



MINISTRY OF EDUCATION

Te Tāhuhu o te Mātauranga

Skills and education

How well do educational qualifications measure skills?

This report forms part of a series called literacy, language and numeracy research. This series covers research on teaching and learning in literacy, language and numeracy and analyses of international surveys on adult literacy and numeracy.

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1 KEY FINDINGS

This study uses data from the Adult Literacy and Life Skills (ALL) Survey, conducted in New Zealand in 2006, to explore the relationship between people's skills and the educational qualifications they hold.

The key findings are:

- Overall, the level of qualifications a person holds is a reasonable indicator of the level of the person's skills, especially among those New Zealanders for whom English is a first language. But there are significant numbers for whom the relationship does not hold.
- It is estimated that between 76,000 and 106,000 New Zealanders aged 16 to 65 who have a degree or higher qualification have low English literacy and numeracy. Conversely, between 83,000 and 119,000 New Zealanders aged 16 to 65 (excluding current students) with no qualifications beyond the level of senior secondary school have relatively high literacy and numeracy.
- While between 18 and 24 percent of degree-holders have low literacy and 22 to 27 percent have low numeracy, two-thirds of the low literacy group and half of the low numeracy group do not have English as a first language. This is largely because skills – numeracy as well as literacy – are tested in the English language. In a society such as New Zealand and in New Zealand's labour market, English-based skills are better recognised and rewarded.
- The finding that a high proportion of those not born in New Zealand – especially immigrants from non-English speaking countries – are degree-qualified but have low English literacy and/or numeracy helps explain why many well-qualified migrants end up working in jobs unsuitable for their level of education, especially in their early years in New Zealand.
- Virtually all (97 to 99 percent) of non-students with no qualifications or school qualifications only but high literacy or numeracy had English as a first language, and 87 to 88 percent were born in New Zealand.
- Comparison of the age distributions of the low qualifications but high skills groups in the 1996 International Adult Literacy Survey (IALS) and the 2006 ALL survey suggests that participation and achievement in tertiary education is an important factor in developing skills. It also reflects the increasing expectation that people stay longer in education.

2 EXECUTIVE SUMMARY

2.1 The focus of the study

This study uses the data from the Adult Literacy and Life Skills (ALL) survey to look at the relationship between New Zealanders' educational qualifications and their literacy and numeracy skills. It builds on earlier explorations of the data (Earle, 2009a; Satherley, Lawes and Sok, 2008b).

It is widely assumed that, on average, people with higher qualifications tend to have higher literacy and numeracy skills. And conversely, those with higher skills are assumed to have gained higher qualifications. In part, these assumptions reflect the fact that one of the principal purposes of education is the development of skills. Information about skills in a population or in the labour market is difficult to find, while information on qualifications is reasonably readily available. As a result, in much research and analysis, qualifications are often used as an index of a population's skill level.

However, there are significant numbers of people whose skill levels do not match their qualifications – some have high levels of education but lower skills or conversely, some may have high skills without having obtained higher educational qualifications. This study looks into the groups of people for whom skills and qualifications don't match.

It addresses the following questions:

- How many people have degree-level qualifications but low skills in numeracy and literacy?
- What are the demographic characteristics of that group? What is their employment status and occupation? What is their immigration status? What is their first language?
- How many people with low qualifications have higher-level skills?
- What are the demographic and employment characteristics of that group?

The findings of this study are presented in three sections. The first looks at the overall relationship between skill levels – as measured in the ALL survey – and the reported level of qualifications held. The second focuses on people who have degree qualifications or higher but who have literacy and/or numeracy at the lower levels on the ALL scale. The third looks at people without any qualification beyond secondary school level but who have high skills in literacy and/or numeracy.

2.2 Skills and education – the overall relationship

The ALL survey measured English-language based skills across four domains: prose literacy, document literacy, numeracy and problem solving.

Previous analysis of the ALL results shows that there is a moderate but definite relationship between skill levels in each of these domains and qualification level (Earle, 2009a; Satherley, Lawes and Sok, 2008b). The difference in score between those with no qualification and those with a bachelors degree represented just over one standard deviation of the score distribution for each domain. But there are groups for whom that relationship doesn't hold. In his study of this matter, Earle (2009a) states:

While overall, people with no qualifications are likely to have low literacy and numeracy, there are a good number of people with no qualifications who have good literacy and

numeracy. Similarly, there are some people who have bachelors degrees or higher who have low literacy and numeracy. This means that qualifications should only not be used on their own to determine the literacy or numeracy ability of an individual [but] qualifications do provide a limited means of determining the literacy and numeracy abilities of groups

The analysis in this report confirms this finding. It shows that people with higher qualifications are significantly less likely to have low literacy and numeracy skills. People whose schooling finished at year 10 or year 11 have much the greatest probability of having low skills. But there are significant numbers of people with high qualifications and low skills and with high skills and low qualifications.

2.3 High qualifications and low literacy and numeracy skills

The ALL dataset suggests that between 76,000 and 106,000 (of the 600,000) New Zealanders who have a degree or higher qualification have low English literacy and numeracy (out of a total of between 936,000 and 1,026,000 with low literacy and numeracy overall). Our analysis suggests that:

- The degree holders with low literacy are more likely to be in younger age groups, but this does not hold for numeracy.
- While female degree holders appear somewhat more likely to have low numeracy than males, the difference isn't statistically significant.
- People with degrees who work in professional occupations are less likely to have low literacy – which may reflect the fact that they are more likely to have to 'practise' their skills but may equally be a 'selection' effect in that people without high literacy may not win professional jobs, despite holding a degree.
- While professionals and technicians with degrees are somewhat less likely than people in other occupational groups to have low numeracy, the difference is not statistically significant.
- People with degrees who were born in New Zealand were much less likely to have low literacy or numeracy than those born elsewhere. Established immigrants are less likely to have low literacy than recent immigrants, but that doesn't apply to numeracy where the difference is not statistically significant.
- The main factor associated with low literacy and numeracy skills among degree holders is first language. Degree holders for whom English is a first language are much less likely to have low literacy and numeracy than others. Among people with degrees whose first language is an Asian language, there is significantly higher prevalence of low literacy than among those whose first language is neither English, nor an Asian language.
- About two-thirds of degree holders with low English prose literacy have a first language other than English, while about half of degree holders with low numeracy have a first language other than English.
- The importance of first language as a marker of people with high qualifications and low skills reflects the fact that ALL – across all four of its domains – uses tests in English to determine skills. And the New Zealand labour market and the wider society recognises skills in an English language context.

- The finding that a high proportion of those not born in New Zealand – especially immigrants from non-English speaking countries – are degree-qualified but have low English literacy and/or numeracy helps explain why many well-qualified migrants end up working in jobs unsuitable for their level of education, especially in their early years in New Zealand.

2.4 High literacy and numeracy skills and low qualifications

If we exclude students – who are working towards higher qualifications – between 83,000 and 119,000 New Zealanders with no qualifications beyond the level of senior secondary school have literacy and numeracy that is in the highest quartile of the New Zealand population. (There is a total group of 1,489,000 with no qualifications beyond the level of secondary school and there are between 400,000 and 477,000 New Zealanders with highest-quartile literacy and numeracy overall). Our analysis of the skills of those who are not students but who have no qualifications beyond the level of senior secondary school suggests:

- People with low qualifications who are in employment have a significantly higher prevalence of high literacy and high numeracy than those who have any other labour force status. This finding may reflect the fact that those in work are more likely to ‘practise’ their skills but may equally be a ‘selection’ effect in that people without high skills may be unable to sustain a job.
- People who were clerks and managers who had low qualifications were more likely to have high literacy and numeracy than those in most other occupations. This, too, may be a practice effect or a selection effect or a bit of both.
- People whose schooling finished at year 11 or earlier are much less likely to have high skills than people whose highest qualification was years 12 or 13 at school or who completed a level 1-3 tertiary education qualification. Those whose highest qualification was years 12 or 13 at secondary school were somewhat more likely to have higher literacy and numeracy than people whose highest qualification was a tertiary level 1-3 certificate, but the difference was not statistically significant.
- In the low qualification population as we have defined it, men were somewhat more likely than women to have high numeracy and women more likely to have high literacy, but the differences were not statistically significant.
- Virtually all (97 to 99 percent) of non-students with low qualifications but high literacy or numeracy had English as a first language, and 87 to 88 percent were born in New Zealand.
- People born in New Zealand who had no qualifications beyond the level of senior secondary school were more likely than those born overseas to have higher literacy and numeracy. This reflects the fact that ALL tested skills in the English language and immigrants have a high prevalence of people for whom English is an additional language.
- People in the 45-65 year age group were less likely than those in the 35-44 year age band to be in the high skill/low qualification group. The difference was statistically significant for numeracy but not for literacy. We verified that the same result holds for literacy in the International Adult Literacy Survey conducted in New Zealand a decade earlier.
- This last finding was perhaps surprising. Many would have expected that the high skill/low qualification population might largely comprise those who went into careers direct from school in an era when tertiary education was less of an option and when expectations of staying longer at school were lower. That this expectation is not borne out in the data may

confirm that a tertiary education is an important means of facilitating the development of a person's literacy skills.

3 INTRODUCTION

3.1 Purpose and key questions

Education aims to provide people with skills and competencies, as well as with knowledge. Therefore, it is widely assumed that people with higher qualifications tend to have higher skills. And conversely, those with higher skills tend to have gained higher qualifications. In part, these assumptions derive from the fact that it is easier to measure and recognise qualifications than it is to assess skill levels. For this reason, qualification level has often been used in research and analysis on trends in the labour market as a proxy for skills.

The Adult Literacy and Life Skills (ALL) survey, conducted in New Zealand in 2006 and in 12 other countries between 2003 and 2006, enables us to examine the relationship between skills and education more closely. ALL used standardised tests to measure certain skills of respondents directly and it also asked them questions about their education, family background, immigration status and employment. Consequently, we can examine the extent to which educational qualifications are a good proxy for skills. And we can use the ALL data to examine in more detail the characteristics of those for whom the ‘high education/high skills’ and ‘low education/low skills’ link does not hold.

This study uses the ALL data to examine how well qualifications can predict literacy and numeracy skills in the New Zealand adult population and then looks at the following questions:

- How many people have degree-level qualifications but low skills in numeracy and literacy?
- What are the demographic characteristics of that group? What is their employment status and occupation? What is their immigration status?
- How many people with low qualifications have higher-level literacy and numeracy skills?
- What are the demographic and employment and immigration status of the people in that group?

3.2 The Adult Literacy and Life Skills (ALL) Survey

The Adult Literacy and Life Skills (ALL) Survey directly measured the literacy, numeracy and problem solving skills of an achieved sample of 7,131 New Zealanders aged 16 to 65 in 2006. The survey also collected extensive background information on education, employment, income and other areas.

The ALL survey tested skills across four domains:

- **Prose literacy** – the ability to read continuous texts, such as news stories and instruction manuals
- **Document literacy** – the ability to read discontinuous texts, such as maps and timetables
- **Numeracy** – the ability to read and work with numeric information
- **Problem solving** – the ability to reason in situations where no routine procedure exists.

The tests were designed to assess skills across the full range of competency, from limited to highly-developed skills. The tests were designed to cover general, cognitive skill levels and did not attempt to assess specialist knowledge and skills (Satherley and Lawes, 2007).

3.3 Report structure

The findings of this study are presented in three sections.

The first section looks at the extent of the relationship between educational qualifications and prose literacy and between educational qualifications and numeracy. It estimates the size in the New Zealand adult population of the two groups of interest in this study – degree qualified people with low literacy and/or numeracy and those with no post-school qualifications but high literacy and/or numeracy.

The second section looks in more detail at those with degrees or higher but low literacy and/or numeracy, looking at their demographic characteristics, their employment and occupational status, their immigrant status and their first language.

The third section looks in more detail at those with no qualification beyond secondary school level but high literacy and/or numeracy, looking at their demographic characteristics and their employment and occupational status.

4 SKILLS AND EDUCATION

This first section looks at the strength of the relationship between qualifications and skills and attempts to estimate the size of the groups for which the ‘high education/high skills’ and ‘low education/low skills’ link does not hold.

4.1 Relationships between skill domains

The ALL survey measured literacy and numeracy skills across four domains. These domains are closely related, so that the four skill measures were highly correlated.

Table 1 shows the correlations between scores. It shows that the strongest correlation was between document literacy and prose literacy. The weakest correlations were between prose literacy and numeracy and between numeracy and problem solving.

Table 1

Correlations between ALL skill domains

	Document literacy	Numeracy	Problem Solving
Prose literacy	0.93	0.83	0.89
Document literacy		0.88	0.88
Numeracy			0.82

Source: New Zealand results from the Adult Literacy and Life Skills Survey, Ministry of Education calculations

Similarly, Earle (2009b) shows that, for people in employment, prose literacy and document literacy tended to be closely related. Numeracy and prose literacy, and numeracy and problem solving, were the least closely related skills. For that reason, we follow Earle in focusing in this analysis on prose literacy and on numeracy.

