportion of the working age population in each participating country have low levels of literacy and numeracy skills. For example, in the Netherlands, which was among the best performing countries in the literacy assessments, 11.7% scored at or below Level 1 in PIAAC, suggesting that 1.3 million Dutch adults of working age are functionally illiterate (Grotlusch et al 2016).

Figure 2: OECD countries, PIAAC data on low performers in literacy and/or numeracy (2012). Countries in bold did not take part in the first round.



Source: PIAAC, 2012.

PIAAC does not reveal a homogenous group of adults with low literacy skills. Instead, it reveals great variation in the characteristics of this group, both within and across countries. That such a sizeable proportion of the population is measured as having lower than functional skills in literacy demonstrates the potential size of the challenges countries face in improving the literacy levels of their adult population. This is compounded by the heterogeneous nature of this population of adults, meaning that, when seeking to increase the supply of basic skills among the adult population, there is no simple, clear target for policy makers to aim at.

Trends

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 (see for example Montt 2016). Literacy and numeracy proficiency has somewhat of an inverted U-shape. Literacy proficiency typically peaks among 25 to 34 year-olds and is lowest among those over 55. The increase in literacy and numeracy skills post-compulsory education may be a result of honing skills in employment. The down-slope in older age is likely to be related to the ageing process, but also may demonstrate a reduction in the use of those skills.

Literacy and numeracy skills and education levels

PIAAC also reveals that there is not a simple relationship between adults' educational levels and their literacy and numeracy skills. 41% of those who scored at or below Level 1 in PIAAC had completed secondary education, while 29% of those who achieved Level 2 had not. One hypothesis is that some adults lose their literacy and/or numeracy skills after leaving compulsory education and others gain competences in adulthood that they did not acquire at school.

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. Only 30% of those working in routine occupations with a good maths pass (that is, A*-C at GCSE/O level) achieved Level 2 or above in the numeracy test, compared to 63% of those working in higher managerial/professional occupations.

Young people

Young people (16-25) in England have particularly poor literacy and numeracy skills compared to other OECD countries. Current research (comparing PIAAC and the International Adult Literacy Survey) strongly suggests this is an age effect (with observable patterns over the life course) rather than a cohort effect (differences between generations).

For example, from analysis conducted by NFER, Newman Burdett argues that:

- The cohort of 16-24 year olds in 1996 scored significantly lower on average than the 25-34 and 35-44 age groups.
- When measured again in 2012, the same cohort (now age 32-40) scored 15 scale points higher.
- This implies it is an age effect

Skills levels that young adults in England reach at the end of compulsory schooling are insufficient for everyday life and work implying that they will need to continue to improve on these skills through further education, or when they enter the workplace.

Conclusion

There have been concerted efforts by governments in many countries, including the UK, to increase the supply of literacy skills through development of basic education programmes for adults, with much interest in the delivery of workplace basic literacy and numeracy courses. However, in the UK, despite major public investment through the Skills for Life strategy, literacy and numeracy levels remain worryingly low.

4. What do adults do with their skills?

Demand for skills

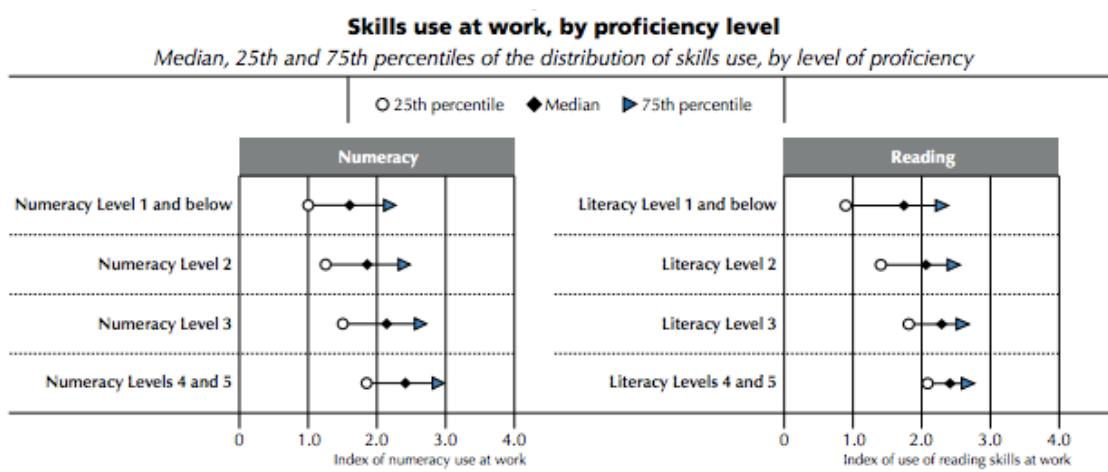
An alternative to a focus on the supply of literacy and numeracy skills among the adult population is to look instead at the demand for these skills. By demand we refer to the literacy and numeracy practices that adults are required and/or encouraged to engage in. Employers frequently cite the need for (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, evidence on demand is largely observational or anecdotal and there is certainly scope for the development of better instruments in order to study and better understand the literacy and numeracy skills that employees need.

