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Abstract

This paper reviews recent research into very low literacy and numeracy to identify the characteristics and learning needs of those with very low levels of literacy and numeracy. Greater insight into the skills and needs of very low level learners should help shape policy and programme development. There are important economic and social reasons for considering the extent and nature of very low levels of literacy and numeracy. UK longitudinal research has highlighted the strong relationship between very low literacy and numeracy and other negative outcomes in adult life, including: lack of qualifications, limited labour market experiences and prospects, inadequate material and financial circumstances, poor health prospects and lack of social and political participation.

Introduction

Although there has been considerable debate concerning policy and funding issues regarding adult literacy and numeracy over the past decade (Benseman 2008), most of these developments have treated these issues in a global manner with little consideration for the heterogeneity of levels that the national surveys showed. In particular, learners' skill levels have substantial implications for which teaching strategies are used. This article looks at the bottom end of the literacy and numeracy spectrum – those adults with very low levels of skills.

Defining 'very low level' literacy and numeracy

Two approaches for differentiating and describing very low literacy and numeracy are relevant to this paper.

1. The Adult Literacy and Life Skills (ALL) Survey in 2006 provides nationally representative and internationally benchmarked data on the skills of the New Zealand population (Satherley and Lawes 2007). The ALL survey requires adults to complete real-world literacy and numeracy tasks embedded in a functional context (untimed) and categorises the results in five levels on a 500 point scale.¹ Level 3 (276 points) is considered the threshold for full participation in contemporary society. Those below Level 3 are considered '*low skills*' and often Levels 1 and 2 are analysed together. This paper focuses on Level 1 only, those with '*very low skills*' (0–225 on the ALL scale for numeracy, document and prose literacy and 0-250 for problem-solving). Tasks at this level require the ability to read simple documents, accomplish literal information-matching with no distractions, and perform simple one-step

¹ ALL uses the same methodology and scoring system as the International Adult Literacy Survey (IALS, 1996) for prose and document literacy. Numeracy and problem solving are new in the ALL Survey. The items are scored on a continuum of difficulty and Scoring is based on the assumption that someone at a given point on the scale is equally proficient in all tasks at that point on the scale – thus someone at a particular point on the proficiency scale would have an 80 per cent chance of answering items at that point correctly (and a greater than 80% chance of answering correctly those at a lower level).

calculations. Adults in Level 1 may have skills ranging from no or little literacy or numeracy up through, and including, those skills expected of a 10-11 year old (early middle school in the USA or Years 5 and 6 in New Zealand). In the USA and Canada, those in Level 1 are regarded as performing below the average score of adults who dropped out of high school and never earned a diploma or its equivalent (Murray et al. 2007).

2. A second approach to describe very low skills are the UK Adult Literacy and Numeracy curriculum levels,² where the equivalent of ALL Level 1 has been split into three Entry levels (Table 1 below). Subdividing the lowest curriculum level into three entry levels enables UK teachers and learners to recognise the very small steps and degrees of progress adults make when learning literacy and for teachers and programme providers to distinguish between the different needs of people at each level. It's useful to understand the UK Entry levels because they are used in UK research on very low level learners that will be presented in this paper.

Table 1 - Skill descriptors for UK ALN entry levels

IALS/ ALL	English curriculum levels	Equivalence in UK system	Literacy (reading) An adult classified at this level...
L1	Entry Level 1 (E1) 3% of population	National curriculum level 1	..understands short texts with repeated language patterns on familiar topics Can obtain information from common signs and symbols
	Entry Level 2 (E2) 2% of population	Level expected of a 7-year-old (Curriculum level 2)	..understands short straightforward texts on familiar topics Can obtain information from short documents, familiar sources and signs and symbols
	Entry Level 3 (E3) 11% of population	Pre-qualification levels - expected of 11-year-old	..understands short straightforward texts on familiar topics accurately and independently Can obtain information from everyday sources
L2	L1	Elementary qualifications	
L3	L2	School leaving qualifications - General Certificate in School Education (GCSE)	

Rationale for a special focus on very low literacy

There are strong economic, social and educational reasons for considering the nature and extent of very low levels of literacy and numeracy. A major UK longitudinal research study (Bynner and Parson 2006) shows that very low literacy has a significant negative impact on individuals and a downstream economic cost, both to them as individuals and society generally. Bynner and Parson's work compared the distinctive features of the life course and current situation of individuals with very low and higher literacy and numeracy skills from a cohort of 9665 individuals. The research has had a significant influence on policy in England

² http://www.dcsf.gov.uk/curriculum_literacy/level/

because of its heightened validity and the robustness of evidence that shows the consequences of poor adult literacy and numeracy.

