

How well do qualifications predict literacy and numeracy?

There are many situations where educational qualifications may be used to estimate a person's literacy and numeracy skills. These situations include recruiting new staff, deciding who might benefit from a literacy or numeracy programme, deciding eligibility for higher education, and understanding the overall literacy and numeracy skills of the population.

However, it is also commonly recognised that education levels alone are not a precise measure of literacy and numeracy. People with low education qualifications may still have good literacy and numeracy. People with high levels of education may have poor literacy and numeracy.

The Adult Literacy and Life Skills (ALL) Survey directly measured the literacy, numeracy and problem solving skills of a sample of New Zealanders in 2006. The survey also collected information on their education level (see Satherley et al, 2008a).

This fact sheet looks at literacy and numeracy measured through the ALL survey against educational levels, to see how well educational levels predict literacy and numeracy skills.

The Adult Literacy and Life Skills Survey

The ALL survey tested four areas of literacy and numeracy:

- **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.

These areas were assigned to five levels. Level 1 and 2 are seen to represent low skill, that is, below the level required to function well in a knowledge society. At level 2, a person can search through information, draw some simple conclusions and make one or two step calculations.

Matching qualifications to literacy and numeracy

For this fact sheet people are grouped by their level of skill in each literacy or numeracy area against the level of qualification completed. An example is given in the table below.

Literacy and numeracy levels are related to educational qualifications.

However, educational qualifications do not provide a robust way of predicting the literacy levels of individuals and should be used with caution.

Qualifications provide a limited means of determining the literacy and numeracy abilities of groups. For example, they can be used to identify potential target groups for literacy and numeracy programmes or to provide some understanding of the social and economic outcomes of different levels of literacy and numeracy.

Qualifications	Prose literacy	
	Level 1 to 2	Level 3+
None	Low skills / no qualifications	High skills / no qualifications
School or tertiary	Low skills / with qualifications	High skills / with qualifications

The fact sheet looks at the proportion of people who fall outside the expected categories. In the example above, that is:

- What proportion of those with low literacy or numeracy have a qualification?
- What proportion of those with high literacy or numeracy have no qualification?

Three groupings of qualifications are looked at – with and without a qualification; below or above a level 4 tertiary qualification; and above or below a bachelors degree. For each grouping, the population has been divided into three age groups – under 25, 25 to 39 and 40 and over. This controls for different educational and life experiences.

Only people with English as a first language are included in this analysis. The ALL survey was conducted in English. Doing this removes effect of English as a second language on the results. However, it means the figures in this fact sheet differ from those published elsewhere.

How well does having no qualification predict having low literacy or numeracy?

In the 25-39 year age group, only around 6 to 9 percent of people with level 3 or better literacy and numeracy had no qualifications. The proportions were higher for under 25-year olds, many of whom were still in education, and people 40 years and older, who may have developed these skills through experience rather than education, and were educated in a period where opportunities and expectations of continuing in formal education were lower.

This means that people who have no qualifications are very likely to have low literacy and numeracy, especially in the 25- to 39-year age group.

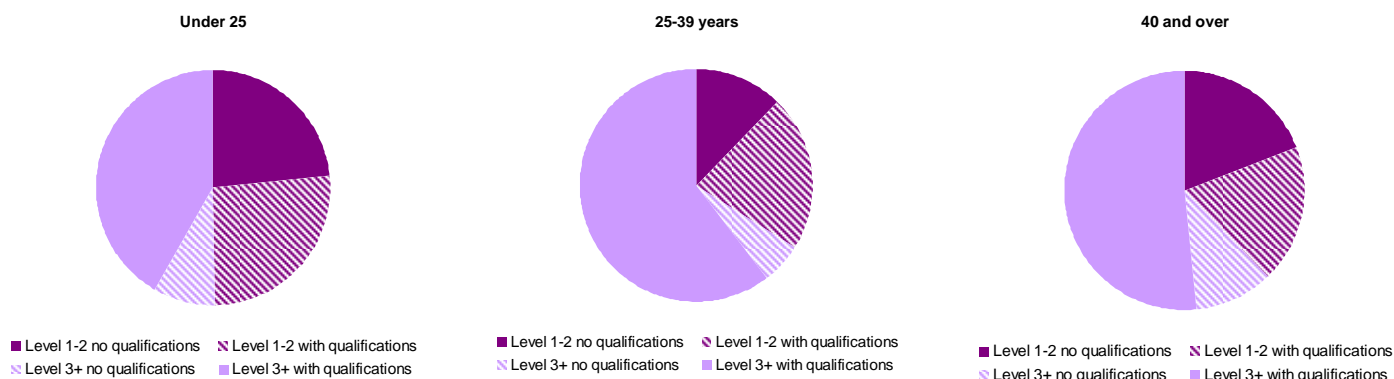
However, half to three-quarters of people with level 1 to 2 literacy or numeracy in each age group had a school or tertiary qualification.