4.2 Skills and highest qualification

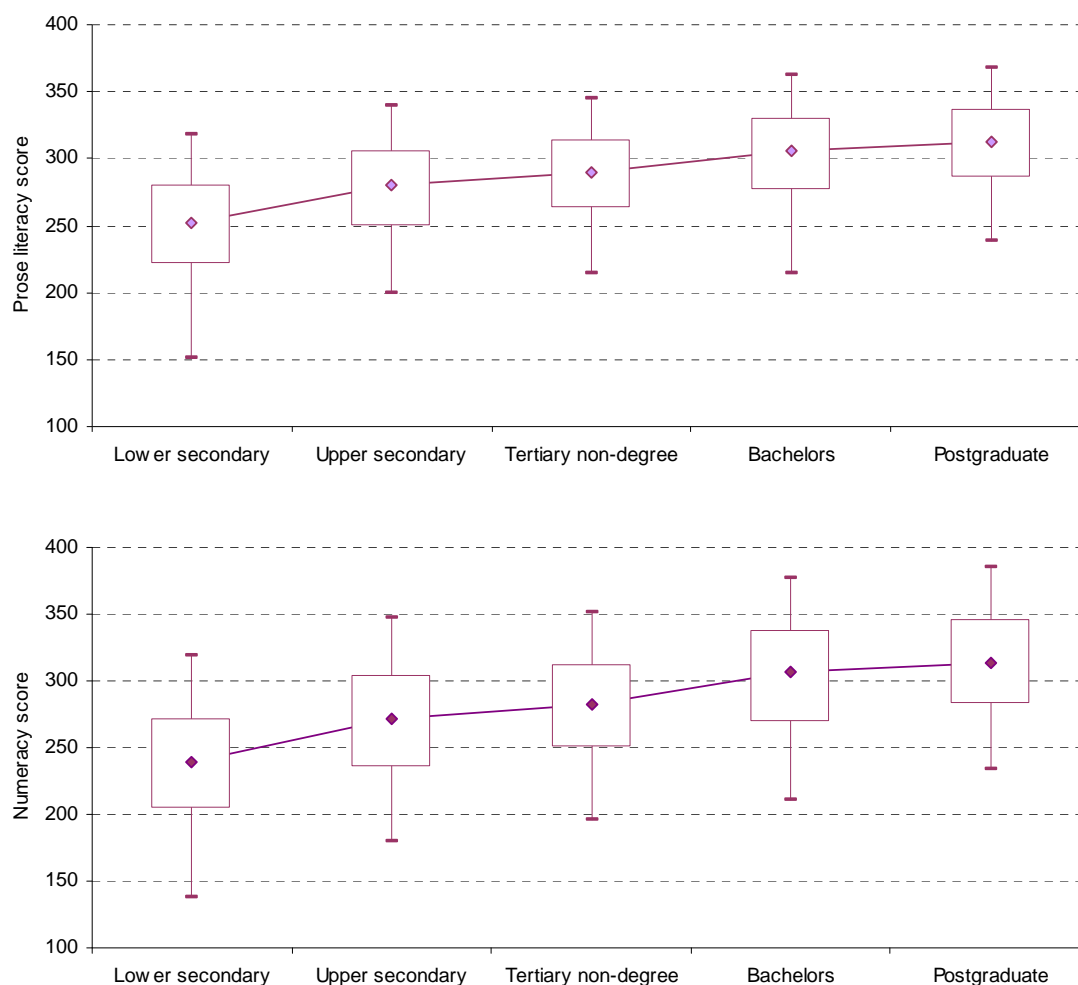
In their analysis of educational participation and literacy, Satherley, Lawes and Sok (2008b) show that participation in education at higher levels tends to be associated with higher levels of prose literacy skill. This finding was derived from ALL data and also confirmed an earlier international study of literacy, the International Adult Literacy Survey, conducted in New Zealand in 1996. Earle (2009a) extended this finding by using ALL data to look at educational qualifications in more detail. Earle concluded that, overall, both literacy and numeracy levels are related to educational qualifications but that there are significant numbers for whom the linkage does not hold. In his subsequent ALL study, Earle (2009b) concludes:

for people in employment, there was a moderate but definite relationship between skill level and qualification level. The differences are more noticeable for people with lower levels of educational qualifications. The difference in literacy and numeracy skill between those with degrees and those with postgraduate qualifications was minimal.

The relationship between qualifications and skills is summarised in the graphs below.

Figure 1

Prose literacy and numeracy skill levels by highest qualification for total population aged 16 to 65 years



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For classification of qualifications see Appendix A. The boxes indicate the range from the 25th to 75th percentiles. The line indicates the median. Bars indicate the range from the 5th to 95th percentile.

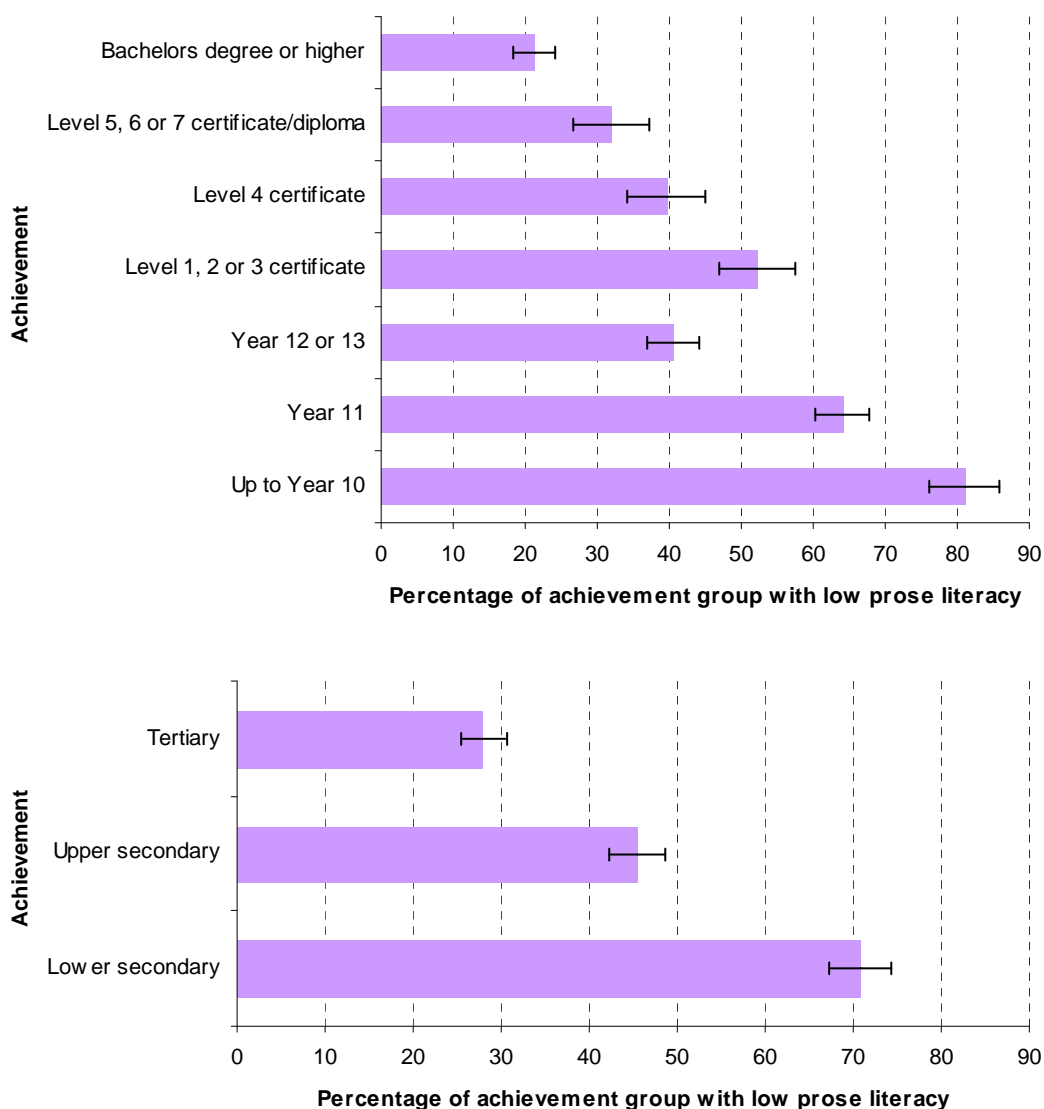
4.3 People with high qualifications and low literacy and numeracy skills

While Figure 1 shows a clear relationship between skills and qualifications at a population level, there are significant numbers for whom it breaks down. Figure 2 below shows the highest educational achievement of those with prose literacy at levels 1 or 2 in the ALL survey¹ – generally interpreted as being below what is needed for dealing successfully with life and work in a complex, advanced society (OECD and Statistics Canada, 2000). Roughly one in five holders of a bachelors degree or higher qualification has level 1 or 2 prose literacy, while more than a quarter of those who are tertiary qualified – at any level above level 3 on New Zealand’s qualifications register² – have low prose literacy.

¹ The levels referred to here and subsequently in this report are ‘cognitive levels’ assigned on the basis of scores in the ALL tests. These cognitive levels are used in national and international comparison, essentially as a benchmark (Satherley and Lawes, 2007). Refer to appendix A for descriptors of the levels.

² The term ‘tertiary-level qualification’ in this report refers to a post-school qualification that appears at Level 4 or higher on the New Zealand Register of Quality Assured Qualifications. Some post-school

Figure 2
 People with low prose literacy (ALL levels 1 or 2) by highest level of education completed



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

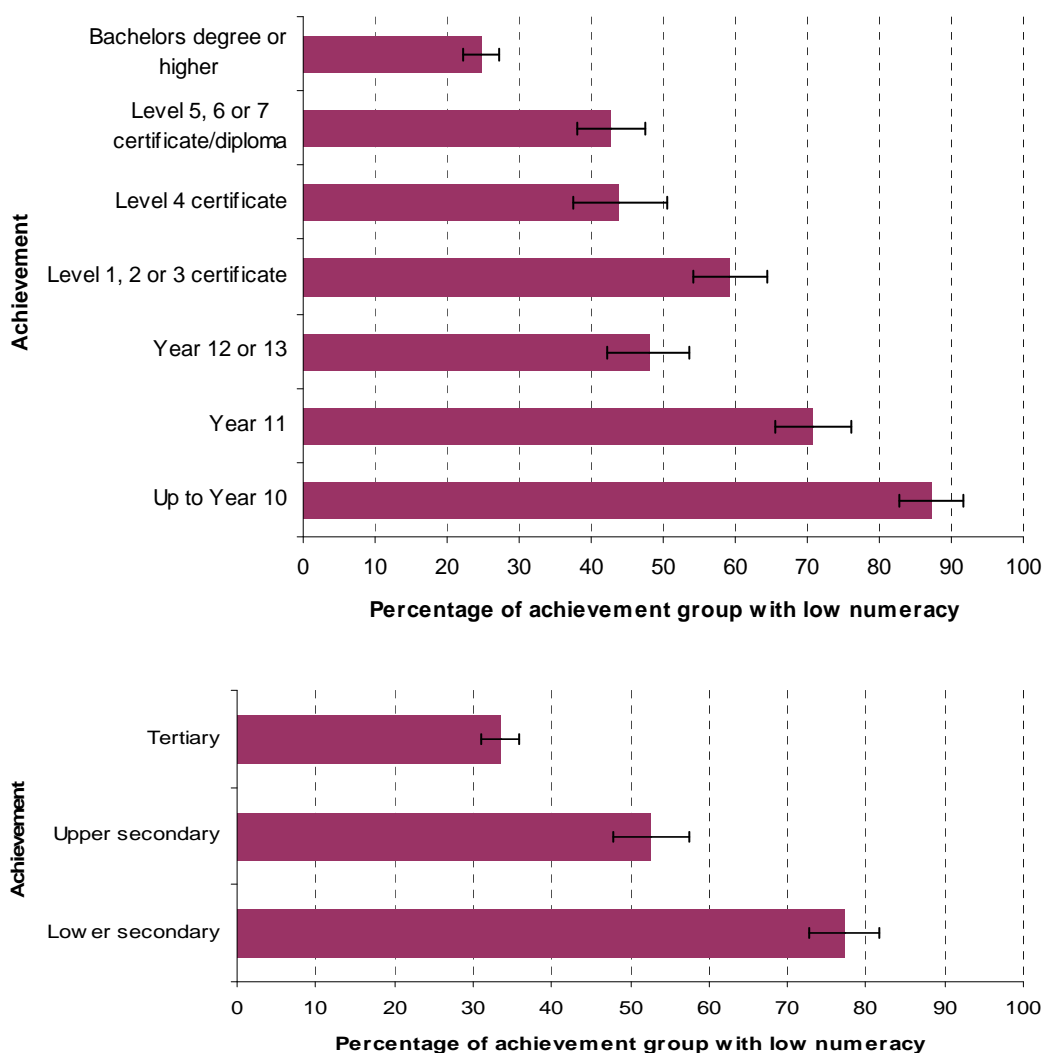
Note: For an explanation of the categories see Appendix A. The bars represent margins of error (at the 95% confidence level). The term 'tertiary' education means education that is above level 3 on the NZ Register of Quality Assured Qualifications

Likewise about a quarter of holders of bachelors degrees or higher qualifications had low (levels 1 or 2) numeracy, with a third of those with a tertiary-level qualification having low numeracy.

qualifications are rated on this register as at levels 1-3 and hence, are at the level of a secondary school qualification – even though they are taught outside of schools. Refer to Appendix A for a more detailed explanation.