The study found a strong relationship between very low basic skills and other negative outcomes in adult life, which include: lack of qualifications, poor labour market experiences and prospects, poor material and financial circumstances, poor health prospects and lack of social and political participation. Those with very low skills left school early, had negative feelings toward the value of further education and training and had more restricted home and family choices (Bynner and Parson 2006).

Very low skills were defined as Entry levels 1-3 of the UK adult literacy curriculum – E1 is the very lowest. The three Entry levels make up the equivalent of ALL Level 1. Bynner and Parsons found there are significant social and economic disadvantages for those in Entry level 2 and below, and for their families. For example, children of parents with E1 or E2 skills were twice as likely to be in the bottom 20% of those tested at age 5 as parents of those who had UK L2 numeracy. Women with Entry 2 level literacy were the most disadvantaged at work – their work was less skilled, very few used a computer (38% compared to 78% for women with higher literacy) and they were unlikely to have been on a work-related training course.

A further analysis of data from the study (Parsons and Bynner 2007) compares the life outcomes between birth and age 34 for people with very low literacy (entry levels in the UK adult literacy curriculum) and those with slightly higher skills (Levels 1 and above of this curriculum) to get more insights into the dimensions of very low literacy. Those with the poorest literacy and numeracy were by far the most likely to leave school without qualifications and people in Entry level skills were four times more likely to have negative views on the value of education for improving their chances in the labour market than those in UK Level 1 (the equivalent of ALL Level 2).

Gender differentiation

Men with Entry level skills spent more time unemployed or on sickness benefits and women were more often in full-time home care. By the age of 34, men with very low skills were 20% less likely to be in employment compared to those with higher skills. If employed, it was more likely to be in low-skill, labour-intensive industries - 16% of men and 20% of women with Entry level 2 skills were in less secure industries (cleaning, for example) compared to 5% of men and 3% of women with UK Level 1 or higher literacy. They had significantly less workplace training than those with UK Level 1 or higher skills.

Men with the lowest literacy and numeracy tended to lead a solitary life and were less likely to be fathers in the mid-30s, while women with low skill of similar ages were more than twice as likely as women with higher skills to have been teenage mothers, three times as likely to have four or more children and were likely to be sole parents.

Those people in the groups with the poorest literacy and numeracy were the most likely to have parents who left school early and they were more than twice as likely to have parents who reported difficulties with reading. Parents with very low skills supplied the least educational support to their children and thus the “pattern of poor performance is likely to be repeated across the generations” (Parsons and Bynner 2007, p.80).

Equally importantly, the study also found that very poor literacy and numeracy was not irreversible; the small numbers of adults with very low skills in this survey who

had taken part in training had skills enhancement, improved self-confidence and a range of positive life outcomes. Men with poor literacy aged 21 who improved their skills by age 34 were almost twice as likely to own their own homes as those whose skills remained low.

Other research is also highlighting the role of literacy and numeracy in supporting economic well-being. A more recent study on the value of basic skills in the UK workforce (Vignoles, de Coulon et al. 2008) has found that higher literacy skills are associated with higher employment at age 33/34, with women getting greater employment opportunities from higher literacy and men from higher numeracy. A synthesis of research on adult learning (Sabates 2008) has found that successful adult learning and improved financial literacy play an important part in poverty reduction. An important spin-off from improving literacy and numeracy generally is that it opens the way for learners to take part in further learning opportunities that may develop skills relevant to work (Metcalf and Meadows 2009).

Very low level learners in New Zealand ALL Survey

In 2006 a representative sample of over 7000 New Zealanders aged between 16-65 years participated in the Adult Literacy and Life Skills Survey. This section of the paper presents Ministry of Education-generated data on participants in Level 1 (Satherley and Lawes 2008a; Satherley and Lawes 2008b; Satherley and Lawes 2008c; Satherley, Lawes et al. 2008). Details are provided on Level 1 document literacy and numeracy and on a combined group who have Level 1 skills in both.³ Document literacy is used rather than prose literacy because it better matches the types of reading required at work and many everyday tasks. As part of a detailed interview for ALL, participants completed six simple literacy and numeracy tasks of which they had to get four correct to complete the main part of the survey. Potential participants needed sufficient English to understand the interviewer and give comprehensible answers, so the processes excluded very new speakers of English.

