

Youth Skills

Survey of Adult Skills (PIAAC)



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Executive summary

This is part of a series of in-depth reports from the Survey of Adult Skills. This report covers key findings on how New Zealand youth (aged 16 to 24) compare internationally and what factors are associated with higher youth skills.

Key findings

- » The skills of New Zealand youth ranked in the middle of the OECD
- » Youth who had low skills did not increase their skills as they got older
- » Higher-skilled teenagers were much more likely than their low-skilled peers to gain tertiary qualifications in their early twenties
- » Increasing participation in education may raise youth skills
- » Māori and Pasifika youth had lower skills than other ethnic groups
- » Māori youth appeared to increase their skills faster than other ethnic groups as they got older

About the Survey of Adult Skills

The Survey of Adult Skills measures the skills of New Zealand adults aged 16 to 65 in literacy, numeracy and problem solving in technology-rich environments. In addition to this, detailed information is collected from respondents on their education, employment and occupation, skills and qualifications required for their jobs, the use of skills at work and at home, parents' education and occupation, languages spoken and migration status. The survey has been undertaken in 32 countries, which makes it possible to compare the skills of New Zealanders internationally. Previous surveys make it possible to compare literacy skills in 2014 to 1996 and 2006, and numeracy scores to 2006.

Key findings

New Zealand youth were in the middle of the OECD

When compared to youth in other OECD countries, New Zealand youth ranked:

- » 12th of 28 countries in literacy
- » 18th of 28 countries in numeracy
- » eighth of 25 countries in problem solving.

These rankings were lower than for the total population aged 16 to 65.

Increasing youth reading in everyday life and education participation may increase youth skills

New Zealand youth had a lower participation rate in formal education compared to the top OECD countries. This was also closely related to their literacy scores. This means there is room to improve participation in education compared to other countries, which may result in higher overall skill levels for youth.

New Zealand youth had fewer books in their home compared to the top OECD countries, and were slightly less likely to read books in everyday life. These factors are closely correlated with higher skills. Improving activities of young people in these areas could have an effect on overall skill levels.



Low-skilled youth stayed low skilled as they got older, while some moderately skilled youth may have become high skilled through gaining tertiary qualifications

New Zealand's proportion of youth that were low skilled in both literacy and numeracy was similar to that of Canada, Australia and the United States. Of people aged 16 to 24 in 2006 (and 24 to 32 in 2014), the same proportion had low skills in 2014 as in 2006. A greater proportion of this low-skilled cohort had qualifications in 2014 than in 2006. However, these people showed no evidence of improved skills. Of this youth cohort, a greater proportion may have had high skills in literacy and numeracy in 2014 than in 2006.

Youth who spoke a language other than English at home or had low-qualified parents were more likely to have low skills in literacy and numeracy

A higher proportion of youth who spoke a language other than English at home had low skills in both literacy and numeracy, as did youth whose parents did not have a qualification higher than National Certificate of Educational Achievement (NCEA) Level 1.

Asian youth had similar numeracy skills to NZ European youth, while Māori and Pasifika had lower skills than NZ European and Asian youth

Māori and Pasifika youth had lower literacy, numeracy and problem solving skills than NZ Europeans and Asians. Asian youth had similar scores to NZ Europeans. The difference between Māori youth skills and NZ European youth skills was a similar size to the difference for older age groups.

Average literacy scores of Māori youth appeared to have risen faster than for the total youth population

Average literacy scores for the total youth population appeared to have increased between 2006 and 2014 though not significantly. However, average Māori youth literacy and numeracy scores appeared to increase to a greater extent than the total population – though this was not a significant difference due to small sample sizes. Māori numeracy scores also appeared to increase – though again not significantly – while there was no measurable change in average numeracy scores for the total youth population.

Māori youth increased their skills faster than other ethnic groups as they got older

Comparing the scores of youth in 2006 to the same cohort eight years older (aged 24 to 32) in 2014, Māori literacy and numeracy scores increased to a greater extent than for other ethnic groups. The increases for Asian and Pasifika youth were the smallest.

Youth with more books in the home had higher skills

Having more books in the home was highly correlated with higher literacy, numeracy and problem solving scores. Living in a less deprived area, having parents with higher-skilled occupations and speaking English at home are also correlated with higher skills, but less so than having more books in the home. Having parents born in New Zealand had very little correlation with higher skills.

Youth who were working and had a Level 4 or higher qualification had the highest skills

Youth in work who had a Level 4 or higher qualification and had finished studying had the highest skills. Youth who were studying had higher average skills than working youth without a post-school qualification and youth who were not in work or education.



Males had higher numeracy scores

Male youth had slightly higher numeracy scores than females, although it was not statistically significant. There was no measurable difference in literacy scores or problem solving scores. In 1996, females had higher slightly higher literacy scores than males, but male literacy scores have increased at a faster rate since then.

Youth were less likely to read books and magazines at home

Youth were slightly less likely than those aged 25 to 44 to read books at home and much less likely to read newspapers and magazines at home. Youth who did read books, newspapers or magazines at least once a week had higher literacy scores than those who did not.

Youth were more likely than those aged 25 to 44 to do some computer activities in their everyday lives, such as using a word processing application or being involved with real-time discussions on the internet. However, they were equally likely to use the internet to understand issues and less likely to conduct transactions on the internet.



Introduction

What is the Survey of Adult Skills?

The Survey of Adult Skills measures the skills of New Zealand adults in literacy, numeracy and problem solving in technology-rich environments. It is part of the OECD's Programme for the International Assessment of Adult Competencies (PIAAC). The Survey of Adult Skills provides the first picture of skills for those aged 16 to 65 in New Zealand since 2006. The survey has been run across 32 countries, making it possible to compare the skills of adults in New Zealand internationally.

The survey was undertaken in 2014 with a representative sample of New Zealand households. In total, 6,177 people were surveyed. It was conducted in English and included an extensive background questionnaire covering education, employment, and the use of skills at work and in everyday life. The respondents were then tested on their skills.

Skills are becoming more important in the modern workplace and in everyday life. Higher skills are associated with better jobs, higher income and greater well-being. The Survey of Adult Skills can help answer key questions related to skills in New Zealand, such as:

- » what are the characteristics of the most skilled and least skilled people in New Zealand in terms of education, employment, income, well-being and other characteristics?
- » how do New Zealanders use their skills at work and at home?
- » what areas should we focus on to improve the skills of New Zealand adults?

The survey measures skills on continuous scales that show the range of abilities from being able to deal with simpler through to more complex tasks. The survey does not measure whether people 'pass' or 'fail' certain standards, nor whether people are 'literate', 'illiterate', 'numerate' or 'innumerate'.

The scales can be divided into levels to group people within similar ranges of ability. These levels help describe the kinds of tasks these groups of people can do. However, the levels, on their own, do not describe benchmarks or thresholds for participation in society and the economy.

Literacy

Literacy is the ability to understand, evaluate, use and engage with written texts to get everyday things done. The Survey of Adult Skills only measures reading literacy; there is no writing component. Some skills required are:

- » understanding of written words and sentences
- » comprehension of text in charts and diagrams
- » comprehension, interpretation and evaluation of complex texts.

Numeracy

Numeracy is the ability to use, interpret and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of situations. Some aspects that people are required to understand are:

- » quantity
- » dimension and shapes
- » patterns
- » data and chance
- » visual displays.



Problem solving in technology-rich environments

Problem solving in technology-rich environments is the ability to use computers to acquire and evaluate information, communicate with others and perform practical tasks. All tasks are completed on a computer that simulates real-world tasks with standard applications. Some skills required are:

- » completing tasks using different everyday computer applications
- » finding specific information in everyday computer applications
- » using common functions to complete tasks in everyday computer applications.

Measuring skills over time

Previous surveys allow adult literacy skills in 2014 to be compared to those in 1996 and 2006. Adult numeracy skills in 2014 can be compared to numeracy skills in 2006. Problem solving in technology-rich environments was measured for the first time in the Survey of Adult Skills.

Previous measures of adult skills come from the 2006 Adult Literacy and Life Skills Survey (ALL) and 1996 International Adult Literacy Survey (IALS). The ALL and IALS surveys previously reported literacy as two separate measures: 'document literacy' and 'prose literacy'. These two separate scales have been remodelled into a single scale that can be compared to literacy in the Survey of Adult Skills. The measures are not strictly the same, so some caution is needed when making comparisons between the 2014 Survey of Adult Skills and previous surveys.

Numeracy scores from the 2006 ALL Survey have been re-calculated to match the measure used in the Survey of Adult Skills. The numeracy scores from 2006 used in this report therefore differ from those in the Ministry of Education's New Zealand reports from New Zealand ALL data.

Skill levels, low skills and high skills

Literacy and numeracy scores are divided between the lowest scores, which are below Level 1, and the highest scores, which are Level 5. Those with scores at Level 1 or below Level 1 are considered to have low skills, while those at Level 4 or Level 5 have high skills.

Problem solving skills are divided between the lowest scores, which are below Level 1, and the highest scores, which are Level 3. Those with scores at Level 1 or below are considered to have low skills, while those at Level 3 are considered to have high skills.

A full list of skill levels and tasks people can complete at each level is given in the Appendix.

Statistical significance

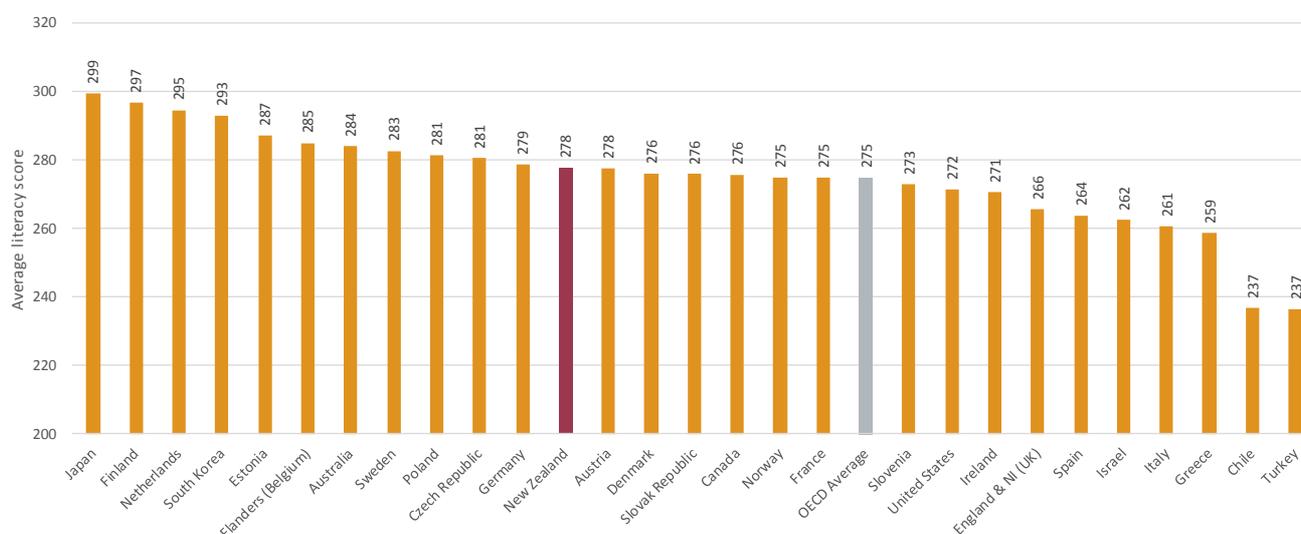
This report considers differences over time, between groups or between countries, statistically significant where there is at least 95% certainty that the differences are not due to chance alone. In the bar graphs, the 90% confidence intervals are shown. Where these intervals do not overlap, there is at least 95% certainty that the difference is not due to chance alone.

Skills of youth in New Zealand and overseas

New Zealand youth were 12th in the OECD in literacy

Average youth literacy scores in New Zealand were above the OECD average, ranking 12th highest in the OECD (Figure 1). New Zealand's average score for those aged 16 to 65 ranked fourth in the OECD. New Zealand's youth score was not measurably different from Australia or Canada. However, the average literacy scores of New Zealand youth were higher than those of youth in the United States, England and Northern Ireland and the OECD average by a statistically significant margin.

Figure 1: Average literacy scores of youth in New Zealand and other OECD countries

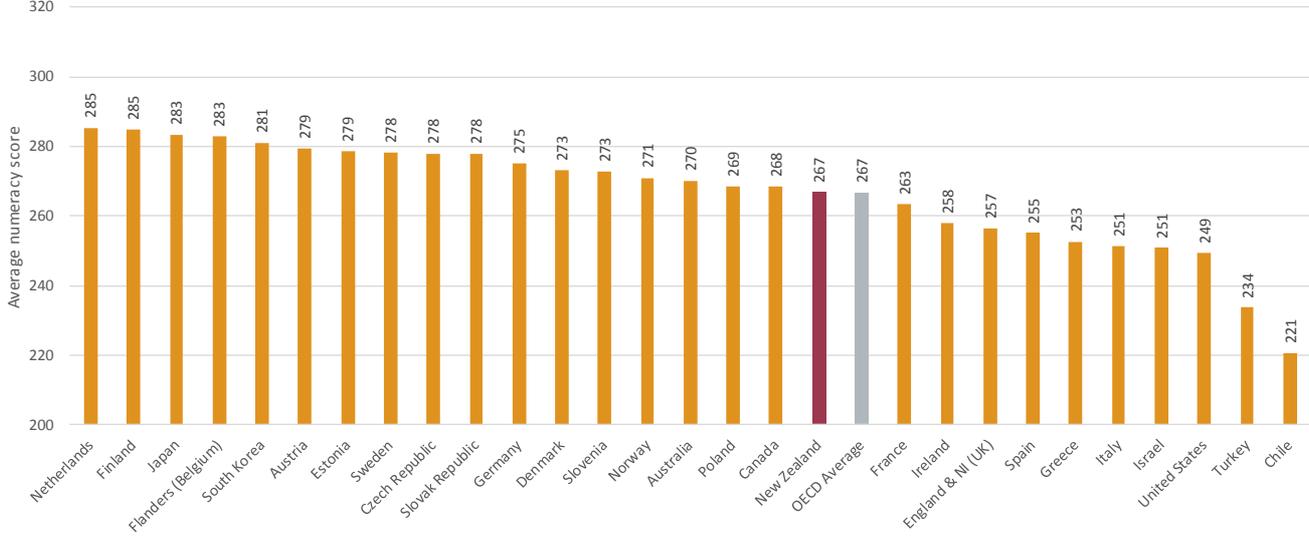


New Zealand youth were at the OECD average in numeracy

Average youth numeracy scores in New Zealand were the same as the OECD average (Figure 2). At 18th highest in the OECD, this puts New Zealand youth in the lower half of the 28 OECD countries that have undertaken the survey. This was lower than New Zealand's overall numeracy ranking, which is 13th in the OECD. While New Zealand youth ranked lower than youth in Australia and Canada, the difference was not statistically significant. The average score of New Zealand youth was higher than youth in the United States and England and Northern Ireland by a statistically significant margin.



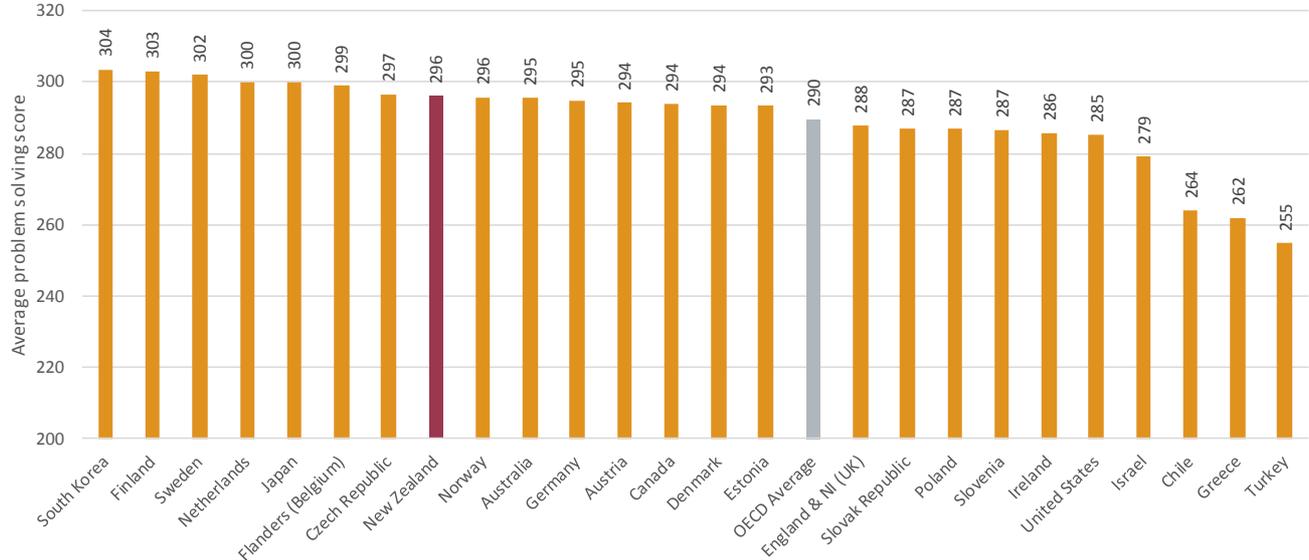
Figure 2: Average numeracy scores for youth in New Zealand and other OECD countries



New Zealand youth ranked eighth in the OECD in problem solving

The average problem solving score of New Zealand youth was the eighth highest in the OECD (Figure 3). For all adults aged 16 to 65, New Zealand’s average problem solving score was fifth highest in the OECD. The average score for youth was higher than in other English-speaking countries. However, New Zealand youth scores did not differ from Australia and Canada by a statistically significant margin.