Skills use in PIAAC

PIAAC provides data on ‘skills use’, or adults’ practices – what adults do with their literacy and numeracy, allowing us to both better understand the demands placed on adults and also to relate the use of literacy and numeracy to proficiency, as well as to a number of socio-economic variables.

A number of key messages emerge from this data. Sizeable proportions of the low literacy population do not use writing at all, either at work (32.9%) or outside of work (24.9%), while 5% never read outside of work at all. Overall there is a clear pattern of those with good skills using them to a greater degree than those with poor skills.

Figure 3: Survey of Adult Skills, 2012, skills use at work by proficiency level (OECD 2013)¹



Notes: Employees only.

Source: Survey of Adults Skills (PIAAC) (2012), Table A4.23.

StatLink <http://dx.doi.org/10.1787/888932901695>

Source: OECD, 2013.

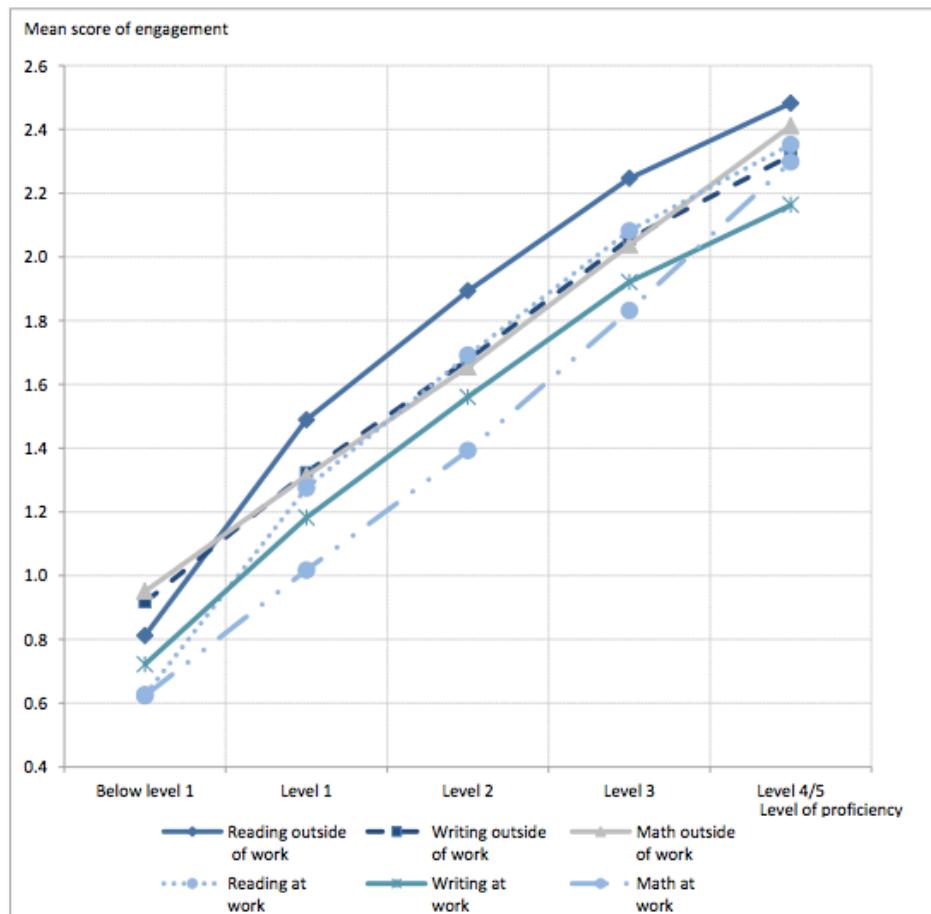
What is more, literacy proficiency in PIAAC is correlated with engagement in reading and in writing practices and numeracy proficiency is correlated with engagement in numeracy

How can we motivate adults to engage in literacy and numeracy learning?

practices. As literacy and numeracy proficiency levels rise, average levels of engagement in reading, writing and numeracy practices rise too, as shown in Figure 4.