Figure 3

People with low numeracy (ALL levels 1 or 2) by highest level of education completed



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent margins of error (at the 95% confidence level). The term 'tertiary' education means education that is above level 3 on the NZ Register of Quality Assured Qualifications

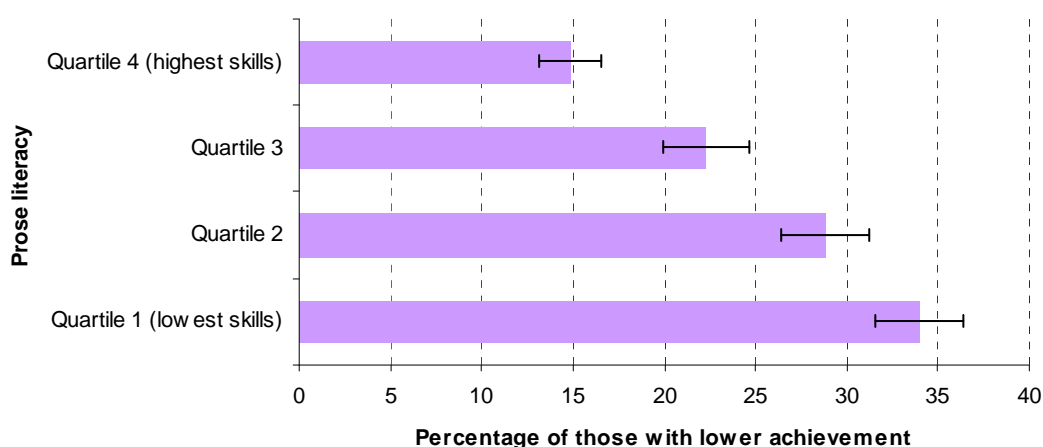
Applying these findings across the New Zealand population, we estimate that between 111,000 and 145,000 New Zealanders between the ages of 16 and 65 hold a degree or higher (out of 600,000 degree holders) but have low prose literacy. With numeracy, the estimate of the corresponding number is between 130,000 and 166,000. The overlap between these two groups -- that is, the number with a degree or higher but low prose literacy *and* low numeracy -- is between 76,000 and 106,000 (out of a total group of between 936,000 and 1,026,000 with low prose literacy and low numeracy). Taking the midpoints of these ranges, 71 percent of those with a degree or higher with low prose literacy also have low numeracy, while 62 percent of those with low numeracy also have low prose literacy.

4.4 People with low qualifications and high literacy and numeracy skills

The relationship between qualifications and skills is clearer for those with low qualifications. The numbers who had no qualification beyond year 11 at secondary school but whose prose literacy was at levels 4 or 5 in ALL were too small for analysis. Only about 8 percent of those who had no qualification beyond secondary school level³ had a prose literacy level of 4 or 5. In fact, only 15 percent of the entire ALL sample had prose literacy at level 4 or 5 (Satherley, Lawes and Sok, 2008a). This means that it is difficult to conduct any meaningful analysis of the people with ALL skill levels 4 and 5 who have low qualifications. Therefore, in this analysis, we take the low qualifications/high skills group to be those who had no qualification beyond school level but whose skills were measured as being in the top quartile⁴ in the ALL survey.

Figure 4

Prose literacy quartiles for people with lower educational achievement – year 13 at secondary school or tertiary qualifications at level 3 or lower



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: The bars represent the margins of error (at the 95% confidence level).

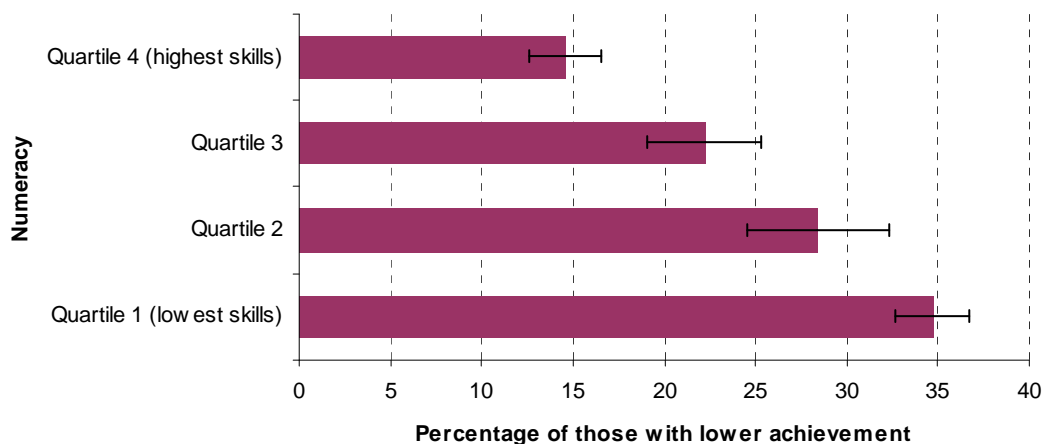
Around 15 percent of those with low educational qualifications have prose literacy in the top quartile. A similar result is found with numeracy, as shown in Figure 5.

³ The people in this group may have had a post-school qualification but, if so, it was no higher than level 3 – which is the level of attainment of someone who had completed a high school qualification such as NCEA level 3.

⁴ The top quartile means the score that separates the highest quarter of the population from the rest.

Figure 5

Numeracy quartiles for people with lower educational achievement – year 13 at secondary school or tertiary qualifications at level 3 or lower



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: The bars represent the margins of error (at the 95% confidence level).

The ALL results suggest that something between 196,000 and 248,000 New Zealanders aged between 16 and 65 years have no qualification beyond school level (out of a total group of 1,489,000 with no qualifications beyond school level) but have high prose literacy, while the corresponding figure for numeracy is between 186,000 and 249,000. The overlap between these two groups, that is, the number with low qualifications but high prose literacy *and* high numeracy, is between 106,000 and 149,000 (out of a total group of 400,000 to 477,000 with high prose literacy and high numeracy). Taking the midpoints of these ranges, 58 percent of those with low qualifications but with high prose literacy also have high numeracy, while 59 percent of those with high numeracy also have high prose literacy.

5 PEOPLE WITH HIGH QUALIFICATIONS AND LOW LITERACY AND NUMERACY SKILLS

This section looks at people who have degrees or higher qualifications but whose literacy and/or numeracy was measured in the ALL survey as level 1 or 2 and explores the demographic, the employment and the migration and language characteristics of this group.

Levels 1 and 2 are below what is considered a minimum for dealing with the demands of life and work in a complex, advanced society. (OECD and Statistics Canada, 2000; Statistics Canada, 2005). Level 3 is generally seen as the skill level required for successful entry to degree study. Performance above Level 2 is generally associated with a number of positive outcomes, including increased civic participation, higher earnings and more opportunities for ongoing skill development (Statistics Canada, 2002).

5.1 Demographic differences

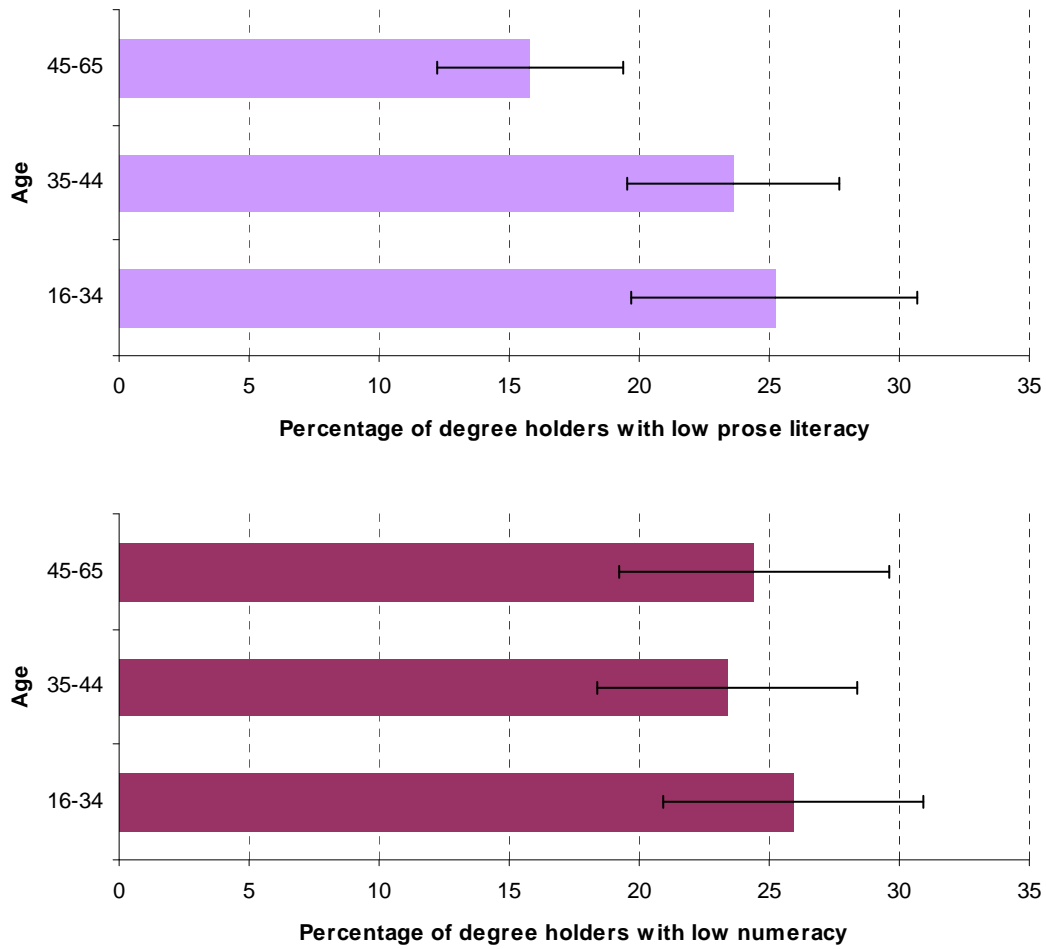
Figure 6 below looks at the degree-holders with low literacy, broken down by age, while Figure 8 looks at differences by gender.

Low prose literacy is significantly less likely to occur among holders of degrees or higher qualifications aged over 45 years, despite there being no statistically significant difference in the proportion of people over the age of 45 with low literacy over the population as a whole (Satherley and Lawes, 2008).

While it is not possible to be definitive about the reasons for the lower prevalence of low literacy among holders of bachelors degrees aged over 45, this may be a consequence of the greater prevalence of immigration in younger age groups, meaning that the over 45 group is less likely to include people whose first language is not English. It may also reflect the fact that those in older age groups may be in more senior positions that require them to enhance and maintain their skills. Further, it may reflect the elite nature of the New Zealand university system until the 1970s. Universities tended to cater to a narrower (and hence, more able) section of school leavers until the late 1960s, when the early baby-boom generation left school. A good proportion of the degree holders in the 45-65 age group at the time of the ALL survey had been through university before the expansion of the 1970s and later.

Figure 6

Holders of a degree or higher qualification with low English prose literacy and low numeracy (level 1 or 2) by age group

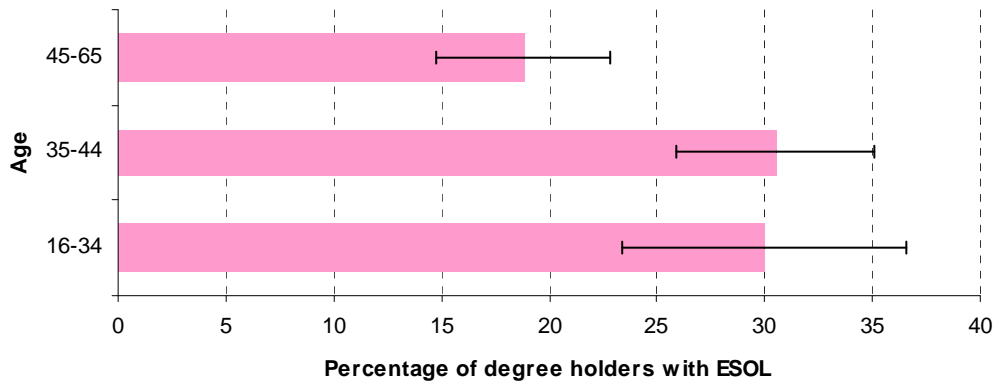


Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the high qualification/low skills groups.

The most obvious factor related to the age distribution of prose literacy is first language. In section 5.3 it is shown that degree holders whose first language is not English are much more likely to have low prose literacy than native English speakers. The following graph applies to all degree holders and displays the percentage in each age group who are not native speakers of English. It shows that the percentage of degree holders whose first language is not English is considerably lower in the 45-65 age group.