Overview of Level 1 ALL Survey data

Table 2 provides a summary of key facts about people with very low literacy and numeracy. People with very low skills in both literacy *and* numeracy are likely to be particularly disadvantaged in the labour market. 318,000 New Zealand people within Level 1 are estimated to have very low skills in both document literacy and numeracy i.e. 84% of all of those in Level 1 document literacy also have very low literacy while 61% of all those with L1 numeracy also have very low document literacy.

³ This article draws on the four published ALL reports, additional analysis provided by the Ministry of Education and the unpublished Department of Labour's "Analyses from the Adult Literacy and Life Skills Survey for the Up-skilling work".

Table 2 - Summary table of ALL Level 1 Document Literacy and Numeracy

Level 1 Document Literacy	Level 1 Numeracy	Level 1 Document literacy & Level 1 numeracy
– 14% of population ⁴	– 20% of population	– 12% of population
– 378,000 individuals	– 521,000 individuals	– 318,000 individuals
– 52% male/48% female	– 45% male/55% female	– 50% male/female
– 49% Pakeha/22% Māori – 15% Pasifika/19% Asian	– 50% Pakeha/23% Māori – 16% Pasifika/17% Asian	– 45% Pakeha/23% Māori – 17% Pasifika/20% Asian
– 60% employed,	– 58% employed	– 58% employed
– 24% aged 55yrs+	– 22% aged 16-25 yrs	– 24% aged 55+years
– 30% completed Yr 10 or less schooling	– 26% completed Yr 10 or less schooling	– 32% completed Yr 10 or less schooling

Source: Ministry of Education analyses

Some adults may have very low writing and numeracy and higher reading and spoken English. Others may have high numeracy and lower reading skills. For example, 39% of those with Level 1 numeracy have L2 document literacy or above while 16% of those with Level 1 document literacy have L2 numeracy or above.

The results show that men are more likely to have very low literacy and higher numeracy - 67% of those with Level 1 prose literacy and Level 2 numeracy are men, compared to 33% of women. Women are more likely to have very low numeracy and higher literacy - 65% of those with Level 1 numeracy and L2 prose literacy are women.

Socio-demographic characteristics

Men and women are fairly equally represented in Level 1 document literacy and in the group with very low skills in both domains. In Level 1 numeracy alone women are the majority (55%).

People aged over 55 make up the biggest proportion of people in Level 1 document literacy and the combined group (this group has been out of school longer, left school at a time when fewer people participated in higher secondary or tertiary education and/or may have lost skills through lack of practice). People aged 16-24 make up the largest proportion of people in L1 numeracy.

Of those in Level 1 document literacy, 49% are NZ European; in the combined group (i.e. those in both Level 1 document literacy and Level 1 numeracy) they are 45% - approximately 175,000 people. Māori make up 23% of the combined group, Pasifika

⁴ This is down from 21% in the 1996 IAL survey. Numeracy was not measured in 1996. IALS and ALL did not measure writing, speaking or listening.

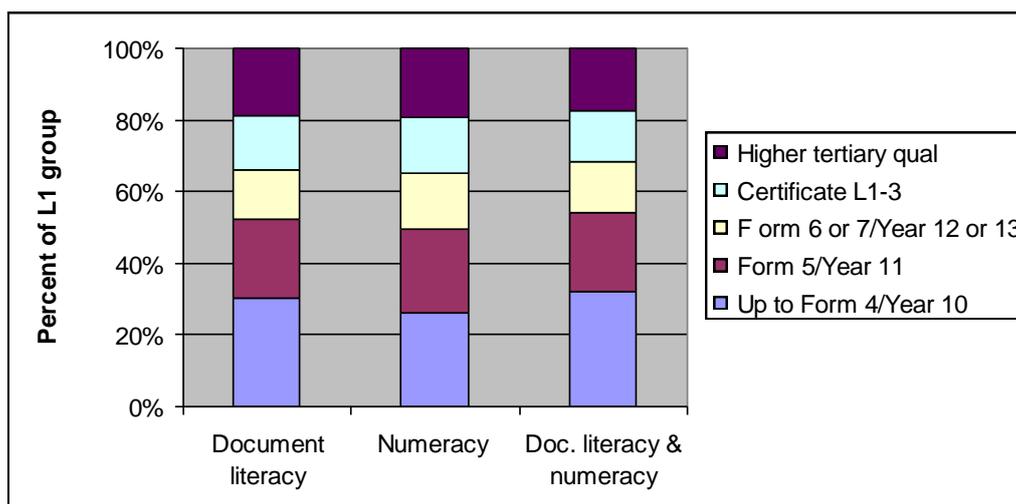
17% and Asian 20%. The last three groups are over-represented relative to their distribution in the New Zealand population.