This means that the group of people with no qualifications only includes a third to a half of all people with literacy and numeracy at level 1 or 2.

Therefore, having no qualifications is a strong signal that a person may have low literacy or numeracy, but there are also a lot of people with qualifications who also have low literacy or numeracy.

	Prose Literacy	Document Literacy	Numeracy	Problem Solving
Under 25 years				
proportion of level 3+ with no qualifications	17%	20%	16%	18%
proportion of level 1-2 with qualifications	53%	55%	57%	62%
25 to 39 years				
proportion of level 3+ with no qualifications	9%	9%	7%	6%
proportion of level 1-2 with qualifications	64%	63%	67%	73%
40 years and over				
proportion of level 3+ with no qualifications	17%	17%	15%	11%
proportion of level 1-2 with qualifications	49%	51%	54%	61%

Prose literacy:



How well does having a qualification below level 4 predict having low literacy or numeracy?

The findings above suggest that looking at people with lower-level qualifications, rather than no qualification, might be a better way of identifying people with low literacy and numeracy.

In the national qualifications system, level 1 to 3 qualifications cover school qualifications and tertiary qualifications of equivalent level. Qualifications at level 4 and above are tertiary only.

Around 40 percent of people aged 25 and over with level 3 or better literacy or numeracy had a qualification under level 4.

This means that people with qualifications below level 4 may or may not have low literacy or numeracy.

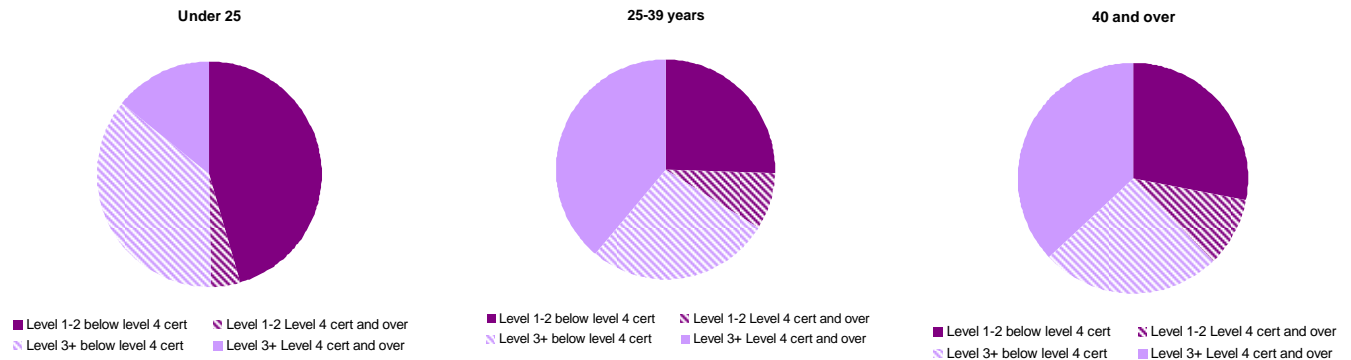
Around 25 to 35 percent of people aged 25 and over with level 1 or 2 literacy or numeracy had a qualification at level 4 or above.

This means that about two thirds of people with level 1 or 2 literacy or numeracy are likely to have a qualification below level 4.

Therefore, most people with level 1 or 2 literacy or numeracy will have qualifications below level 4. However, nearly half of the people with qualifications below level 4 will have literacy or numeracy at level 3 and above.

	Prose Literacy	Document Literacy	Numeracy	Problem Solving
Under 25 years				
proportion of level 3+ with qualifications under level 4	71%	73%	71%	69%
proportion of level 1-2 with qualifications at level 4 and over	8%	9%	10%	13%
25 to 39 years				
proportion of level 3+ with qualifications under level 4	41%	42%	39%	37%
proportion of level 1-2 with qualifications at level 4 and over	25%	25%	27%	36%
40 years and over				
proportion of level 3+ with qualifications under level 4	40%	40%	38%	34%
proportion of level 1-2 with qualifications at level 4 and over	26%	27%	30%	36%

Prose literacy:



How well does having a bachelors degree predict having higher literacy or numeracy?

Given that no or lower level qualifications don't predict low literacy or numeracy very well, does having a bachelors degree mean that a person will have higher literacy and numeracy skills?

In each age group, around 10 percent or less of people with a bachelors degree had low literacy or numeracy.