Figure 7
Holders of a degree or higher qualification who are not native speakers of English, by age group

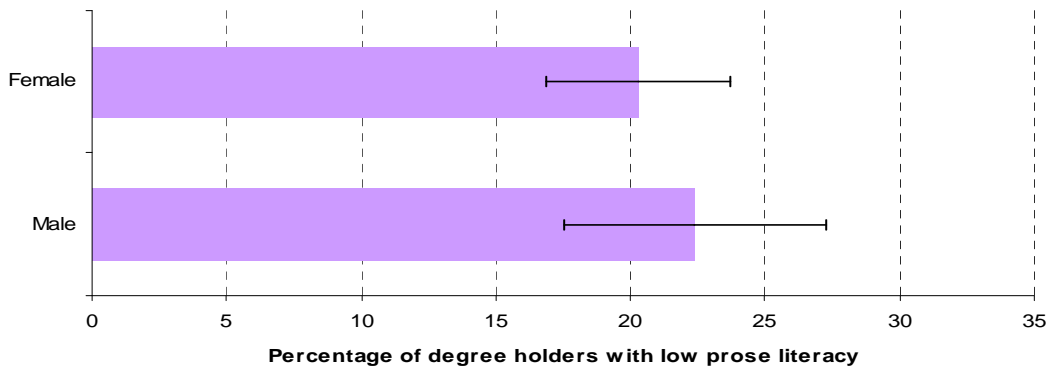


Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the high qualification/low skills groups.

Female graduates are slightly – but not statistically significantly – less likely to have low literacy than male, while the reverse applies in the case of numeracy.

Figure 8
Holders of a degree or higher qualification with low English prose literacy and low numeracy (level 1 or 2) by gender



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

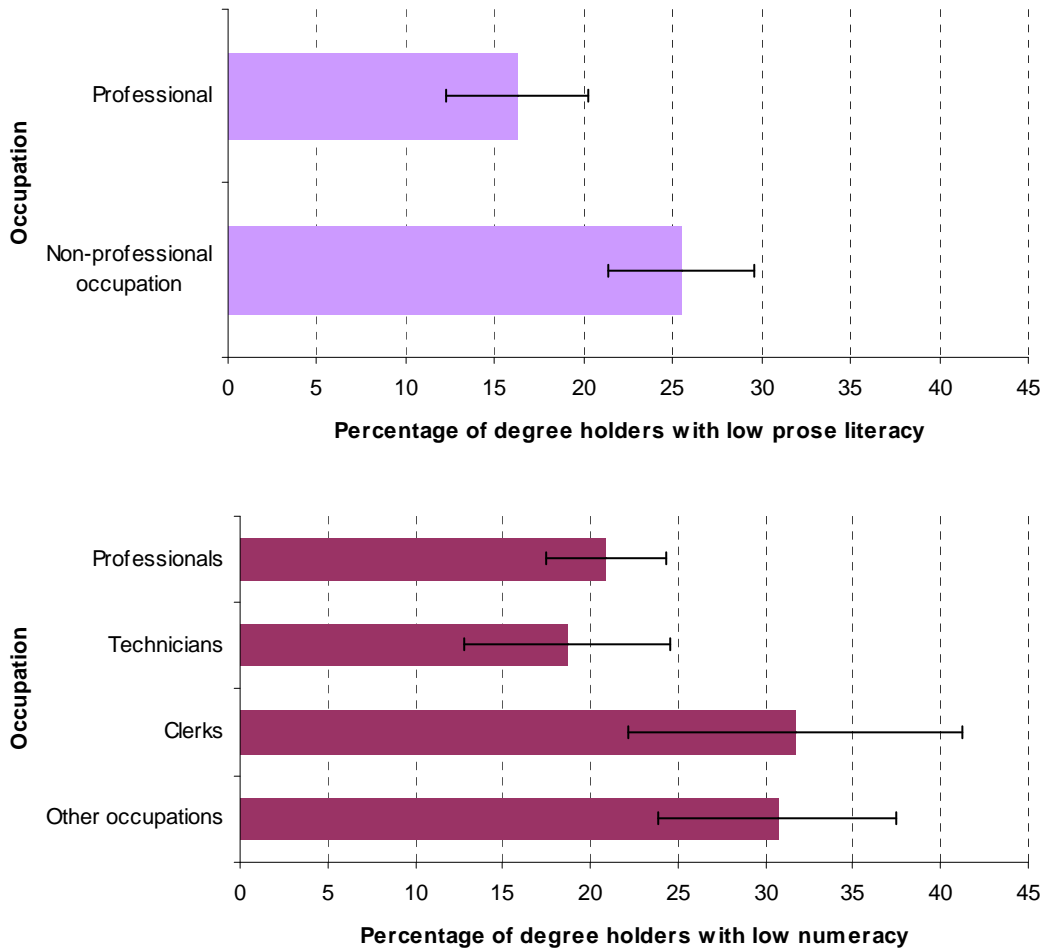
Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the high qualification/low skills groups.

5.2 Employment differences

Unsurprisingly, people with degrees who are in professional occupations have significantly higher literacy than those in non-professional occupations. In part, this may relate to the fact that those in professional occupations have to use (and hence, practise) their skills more. Equally, there could be a selection effect, with those with lower literacy being unable or unwilling to secure employment in a professional occupation.

Figure 9

Holders of a degree or higher qualification with low English prose literacy and low numeracy (level 1 or 2) by occupational group



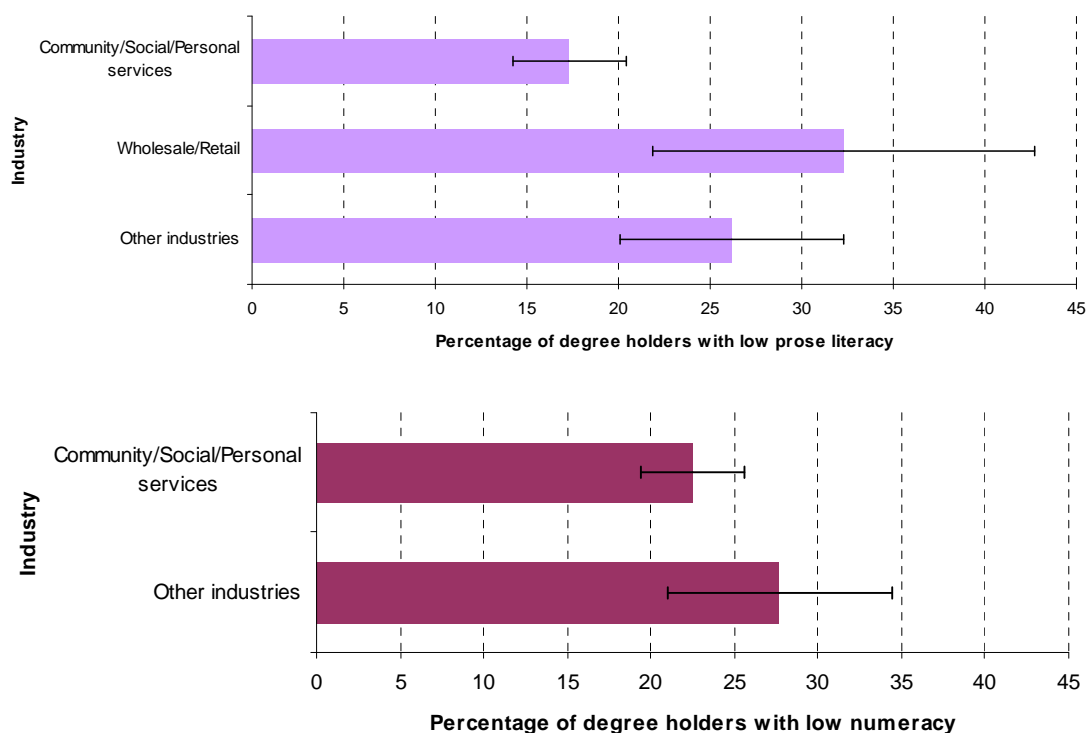
Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the high qualification/low skills groups.

Those with higher qualifications and lower literacy are less likely to be working for employers in community, personal and social services.

Figure 10

Holders of a degree or higher qualification with low English prose literacy and low numeracy (level 1 or 2) by industry group



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the high qualification/low skills groups.

5.3 Migration and language differences

The following graphs look at the high qualifications/low skills groups by immigrant status and by first language. Those not born in New Zealand are counted as ‘immigrants’. Immigrants constitute a diverse group – it includes refugees, skilled migrants and their families, business migrants and others, and it may include some temporary migrants. See Appendix A for further detail of immigrant categories. Different categories of immigrants can be expected to have different occupational and language skills. In this analysis, we are not able to distinguish between immigrant categories and hence, the results we show below will not reflect the diversity of skills in the immigrant community.

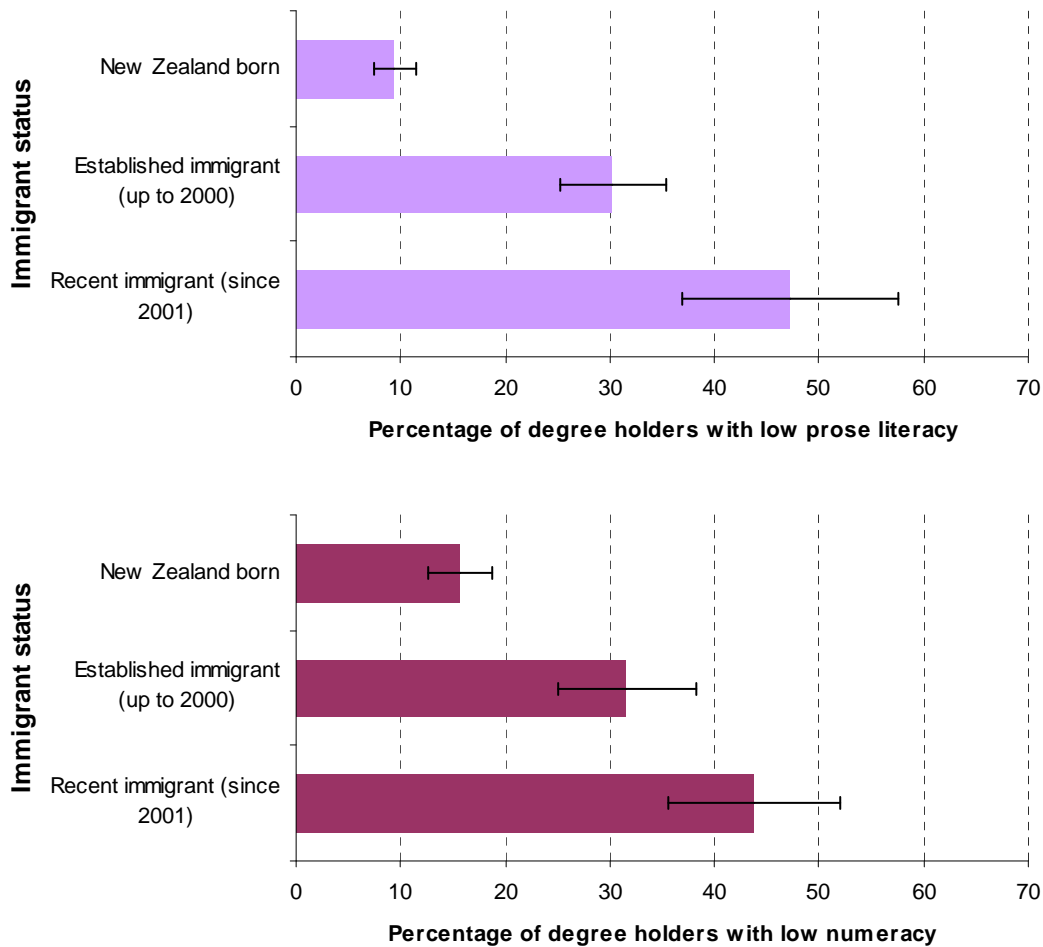
The ALL survey was administered in English⁵, so that skills as measured in ALL are dependent on some level of fluency in English. To some extent, the New Zealand labour market discounts the qualifications of those for whom English is not a first language (Earle, 2009c; Maani, 2009), reflecting the fact that, in New Zealand’s largely mono-lingual labour market, skills in work are not necessarily revealed fully if someone is struggling with English. There may also be some reluctance in some occupations, industries or workplaces to employ people with non-native English accents. Analysis of the ALL data shows that recent immigrants with degrees are significantly more likely to have low literacy, while established immigrants with high

⁵ Literacy and numeracy were measured in ALL using a standardised international instrument, rather than one tailored specifically to New Zealand social and cultural requirements. However, analyses of the relation between literacy or numeracy as measured in ALL and labour market outcomes (Satherley, Lawes and Sok 2008b, Earle 2009b) indicate that the skills measured by ALL approximate the English literacy and numeracy skills demanded in the New Zealand labour market.

qualifications are significantly more likely to be in this category than people born in New Zealand.

The relationships between literacy and numeracy skills and immigrant status are not necessarily direct. Due to the small size of the high qualifications/low skills groups, there is little scope for more in-depth analysis of different immigrant categories within these groups. However, one of the main factors clearly related to English literacy and numeracy is first language, and one of the main differences between the different immigrant statuses is the proportions of degree-holders with English as a first language: for the New Zealand born, this proportion is 98 percent; for established immigrants, it is 52 percent; and for recent immigrants it is 29 percent.