Figure 3: Average problem solving scores for youth in New Zealand and other OECD countries

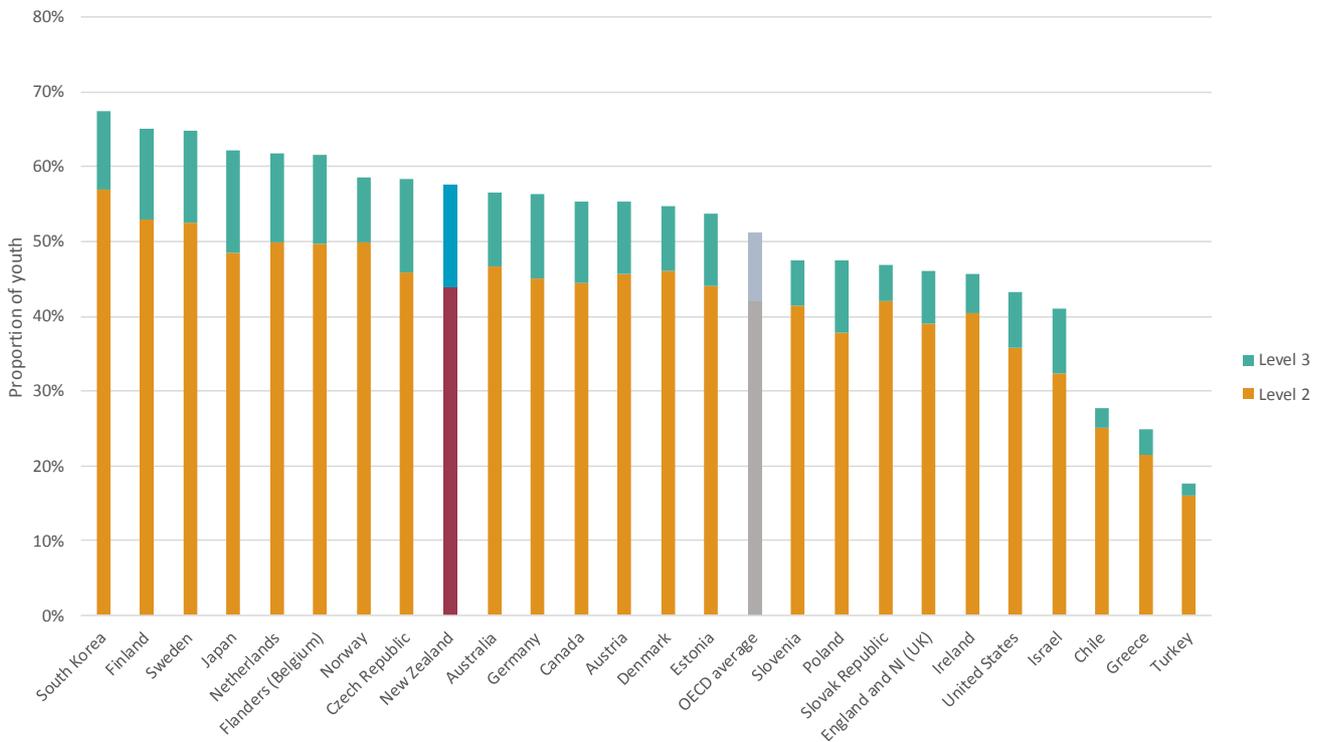


Problem solving skills are divided into three levels, from below Level 1 to Level 3. Those with Level 2 scores have moderate problem solving skills, while those with Level 3 scores have high problem solving skills. A full list of tasks people can do at each level is in the Appendix.

Of New Zealand youth, 58% had moderate to high, or Level 2 or Level 3, problem solving skills (Figure 4). This compared to 49% of all adults aged 16 to 65. On this measure, New Zealand youth ranked ninth highest in the OECD while all New Zealand adults aged 16 to 65 ranked first. At the highest end of problem solving skills, New Zealand youth did very well. Of New Zealand youth, 14% had high, or Level 3, problem solving skills, which, along with Japan, was the highest in the OECD.



Figure 4: Proportion of youth with Level 2 and Level 3 problem solving scores¹



Youth skill rankings differed from 15-year-old skill rankings

The OECD’s Programme for International Student Assessment (PISA) measures the reading and maths skills of 15-year-olds in New Zealand and other countries. The 15-year-olds of PISA 2009 were aged 20 in 2014 and within the youth cohort addressed in this report. The same people were not surveyed in the two studies, but results represent the same group of people. Also some countries participated in the Survey of Adult Skills in 2011, so they had a shorter interval from PISA 2009.

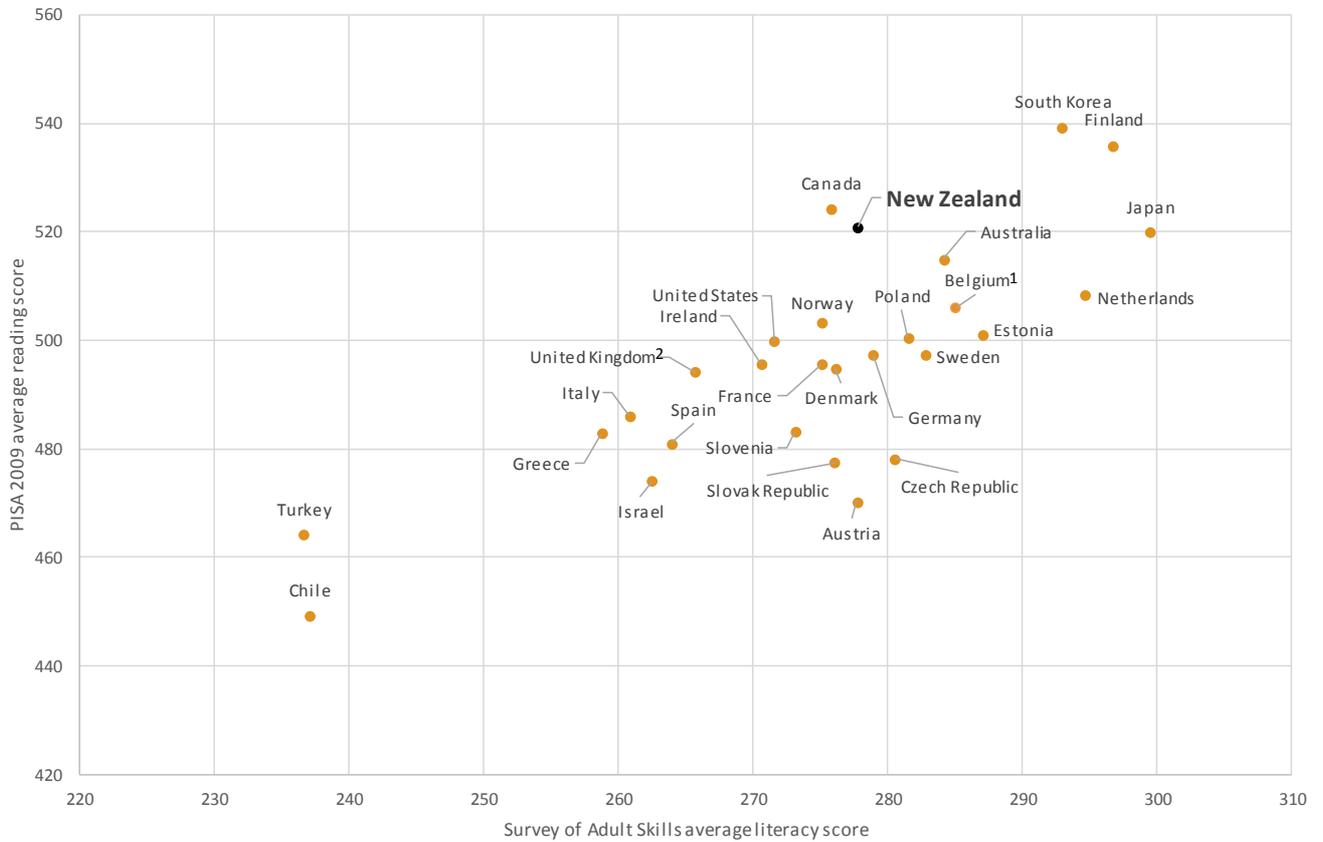
In 2009, New Zealand 15-year-olds ranked fourth in the OECD in reading and sixth for maths in the PISA survey. These rankings were above those of youth in the Survey of Adult Skills. However, national average PISA scores in reading and maths were strongly correlated with average youth skills in literacy and numeracy from the Survey of Adult Skills (Figures 5 and 6).

New Zealand and Canada were outliers in these correlations. Both countries had higher rankings in PISA than they did in the Survey of Adult Skills. Other countries, such as the Czech Republic, Austria and the Slovak Republic, ranked higher in the Survey of Adult Skills than they did in PISA.

The reasons why New Zealand ranked differently in the two surveys are not clear. One reason may be that the two surveys measure skills in very different settings – PISA in school and the Survey of Adult Skills in people’s homes.

¹ Countries are ordered from highest proportion at Level 2 and 3 to lowest.

Figure 5: Average youth literacy scores in the 2014 Survey of Adult Skills and average reading skills in PISA 2009 for OECD countries

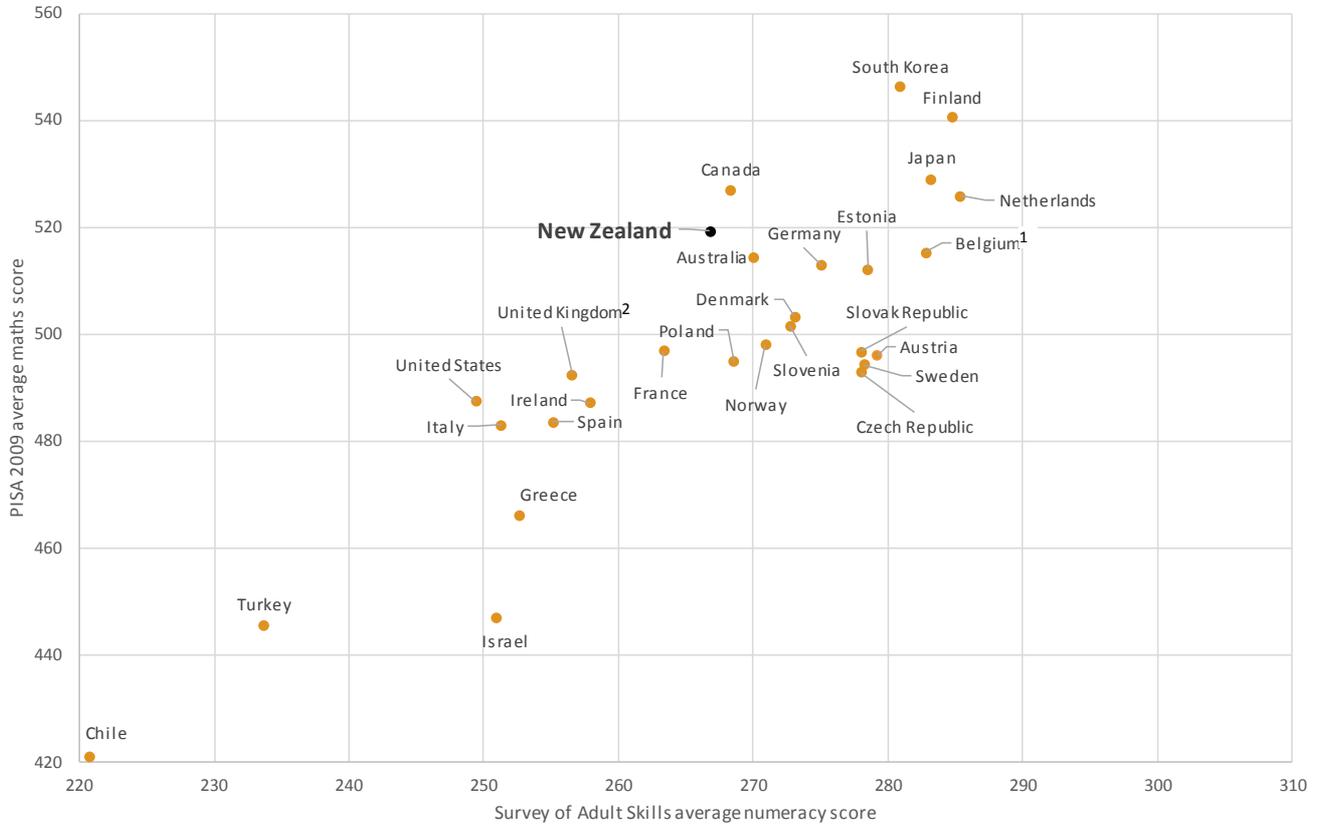


1 Only Flanders was surveyed in the Survey of Adult Skills, while all of Belgium was surveyed in PISA.

2 Only England and Northern Ireland were surveyed in the Survey of Adult Skills, while the United Kingdom was surveyed in PISA.



Figure 6: Average youth numeracy scores in the 2014 Survey of Adult Skills and average maths scores in PISA 2009 for OECD countries



1 Only Flanders was surveyed in the Survey of Adult Skills, while all of Belgium was surveyed in PISA.

2 Only England and Northern Ireland were surveyed in the Survey of Adult Skills, while the United Kingdom was surveyed in PISA.



Improving skills in the future

Comparing attributes related to higher youth skills

Findings from the Survey of Adult Skills can give some insight into the attributes that are associated with higher skills among young people and how well New Zealand youth compare on these attributes to those in other OECD countries. This provides some indication of the areas where changes could result in higher overall skills for young people.

We used correlations to measure the strengths of association of various attributes with literacy skills for New Zealand young people, and compared these to the OECD youth average. The attributes, grouped into three categories, were:

- » home environment factors: more than 200 books in the home; read books at home; use a computer in everyday life; use the internet to understand issues
- » work factors: employed; participated in on-the-job training in the last year; read directions or instructions at work; write letters, memos or emails at work; write reports at work
- » education factors: have a bachelors or higher qualification; undertook formal education in the last year.

We focused on attributes that:

- » were strongly related to youth skills in New Zealand
- » New Zealand youth were less likely to have than youth in other OECD countries.

This provides an indication of where potential may exist to increase the proportion of youth with these attributes and thus influence skill improvement.

The relationships of each attribute to numeracy and problem solving skills were extremely similar to literacy.

Changing working attributes may not increase skills

Youth who participated in on-the-job training, and who were employed, had higher skills than those who did not. However, a high number of New Zealand youth were employed and participated in on-the-job training by international standards, meaning there may be less room for improvement. Writing letters, emails and memos at work was also closely related to higher skills. This may be an indicator of the general type of employment people are in. Overall, it is an area where improvements may have less effect on overall skill levels.

Home environment attributes were closely related to higher skills

Home environment attributes, such as reading books and having a large number of books in the home, were closely correlated with higher skills. New Zealand youth had fewer books at home when they were aged 16 compared to some high-performing OECD countries. They were also slightly less likely to read books in everyday life compared to some high-performing OECD countries.

Having books in the home and reading at home may be indications of other factors in the home environment. It is possible that increasing access to books and reading may increase youth skills. But it is also possible that youth with higher skills are more likely to read; or reading and having books in the home is an indicator of how much learning is valued in the home. However, the results suggest that increasing reading at home could have an effect on overall skill levels.

Increasing youth education participation may increase youth skills

Having participated in formal education in the past 12 months was closely related to higher skills. Of New Zealand youth, 69% had participated in education in the last year. This ranked 22nd highest in the OECD. When accounting for the high number of youth in New Zealand that had a bachelors or higher qualification (and may not require further education), New Zealand's position moves up to 19th. The relatively low participation rate in formal education may be due to having a lower school leaving age than some other countries. However, participation was also low in older age groups. Fifty-one percent of youth aged 20 to 24 participated in formal education in the last year, which is 23rd highest in the OECD.



Data from this survey cannot show how much participation in formal education increases youth literacy scores. It is likely that people with higher literacy skills are also more likely to participate in formal education. However, it is likely there is at least some increase in literacy scores from participation in formal education. Increasing youth participation in education is likely to have some effect on overall skill levels.



Trends in high and low skills

The meaning of high literacy skills and low literacy skills

The average literacy and numeracy scores across New Zealand provide a headline skills indicator. Figure 19 on page 28 shows the changing pattern over time for the total youth population, as well as for the Māori and Pasifika youth populations. However, understanding the proportions of people with high or with low skills is also important.

Literacy scores in the Survey of Adult Skills are divided into six levels, ranging from below Level 1 to Level 5. People with high literacy scores are those who score at Level 4 or above. People at this level can:

- » combine and synthesise information from multiple complex texts
- » understand different competing ideas to form a conclusion about a specific piece of text.

People with low literacy skills are those who score at Level 1 or below. People at this level:

- » have basic vocabulary skills and understand the meaning of sentences
- » can find a short piece of text within a larger piece of text when it is identical to what they are looking for
- » may have difficulty deciphering competing information from the same text.