Figure 4: Engagement in skills use by proficiency level.¹

Mean scores of reading, writing and numeracy skills use at and outside of work by level of proficiency (OECD average)



Note: Engagement in reading and writing are plotted against literacy proficiency levels whereas engagement in numeracy is plotted against numeracy proficiency levels.

Source: Survey of Adult Skills, 2012.

The relatively strong correspondence between engagement in literacy and numeracy practices and proficiency levels may be a consequence of a number of mechanisms:

- Low-skilled adults are likely to use their skills less simply because of their lower proficiency in literacy and numeracy.
- Lower skills prevent adults accessing those jobs or situations in which they would have opportunities to use these skills more often.
- Low-skilled adults self-select into those jobs and situations which require less engagement in these practices, thus avoiding possible situations in which their skills could be found to be insufficient.
- Reduced opportunity to practise these skills prevents maintenance of existing and development of new skills, thus creating a vicious cycle of skills decline.

Skills use in the workplace correlates with earnings

In low-proficiency populations, reading, writing, and numeracy practices – whether at work or outside of work – are stronger predictors of earnings than proficiency. Initial analyses of data about skill use in the workplace from the OECD's 2008 Adult Literacy and Lifeskills Survey (ALLS) (Desjardins and Rubenson, 2011) and PIAAC (OECD, 2013) showed substantially increased earnings for workers at higher levels of skill use. In the case of their more in-depth analyses of ALLS, Desjardins and Rubenson (2011) estimated 32%, 20% and 10% increased earnings for high levels of reading, writing and numeracy skill use at work, respectively, compared to low levels of skill use after controlling for proficiencies, demographics, education, work experience, occupation and industry (p. 37). Reading, writing and numeracy practices are also embedded in a number of important social outcomes, including social trust, volunteerism, political efficacy and general health.

Furthermore, for the population with poor literacy and/or numeracy skills, practices outside of work appear to be of more importance than practices at work. This may be because they are less likely to be in jobs that require use of reading, writing and numeracy skills. Accordingly, what they do outside work may be of crucial importance in order to maintain and develop their skills.

Conclusion

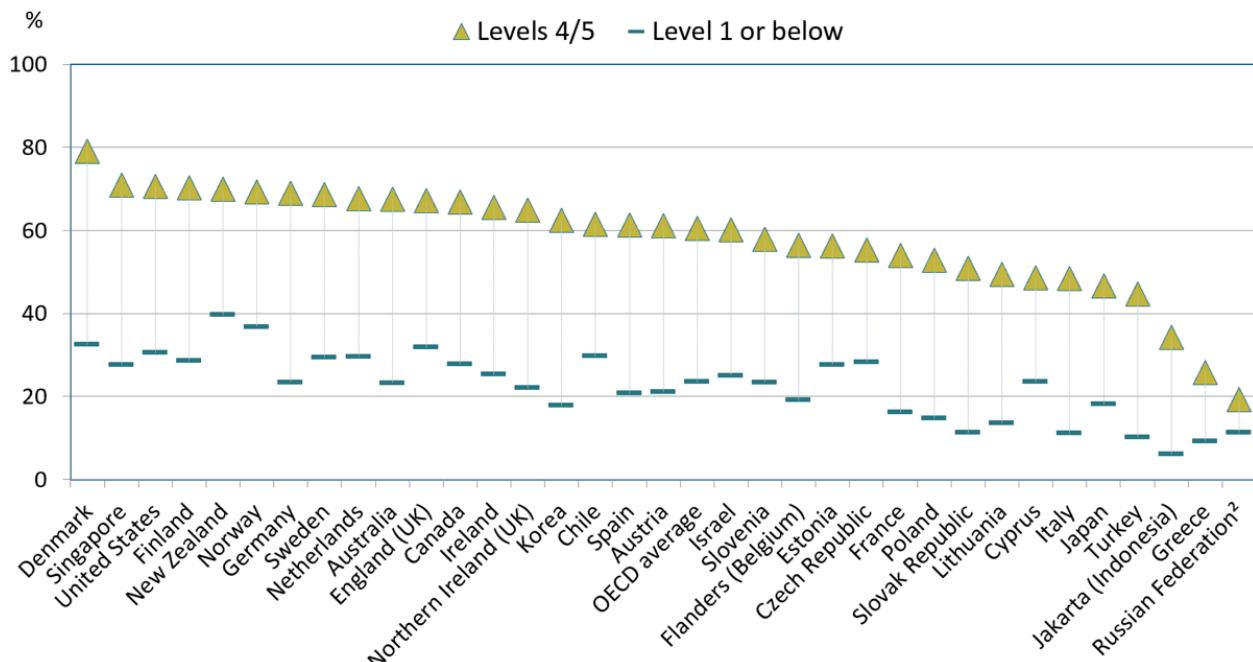
What adults do with their literacy and numeracy skills (practices) matters as much as what adults can do (proficiency). Those adults with the poorest skills are also likely to make less use of their skills than those with higher levels of proficiency. That a high proportion of adults with literacy at or below Level 1 make little use of their literacy skills at work likely indicates that they are working in jobs that demand little in terms of their literacy skills. And, if engaging in practices develops skills proficiencies and prevents skills loss, then they therefore run the risk of losing the skills that they do have by not using them. Adults with poor skills should be encouraged and supported to engage in literacy and numeracy practices within and outside of the workplace.