Figure 11
Holders of a degree or higher qualification with low English prose literacy and low numeracy (level 1 or 2) by migration status



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

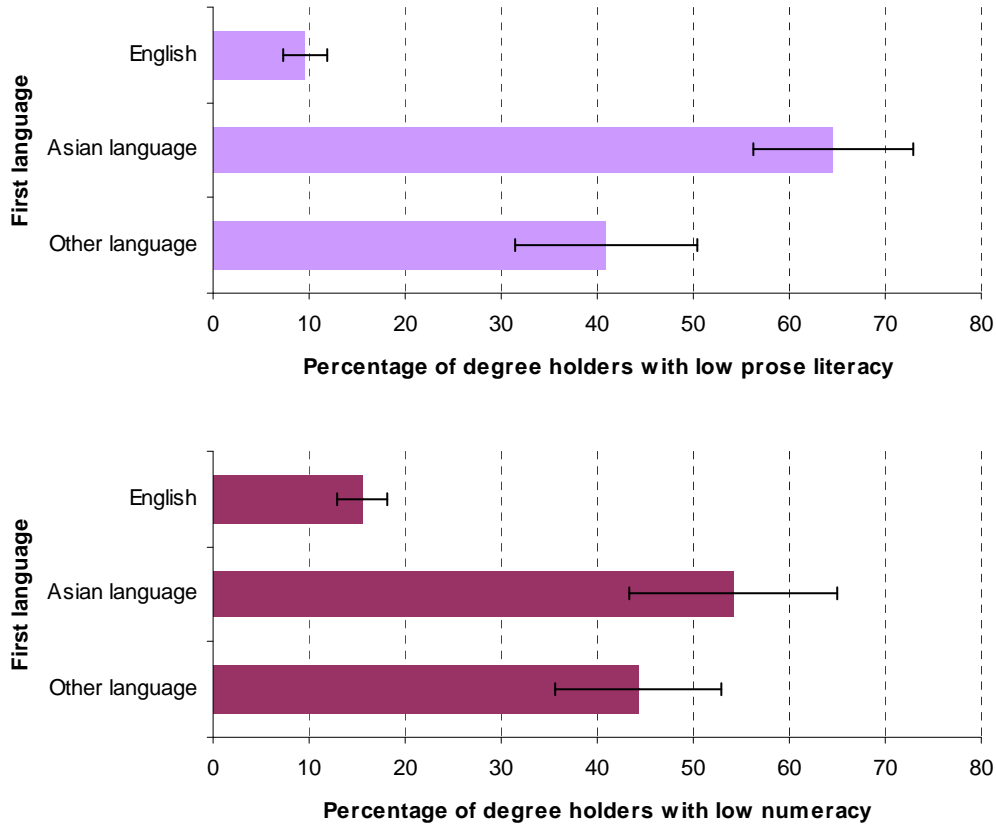
Note: Bars represent margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the high qualification/low skills groups.

As implied in Figures 6 and 7 above, first language is an even more powerful predictor than immigrant status of low English prose literacy among holders of degrees or higher qualifications. About two-thirds of degree holders with low English prose literacy have a first language other than English; 33 percent have English as a first language, 45 percent have an Asian first language and 22 percent another first language. About half of degree holders with low numeracy have a first language other than English; 47 percent have English as a first language, 33 percent have an Asian first language, and 20 percent another first language. Figure

12 shows that those with English as a first language who hold a degree or higher qualification are relatively unlikely to have low English prose literacy.

Figure 12

Holders of a degree or higher qualification with low English prose literacy and low numeracy (level 1 or 2) by first language



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the high qualification/low skills groups..

These two findings reflect two features of recent immigration trends. The first is the fact that many immigrants have higher qualifications. Immigrants are roughly twice as likely to have a degree as the New Zealand born (Maani, 2009), reflecting preference given to immigration applications from those with degrees over much of the last 15 years. The second is that many immigrants come from countries where English is not the first language⁶.

⁶ This paper does not traverse the changes in immigration policy over the years. Changes made to immigration policy since 2004 have given greater weight to matching skills of applicants to skill needs in the economy. This may tend to have different effects over time.

6 PEOPLE WITH LOW QUALIFICATIONS AND HIGH LITERACY AND NUMERACY SKILLS

This section looks at people who do not have a qualification above level 3 on the New Zealand Register of Quality Assured Qualifications but whose literacy and/or numeracy was shown in the ALL survey as being high – in the highest quartile of literacy or numeracy scores.

The analysis below will show that the 25 percent with high literacy and/or numeracy tend to have higher qualifications, so the group of interest in this study – those with low qualifications but high skills – is small.

6.1 Educational differences

As one would expect, some of those in the high skills/low qualifications groups are current students – people whose lack of qualifications reflects their status at the time of the ALL survey but who were on the path to gaining qualifications. Among the group are secondary students who have not yet completed level 3, and tertiary students at level 4 or above who have not yet completed a qualification at that level. Of those with lower qualifications but prose literacy in the highest quartile, 16 percent are current students. Of the lower qualified with numeracy in the highest quartile, 23 percent are current students.

Almost all of the current students with low qualifications and high skills were between 16 and 24 years of age (94 percent of those with high prose literacy and 95 percent of those with high numeracy), and many were simply too young to have achieved at level 4 or above.

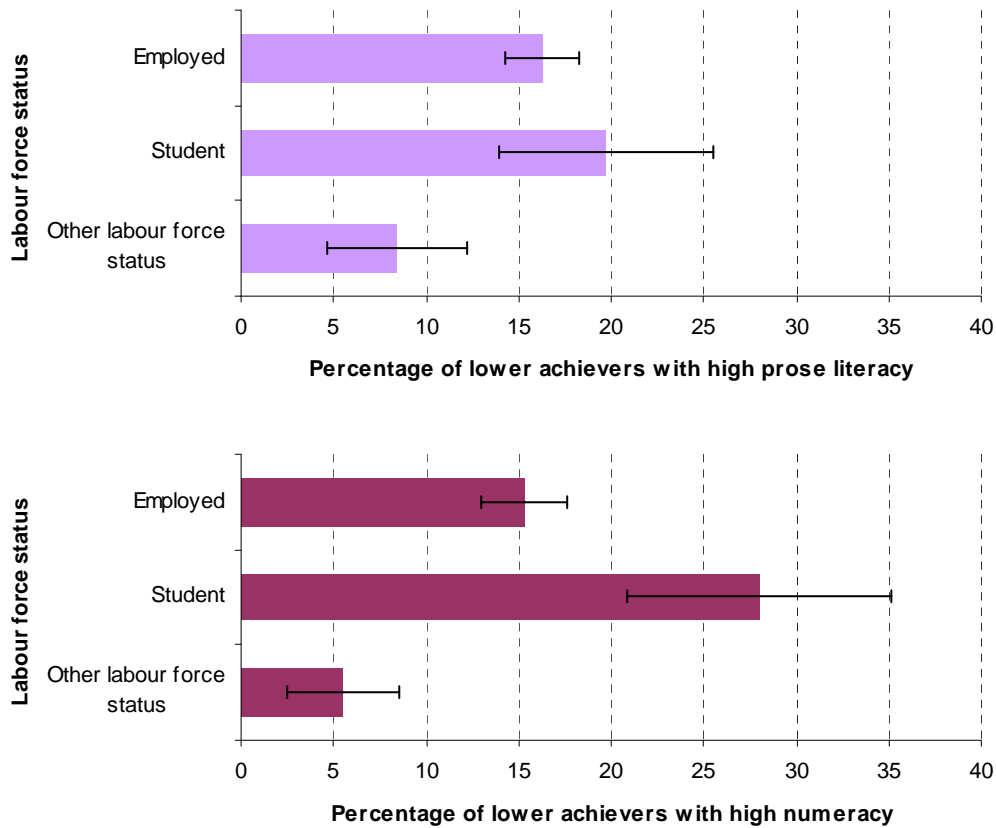
Students with lower educational qualifications as a group have a different literacy and numeracy profile from the lower qualified who are not students, as indicated in Figure 13. While students have a similar prevalence of high prose literacy to employed people, they have a higher prevalence of high numeracy than employed people and than those with other labour force status. These differences are statistically significant.

Many of the current students will be on their way to achieving a qualification at level 4 or higher. Retaining current students in the definition of those with lower qualifications but higher skills distorts the overall pattern of this group. Therefore, current students will be excluded in the rest of the analysis of this group.

After excluding students, between 162,000 and 211,000 people aged 16 to 65 years have no qualification beyond school level but have high prose literacy, while the corresponding figure for numeracy is between 146,000 and 189,000. The overlap between these two groups, that is, the number with low qualifications but high prose literacy *and* high numeracy, is between 83,000 and 119,000. Taking the midpoints of these ranges, 54 percent of those with low qualifications but with high prose literacy also have high numeracy, while 61 percent of those with high numeracy also have high prose literacy.

Figure 13

Prevalence of high prose literacy and numeracy (highest quartile) among those with no educational qualification above Level 3 by labour force status

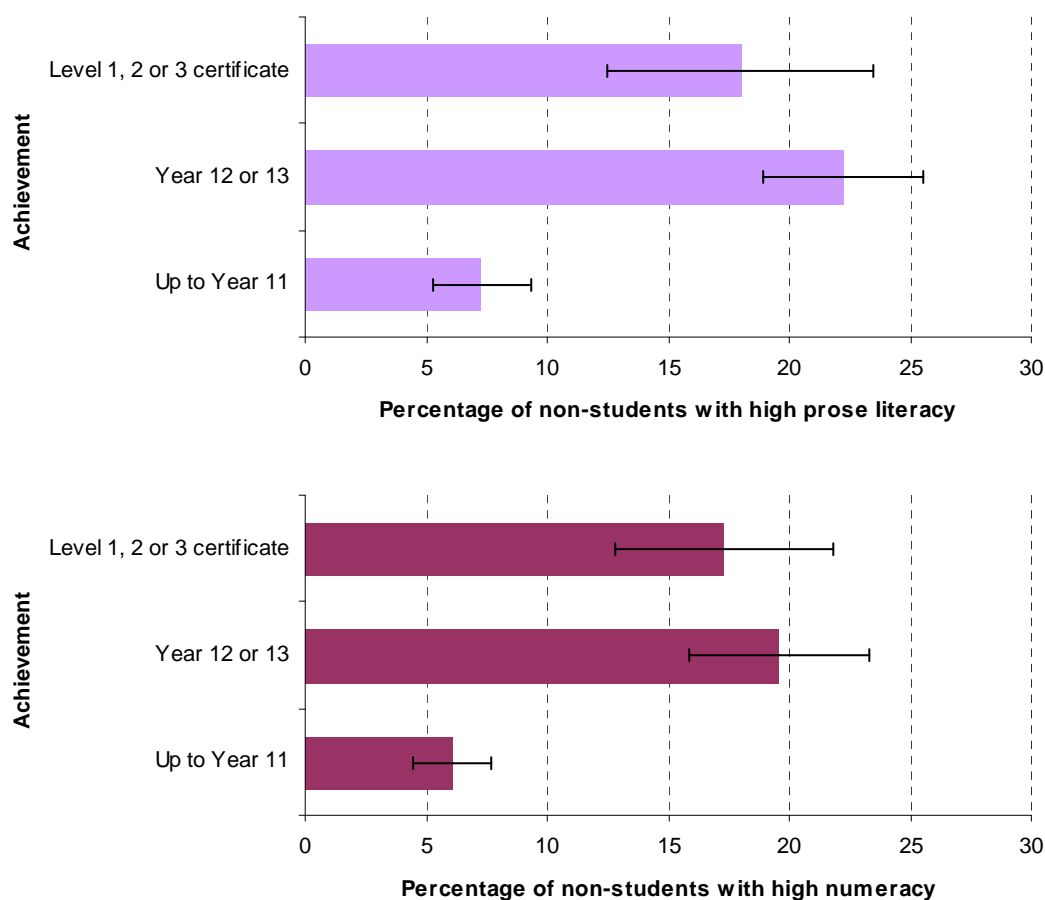


Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the low qualification/high skills groups.

Within the group of non-students with educational qualifications at level 3 or lower, there are considerable differences according to the precise level of educational achievement, as indicated in Figure 14. The prevalence of high prose literacy and of high numeracy is comparable between non-students who have completed Year 12 or 13 at secondary school and those who have completed Level 1 to 3 certificates. But the prevalence of high prose literacy and of high numeracy is much lower among non-students who have completed Year 11 or less, and this difference is statistically significant. This difference is likely to reflect both the effect of more time spent in education enhancing literacy and numeracy skills and also a tendency for those with lower literacy and numeracy to exit education at an earlier stage than those with higher skills.

Figure 14
Prevalence of high prose literacy and numeracy (highest quartile) among non-students with no educational qualification above Level 3



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the low qualification/high skills groups.