Migrants make up 38% of those in the combined very low skills group; 14% are recent migrants who arrived since 2001 and 24% are established migrants (arrived before 2001). The majority (62%) in the combined low skills group are New Zealand-born.

Although many migrants are native English speakers and the first language of some of the New Zealand born is not English, the proportions of people in Level 1 with and without English as a first language closely matches those who are and aren't New Zealand-born. Of the combined very low skills group, 62% speak English as a first language, and 38% speak English as a second or other language (ESOL).

Figure 1 shows educational levels of those in Level 1. Over 30% of those in the combined very low skills group had fewer than three years of high school (including a small number with no schooling). About 15% have low-level tertiary qualifications. A significant number of the higher tertiary qualifications may be held by migrants with qualifications gained in other languages.

Figure 1 – Level 1 by educational level

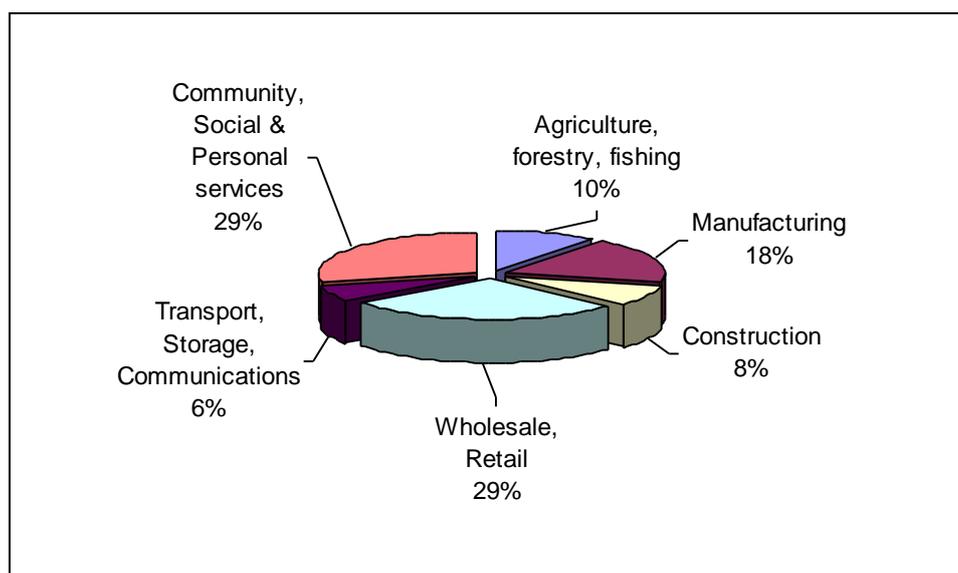


Approximately 57% of those who are in the Level 1 combined low skills group had a mother with less than three years secondary schooling.

Employment and industry

So where are Level 1 New Zealand adults by industry? Reliable figures are available only for numeracy. Figure 2 below shows the distribution of those in Level 1 numeracy by Census industry categories.

Figure 2 - Level 1 numeracy by industry categories



However, because of the variable sizes of these industries, it is important to note that the percentage of Level 1 people in these industries varies considerably. For example, while Community, Social and Personal Services make up about a quarter of the total number of Level 1, they constitute a small percentage of a large industry group. By contrast, workers in Agriculture make up 10% of all Level 1 numeracy, but they are a sizeable percentage of that industry.

Approximately 60% of those in Level 1 across all categories were employed and about 10% unemployed; about 7% were students and about 13% in the combined very low skills group were homemakers. Data from other categories were based on too few respondents to be reliable.

The majority of those in Level 1 are in full time work; 67% of those in the combined very low skills group are in full-time work (147,000 people). The most common occupations for people at this level are service workers, plant/machinery operators and elementary occupations.

Use of literacy and numeracy skills at work

The ALL Survey asked questions about the regularity with which participants read, wrote, and used numeracy and computers at work. Frequency of skill use is important. The Canadian International Survey of Reading Skills (ISRS) found the frequency of reading related to success in spelling and there is clear evidence now of skills loss when people do not use their literacy (Willms and Murray 2007).