5. Demand for learning

Participation in learning

One way of supporting adults with poor skills is through adult education programmes. However, we know that participation in adult education is lowest amongst those with the poorest skills as can be seen in Figure 5 below. (Very little robust data is available on participation in literacy and numeracy education.)

Figure 5: Participation in education and training by literacy level.¹



Source: Survey of Adult Skills, 2012.

This may suggest that adults with poor literacy and numeracy do not think that they need to improve their skills in the first place or perhaps that the adult education solutions that are on offer aren't the 'right' kind for many people within this population.

There is some evidence that employees with poorer literacy and numeracy skills are less likely to participate in education and training than workers with higher levels of literacy and numeracy. Bynner and Parsons (1997) found that men and women in the National Child Development Study cohort (born in 1958) were much less likely to receive workplace training if they had poor literacy skills. 58% of men and women with very low literacy had never been on a training course, compared to 30% of men and 43% of women with low literacy and 20% of men and 25% of women with good literacy skills. Atkinson and Williams (2003), in a study of employer perspectives on the recruitment, retention and advancement of low-paid, low status employees in the UK, found that the vast majority of individuals in unskilled jobs received no training at

work. Employers who do invest in training tend to focus their resources on higher skill employees.

Wolf and Evans (2011) concluded that, contrary to policymakers' expectations, employers of low skilled individuals were not particularly concerned about their literacy levels. Employers were only willing to provide the courses so long as they were paid for by the government. Wolf et al concluded that the programmes used "an extremely costly approach, and left no lasting legacy", therefore the policy of subsidising workplace literacy training was "seriously defective".

Qualifications

Achievement of qualifications is often used as a proxy measure for improvements in literacy and numeracy skills. Over the last decade, funding of adult basic skills in England has been increasingly attached to qualification-bearing courses. Currently in England, learners are expected to pass a qualification one level above their pre-existing standard. However, there are questions over how useful qualifications are as a guide to the levels people function at. The aim should be to secure a balance between the priorities of achieving qualifications and promoting sustainable learning progress, in order to give individuals or employers what they want/need.

Adults' motivations to learn

The Skills for Life programme, and subsequent literacy and numeracy initiatives, have largely been shaped by an economic agenda – the perceived need to upskill the population in order to ensure the UK's ability to compete on the global market. And progress toward achieving this has largely been measured by gains in qualifications.

However, evidence on learner motivation strongly suggests that neither the desire to acquire qualifications nor the desire to improve labour market position are the primary motivations for adults to engage in literacy and numeracy learning. Adult motivations to learn are complex; and there is reason to argue that one way to achieve greater participation in and engagement with learning is to more closely align provision to motivation.

Not all learners are motivated by the desire to acquire qualifications; they may be motivated by intrinsic goals (for example, regaining confidence lost at school), or extrinsic goals such as career development, better wages and improved employment.

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 role.