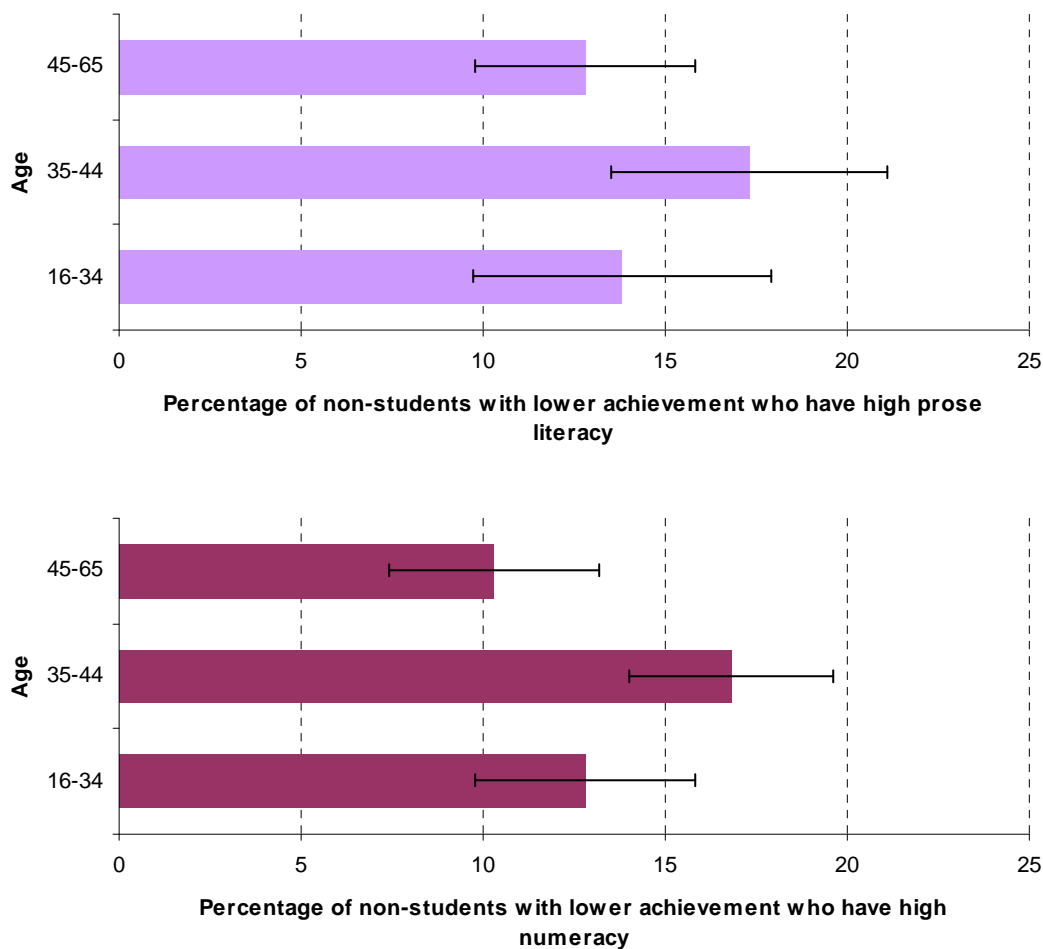
6.2 Demographic differences

This section looks at the age and gender characteristics of the low qualifications/high skills group as we have defined it – those who are not current students, have no qualifications beyond the level of Year 13 at secondary school and with skills in the top quartile in the ALL survey. This group is bunched towards the middle of the age range, with approximately one-third in the age band 35-44, and about one-third in each of the wider bands 16-34 and 45-65.

There is no clear difference between age groups in the prevalence of high prose literacy among non-students, as indicated in Figure 15.

Figure 15

Prevalence of high English prose literacy and high numeracy (highest quartile) among non-students with no educational qualification above Level 3 by age group – 2006 – ALL survey



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the low qualification/high skills groups.

This is an interesting result in terms of what it indicates about the relationship between adult literacy and numeracy skills and tertiary education.

We know that overall there is a strong association between higher literacy and numeracy and having tertiary qualifications. However there are a number of ways this association could come about. One is that tertiary education could have a causative effect, that is, tertiary education could directly develop learners' literacy and numeracy. Another possibility is that higher literacy and numeracy skills are developed during schooling and provide a platform for achieving tertiary qualifications. Alternatively tertiary education could provide entry to employment in careers which provide regular practice of literacy and numeracy skills and this is what leads to higher skills. Or those who acquire tertiary qualifications could be people with a habit of effective self-education who are capable of developing their own skills with or without a formal educational framework.

In the age range covered by the ALL survey, the oldest respondents would have left school at a time when only a relatively small elite group participated in tertiary education, and many skilled jobs were open to school leavers, while the youngest have left school at a time when tertiary participation was much higher and when tertiary qualifications were becoming necessary for

entry to a broader range of skilled jobs. Therefore the composition of the group without tertiary qualifications differs across the age range. In particular, the oldest respondents would have had lower expectations of tertiary participation than younger ones, but more opportunities to develop skilled careers without tertiary qualifications.

Given these differences across the age range and assuming that a tertiary education is not the principal means of achieving high literacy and numeracy skills, we would expect that the chances of a person without tertiary qualifications having high literacy and numeracy skills would be greatest in the oldest age group. But as we can see this is not the case in the ALL survey data.

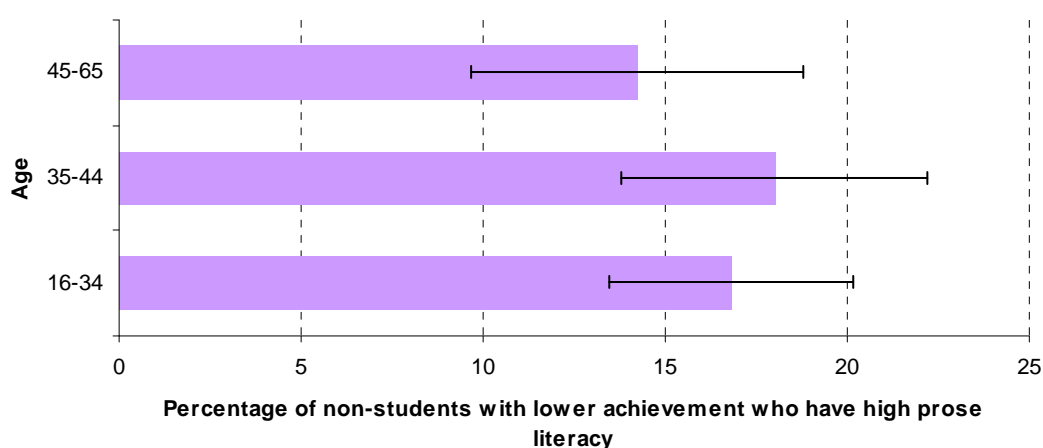
The oldest age group we can distinguish in the ALL data is those aged 45 to 65 years. People in this group left school before, during and after the first major expansion of tertiary participation in the late 1960s and early 1970s⁷.

It may be that there are not enough respondents from the pre-expansion period to get a clear picture.

As a result, we have looked at the corresponding graph from the predecessor of ALL, the 1996 International Adult Literacy Survey (IALS). IALS covered prose and document literacy but not the other two skill domains measured in ALL. The measures of literacy in ALL were developed so as to ensure that they measured the ‘same thing’ as IALS and so that the ALL levels were consistent with IALS levels (Satherley, Lawes and Sok, 2008a).

In the IALS survey, most of the respondents aged 45 to 65 years (i.e. born between 1931 and 1951) would have left school before the expansion of tertiary participation from the late 1960s. Therefore if there were a substantial number of people in this age group who had developed high literacy or numeracy skills through schooling, work experience or self-education then this should show up in the prevalence of high prose literacy by age for those without tertiary qualifications, which is presented in Figure 16.

Figure 16
Prevalence of high English prose literacy (highest quartile) among non-students with no educational qualification above Level 3 by age group – 1996 – IALS survey



Source: New Zealand results of the International Adult Literacy Survey 1996. Ministry of Education calculations

⁷ The ALL 45-65 age-group was born between 1941 and 1961 and hence, turned 18 between 1959 and 1979. The first wave of expanded access to tertiary education occurred from the late 1960s, so many of those people in this age-group will have had opportunities to study at a tertiary level.

The relatively low prevalence of high prose literacy in those aged 45 to 65 years in Figure 16 suggests that in the absence of tertiary qualifications, other pathways to high prose literacy are relatively ineffective. In particular, greater participation of lower-qualified people in skilled jobs does not appear to have led to a higher prevalence of high prose literacy in the older age group.

Analysis of the age distributions of those with low qualifications and high skills in the two surveys therefore supports the conclusion that tertiary education has an important role in developing high literacy and numeracy skills.

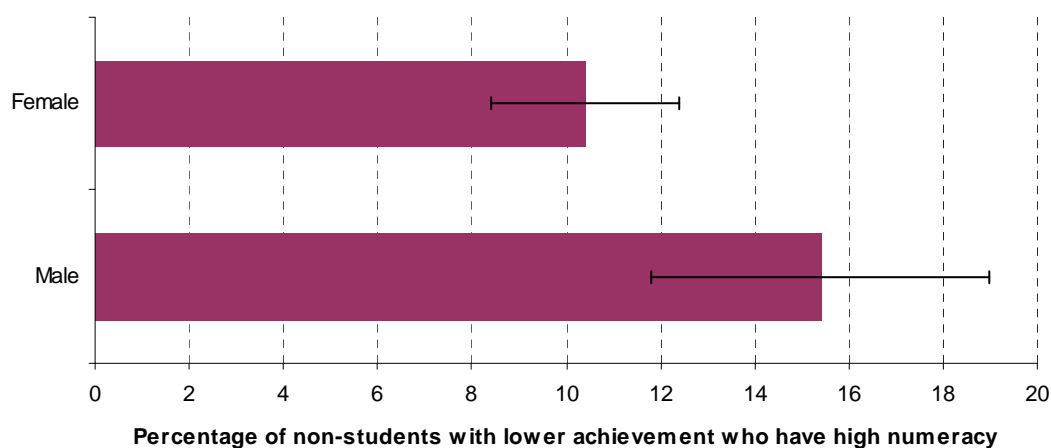
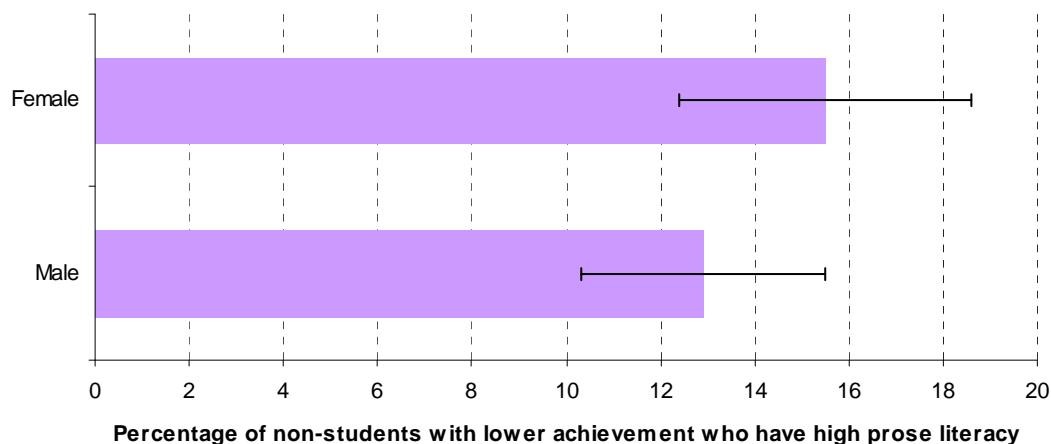
Returning to the ALL survey results, one factor which may help to explain the age distribution is that among non-students with lower achievement, the percentage who have completed only Year 11 or less increases with age (35 percent of those aged 16 to 34, 43 percent of those aged 35 to 44, and 58 percent of those aged 45 to 65), reflecting the fact that in the past, people were not expected to spend as long in education. And as seen in Figure 13, those who have completed only Year 11 or less have a much lower prevalence of high prose literacy.

The main difference between the age groups is this difference in educational background. There are only small differences between the age groups in terms of other factors such as employment status, occupation and computer use at work. The degree of overlap between the group with high prose literacy and that with high numeracy is similar in the different age groups.

A conceivable confounding factor could be a general tendency for skills to decline with age after 45 years. If this was a factor it could be expected to affect the population as a whole. However, when the skills of the population are modelled and factors including education, labour force status, occupation, computer use, first language and gender are taken into account, no clear evidence is found for such a decline.

There are marginal gender differences in the low qualifications/high skills group. There is a majority of women among those with low qualifications and high prose literacy but the difference is not statistically significant. There is a majority of men with low qualifications and high numeracy, and the difference is close to statistical significance.

Figure 17
Prevalence of high English prose literacy and numeracy (highest quartile) among non-students with no educational qualification above Level 3 by gender



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the low qualification/high skills groups

6.3 Employment differences

Of the group with lower educational achievement but high skills as we have defined it, the largest group had been in paid employment⁸ during the previous year; those in paid employment constituted 91 percent of non-students with lower achievement but high prose literacy and 93 percent of the group with high numeracy. The number of respondents in this category who were not employed was too small to make reliable estimates of their characteristics.