A full list of skill levels and what they mean is in the Appendix.

The proportion of young people with low literacy skills has decreased

Between 1996 and 2014, the proportion of young people with low literacy scores reduced from 19% to 11%, while the proportion of young people with high literacy skills reduced slightly from 15% to 12% (Figure 7). Between 1996 and 2006, there was a statistically significant:

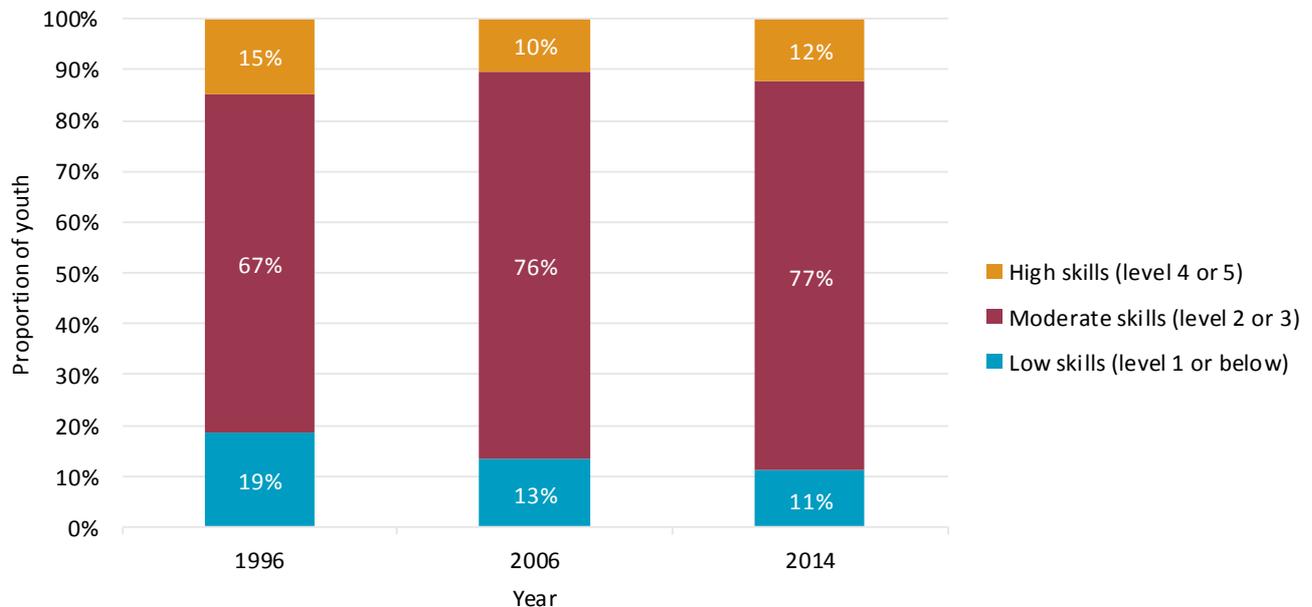
- » increase in the proportion of youth with moderate literacy skills
- » reduction in the proportion of youth that were low skilled. (The 1996-2014 reduction was significant though neither the 1996-2006 nor the 2006-2014 reductions were.)

Between 2006 and 2014, there was a small:

- » reduction in the proportion of youth that have low literacy skills
- » increase in the proportion of youth that have high literacy skills.

Neither of these two changes was statistically significant.

Figure 7: Youth literacy skill distribution – 1996, 2006 and 2014



The meaning of high numeracy skills and low numeracy skills

In the Survey of Adult Skills, numeracy scores, like literacy scores, are divided into six different levels, ranging from below Level 1 to Level 5. People with high numeracy scores are those who score at Level 4 or above. People at this level can:

- » understand a broad range of complex mathematical information in unfamiliar contexts
- » undertake tasks that have multiple steps
- » understand quantities, statistics, chance, spatial relationships, proportions and formulas.

People with low numeracy skills are those who score at Level 1 or below. People at this level can:

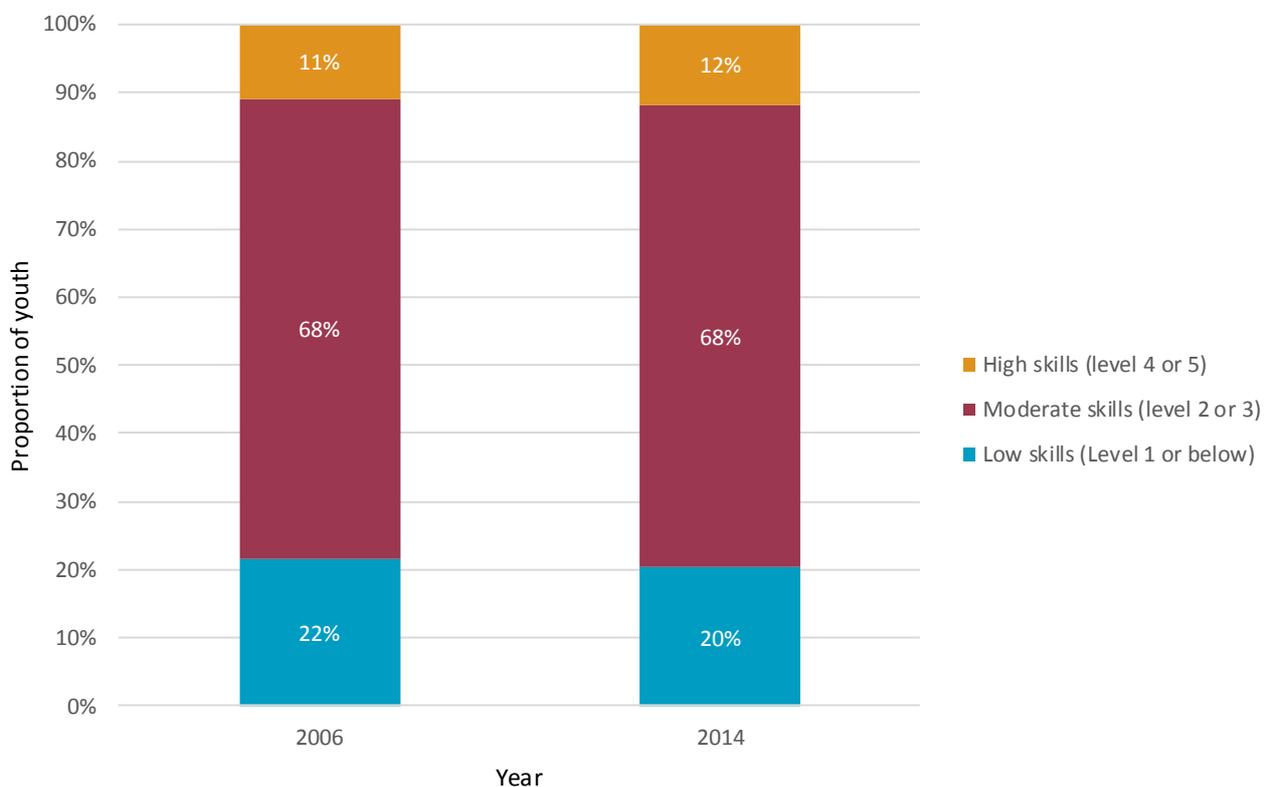
- » carry out basic mathematical tasks in concrete situations
- » undertake one-step processes
- » understand situations where mathematical content is explicit with minimal text
- » understand simple percentages such as 50%.

A full list of skill levels and what they mean is in the Appendix.

Numeracy scores for youth were similar in 2006 and 2014

Between 2006 and 2014, there was a slight decrease in the proportion of youth with low numeracy skills and a slight increase in the proportion of youth with high numeracy skills (Figure 8). Neither of these changes was statistically significant. There was also no statistically significant change in the average numeracy score of youth over the time period. Unlike literacy, numeracy was not measured in 1996.

Figure 8: Youth numeracy skill distribution – 2006 and 2014

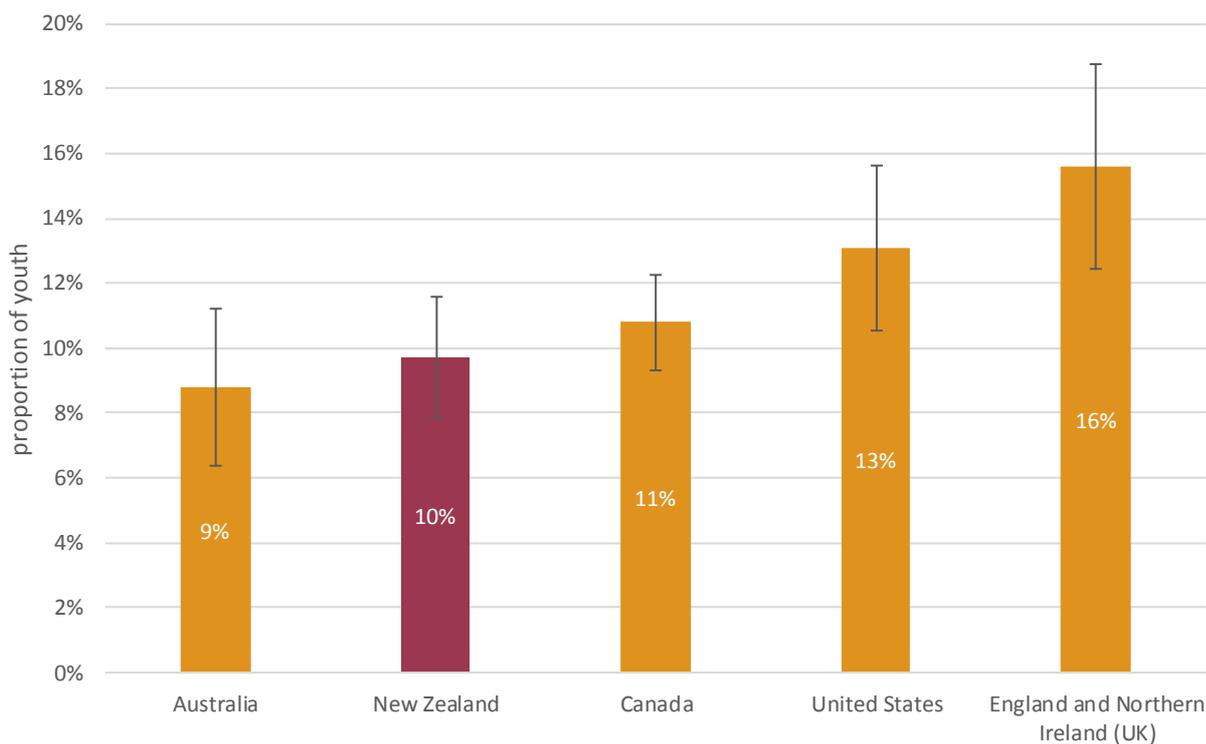


Low-skilled youth

The proportion of youth in New Zealand that were low skilled was similar to Australia and Canada

In New Zealand, 10% of youth had low skills (Level 1 or below) in both literacy and numeracy (Figure 9). This was not measurably different from Australia, Canada or the United States. However, a significantly higher proportion of youth in England and Northern Ireland had low skills in literacy and numeracy, at 16%.

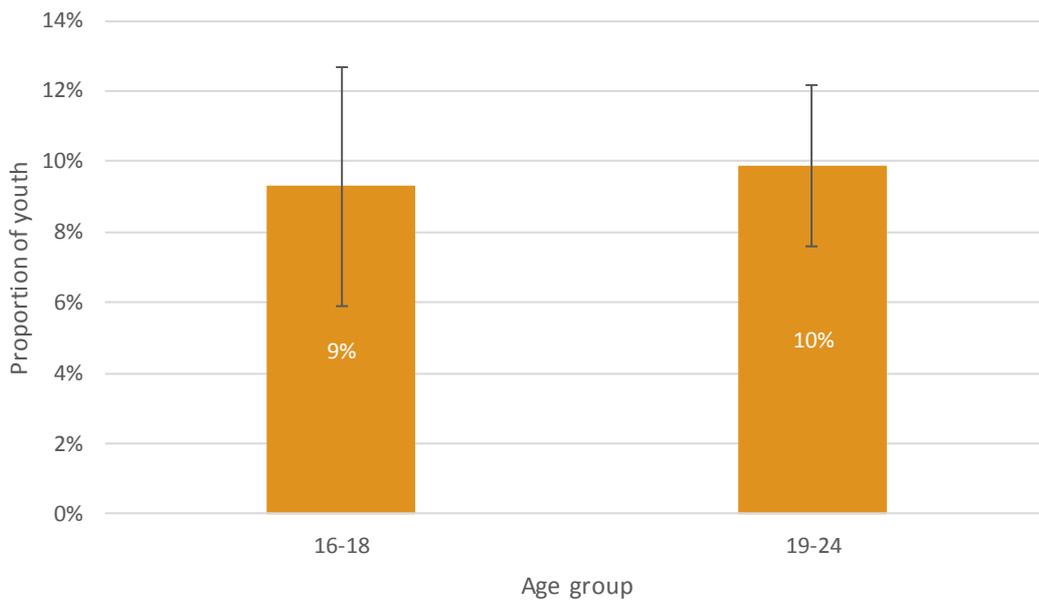
Figure 9: Proportion of youth that were low skilled in New Zealand and selected countries



'Older' youth and 'younger' youth were just as likely to be low skilled

There was no measurable difference between the proportion of 16 to 18-year-olds and 19 to 24-year-olds who were low skilled in both literacy and numeracy (Figure 10). This suggests that youth may not advance out of this low-skilled group as they get older. However, some caution is required with this finding. The skills of different people in different age groups are being measured at the same point in time. The survey does not measure the skills of the same people when they are aged 16 to 18 and then again when they are aged 19 to 24.

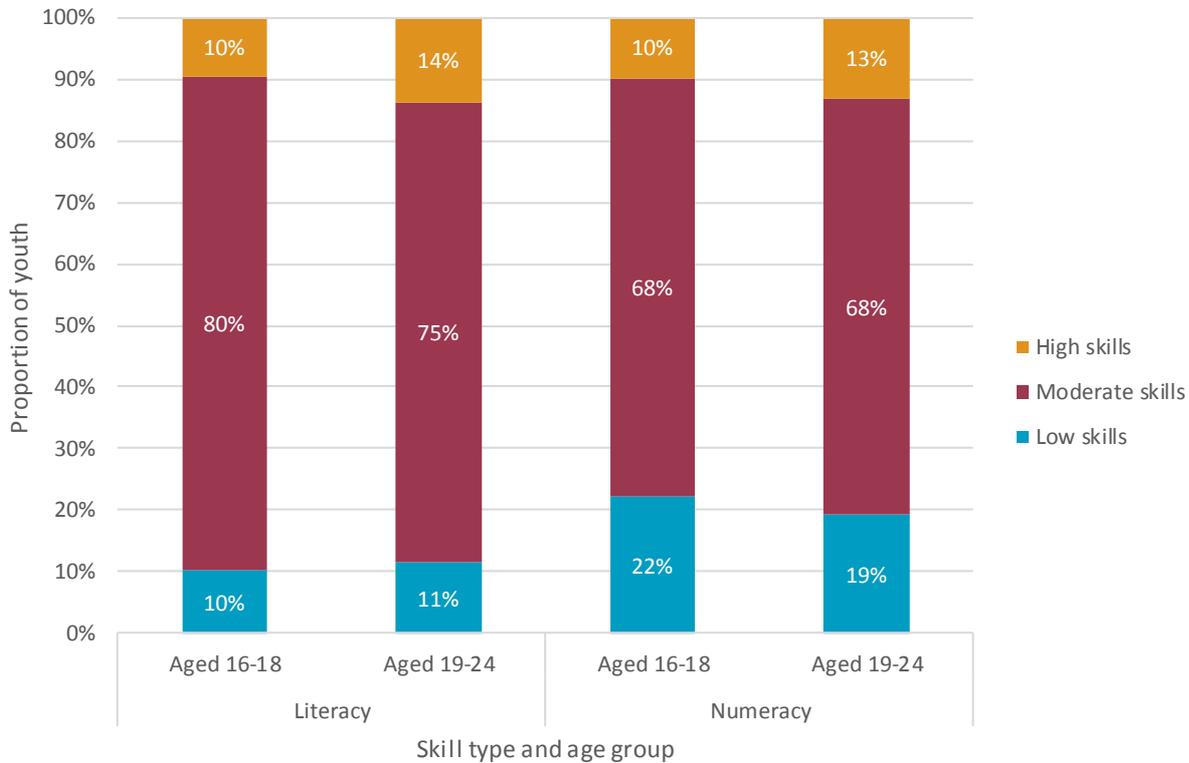
Figure 10: Low-skilled youth and age



Post-school age youth may have higher literacy and numeracy skills

While there was no difference in the proportion of older youth and younger youth who were low skilled in both literacy and numeracy, there may have been a difference in the proportion that had moderate skills or higher skills. A greater, but not significantly greater, proportion of 19 to 24-year-olds had high literacy skills than 16 to 18-year-olds (Figure 11). Similar differences were evident for numeracy skills. In addition, the average score of 19 to 24-year-olds in both literacy and numeracy was higher than for 16 to 18-year-olds but not by a statistically significant margin.