In research drawing on data from the same three-year project on the 'Impact of policy on learning and inclusion in the learning and skills sector' concurred that for employees participating in basic skills courses, career development was not as prominent a motivator 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. (Finlay et al 2007)

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.

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’.

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).

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.

Hodgson et al. (2007) draw three conclusions: a narrow definition of learner motivation based purely on personal economic benefits, coupled with an 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 viewed as the problem, rather than the system, policy reforms fail to create the conditions that are favourable for sustained participation, achievement and progression .

Do employers know what they need?

The UK Commission's Employer Skills Survey (ESS) is the key UK data source on employer demand for and investment in skills (Davies et al, 2012). In ESS 2015, 14% of employers reported a skills gap; the equivalent of 5% of the UK workforce lacking proficiency in their current role. Employers judge that around a quarter of employees, and roughly the same proportion of job applicants, are lacking in the basic numeracy or reading and writing skills the role requires. However, the survey does not provide much more detail than this; and offers no breakdown of how employers interpret basic numeracy skills, for example, or the types of specific tasks this might involve.

The other major survey of this type is the annual CBI survey which questions employers about workplace basic skills gaps, among other related issues. The 2015 survey polled CBI members at senior executive level across all employment sectors – receiving 300 responses from companies that employ over 1.2 million people between them. While most businesses view the overall skill levels of their present workforces as satisfactory or good, half of businesses report they are aware of problems among at least some of their employees in basic literacy (50%), numeracy (50%) and IT skills (46%). In all parts of the UK, 40% or more of businesses provided remedial training in basic skills in the past year for at least some adult employees; although this is primarily in IT and there has been less activity on literacy/use of English (11%) and numeracy (14%). Close to a third of businesses (31%) organised remedial training for at least some young people joining them from school or college while more than one in five businesses (22%) reported providing remedial support for graduates in the past year.

Caution is due as these surveys offer employers limited options for reporting their concerns, and the reports conflate the responses of employers reporting either that there are skills problems to some extent and to a significant extent within their establishment. For these reasons, when NRDC and Ipsos MORI carried out a quantitative survey (of a nationally representative sample over 4,000 workplaces) for BIS on the impact of basic skills on employers, attempts were made to capture more robust data on skills deficits in the workplace by asking survey respondents to consider real world examples, and to differentiate data according to employee level. This study found that:

- One in eight (12%) workplaces in England report a literacy and/or numeracy gap whereby at least one member of staff is unable to perform certain literacy or numeracy tasks to the level required in their day-to-day job.
- More workplaces report a literacy gap than numeracy gap (8.6% vs 6.6%).

- Only 3.2% of workplaces report a deficit in both.

The 2015 CBI survey reports higher levels of skills shortages than the Employer Skills Survey – and this has been the case through the years that these two studies have been running. One possible explanation for the large differences may be found in the large-scale Skills Needs in Britain surveys conducted during the 1990s. In these surveys, employers with more than 25 employees were asked whether they believed a significant gap existed between the skills that their current employees had and those needed to meet the employer's business objectives. Data from one sweep of this survey were used by the National Skills Task Force (1997) to argue that a large percentage of employers thought their employees lacked basic literacy and numeracy skills. As reported by Brooks et al (2001), Robertson (1997) challenged this conclusion, arguing that employer respondents were sensitised to literacy and numeracy issues by the concentrated focus of the survey. 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 et al (2001) suggest could be taken as evidence of a larger employer concern over oral communication skills in the workplace.

Another issue to consider is that literacy and numeracy skills are often viewed as part of a broader range of employability skills, essential but not isolated aspects of employability rather than isolated influences on worker performance and company productivity. This is in step with a holistic view from employers that also includes the influence of personal characteristics; this is important, but it does make research that is able to look for direct links between literacy and numeracy and productivity hard to do

Waite et al (2011) found only 14/53 organisations in their sample carried out any sort of 'Training Needs Analysis' and where this was carried out, it focused on general literacy needs rather than occupation-specific ones. This study draws on longitudinal data from the 'Adult Basic Skills and Workplace learning' project (2003-2008) – interviews with 564 learners in 53 organisations from a variety of sectors and literacy assessments – together with findings from Project 2 in LLAKES Strand 3 research

Workplace case studies carried out as part of the Ipsos MORI/NRDC study for BIS (Carpentieri 2016) suggest that 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.