Of those with lower educational achievement but higher prose literacy, the largest occupational groups were clerks (26 percent), service workers (18 percent), managers (15 percent), technicians (approximately 14 percent⁹), and professionals (approximately 8 percent). Clerical workers (approximately 23 percent), technicians (approximately 16 percent) and managers (15 percent) are the three largest groups among those with low qualifications and high numeracy.

⁸ This includes employment that was mostly full-time, mostly part-time or variable.

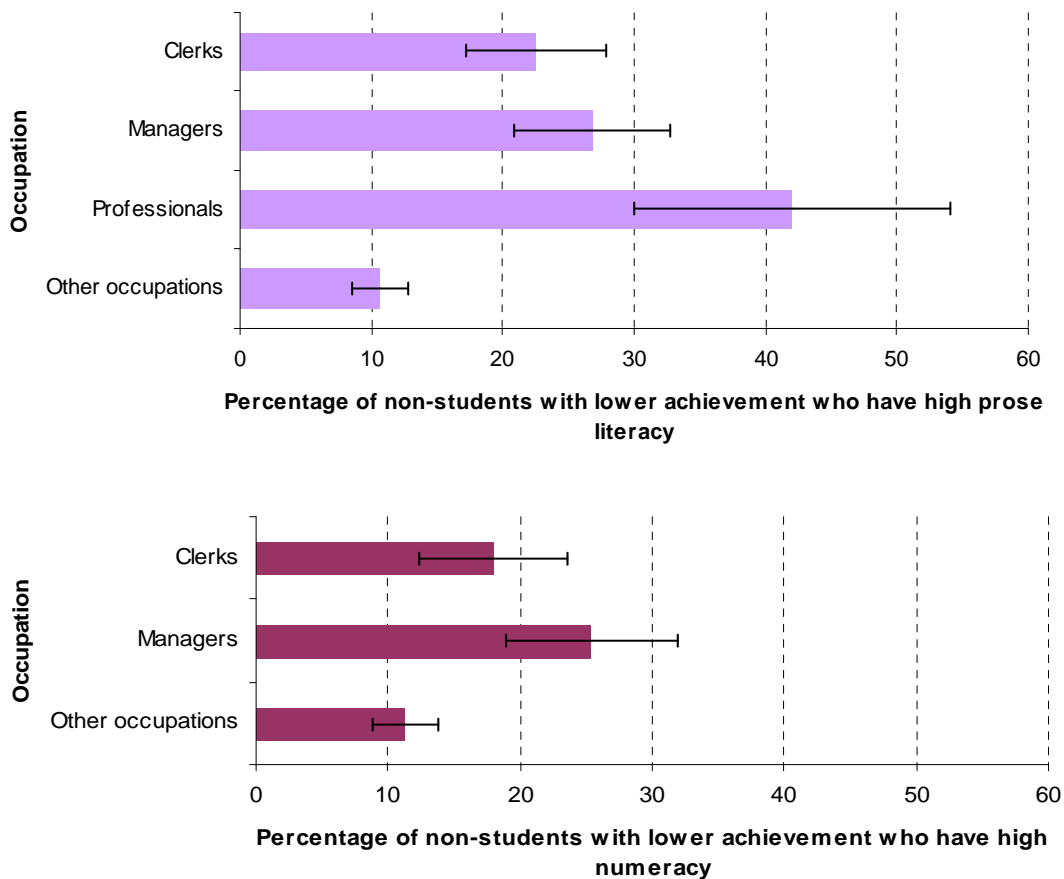
⁹ The following estimates in these breakdowns are of marginal reliability: technicians and professionals with high prose literacy, and clerks and technicians with high numeracy.

Figure 18 shows the prevalence of high English prose literacy and numeracy for non-students with lower achievement, by occupation. There are somewhat different occupational patterns for prose literacy and numeracy. Firstly, there are sufficient numbers of non-student survey participants with lower achievement but high prose literacy who are in the professional occupation group to distinguish this group from others. However this is not the case for numeracy.

Secondly, among non-students with lower achievement, the clerical, managerial and professional occupational groups all have a considerably higher prevalence of high prose literacy than all other occupational groups. However, there is not such a clearcut difference for numeracy, though managers have a considerably higher prevalence of high numeracy than other occupational groups apart from clerks.

Figure 18

Prevalence of high English prose literacy and numeracy (highest quartile) among non-students with no educational qualification above Level 3 by occupational group



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the low qualification/high skills groups. Estimates of prevalence of high prose literacy and numeracy for service workers and technicians were of marginal reliability and have not been included.

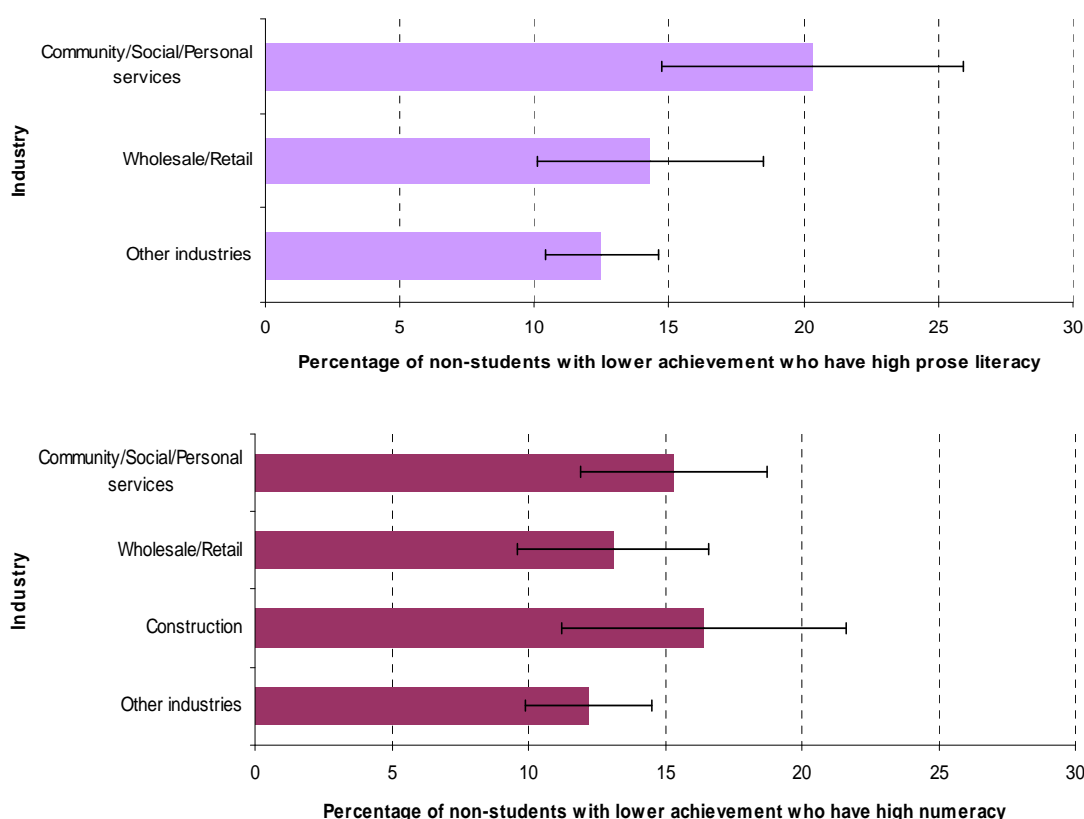
The higher prevalence of people from the low qualifications/high skills groups in clerical and managerial occupations may reflect two possible causes. First, those in clerical and managerial occupations are likely to be working with items of text and/or with numbers as part of their routine work. As a result, they will be using literacy and numeracy skills more often and thus

will be practising these skills on a daily basis¹⁰. Second, there may be a selection effect – people are employed in or succeed in those sorts of jobs because they have better literacy and numeracy skills.

Of non-students with low qualifications (to Year 13 or Level 3 certificate) who had high prose literacy, the largest groups were in the industry categories ‘Community, social and personal services’ (36 percent) and ‘Wholesale and retail’ (25 percent), with the remaining 39 percent spread across all other industry categories. Of non-students with low qualifications but high numeracy, 30 percent were in ‘Community, social and personal services’, 25 percent in ‘Wholesale and retail’, 15 percent in ‘Manufacturing’, 11 percent in ‘Construction’ and 20 percent in all other industries combined.

The prevalence of high English prose literacy and numeracy among non-students with lower achievement in different industries is represented in Figure 18. For numeracy there is no clearcut difference between people in different industries, but for prose literacy, people in the industry category ‘Community, social and personal services’ had a higher prevalence of high skills than all other industries apart from ‘Wholesale and retail’.

Figure 19
Prevalence of high English prose literacy and numeracy (highest quartile) among non-students with no educational qualification above Level 3 by industry



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the low qualification/high skills groups. Estimates of high prose literacy and numeracy for manufacturing were of marginal reliability and are not included.

¹⁰ There is a series of questions in the ALL questionnaire about literacy and numeracy practices at work. The responses to these questions confirm that people in these occupations are regularly engaged in a wide range of literacy and numeracy practices.

6.4 Migration and language differences

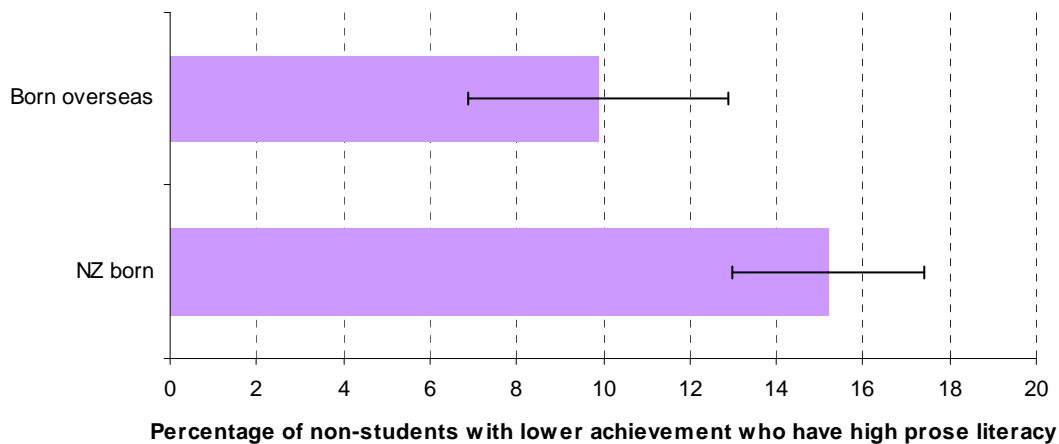
Of those non-students with lower educational achievement who had high English prose literacy, the largest group (87 percent) were born in New Zealand. The corresponding figure for non-students with low qualifications but high numeracy is 88 percent. The number of respondents in this category who were immigrants was too small to make reliable estimates of their characteristics.

Likewise, almost all of the people in the low qualifications/high skills groups had English as a first language (99 percent of non-students with low qualifications and high prose literacy, and 97 percent of those with low qualifications and high numeracy). The number of respondents in this category who had other first languages was too small to make reliable estimates of their characteristics.

Figure 20 shows the prevalence of high prose literacy among non-students with lower achievement according to their place of birth. There is a difference which is almost statistically significant between New Zealand born and non-New Zealand born people, with the higher prevalence among the New Zealand born.

Figure 20

Prevalence of high English prose literacy (highest quartile) among non-students with no educational qualification above Level 3 by place of birth



Source: New Zealand results of the Adult Literacy and Life Skills Survey. Ministry of Education calculations

Note: For an explanation of the categories see Appendix A. The bars represent the margins of error (at the 95% confidence level). Margins of error are large, and more detailed breakdowns are not feasible, due to the small size of the low qualification/high skills groups

There is no graph for numeracy because the estimate of the prevalence of high numeracy among the overseas-born is of marginal reliability.

7 CONCLUSION

This report examines the question of whether educational qualifications represent a reasonable proxy for skill levels. The analysis looks at the two groups for whom the relationship between qualifications and literacy and numeracy skills breaks down: those with low skills despite high educational qualifications; and those with high literacy and numeracy despite having no qualifications beyond senior secondary level.

There are three conclusions that can be drawn from this study:

- Qualifications represent a reasonable index for skills, especially among those New Zealanders for whom English is a first language.
- While about 18 to 24 percent of degree-holders have low literacy and 22 to 27 percent have low numeracy, these mismatches are particularly evident among those for whom English is not a first language. This reflects preferences in New Zealand's immigration policy, in that it reflects high priority for tertiary qualified people. However, it raises questions about the diversity of English language requirements for different groups of migrants.
- There are few people with low qualifications but high literacy and numeracy skills. The age distribution of that group and comparison with the corresponding group in the 1996 IALS survey tends to suggest that participation and achievement in tertiary education is an important factor in developing literacy and numeracy skills, and it also reflects the increasing expectation that people stay longer in education.

These conclusions are explained further below.

The analysis finds that roughly 20 to 25 percent of degree-qualified people have low literacy and/or numeracy. This group disproportionately comprises those who have immigrated to New Zealand and in particular, those whose first language is not English. There is a small number who have no educational qualifications beyond senior secondary school level but whose literacy and/or numeracy skills are high. About 15 percent of those with no educational qualifications beyond senior secondary school level have high skills.