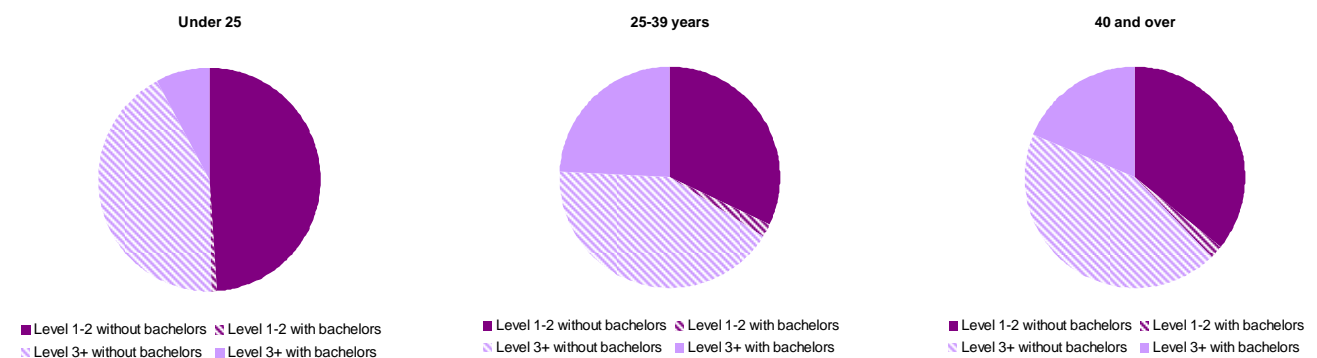
This means that having a bachelors degree is a good indicator that a person will have higher levels of literacy and numeracy.

However, around two thirds of people aged 25 and over with level 3 and above literacy and numeracy skills did not hold a bachelors degree.

Therefore, having a bachelors degree is a strong signal that a person will have a higher literacy and numeracy, but there are also many people with higher levels of skill who don't have qualifications at this level.

	Prose Literacy	Document Literacy	Numeracy	Problem Solving
Under 25 years				
proportion of level 1-2 with bachelors	2%	2%	3%	5%
proportion of level 3+ without bachelors	85%	86%	83%	82%
25 to 39 years				
proportion of level 1-2 with bachelors	6%	6%	8%	14%
proportion of level 3+ without bachelors	63%	64%	61%	57%
40 years and over				
proportion of level 1-2 with bachelors	5%	6%	7%	11%
proportion of level 3+ without bachelors	70%	70%	68%	62%

Prose Literacy:



How well do qualifications predict the literacy and numeracy of individuals?

Qualifications are a poor way to predict the literacy or numeracy of an individual. 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.

How well do qualifications predict the literacy and numeracy of groups?

Qualifications do provide a limited means of determining the literacy and numeracy abilities of groups.

It would be reasonable to target a literacy or numeracy programme to people with no qualifications, so long as it is understood that only half to a third of the people with low literacy or numeracy would be covered. Alternatively, a programme could be targeted to people with qualifications below level 4, with additional criteria to identify those who really need it.

In the absence of direct measurement of literacy and numeracy, educational level can be used to understand the social and economic outcomes of skill levels. The relationships will be clearest for those with no qualifications and those with bachelors degrees and above.

Logistic regression can be used to further examine the relationship between education level and prose-literacy. Using this approach to prose literacy, age and gender alone explained around 4 percent of the variation in literacy levels. Adding educational level to the model helps explain

about 30 percent of the variation. If mother's and father's qualifications are added, as proxies for home background, then a further 5 percent of the variation can be explained. So while there is a definite relationship, and education is one of the strongest explanatory variables, it by no means explains all of the variation in literacy skills.

Does age make a difference?

Qualifications have the best match to literacy and numeracy levels for people aged 25 to 39.

Qualifications are least useful in predicting the literacy and numeracy of people aged under 25, as most people in this age group are still completing their formal education.

Qualifications are also less useful in predicting the skill levels of people aged 40 and over, where work and life experience have presumably also had an impact on their skill levels, as well as having gone through formal education at a time when expectations for completing school and tertiary qualifications were lower.

Technical note:

The ALL survey records level of schooling completed and tertiary qualifications achieved. Those who had only completed to Form 5/Year 11 were treated as having no qualification for this analysis. Those who completed to Form 6 or 7/Year 12 or 13 were treated as having at least a school qualification.

References

- P Satherley, E Lawes and S Sok (2008a), *The Adult Literacy and Life Skills (ALL) Survey: Overview and International Comparisons*, Wellington: Ministry of Education
- P Satherley, E Lawes and S Sok (2008b), *The Adult Literacy and Life Skills (ALL) Survey: Education, Work and Literacy*, Wellington: Ministry of Education.