The case studies suggest that:

- Employers have poor understanding of the basic skills elements within the tasks that their employees carry out.
- Employers have poor awareness of the literacy and numeracy gaps within their workforce and, by implication, the impact of such gaps on their own workplace performance.

- Employers do not generally require certain qualifications to verify levels of literacy and numeracy of prospective employees. Quantitative data in this study show the majority of workplaces [56%] do not specify minimum levels in English or maths in their recruitment).

Conclusion

Adults with poor literacy and numeracy skills are less likely than more highly skilled adults to engage in education programmes designed to improve their skills. Adults' motivations to engage in learning are complex and are not necessarily related to the achievement of qualifications. Employers are not well informed about the literacy and numeracy demands within the workplace or their employees' ability to adequately meet those demands.

6. The impact of participation in basic skills courses

Practice Engagement Theory

Data from PIAAC shows that the supply of literacy and numeracy skills in the population would appear to be below that required to meet the demands of modern society. What's more, those in most need of support are also those who are least likely to engage in literacy or numeracy practices, thus limiting further the development of their proficiency in literacy and numeracy. Practice engagement theory (Reder 1994) holds that proficiency and engagement in literacy practices reinforce each other across the adult lifespan. More frequent reading and writing activities lead, over a long period of time, to greater proficiency. St Clair et al. (2010) carried out a survey of a random sample of 19,927 adults in Scotland 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 proficiency score and 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

Impact on proficiency

Research on adult basic skills programs, both longitudinal (Reder, 2009) and cross-sectional (Sheehan Holt et al 2000), has shown that programme participation has positive short-term effects on levels of literacy practices but not on levels of literacy proficiency Grotlueschen et al 2016).

Wolf and Evans (2011) showed that short workplace courses in England, delivered as part of Skills for Life, did not, in general, have any substantial impact on participants' literacy proficiency. While 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. It would appear that programme participation influences practices rather than vice-versa.

Conclusion

There is thus a strong chain of evidence linking basic skills programmes to increased engagement in practices, with practice engagement over longer periods of time leading to increased proficiency levels. Interventions focused on increasing adults' uses of skills, their practices – whether at work or outside of work – may have an important role to play in increasing the supply of adult literacy and numeracy skills.

7. Promising approaches to the improvement of adult literacy and numeracy skills

Intensive training in the workplace: the British Army

Each year more than half of new recruits to the British Army are assessed as having below Level 1 (functional) literacy: it is not a viable option for the British Army to raise minimum thresholds for entry, therefore literacy and numeracy must be improved through courses offered to recruits in the first three years of training.

A longitudinal study for the Department for Business, Innovation and Skills and the MOD carried out by NIACE and NRDC from 2010 to 2012 followed an initial sample of 1622 new recruits. The quantitative arm of the study took the form of analysing the literacy and numeracy needs, levels and learning amongst recruits at three stages during their first two and a half years of training and service. The report argues that literacy and numeracy policy in the Services represents a model of national significance, with lessons and implications for large employers in non-military contexts.

In terms of understanding adults' motivations to learn, the study found that:

- There were impressively high success rates in terms of qualifications gained, and from provision offered over far fewer hours than those research suggests are needed to make meaningful improvements (20-30 hours rather than 100-150 hours)
- There were concerns that recruits were being taught to the tests. There is therefore a question about the extent to which achievement rates are accompanied by significant and functional learning gains. Qualifications are not always a reliable indicator of long term improvements in skills, and it is a challenge to produce these improvements in a short period of time. The issue is one of balancing the priorities of achieving qualifications and promoting sustainable learning progress.
- Key to success was overt encouragement and support for individual improvement, progression and 'getting on'. This combined with discrete, intensive literacy and numeracy provision that is delivered in an adult learning environment, contextualised to the specific Service settings and made relevant to workplace scenarios increases learner motivation and engagement – even amongst those with very poor experiences of school education. With their emphasis on relevance to the workplace, the extended use of Apprenticeships during the first two years of service in providing the principal route for Service personnel to secure the necessary literacy and numeracy improvements is widely supported. This provides many (though as yet, under-exploited) opportunities for embedding literacy and numeracy within vocational training. Securing sound literacy and numeracy skills forms an integral part of the development pathways, as they are recognised as essential 'enabling' skills.
- The Services context has a large bearing on the effectiveness of provision. This context includes a close link between qualifications and promotion, and high expectations and levels of motivation amongst trainees, who operate in an environment in which short and

intensive training is the norm. Evidence from this study suggests that an environment with these characteristics is likely to have a significant and positive effect on the receptivity and ability to learn and make learning progress over a shorter period than otherwise.