In effect, if we discount those whose first language is not English, qualifications are a reasonable index of literacy and numeracy.

Language is a factor in skills because the ALL survey measures skills across all four skill domains by tests administered in English. In a labour market such as New Zealand's, skills are dependent on comprehension and facility in English.

The finding that a high proportion of immigrants – especially from non-English speaking countries – are degree-qualified but have low English literacy and/or numeracy helps explain why many well-qualified migrants end up working in jobs unsuitable for their level of education, especially in their early years in New Zealand. Using data from the Household Labour Force Survey, Maani (2009) finds that immigrants are more likely than New Zealand born people to have degrees. But the presence of immigrants in a region appears to have the effect of lowering wages in low-skilled occupations, not in occupations that require a degree. This finding implies that degree-qualified immigrants tend to work in low skill jobs. It matches the finding of Zodgekar (1998) that immigrants are less likely than others in the New Zealand workforce to be working in an occupation that matches their qualifications while Boyd (2003) found that employment rates remained lower for tertiary qualified migrants from Asia and the

Pacific, two areas from which New Zealand has drawn many immigrants in recent years.¹¹ It also reflects the preference given in immigration policy in recent years to those who hold higher qualifications. The analysis of ALL data in this study confirms Maani's and Zodgekar's findings but also provides an explanation for this phenomenon.

It is interesting to see this finding in the context of migration data. In their study of migration patterns in 27 countries, Dumont and Lemaitre (2005) reports that emigration of degree-qualified New Zealanders is almost exactly balanced by immigration of degree-qualified people. What the ALL data implies is that this balanced exchange of qualified people does not imply balance in the exchange of skills.

The third key finding relates to the age distribution of the high skills/low qualifications group. We would have expected that older New Zealanders would have been over-represented in this group, as the older group had lower expectations of progression from school to tertiary education. This appears not to be the case – either in the 2006 ALL survey or in its predecessor, the 1996 IALS data; in both surveys, more respondents under 45 with low qualifications had high skills. In part, this finding reflects the fact that many of the older respondents in both surveys had left school at year 11 or earlier – an important marker of low skills. Also, given the relatively low access to tertiary education enjoyed by people born before 1950, this finding seems to suggest that participation and achievement in tertiary education is an important means of developing literacy and numeracy skills.

¹¹ Note that these studies all use data which dates from before policy changes in 2004 which focus on matching immigrants to specific jobs.

APPENDIX A TECHNICAL NOTES

Scores in the Adult Literacy and Life Skills Survey

Satherley and Lawes (2007) gives an account of the scoring approach in the ALL survey:

To each individual, and for each of the domains, a score from zero to 500 is assigned. Zero indicates extremely low proficiency, and 500 extremely high. In addition, based on this score, one of five ‘cognitive levels’ is assigned. These cognitive levels are used in national and international comparison, essentially as a benchmark. The following list provides descriptions of typical tasks associated with each cognitive level.

Level 1 (Scores 0–225):

Tasks at this level require the ability to read simple documents, accomplish literal information-matching with no distractions, and perform simple one-step calculations.

Level 2 (Scores 226–275):

This level includes tasks that demand the capacity to search a document and filter out some simple distracting information, achieve low-level inferences, and execute one- or two-step calculations and estimations.

Level 3 (Scores 276–325):

Typical tasks at level 3 involve more complex information-filtering, sometimes requiring inferences and the facility to manipulate mathematical symbols, perhaps in several stages.

Level 4 (Scores 326–375):

A level 4 task might demand the integration of information from a long passage, the use of more complex inferences and the completion of multiple-step calculations requiring some reasoning.

Level 5 (Scores 376–500):

Level 5 tasks incorporate the capability to make high-level inferences or syntheses, use specialised knowledge, filter out multiple distractors, and to understand and use abstract mathematical ideas with justification.

OECD and Statistics Canada (2000) provide the following characterisation of Level 3:

Level 3 is considered a suitable minimum for coping with the demands of everyday life and work in a complex, advanced society. It denotes roughly the skill level required for successful secondary school completion and college entry.

Using variables from the ALL dataset

Highest qualification

The highest qualification was derived from questions A4B and A4C of the ALL questionnaire which asked respectively “What is the highest level of primary or secondary school that you have ever completed?” and “What is the highest level of formal education or training that you have ever completed?” The New Zealand coded responses were used and grouped in two different ways, as follows:

Table 2

Detailed classification of educational qualifications

Detailed Grouping	Responses (from A4B & A4C)	Frequency	Weighted Frequency
Up to Year 10	Up to Standard 3/Year 5 Standard 4/Year 6 Form 1, 2 or 3/Year 7, 8 or 9 Form 4/Year 10	838	265,997
Year 11	Form 5/Year 11	1,151	402,329
Year 12 or 13	Form 6 or 7/Year 12 or 13	1,202	483,386
Level 1, 2 or 3 certificate	Level 1, 2 or 3 certificate	952	337,523
Level 4 certificate	Level 4 certificate	630	233,745
Level 5, 6 and 7 certificate/diploma	Level 5, 6 and 7 certificate or diploma	880	310,251
Bachelors degree	Bachelors degree Professional degree	845	348,860
Postgraduate	Bachelors degree with honours or postgraduate diploma Masters degree Doctorate	629	251,587
Not stated		4	765

Table 3

Broad classification of educational qualifications

Broad Grouping	Responses (from A4C)	Frequency	Weighted Frequency
Lower secondary	Up to Form 5/Year 11	1,989	668,326
Upper secondary	Form 6 or 7/Year 12 or 13 Level 1, 2 or 3 certificate	2,154	820,909
Tertiary	Level 4 certificate Level 5, 6 and 7 certificate or diploma Bachelors degree Professional degree Bachelors degree with honours or postgraduate diploma Masters degree Doctorate	2,984	1,144,443
Not stated		4	765

Immigrant status

Immigrant status was derived from ALL question A1, which asked “Were you born in New Zealand?”, and question A2, which was addressed to those who answered “No” to A1 and asked “In what year did you first immigrate to New Zealand?” No further information relating to immigration is available from the survey. All those born overseas are thus classified as ‘immigrants’ whether they are skilled migrants or business investors or their families, or have been accepted under humanitarian (eg refugee quota), family reunification or other policies.

Survey respondents were selected from people living in permanent private dwellings who had “no usual place of residence elsewhere”, thus excluding short-term visitors. However, some temporary migrants may have been included in the survey sample.

Immigrants have been subdivided by date of first immigration so that those who had been in New Zealand five years or less are treated as a distinct group of ‘recent’ immigrants.¹²

¹² Five years is the time generally considered as representing the initial period of settlement, according to International Migration, Settlement and Employment Dynamics Research, Department of Labour.

Table 4

Classification of immigrant status

Group	Responses (from A1 and A2)	Frequency	Weighted Frequency
Non-immigrant	Born in New Zealand	5,336	1,924,363
Established immigrant	Born overseas, immigrated between 1946 and 2000	1,260	451,602
Recent immigrant	Born overseas, immigrated between 2001 and 2006	530	256,820
Unclassified	Born overseas but date of arrival not stated	1	892

First language

First language was derived from ALL questions B1A and B1B which asked “What is the language that you first learned at home in childhood and still understand?” Respondents could nominate two languages if they were learned at precisely the same time. For a binary classification (English or other) respondents who provided English as a response to one of these questions (5910 for B1A and 20 for B1B) were categorised as having English as a first language, while the rest were categorised as having English as a second or other language.

Classification of first language as English, Asian or Other was based solely on responses to B1A. Respondents were classified as having an Asian first language if their responses to B1A were coded as one of the following: Chinese, Korean, Japanese, Vietnamese, Malay, Indonesian, Hindi, Punjabi, Tamil, other Indian language. The residual category of ‘Other languages’ may include some Asian languages, such as Thai and Tagalog, which were not specifically identified in the coding of the survey responses.

Industry

The ALL background questionnaire contains a series of questions (D18 to D43) about the most recent job that the respondent had worked at. This is termed the “main job”. Industry and occupation all relate to this job.

Industry is coded in the ALL data set using the International Standard Industry Classification. For this project, the international classification has been concorded to the Australia and New Zealand Standard Industry Classification 2006. For the purposes of the analysis, several industries in the top level of the classification have been grouped together, as follows:

Table 5
Classification of industries

Group	ANZSIC06	Frequency	Weighted Frequency
Construction	E Construction	437	163,856
Retail and wholesale trade	F Wholesale trade G Retail trade H Accommodation and food services	1,362	545,153
Community, social and personal services	M Professional, scientific and technical services N Administrative and support services O Public administration and safety P Education and training Q Health care and social assistance R Art and recreation services S Other services	2,597	945,014
Other industries	A Agriculture, forestry and fishing B Mining C Manufacturing D Electricity, gas, water and waste services I Transport, postal and warehousing J Information media and telecommunications K Finance and insurance services L Rental, hiring and real estate services	2,108	767,858
Not stated		19	7,878

Occupation

Occupation was coded to the International Standard Classification of Occupation in the ALL data set. This has been concorded to the New Zealand Standard Classification of Occupation 1999. The level one classification was used in this project, as follows:

Table 6
Classification of occupations

Group	NZSCO99	Frequency	Weighted Frequency
Managers	Administrators and managers	620	231,878
Professionals	Professionals	1,076	417,491
Technicians	Technicians and associate professionals	774	296,175
Clerks	Clerks	988	353,255
Other occupations	Service and sales workers Agricultural workers Trades workers Plant and machinery operators and assemblers Labourers Military	3,053	1,126,254
Not specified		12	4,707

Definitions of level in the New Zealand Register of Quality Assured Qualifications

The New Zealand Register of Quality Assured Qualifications establishes 10 levels of qualifications and qualification titles that can be used at each level. For each qualification there is a statement of learning outcomes that includes what the whole qualification represents in terms of the application of knowledge, understanding, skills and attitudes, as well as the components of the qualification.

Each qualification has a credit value that represents the amount of learning and assessment that is typically required to achieve the qualification.

Level 3 is the level required for achievement in year 13 (the final year) of secondary school. Level 7 is the level required for completion of a bachelors degree and level 8 for a bachelors degree with honours or a postgraduate diploma, while level 9 is the level for completion of a masters degree and level 10 a doctoral degree.

The levels are described in the table below, drawn from the website of the New Zealand Qualifications Authority:

Table 7

Description of levels of qualifications in the New Zealand Register of Quality Assured Qualifications

LEVEL	PROCESS	LEARNING DEMAND
1	Carry out processes that: are limited in range are repetitive and familiar are employed within closely defined contexts	Employing: recall a narrow range of knowledge and cognitive skills no generation of new ideas
2	Carry out processes that: are moderate in range are established and familiar offer a clear choice of routine responses	Employing: basic operational knowledge readily available information known solutions to familiar problems little generation of new ideas
3	Carry out processes that: require a range of well developed skills offer a significant choice of procedures are employed within a range of familiar contexts	Employing: some relevant theoretical knowledge interpretation of available information discretion and judgement a range of known responses to familiar problems
4	Carry out processes that: require a wide range of technical or scholastic skills offer a considerable choice of procedures are employed in a variety of familiar and unfamiliar contexts	Employing: a broad knowledge base incorporating some theoretical concepts analytical interpretation of information informed judgement a range of sometimes innovative responses to concrete but often unfamiliar problems
5	Carry out processes that: require a wide range of specialised technical or scholastic skills involve a wide choice of standard and non-standard procedures are employed in a variety of routine and non-routine contexts	Employing: a broad knowledge base with substantial depth in some areas analytical interpretation of a wide range of data the determination of appropriate methods and procedures in response to a range of concrete problems with some theoretical elements
6	Carry out processes that: require a command of wide-ranging highly specialised technical or scholastic skills involve a wide choice of standard and non-standard procedures, often in non-standard combinations are employed in highly variable routine and non-routine contexts	Employing: specialised knowledge with depth in more than one area the analysis, reformatting and evaluation of a wide range of information the formulation of appropriate responses to resolve both concrete and abstract problems
7	Carry out processes that: require a command of highly specialised technical or scholastic and basic research skills across a major discipline involve the full range of procedures in a major discipline are applied in complex, variable and specialised contexts	Requiring: knowledge of a major discipline with areas of specialisation in depth the analysis, transformation and evaluation of abstract data and concepts the creation of appropriate responses to resolve given or contextual abstract problems

8	<p>Involves skills and knowledge that enable a learner to: provide a systematic and coherent account of the key principles of a subject area; and undertake self-directed study, research and scholarship in a subject area, demonstrating intellectual independence, analytic rigour and sound communication</p>
9	<p>Involves knowledge and skills that enable a learner to: demonstrate mastery of a subject area plan and carry out - to internationally recognised standards - an original scholarship or research project. Demonstrated by: the completion of a substantial research paper, dissertation or in some cases, a series of papers.</p>
10	<p>Involves knowledge and skill that enable a learner to: Provide an original contribution to knowledge through research or scholarship, as judged by independent experts, applying international standards.</p>

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