

4 OUTCOMES OF TERTIARY EDUCATION

AN OVERVIEW

Young people were the most severely affected by the downturn in the labour market in 2009. Of the young people aged 20 to 24 years, the proportion not in employment or formal/informal study increased substantially from 2008 to 2009. The comparable figures for 15 to 19 year-olds showed a smaller increase from 2008 to 2009. However, this is in part because more 15 to 19 year-olds remained in formal education in 2009.

For people with no qualifications, the labour force participation rate decreased in 2009 while it remained stable for those with school and tertiary qualifications. This further weakening of the labour market for people with no qualifications has widened the gap in the unemployment rate between those with no qualifications and the tertiary qualified.

The contraction of the New Zealand economy came to an end in 2009. However, the number of jobless people continued to increase throughout 2009. Despite this further weakening of the labour market, people with a bachelors or higher qualification continued to show a significant earnings advantage over those with a lower-level or no qualification. This reinforces the fact that those with higher qualifications are less likely to be adversely affected during weaker economic conditions.

The proportion of the New Zealand population with a tertiary qualification remained unchanged, at 50 percent, from 2008 to 2009. The proportion with a bachelors or higher qualification also remained stable at 17 percent. When looking further back, the figures show that New Zealand's population has become more skilled over the last decade. In 1999, only 44 percent of people aged 15 years and over held a tertiary qualification and fewer people (10 percent) held a bachelors or higher qualification.

The proportion of Māori with a bachelors or higher qualification increased from 2.7 percent in 1999 to 7.5 percent in 2009. The comparable figures for Pasifika were 3.5 percent in 1999 and 5.9 percent in 2009. The proportion of males and females in the adult population holding a bachelors or higher qualification equalised in 2008. Males continued to be more likely than females to hold tertiary certificates and diplomas. In the younger age groups – those under 40 years of age – proportionately more women than men held a bachelors or higher qualification. On the other hand, more young men than women held a non-degree tertiary qualification, but the gap between them is closing.

An article on what students earn after their tertiary education and another on raising the literacy, language and numeracy of the adult population are included later in chapter 4. The Ministry of Education published an analytical report entitled *Benefits of tertiary certificates and diplomas*, in May 2010, and another report on *Social and economic indicators of education*, in August 2010.

2010 YEAR

Early indications are that the New Zealand economy is no longer shrinking and the upward trend in indicators, such as the unemployment rate and the number of jobless people, has begun to turn. However, the unemployment rate is now almost double what it was two years ago and in the March 2010 quarter the unemployment rate for 15 to 19 year-olds was 25 percent and for 20 to 24 year-olds it exceeded 11 percent. Even though business confidence and people's expectations of the economy have been improving, it is likely that these unfavourable labour market conditions for young people will continue and this is expected to lift demand for tertiary education.

The government's Youth Guarantee programme, aimed at 16 to 17 year-olds not currently engaged in education, commenced in 2010 with eligible tertiary education providers delivering the programme in places with the highest proportion of unemployed young people. The initial funding allocation was for 2,000 placements in 2010 and 2011. This provision may reduce the rate of youth inactivity among those aged 15 to 19 years in the foreseeable future and lift their participation rate in tertiary education.

MORE TERTIARY-QUALIFIED PEOPLE¹

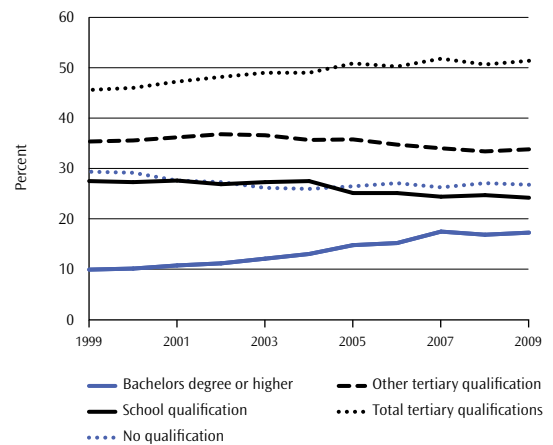
The proportion of the New Zealand population aged 15 years and over holding a tertiary qualification has increased steadily during the last 10 years. In 2009, one in every two New Zealanders was tertiary qualified. The proportion of the population without a qualification has become smaller over the last 10 years – down from 29 percent in 1999 to 26 percent in 2009.

The proportions of the population aged 15 years and over by highest qualification in 2009:

Total tertiary qualifications	50%	(48% in 2004)
Bachelors degree or higher ²	17%	(13% in 2004)
Other tertiary qualification ³	33%	(35% in 2004)
School qualification	24%	(27% in 2004)
No qualification	26%	(25% in 2004)

Source: Statistics New Zealand (2010), Household Labour Force Survey.

Figure 4.1: Population aged 15 years and over (June quarter) by highest qualification



HIGHER QUALIFICATIONS AND AGE

The proportion of the population with a bachelors or higher qualification remained constant between 2008 and 2009 at 17 percent.