Basic Skills Training in the Workplace: Norway

In Norway, CompetencePlus (the new name for Basic Competence in Working Life, Basiskompetanse i arbeidslivet), is a programme for basic skills training in the workplace that has been hugely successful in reaching individuals who would not otherwise participate in any organised learning activity.

The BKA is funded by the National Budget via the Ministry of Education and Research, and is administered by Vox, the Norwegian Agency for Lifelong Learning, which is part of the Norwegian Ministry of Education and Research. Funding and participation in the BKA programme have increased every year since the programme was established in 2006, with the number of participants now exceeding 30,000. Special efforts are made to include small to medium sized enterprises (SMEs) in the programme and to encourage applications from industries which employ people with relatively low formal skills. The programme concentrates on reading, writing, numeracy, and digital skills. From 2014 the BKA also included oral communication in combination with other skills. Any enterprise in Norway, private and public, can apply for funding. The programme emphasises the following criteria:

- Learning activities should be combined with work, and basic skills training should preferably be linked to other job-relevant training, and
- The courses should increase participants' motivation to participate in additional learning.

The BKA is seen as one of Norway's key mechanisms for stimulating demand for improved basic skills, both from employers and employees. The BKA is viewed as expensive but successful, and as an example of Norway's typically collaborative approach to policy and programme development. Firms work with providers to create tailored programmes for literacy, numeracy and digital skills which are specific to the needs of the employees in that company. The BKA places great emphasis on the relevance of basic skills training to the specific, situated practices of individual workplaces. This means that courses are of varying length, time of day, and focus.

Tripartite cooperation between social partners and government is strong in Norway, and has been a key driver of reforms in adult education, including basic skills. In addition to providing adults with the right to education, these reforms have led to higher programme funding, employees' right to educational leave from work, and tax exemption when education is paid for by the employer. Throughout the Norwegian education system, the emphasis is on trust and 'soft accountability' rather than quantitative measures of accountability. Adult basic skills programmes, whether in the classroom or workplace, are assessed not on the basis of skills gains or qualifications gain for participants, but with regard to other metrics, such as participation, satisfaction, and impact on factors such as confidence and everyday practices.

The on-line solution: Germany's open learning portal

ich-will-lernen.de ('I want to learn') is Germany's biggest open learning portal. It provides free learning materials to increase the users' literacy skills and basic education and offers exercises to promote learners' employability and ability to obtain a school leaving certificate. Since 2004, it has been used by more than 400, 000 learners. The learning portal is funded by the Federal Ministry for Education and Research, meaning that it can be used free of charge.

The learning portal is suitable for beginners/advanced beginners. The interactive exercises are compiled individually for each learner. Users can register anonymously online and are guided by online tutors.

Institutions for adult education can also use the portal as a blended learning instrument and set up online courses to support their own classes.

Literacy

The literacy section provides exercises to learn reading, writing and arithmetic. All exercises are audio-supported. The reading and writing exercises are connected with numeracy exercises by means of scenario based tasks.

Interactive exercises provide learners with learning strategies and competencies to organize everyday life. Additionally this section provides exercises for basic economic education.

Employability and school leaving certificate

The section focusing on employability and the ability to obtain a school leaving certificate offers exercises in German, Maths, and English. The learning offer is complemented by exercises on occupation-related skills. The materials are a cross section of subject matter relevant for users preparing to obtain a school leaving certificate. The exercises can be used in addition to a course. Learners can access them independently, while acquiring basic education in an extracurricular environment.

Exercises on basic work skills train learners in the areas of conflict handling skills, work organisation and prepare them for the job application process.

Life and money

'Life and money' provides exercises for financial literacy aimed at people in the transition from school to work. It contains exercises for consumption, household, debts and prevention, which are located in daily life situations. The exercises aim to strengthen the users' economic competencies and the responsible use of their own resources.