Figure 11: Literacy and numeracy skill distribution – youth aged 16 to 18 and 19 to 24



Measuring the change in low skills from youth to young adults

When looking at skills for different age groups at a single point in time, the reasons for any differences are difficult to identify. Scores may differ as a result of different experiences in education or gaining a broader range of experiences over time. For example, people aged 25 to 34 had higher skills than those aged 16 to 24, but it is difficult to tell if these scores were higher because the older age group had greater life experience, or because their education differed.

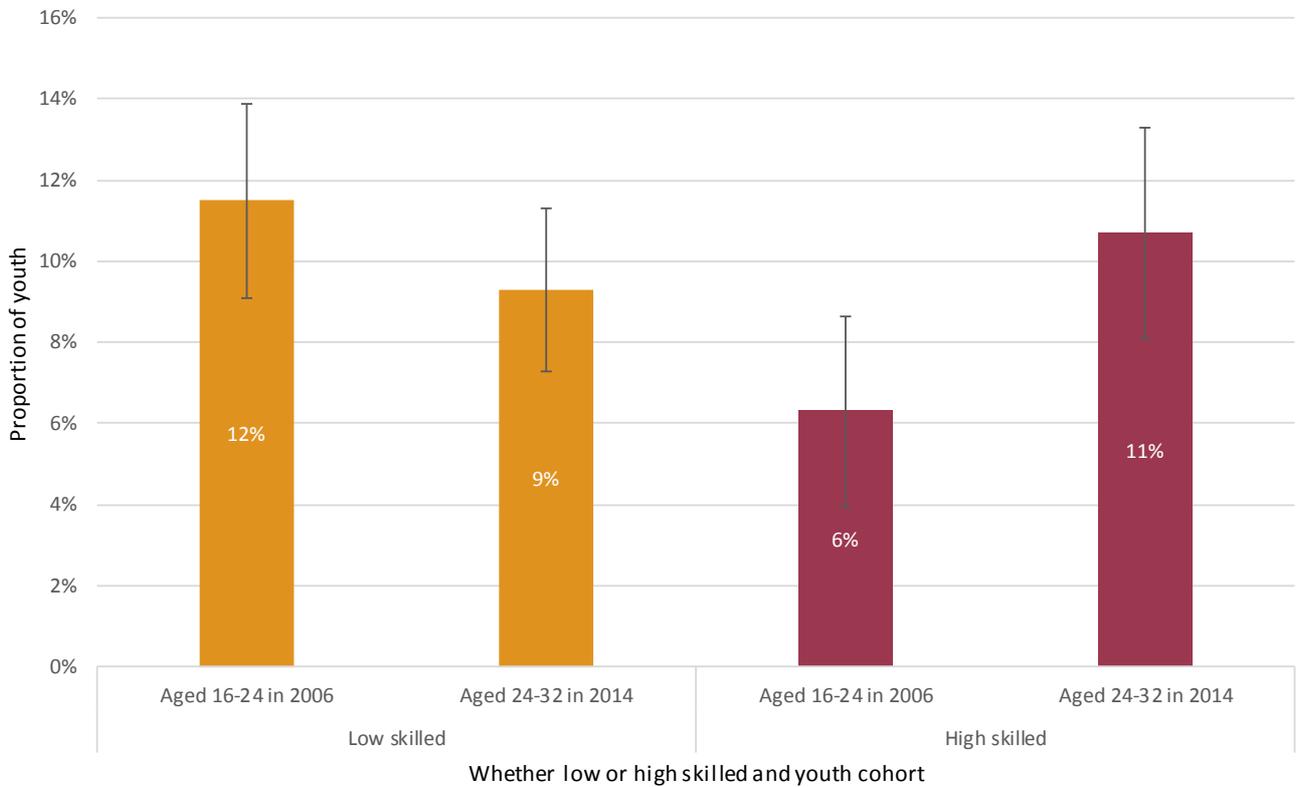
One approach is to compare the proportion of youth aged 16 to 24 in 2006 who had low skills to the proportion of the same cohort who were low skilled when they were eight years older in 2014 and aged 24 to 32. The same people have not been surveyed twice, but the surveys represent the same group of people. Those who were not born in New Zealand who arrived after 2006, and hence could not be surveyed in 2006, were excluded from this analysis so that the same group of people was being compared.

Low-skilled youth in 2006 remained low skilled as they got older

In 2006, 12% of youth were low skilled in both literacy and numeracy (Figure 12). Of the same cohort of people, who were aged 24 to 32 in 2014, there was no measurable change in the proportion that were low skilled. This offers some evidence that people who are low skilled when they are young are unlikely to improve their skills as they get older. There will have been some changes in the composition of this group through people leaving the country between 2006 and 2014. It is also possible that some people will have moved out of this low-skilled group and others will have reduced their skills, falling back into this group. As the Survey of Adult Skills did not survey the same people in 2006 and 2014, it is impossible to tell whether this is the case.



Figure 12: Proportion of 2006 youth cohort that were low skilled and high skilled in literacy and numeracy²



More youth may have become high skilled

While youth with low skills stayed low skilled, the proportion of this cohort that had high skills (Level 4 and above) in literacy and numeracy increased from 6% in 2006 to 11% in 2014 (Figure 13). Because of relatively small sample sizes, this increase was also not statistically significant, but it may reflect an actual increase. It therefore appears that, while a proportion of youth stayed low skilled, a proportion of those who were not low skilled may have increased their skills over time.

² Excludes people not born in New Zealand who arrived after 2006.

Low-skilled youth were less likely to gain a qualification

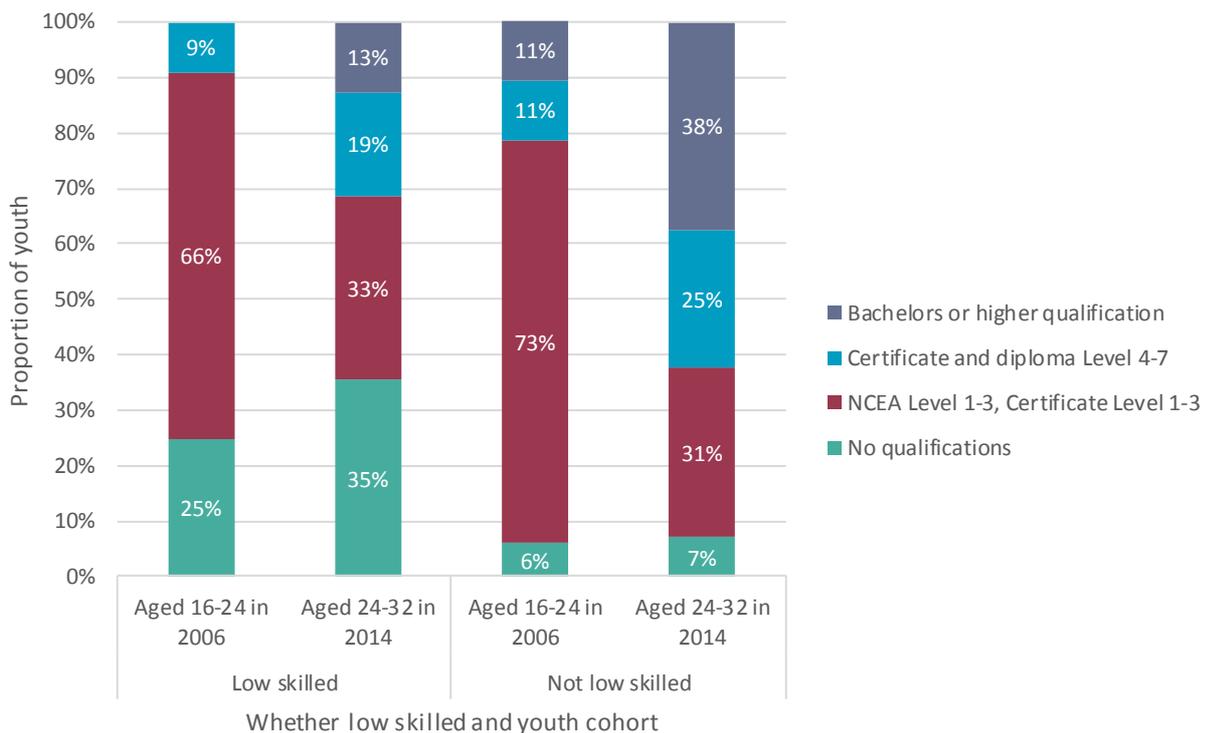
Of low-skilled youth in 2006, 9% had a post-school qualification (Figure 13). Of low-skilled people in the same age cohort in 2014 (aged 24 to 32), 31% had a post-school qualification. There appears to be a proportion of people who have gained qualifications, but have remained low skilled in both literacy and numeracy.

Figure 13 shows a higher proportion of low-skilled people aged 24 to 32 with no qualification than low-skilled people aged 16 to 24 in 2006. As there is no measurable difference in the size of the low-skilled group, this result is counter-intuitive. People shouldn't lose qualifications as they get older. There are a number of possibilities for this increase in low-skilled people in this age cohort with no qualifications:

- » There is some random variation in the sample (the difference is not statistically significant).
- » Slight changes to the way questions were asked in the 2006 and 2014 surveys have changed how people have answered the question.
- » Some youth who were not low skilled in 2006 and had no qualification have become low skilled over time. At the same time, some low-skilled people in 2006 moved out of this group, leaving the overall size of this low-skilled group the same.

Of the 2006 youth cohort who were not low skilled, there was a large increase between 2006 and 2014 in the proportion with post-school qualifications. In 2006, 79% of this group had either no qualification or qualifications at Level 3 or below. By 2014, this proportion had shrunk to 37%. A much larger proportion of those who were not low skilled in 2006 gained post-secondary qualifications than those who were low skilled in 2006.

Figure 13: Highest qualifications for 2006 youth cohort by whether low skilled



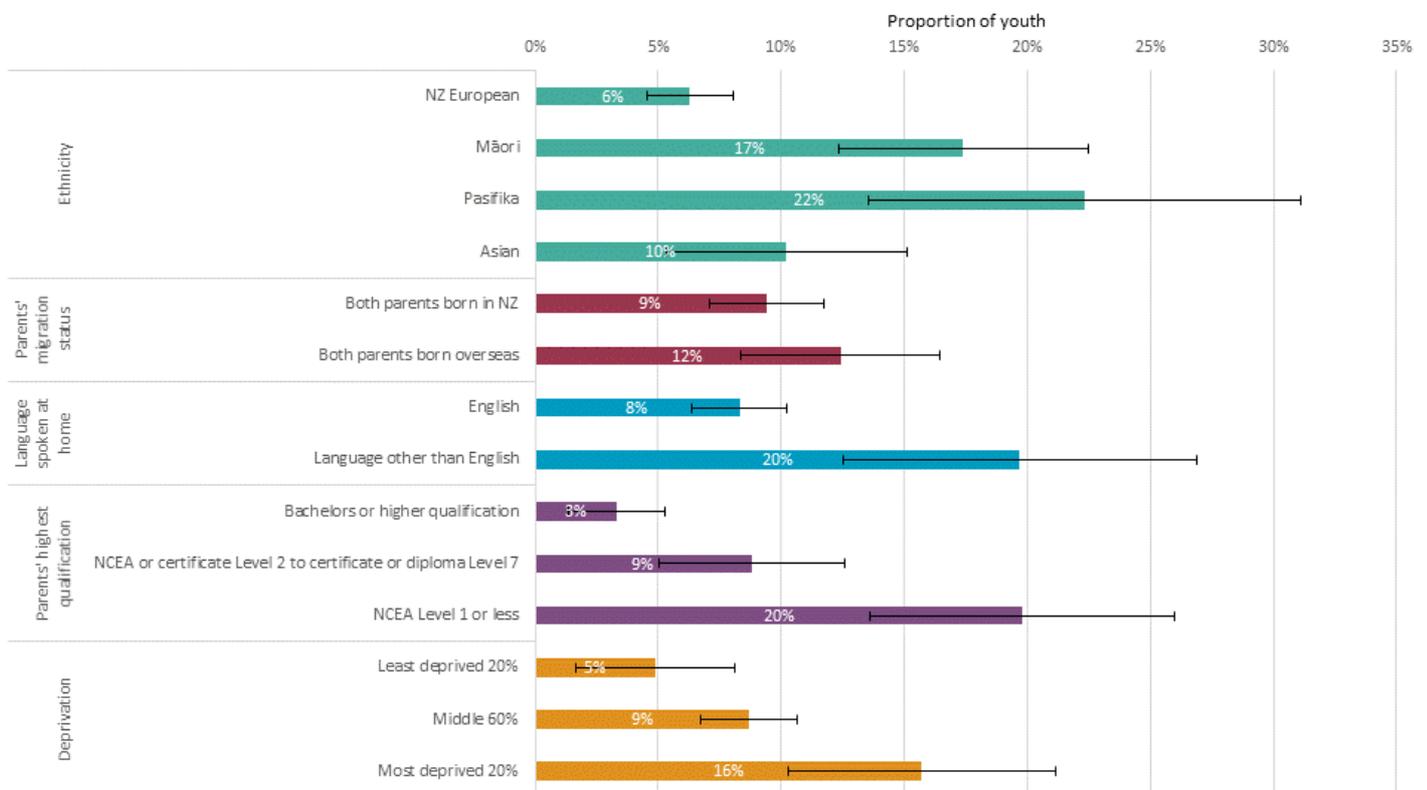
Factors associated with low skills among youth

Groups that had high proportions of low-skilled people were:

- » youth who spoke a language other than English at home (20% were low skilled)
- » youth whose parents had a qualification at NCEA Level 1 or below (20% were low skilled)
- » youth living in the most deprived 20% of areas in New Zealand (16% were low skilled)³
- » Māori and Pasifika youth (17% and 22% respectively were low skilled).

Of youth with two parents born overseas, 12% were low skilled, compared to 9% of youth with both parents born in New Zealand. However the difference was not statistically significant. See Figure 14.

Figure 14: Proportion of youth who are low skilled in literacy and numeracy



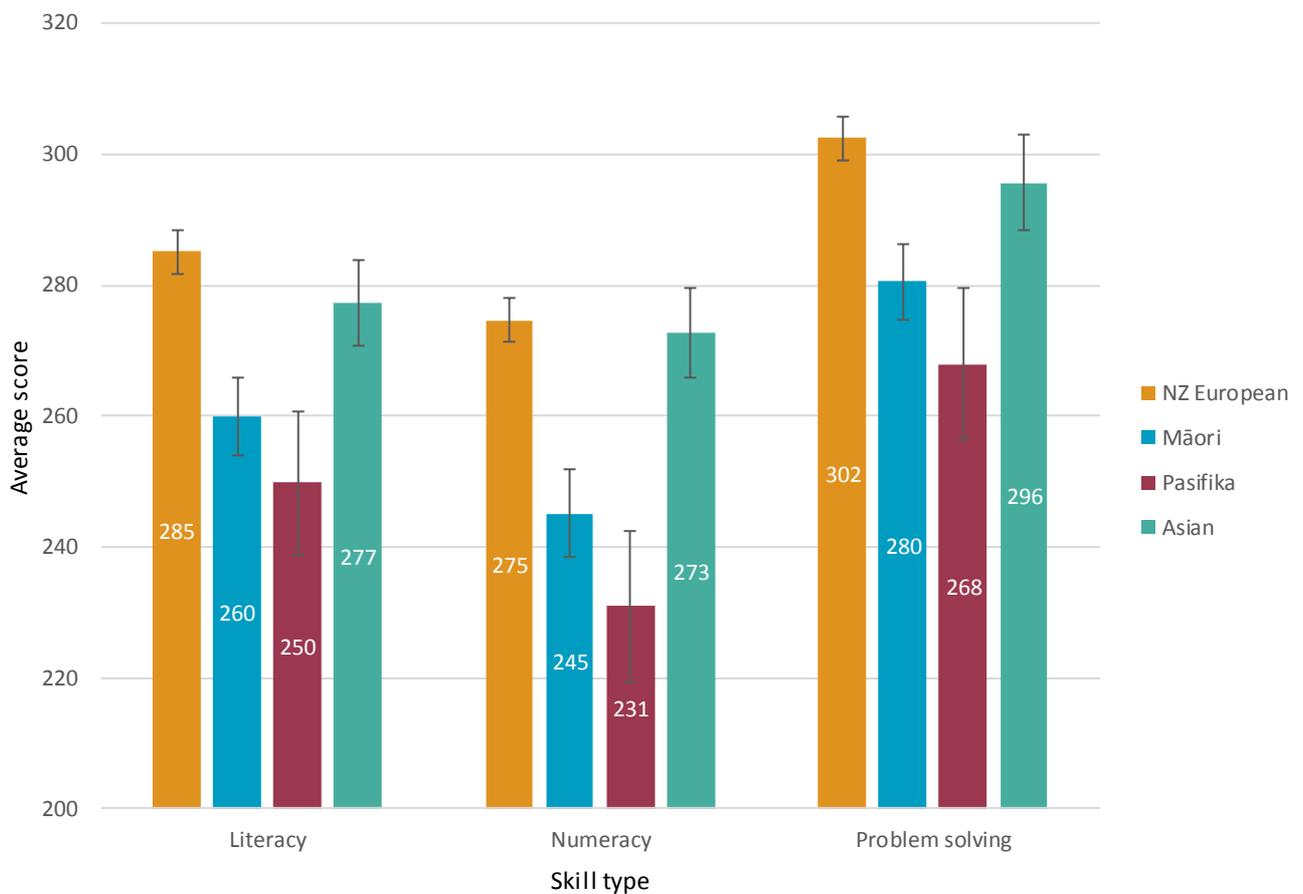
³ The most deprived areas are calculated using the New Zealand Deprivation Index; more details of this are on page 36.