Only 18.5% of those with both Level 1 document literacy and numeracy in the New Zealand study used computers at work, compared with use by 24% of those with Level 1 numeracy only and the more than 60% computer usage of those with Level 2 or higher skills. In the combined very low skills group, over 50% read work directions and instructions on at least a weekly basis while only 25% read diagrams and schematics with any regularity.

People in Level 1 for document literacy and numeracy were much less likely to write at work than read. Writing instructions and directions was more common than other

tasks, but about 50% of people in the combined very low skills group never did those things.

When asked about the adequacy of specific skills to do their job, over 80% of the combined very low skills group believed they had sufficient reading, writing and maths skills to do their main job well. This mis-match between the survey assessments and self-ratings has been a consistent feature of both the IALS and the ALL surveys (OECD 1995; OECD 2000). This discrepancy has been debated in the literature and its causes remain largely unresolved (see for example, Tuijnman, A., I. S. Kirsch, et al. (1997).

Key messages from the ALL data

People with very low skills in literacy and numeracy are likely to be doubly disadvantaged, both in the labour market and socially and about 318,000 people fall into this category. The scores show that there may be only a small proportion of the population at the very bottom of Level 1 document literacy with scores below 165, about 20% of those in Level 1, but that equates to almost 64,000. In both the UK and Canada, the proportion of people in the lowest sub-group of Level 1 is also smaller than those in the higher subgroups.

Analysing the data for the two-way split (high and low Level 1) that is possible with our ALL survey sample, it is clear that ESOL is a key issue for New Zealand in considering policy and provision for people with very low literacy. Notwithstanding this, there are significant numbers of New Zealand-born Pakeha, Māori and Pasifika speakers in Level 1, many of whom appear to be in high Level 1.

There are some gender differences. Although men and women are equally represented in the very low skills group, men are more likely to have L1 literacy and L2 numeracy; women reverse this trend with more likely to have L2 literacy and L1 numeracy.

The pattern of limited education that goes with very low literacy is also inter-generational. The majority of those in Level 1 also had a mother with very low educational achievement. With the insights that come from Bynner's research about the negative impacts of very low literacy on the next generation of children, this pattern is a major concern as these skills are likely to be passed on to successive generations, perpetuating a cycle of cultural reproduction.

The majority of people in Level 1, particularly higher level 1 were working, primarily full-time, when the ALL survey was carried out in 2006, although this may change as the unemployment situation worsens rapidly in the current recession. There appear to be benefits in moving people from low to high skills within Level 1 – full-time employment prospects may improve for example.

People in Level 1 tended to rate their skills as adequate or sufficient for their everyday purposes. Self-rating appears to have less to do with objective evidence about skills and more to do with an individual's self-concept – do they perceive themselves as having poor skills in the light of what they want to do? Often the answer is 'no', in their view, they function adequately in an environment where the amount of literacy and numeracy is limited/repetitive or because they use family members and others to meet their literacy needs (Jones, 1997). But self-appraisal is important because it may indicate which people are motivated to change (Bynner and

Parson 2006). And the mismatch between measured skill and self-rating does need to be taken into consideration when marketing programmes to people with very low skills.

Conclusion

Addressing the issue of adults' LLN skills has been hotly debated. Initially, the debate was about the extent of the issue in the total population (Benseman 2008), but the advent of firstly IALS and then ALL survey have largely resolved this issue. The focus over the past decade has now turned to the issue of how to solve, or at least reduce the scale, the issue. While some still wistfully look to schooling improvement to solve it, most policy-makers now accept that addressing adults' LLN issues is likely to be an on-going challenge for the tertiary education system – not only in the peripheral areas of Adult and Community Education and community provision, but also in mainstream tertiary institutions. And because a large proportion of those with LLN needs are in paid employment, the workplace is also now recognised as an important context within which to offer LLN provision.

But while there has been considerable debate about where to locate LLN provision, there has been much less open debate about where provision should be aimed within the various levels of LLN skills. For many, focussing on Levels 2 & 3 is justified as 'getting easy runs on the board' by helping those with reasonable skills up into the more autonomous operations of Level 3. This emphasis has a look of 'picking the low-hanging fruit' about it, which is historically the response of most providers in a competitive environment looking for maximum impact for the least resources. The challenges of improving Level 1 learners on the other hand are considerable, both in terms of teaching and the resources needed to fund longer periods of tuition. However as some of the research overseas (Bynner, . 2001; Murray, al. 2009) has shown, the social and economic benefits of prioritising these learners are considerable if enough people in Level 1 can be moved upwards.

A difficult challenge, but ultimately rewarding for all concerned.

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