8. Conclusions

Key messages

- Policy makers and researchers should consider the literacy demands on adults in the workplace and other domains of their everyday lives, as well as the supply of such skills, in order to better design policies to support them in meeting these demands. Evidence suggests that encouraging more intense engagement in literate practices is an important mechanism through which literacy is improved and developed.
- A focus on practices, what adults do, not what they are capable of doing, leads us to consider more carefully the demand on adults' literacies in every form. For us to be able to design attractive and motivating learning opportunities we need to better understand the literacy requirements of active engagement in society. Such learning should support adults in engaging in the literacy practices that are important to them.
- Adult basic skills programmes can directly affect students' engagement in literacy and numeracy practices, and over time, gains in practice engagement can lead to longer-term proficiency gains. The embedding of reading, writing and numeracy practices in a broad range of social outcomes further suggests that adult education programs may have positive social, as well as educational, outcomes.

Evidence gaps

- For effective policymaking in this area we need a better understanding of the demands on adults' literacy and numeracy practices. Accordingly, there is an urgent need to develop accurate measures of literacy and numeracy practices to show the relationship between increased levels of practice engagement and proficiency.
- More evidence is needed of the longitudinal impact of improved literacy and numeracy skills as well as changes in practices, on individuals. 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. Thus evidence of the development of adults' literacy and numeracy skills and practices is hard to gather, but could play a key role in improving our understanding.
- There is very little high quality research related to the effectiveness of using technology in adult basic skills delivery, either in the UK or internationally: meta-analysis of RCT evidence from US on prison education found no benefit of ICT over conventional instruction (Torgerson et al 2004). There is a consistent message that technology can motivate learners with basic skills needs, but evidence is lacking on how that motivation leads to concrete learning outcomes Litster et al 2014). What's more, adult literacy and numeracy learners are more likely to be on the wrong side of the "digital divide", that is, the gap between those individuals and communities that have, and are less likely to access the information technologies to support their learning (Parsons and Bynner 2007, Bynner et al 2008).

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Endnotes

¹ The Survey of Adult Skills: Readers' Companion: [www.oecd.org/skills/piaac/Skills%20\(vol%202\)-Reader%20companion--v7%20eBook%20\(Press%20quality\)-29%20oct%200213.pdf](http://www.oecd.org/skills/piaac/Skills%20(vol%202)-Reader%20companion--v7%20eBook%20(Press%20quality)-29%20oct%200213.pdf)

¹ Figure taken from presentation by Andreas Schleiser on announcement of round 2 of the Survey of Adult Skills: www.slideshare.net/OECDEDU/why-skills-matter-further-results-from-the-survey-of-adult-skills

¹ For a summary of what is meant by these levels, see: www.excellencegateway.org.uk/content/etf1286

¹ www.gov.uk/government/publications/skills-for-sustainable-growth-strategy-document

¹ www.gov.uk/government/uploads/system/uploads/attachment_data/file/36000/12-p168-2011-skills-for-life-survey.pdf

¹ See: www.gov.uk/government/uploads/system/uploads/attachment_data/file/246534/bis-13-1221-international-survey-of-adult-skills-2012.pdf

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¹ www.ets.org/Media/Research/pdf/RR-01-25-Kirsch.pdf

¹ www.ipsos-mori.com/Assets/Docs/Events/bis-event-implications-of-piaac-findings-for-england.pdf

¹ Figure taken from presentation by Andreas Schleiser on announcement of round 2 of the Survey of Adult Skills www.slideshare.net/OECDEDU/why-skills-matter-further-results-from-the-survey-of-adult-skills

¹ On average in PIAAC, only 29.7% of adults aged 25-65 at Level 1 and below in literacy had participated in some form of adult education and training in the previous 12 months, while the rate for the general adult population (i.e. all persons aged 25-65) is twice as large (51.3%).

¹ Figure taken from presentation by Andreas Schleiser on announcement of round 2 of the Survey of Adult Skills www.slideshare.net/OECDEDU/why-skills-matter-further-results-from-the-survey-of-adult-skills

¹ England-specific survey report includes findings from more than 74,000 interviews conducted with employers in England, and enables time series comparisons with earlier National Employer Skills Surveys carried out in 2005, 2007 in 2009.

¹ See:

(www.gov.uk/government/uploads/system/uploads/attachment_data/file/525444/UKCESS_2015_Report_for_web_May_.pdf).—

¹ (<http://news.cbi.org.uk/reports/education-and-skills-survey-2015/education-and-skills-survey-2015/>)

¹ The National Research and Development Centre for Adult Literacy and Numeracy (www.nrdc.org.uk)



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