Youth skills and ethnicity

New Zealand European youth had higher skills than other ethnic groups

Māori and Pasifika youth had lower scores on average in literacy, numeracy and problem solving than NZ European and Asian youth (Figure 15). Asian youth had similar numeracy scores on average to NZ Europeans, and had slightly, but not significantly, lower literacy and problem solving scores.

Figure 15: Average scores for youth and ethnic groups



Comparing ethnic group skill differences by age group

This section compares skill differences of ethnic groups between the two age groups: 16-24 and 25-44 years old.

The difference in skills between NZ European youth and Māori youth was similar in literacy, numeracy and problem solving to older age groups (Figures 17, 18 and 19).

The difference in skills between NZ European youth and Asian and Pasifika youth was smaller in literacy and numeracy, but similar in problem solving compared to older age groups (Figures 16, 17 and 18).

Asian and Pasifika youth were more likely to speak English at home than those aged 25 to 44. Forty-nine percent of Asian youth and 75% of Pasifika youth spoke English at home. This compares to 30% of Asians and 68% of Pasifika aged 25 to 44 who spoke English at home. This may be part of the reason for the smaller difference between Asian and Pasifika youth skills and NZ European youth skills compared to the difference for Asians and Pasifika aged 25 to 44 and NZ Europeans. In the future, there may be a generational shift for Asians and Pasifika, where, as today's youth get older, the skill difference between them and NZ Europeans may reduce. This may also be the case for Pasifika, but not for Māori, as Māori youth do not perform better than older Māori relative to NZ Europeans.

Figure 16: Literacy skills and age for different ethnic groups

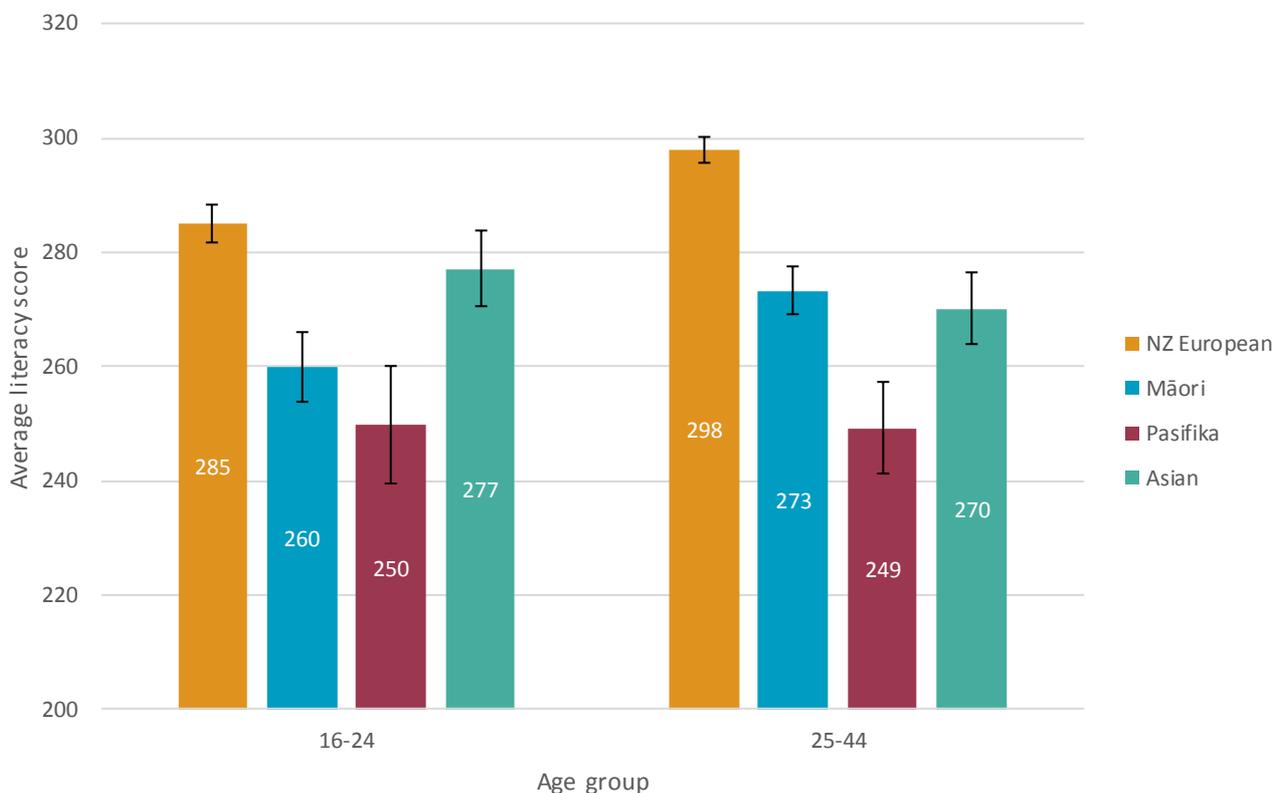




Figure 17: Numeracy skills and age for different ethnic groups

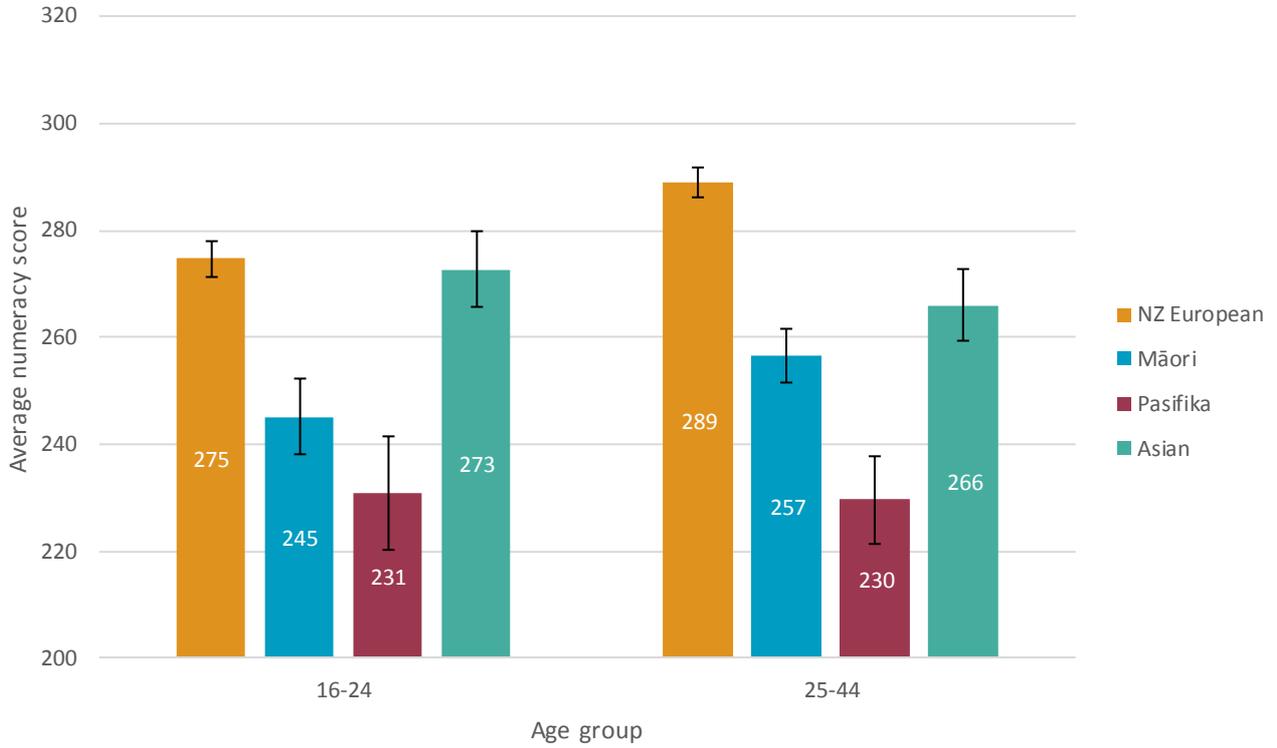
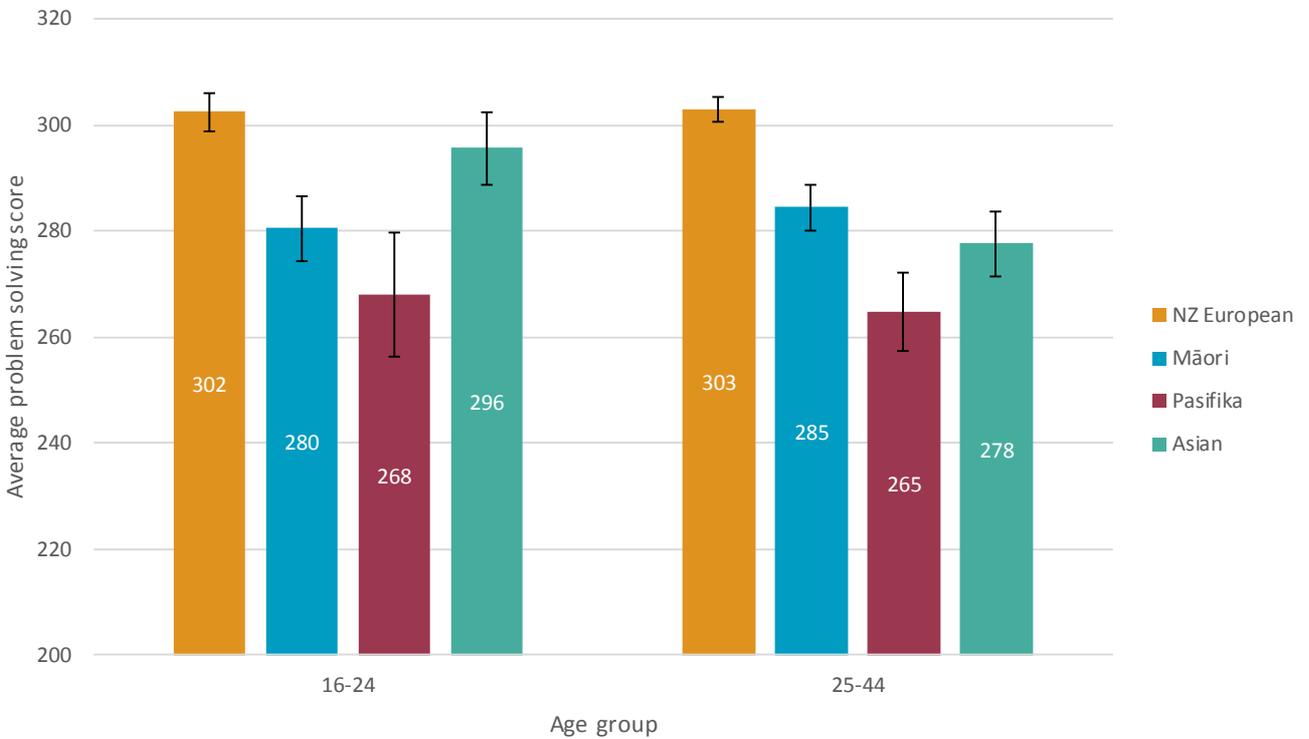


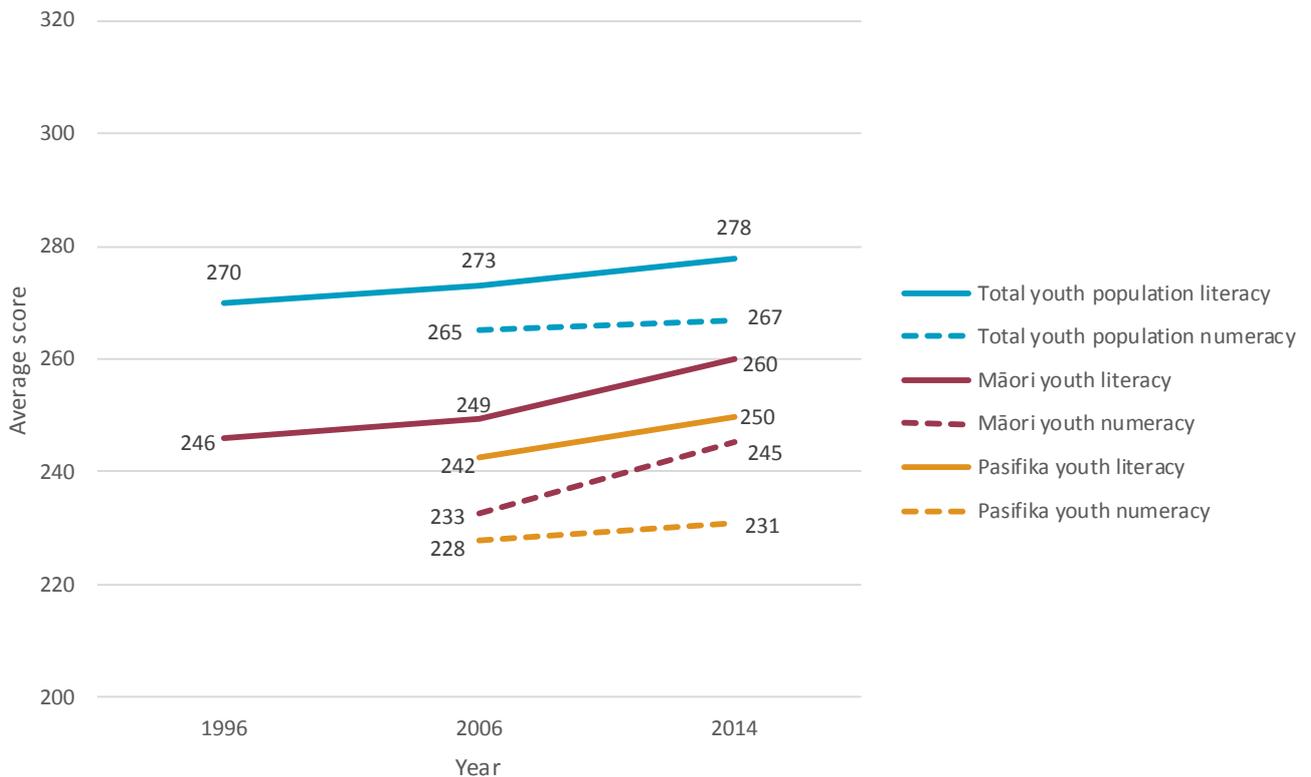
Figure 18: Problem solving skills and age for different ethnic groups



The skills of Māori and Pasifika youth seem to have increased faster than the total youth population

Between 2006 and 2014, average Māori and Pasifika youth literacy and numeracy scores appeared to increase faster than average scores for the overall youth population, though the increase was not statistically significant (Figure 19). This contrasts to the period between 1996 and 2006, where average youth literacy scores changed only slightly for the Māori and the total youth population. Average Pasifika youth literacy and numeracy appeared to rise between 2006 and 2014. However, the sample of Pasifika youth was too small for the increase to be statistically significant. The sample was too small in 1996 to measure Pasifika youth literacy accurately.

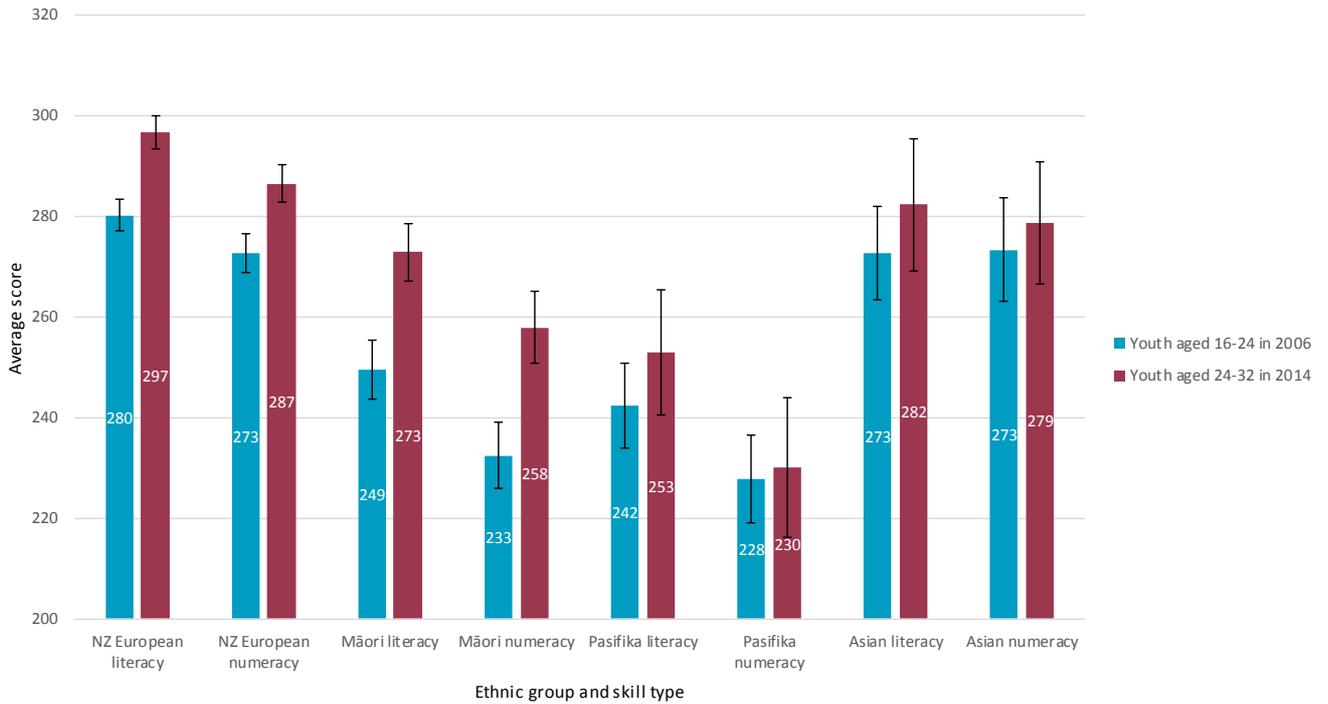
Figure 19: Literacy and numeracy skills over time for Māori, Pasifika and total youth population



Māori youth improved skills as they got older more than other ethnic groups

Youth skills did not remain the same over time. For Māori and NZ Europeans, the cohort that was aged 16 to 24 in 2006 (and aged 24 to 32 in 2014) had significantly higher literacy and numeracy scores in 2014 than 2006 (Figure 20). Māori in this cohort increased their literacy and numeracy scores by 23 points and 25 points respectively. NZ Europeans had smaller gains. The increases in average skills for Pasifika and Asian youth were small and not statistically significant.

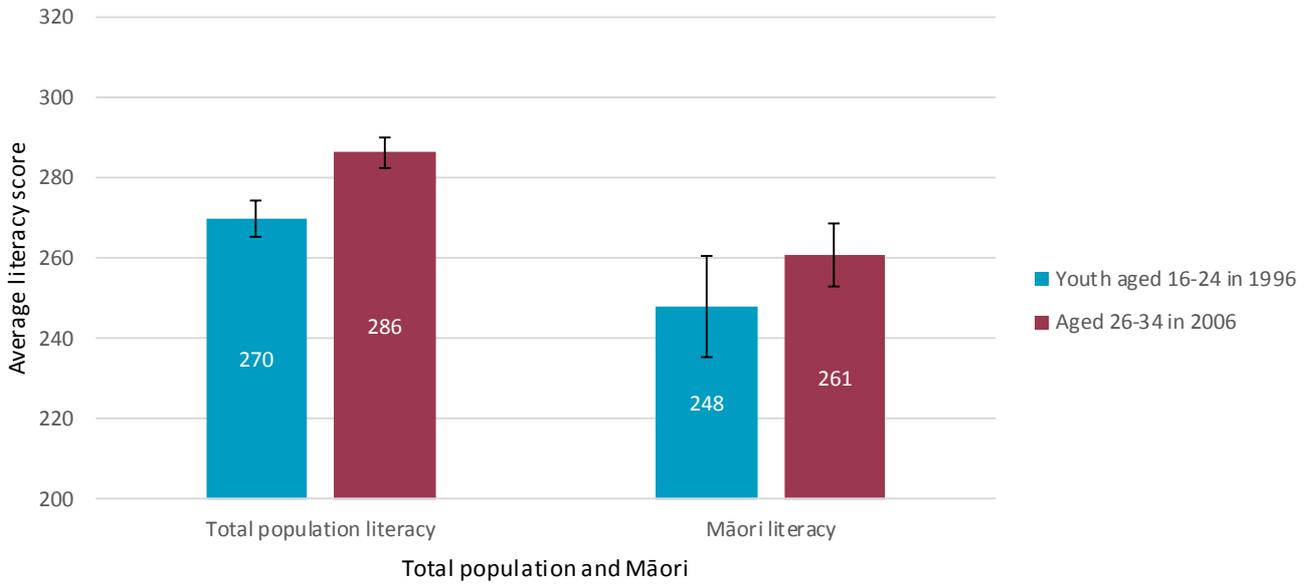
Figure 20: Skills increase and ethnicity – 2006 and 2014



⁴ Excludes people not born in New Zealand who arrived after 2006.

Māori youth appear to have increased their literacy skills faster between 2006 and 2014 than between 1996 and 2006 (Figure 21). As measured in the survey, average scores for Māori increased 23 points for literacy between 2006 and 2014 compared to a 13 point increase in literacy and between 1996 and 2006. However, the sample sizes were not sufficient to measure the latter increase as significant. The same comparisons were even more difficult to measure for Pasifika and Asians as the sample sizes were smaller.

Figure 21: Literacy skills increase and ethnicity – 1996 and 2006



⁵ Excludes people not born in New Zealand who arrived after 1996.

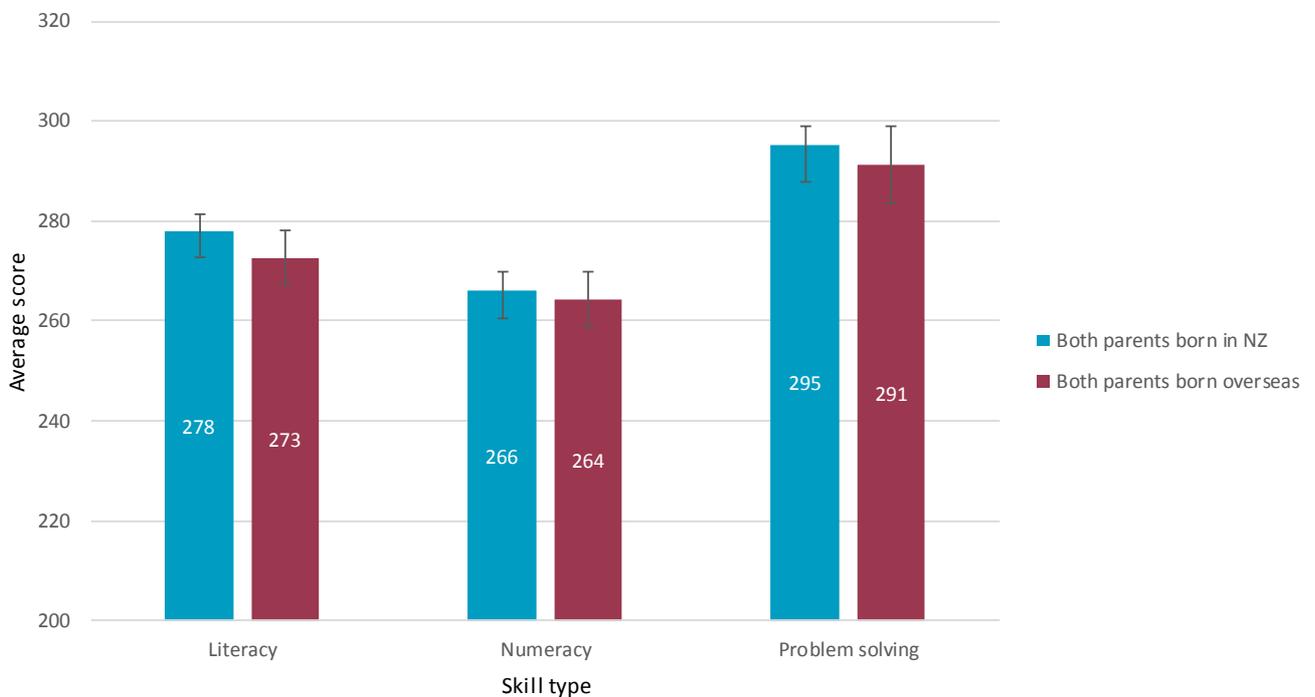
Youth skills and home environment

Youth with overseas-born parents and those with New Zealand-born parents had no measurable skills difference

The difference in literacy, numeracy and problem solving skills between youth with both parents born overseas and those with both parents born in New Zealand was not statistically significant (Figure 22). Youth with two parents born overseas also did well when compared to their counterparts internationally. They ranked:

- » fourth in the OECD in literacy
- » fourth in the OECD in numeracy
- » second in the OECD in problem solving.

Figure 22: Youth skills and parents' place of birth



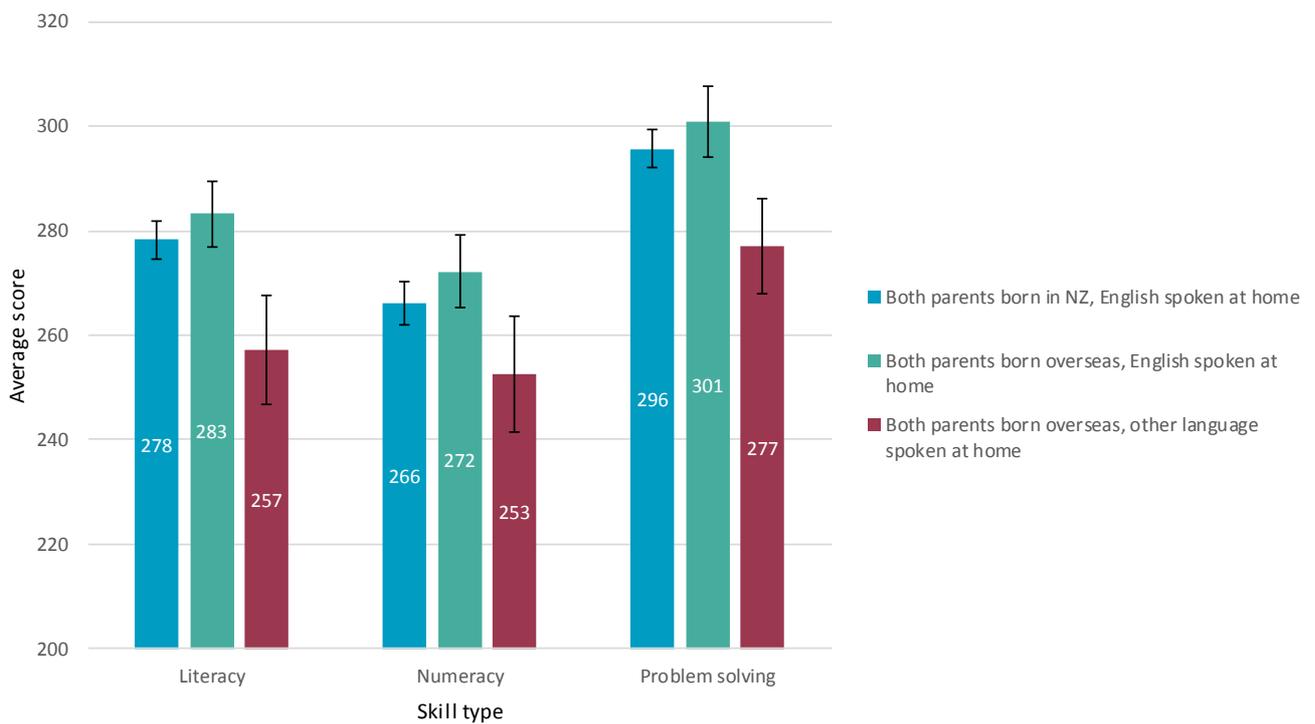
Speaking English at home was closely related to higher skills

Speaking English at home was more closely related to higher skills than having parents born overseas (Figure 23). Youth with parents born overseas, but who spoke English at home, had:

- » higher skills than youth with parents born in New Zealand, but not by a statistically significant margin
- » higher skills than youth with parents born overseas who spoke a language other than English, by a statistically significant margin.

These patterns are consistent with New Zealand's migration policies and level of migration from English-speaking countries.

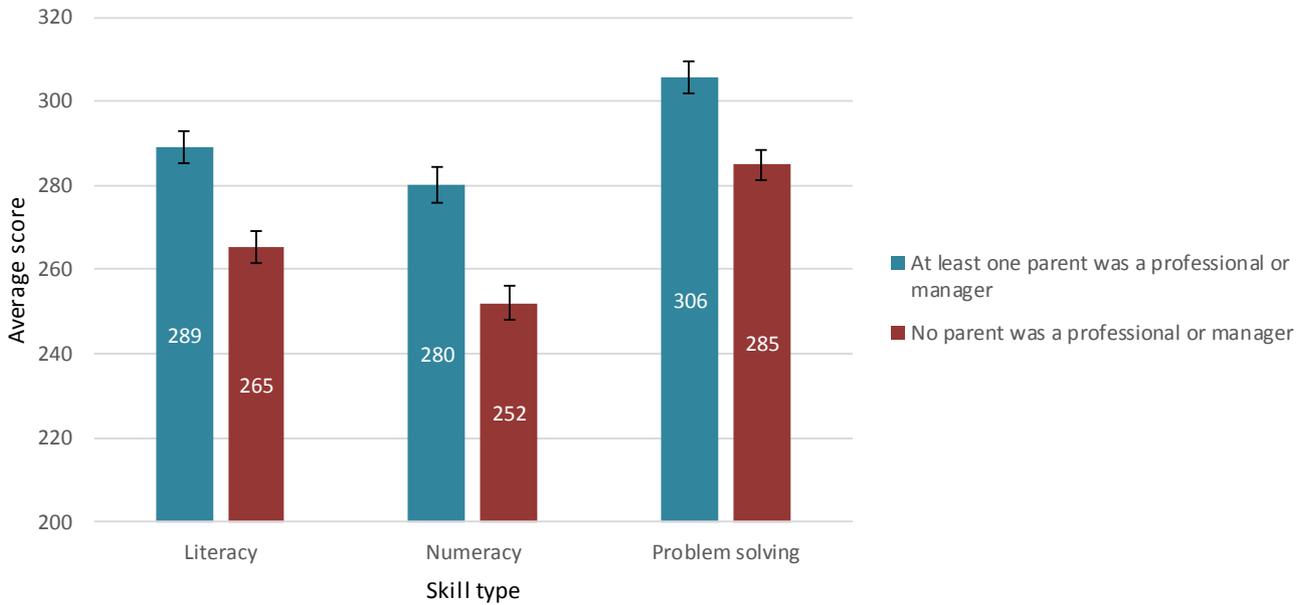
Figure 23: Youth skills, parents' birthplace and language spoken at home



Youth with parents that were professionals or managers had higher skills

Youth who had at least one parent who was a professional or manager when the respondent was aged 16 had significantly higher literacy, numeracy and problem solving skills than youth without a parent in these occupations (Figure 24). The difference between the two groups was greatest in numeracy and least in problem solving.

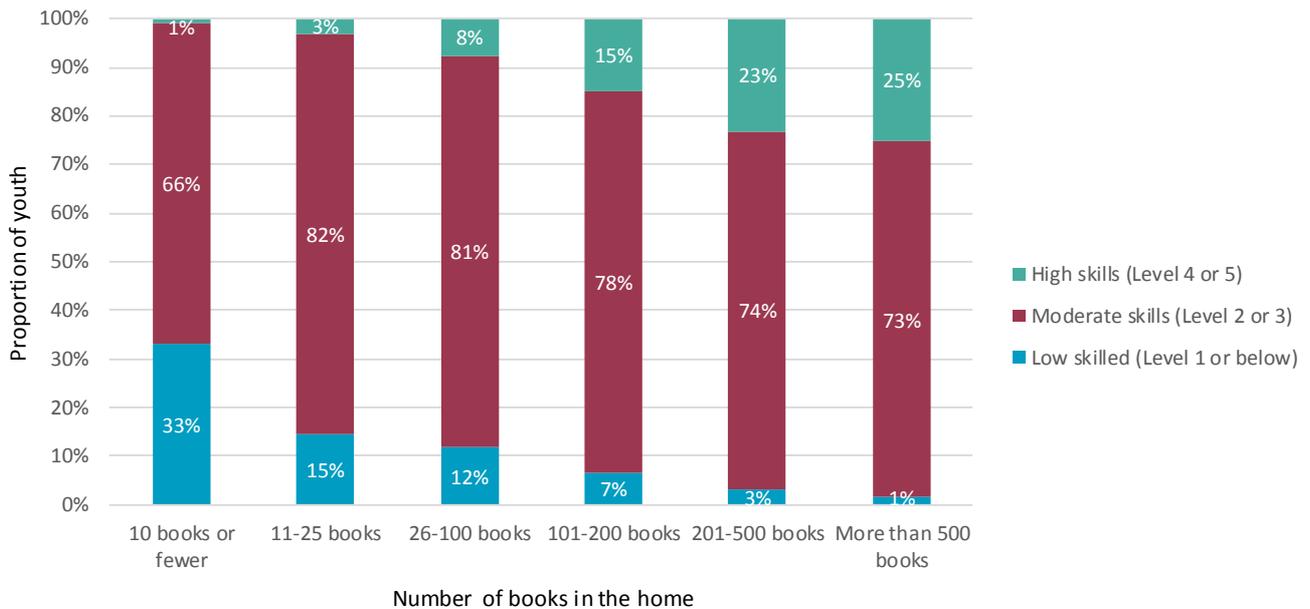
Figure 24: Youth skills and parents' occupation



Having more books in the home was strongly correlated with higher skills for youth

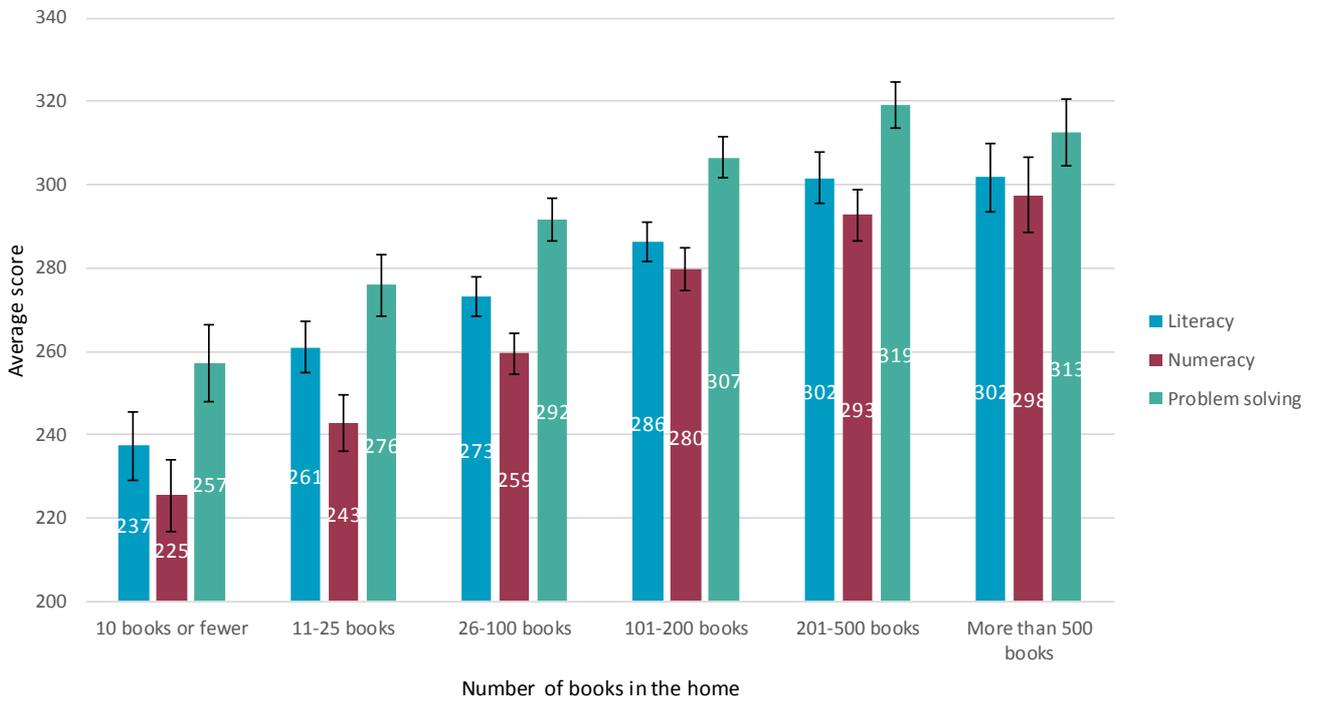
The Survey of Adult Skills asked respondents how many books were in their home when they were aged 16. The more books youth had in their home when they were 16 (or currently if they were aged 16 at the time of the interview), the more likely they were to have high literacy skills (Figure 25). Of youth who had more than 500 books in the home, 25% had high literacy skills compared to only 1% of youth with 10 books or fewer in their home.

Figure 25: Books in home when youth were aged 16 and literacy skill levels



Youth with more books in the home also had higher numeracy and problem solving scores (Figure 26). The average skills of youth were higher in literacy, numeracy and problem solving the more books there were in the home. Above 500 books in the house, skills levelled off. The presence of books in the home cannot directly cause higher skills; however, people with higher skills may read more books, and therefore maintain or enhance their skills. More books in the home may also be an indicator of the wider factors in the home that are related to high skills but are hard to measure in a survey. Examples are cultural capital and how much education and knowledge are valued.

Figure 26: Books in home when youth were aged 16 and average skills



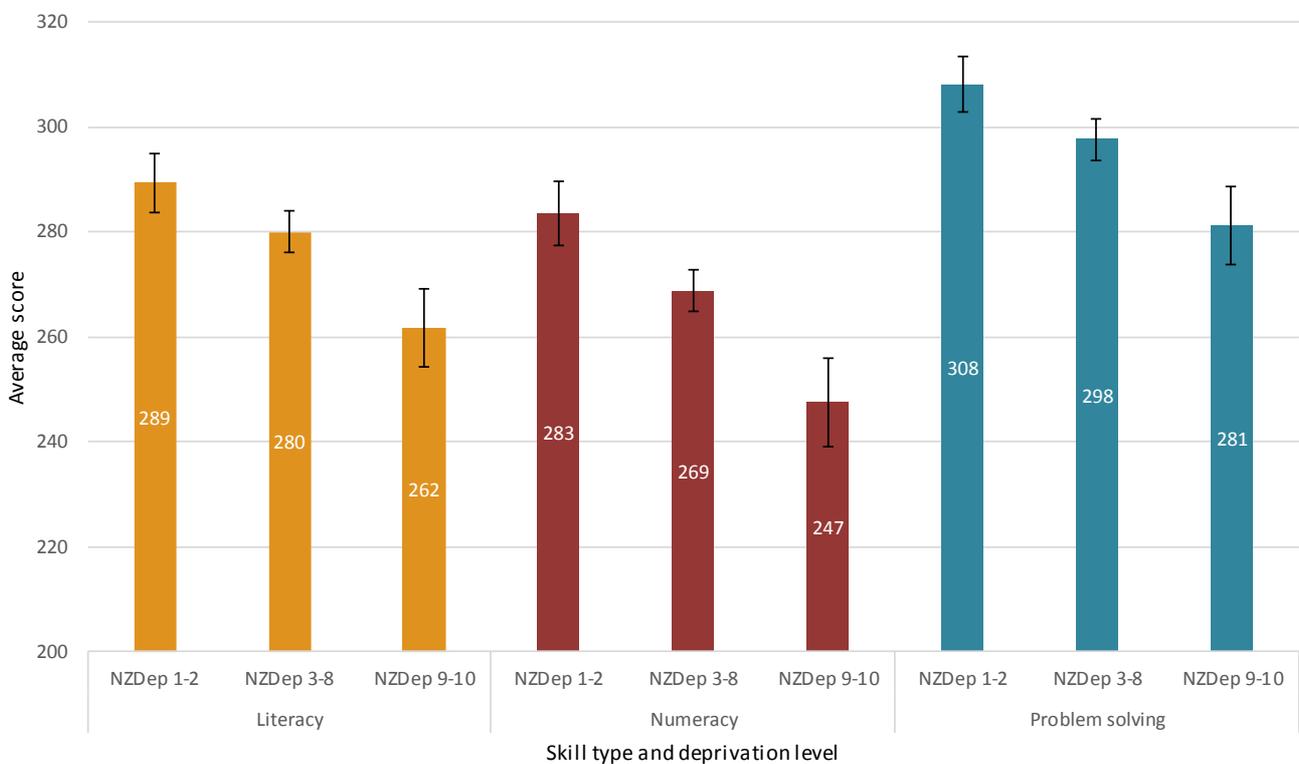
Youth living in more deprived areas had lower skills

Socio-economic deprivation is measured through the New Zealand Deprivation Index (NZDep), which is designed by the University of Otago and assigns levels of deprivation to meshblocks (small areas of around 30 to 60 households). The index is based on a number of questions relating to personal hardship that are then linked to Census questions and how they are answered in each individual meshblock. All households in a particular meshblock are assigned the same level ranging from one, which is the least deprived, to ten, which is the most deprived.

Youth living in the most deprived areas had significantly lower literacy, numeracy and problem solving scores than those living in less deprived areas (Figure 27). Those in NZDep 9 to 10 are living in areas where the most deprived 20% of New Zealanders live. Compared to youth living in the areas where the least deprived 20% of New Zealanders live (NZDep 1 to 2), they scored on average:

- » 28 points lower in literacy scores
- » 36 points lower in numeracy scores
- » 27 points lower in problem solving scores.

Figure 27: Skills and deprivation



Number of books in the home was more strongly correlated with higher youth skills than other home environment factors

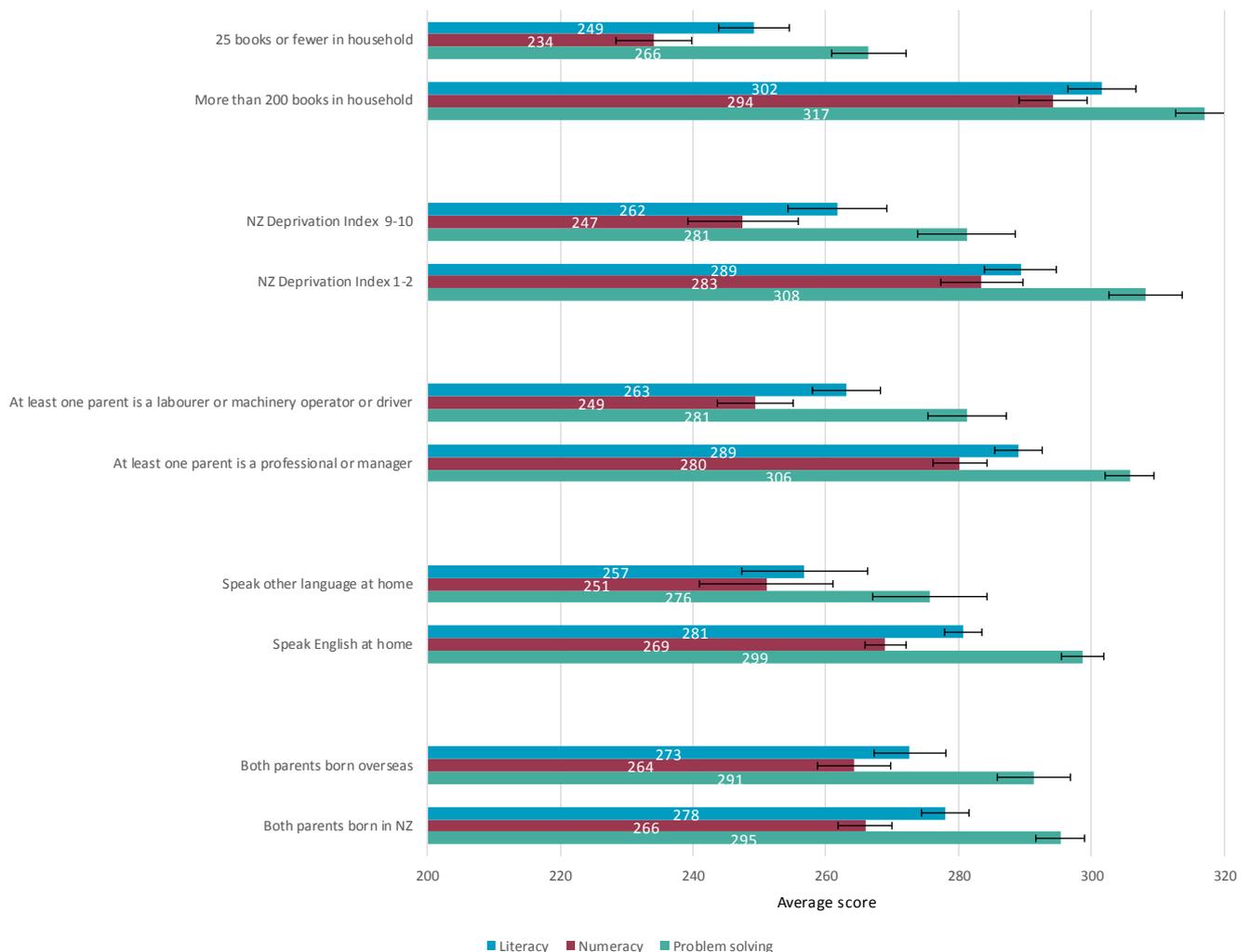
Of the different home environment factors, the number of books in the home was most strongly correlated with higher youth skills (Figure 28). Youth who had more than 200 books in their home when they were aged 16 had average literacy, numeracy and problem solving scores very significantly higher than youth in homes with 25 books or fewer. The differences in youth skills between:

- » the most and least deprived areas
- » those who had a parent who was a professional or manager and those with a parent who was a labourer, machine operator or driver
- » those who spoke English at home and those who spoke another language

were smaller but still significant.

No significant difference in youth skills was measurable between those whose parents were both born in New Zealand and those whose parents were both born overseas.

Figure 28: Youth skills and home environment

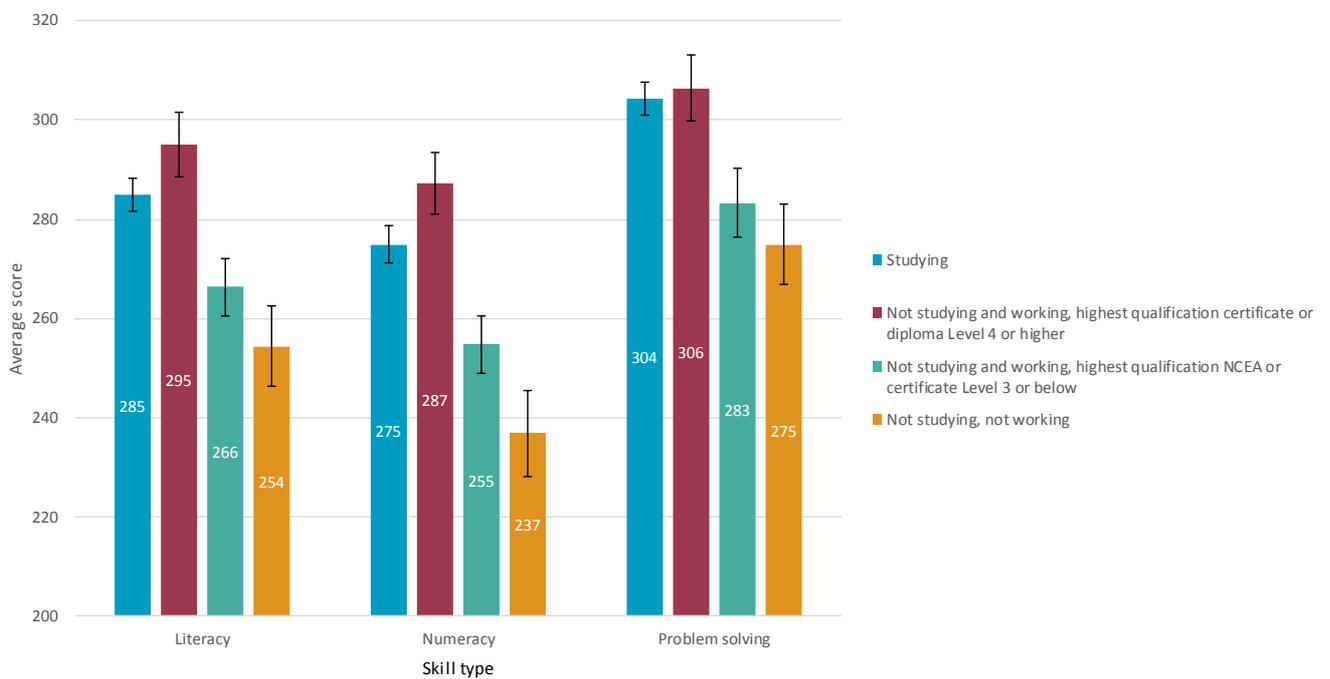


Youth skills, employment and education

Youth who were working and had completed a post-school qualification were the most skilled

Youth who were working and had a post-school qualification had higher skills in literacy and numeracy than those who were studying (Figure 29). Those who were studying had higher skills in literacy, numeracy and problem solving than those who were working and who did not have a qualification above NCEA or Certificate Level 3. Those who were not in employment or education had lower numeracy skills than those who were working with a qualification below Level 3. The difference between these two groups was not statistically significant for literacy and problem solving. Twenty-two percent of people not in employment or education were low skilled in both literacy and numeracy.

Figure 29: Youth skills, employment, studying and education status



Youth skills and gender

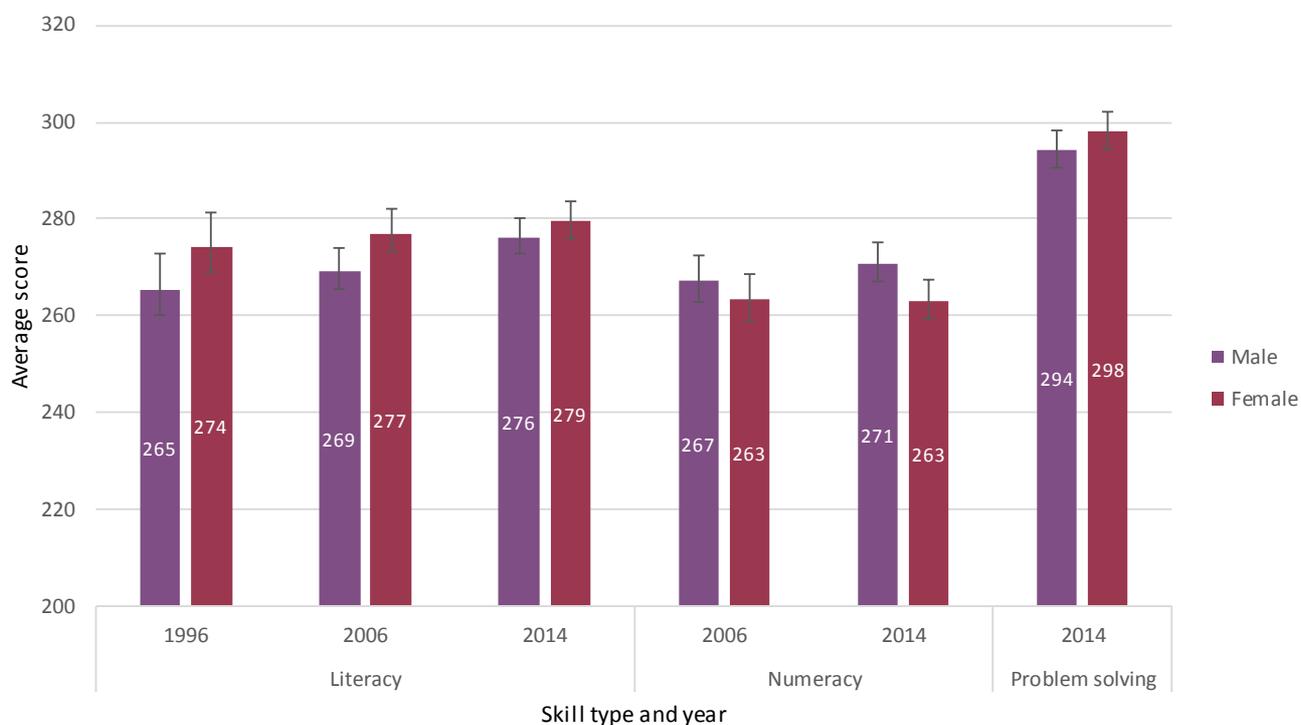
Males had higher numeracy scores than females, but similar literacy and problem solving scores

In 2014, male youth numeracy scores were higher than female scores by an almost statistically significant margin (Figure 30). Since 2006, when there was no measurable difference between male and female numeracy scores, male numeracy scores have increased slightly, while female scores have remained static.

None of the three time points showed significant gender differences in youth literacy. However, the gender gap in favour of young women appeared to be narrowing, with male youth literacy scores increasing faster than female scores.

The first year problem solving was measured was 2014 and there was no measurable difference between male and female youth.

Figure 30: Youth skills and gender – 1996, 2006 and 2014



Use of skills in everyday life

Youth were less likely to read books, newspapers and magazines in everyday life

Youth were slightly less likely (an almost significantly smaller proportion) than those aged 25 to 44 to read books in everyday life (Figure 31). Youth were also much less likely to read newspapers and magazines in everyday life. Youth who did these activities at least once a week had significantly higher literacy scores than youth who never did these activities or did them less than once a month (Figure 32). The lower frequency with which youth undertook these activities could be part of the reason why youth had lower literacy scores than those aged 25 to 44. Lower literacy scores may discourage youth from frequent reading of books, newspapers and magazines.

Figure 31: People reading at least once a week in everyday life and age

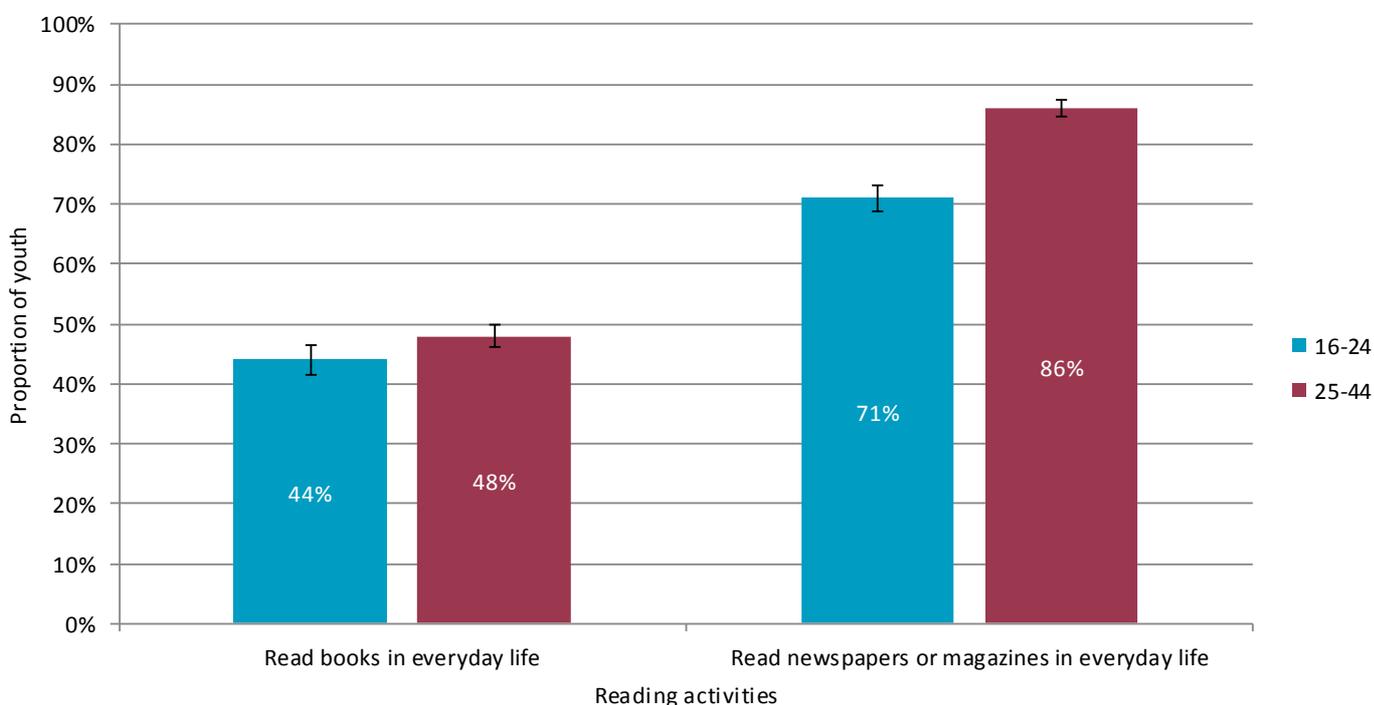
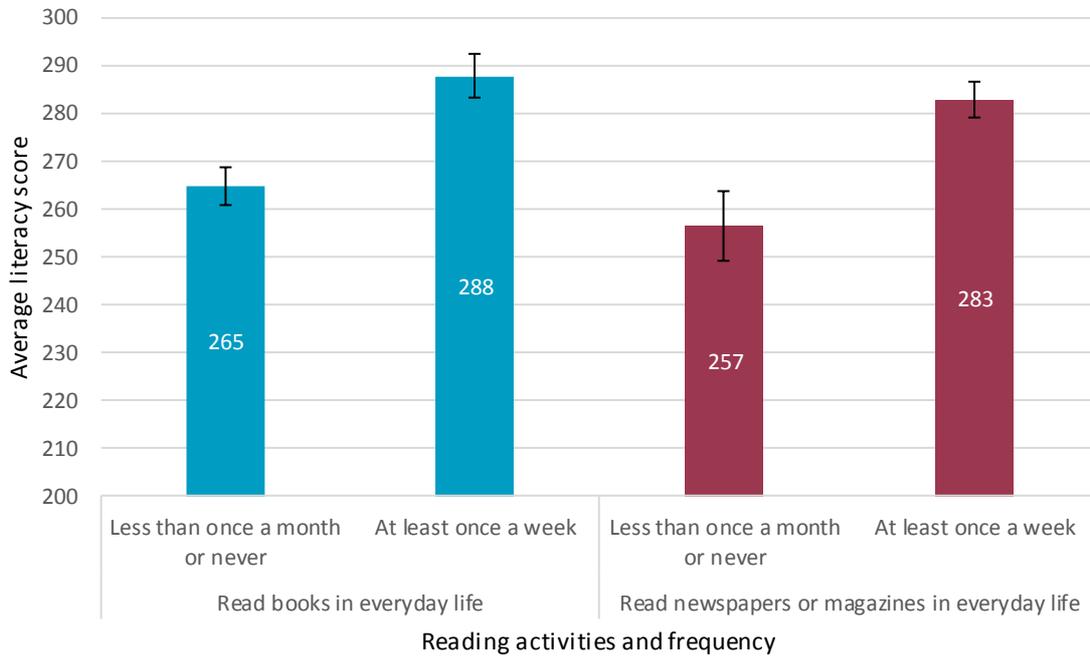


Figure 32: Average literacy skills of youth and frequency of reading in everyday life

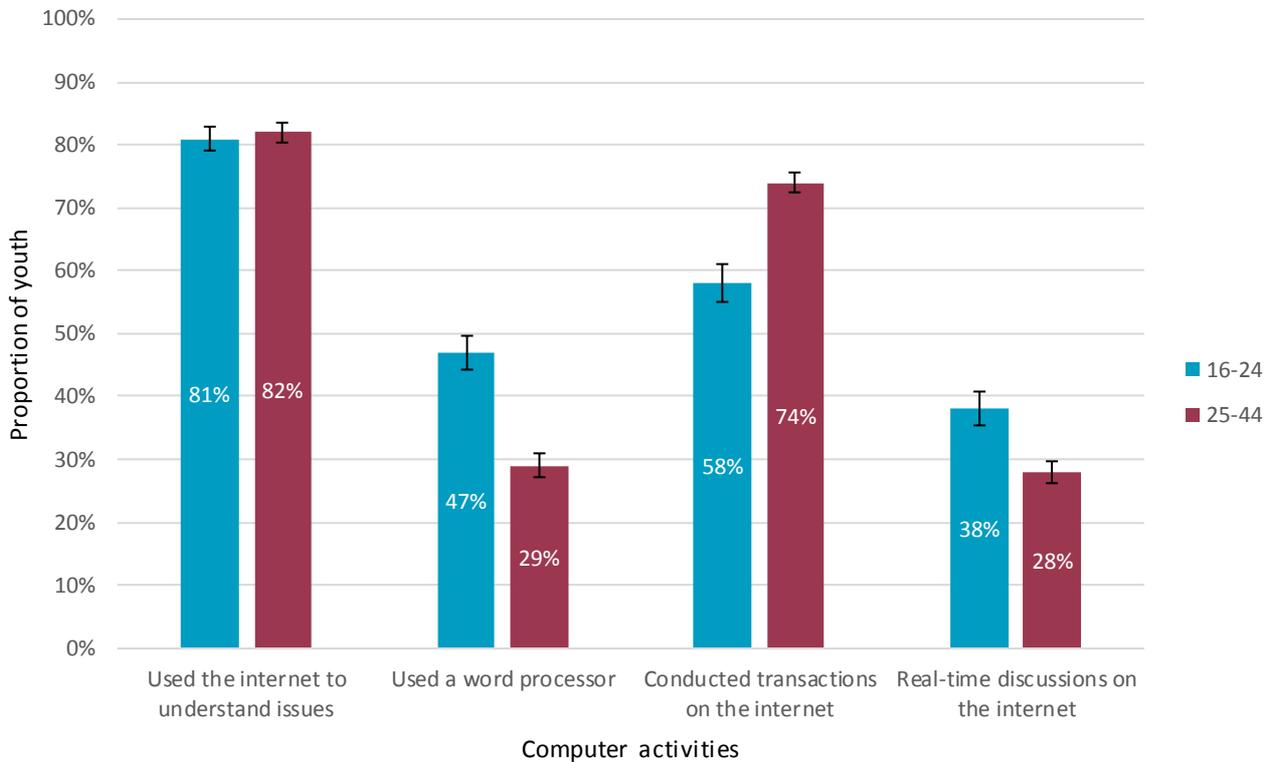


Youth were more likely to do some computer activities but not others

Youth were more likely than those aged 25 to 44 to use a word processing application and participate in real-time discussions on the internet in their everyday life (Figure 33). However, youth were less likely to conduct transactions on the internet and just as likely to use the internet to understand issues. Some of the differences between these age groups were likely to do with life stages. Youth may be less likely to conduct transactions on the internet as they have fewer bills to pay than older people. As more youth are students, they may also be more likely to use a word processing application in their everyday life.

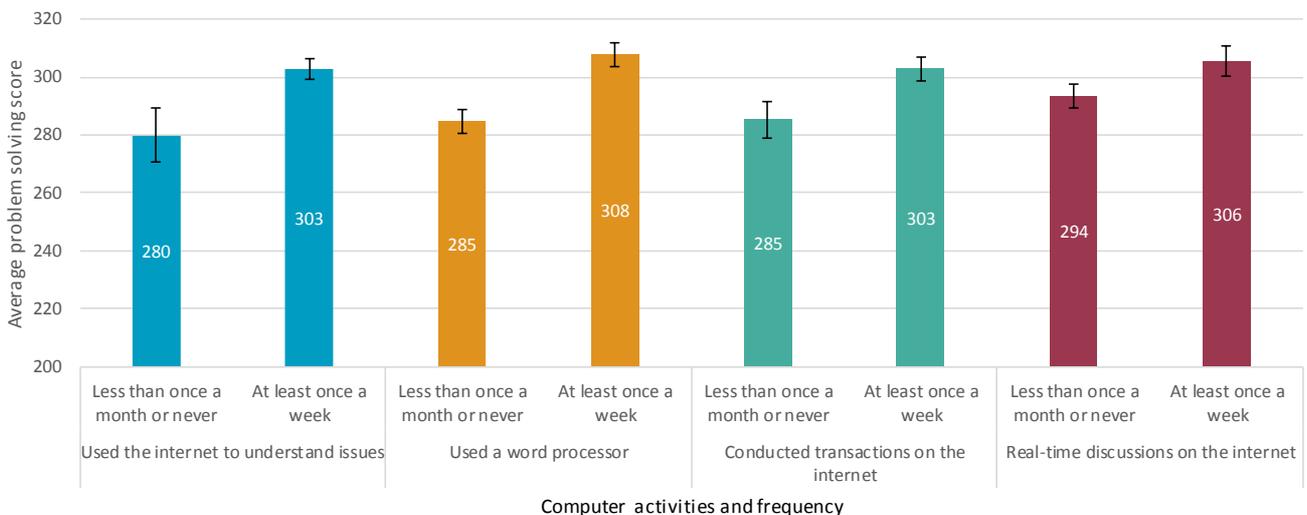


Figure 33: Youth doing computer activities at least once a week in everyday life



Youth who did these computer activities more often had significantly higher average scores in problem solving in technology-rich environments (Figure 34). Using the internet to understand issues and using a word processing application were more closely related to higher problem solving skills than using the internet to conduct transactions and having real-time discussions on the internet. The relationship between higher problem solving skills and using the internet to understand issues and using a word processing application was similar to the relationship between higher literacy skills and reading books, magazines and newspapers.

Figure 34: Average problem solving score of youth and frequency of doing computer activities



Appendix

Literacy levels and their meaning

Literacy level	Type of tasks someone can perform
Below Level 1	At this level, people can read brief texts on familiar topics and locate information in a longer piece of text if it is identical to what they are looking for. They should be able to understand signs and follow short, basic instructions.
Level 1	At this level, people can read relatively short texts and diagrams to locate a single piece of information that is identical to what they are looking for. There will be little competing irrelevant information.
Level 2	At this level, people can navigate within digital texts to identify information. They can compare and contrast different pieces of information and make some inferences.
Level 3	At this level, people can understand dense and lengthy texts to find relevant information among irrelevant or competing information.
Level 4	At this level, people can perform multi-step operations to interpret and integrate information from complex texts. They can also apply background knowledge and interpret subtle arguments.
Level 5	At this level, people can use multiple dense texts to evaluate the reliability of different sources to evaluate evidence and arguments, find key information and synthesise familiar and contrasting ideas.

Numeracy levels and their meaning

Numeracy level	Type of tasks someone can perform
Below Level 1	At this level, people can carry out single tasks, such as counting, sorting and performing basic arithmetic with whole numbers and money. They can also recognise common spatial dimensions.
Level 1	At this level, people can carry out basic mathematical processes where the mathematical content is made explicit and there are few text distractions. They are also able to understand simple percentages such as 50%.
Level 2	At this level, people can perform mathematical tasks with two or more steps where the mathematical content is explicit. These operations may include common decimals, percentages and fractions. They are also able to interpret relatively simple graphs and spatial representations.
Level 3	At this level, people can understand mathematical contexts that are subtly embedded in text. They can make choices between different problem solving strategies. They can also perform basic analyses of statistics in texts, tables and graphs.
Level 4	At this level, people can understand mathematical information that may be complex or abstract and embedded in unfamiliar contexts. They can analyse complex reasoning about quantities, data, statistics, chance, spatial relationships, change, proportions and formulas.
Level 5	At this level, people can integrate and interpret several types of mathematical information. They can understand complex representations and abstract mathematical ideas embedded in complex texts.

Problem solving levels and their meaning

Problem solving level	Type of tasks someone can perform
Did not undertake computer-based test	People at this level did not undertake the survey on a computer. This was because they had no computer experience, failed a basic computer test or opted out of doing the survey on a computer.
Below Level 1	People at this level can do tasks that have well-defined problems and require the use of only one function in a generic computer program.
Level 1	At this level, people can complete tasks where the goal is stated and there is only a small number of steps.
Level 2	At this level, people can use generic and more specific computer applications. They can undertake some tasks that require multiple steps and can use more than one application to solve a single problem.
Level 3	At this level, people can use more than one application to solve problems that have unexpected outcomes and impasses. They can also evaluate the reliability of information to discard anything that is irrelevant.



New Zealand Government