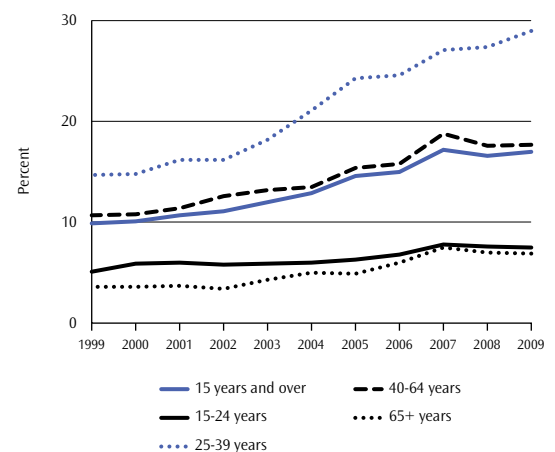
Of those with a bachelors or higher qualification, the proportion aged 25 to 39 years has increased most rapidly in the last five years. In 2009, 29 percent were in this group compared to 21 percent five years earlier.

The proportions of the population aged 15 years and over with a bachelors or higher qualification in 2009:

15 years and over	17%	(13% in 2004)
15-24 years	7.5%	(6.0% in 2004)
25-39 years	29%	(21% in 2004)
40-64 years	18%	(14% in 2004)
65 years and over	6.9%	(5.0% in 2004)

Source: Statistics New Zealand (2010), Household Labour Force Survey.

Figure 4.2: Population aged 15 years and over (June quarter) with a bachelors degree or higher qualification by age group



OTHER TERTIARY QUALIFICATIONS AND AGE

The proportion of the population holding tertiary certificates and diplomas has been steady for some time at 33 percent.

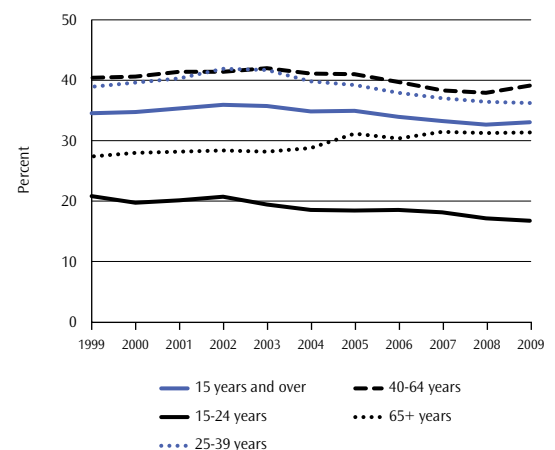
In the various age groups, the proportions with other tertiary qualifications have been declining in general, except for those aged 65 years and over. This reflects a higher level of participation since 1999 in lower-level qualifications by older age groups.

The proportions of the population aged 15 years and over with other tertiary qualifications in 2009:

15 years and over	33%	(35% in 2004)
15-24 years	17%	(18% in 2004)
25-39 years	36%	(40% in 2004)
40-64 years	39%	(41% in 2004)
65 years and over	31%	(29% in 2004)

Source: Statistics New Zealand (2010), Household Labour Force Survey.

Figure 4.3: Population aged 15 years and over (June quarter) with other tertiary qualifications by age group



1. Data for previous years has been revised.
 2. 'Bachelors degree or higher' qualifications include bachelors degrees with honours, postgraduate and graduate certificates and diplomas, and masters and doctoral degrees.
 3. 'Other tertiary' qualifications include university, teaching and nursing certificates or diplomas, New Zealand certificates or diplomas, technician's certificates, local polytechnic certificates or diplomas, and trade certificates or advanced trade certificates.

TERTIARY QUALIFICATIONS AND ETHNIC GROUP⁴

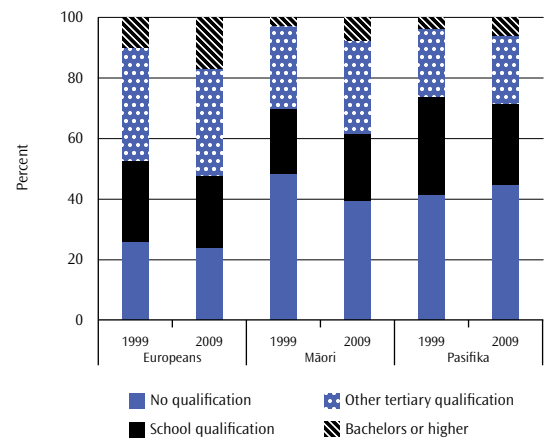
The proportions of the Māori and Pasifika population aged 15 years and over with a bachelors or higher qualification increased significantly between 1999 and 2009. However, the proportions of Māori and Pasifika with degree qualifications were significantly lower when compared with the European ethnic group.

The proportions of the population aged 15 years and over with tertiary qualifications by ethnic group:

	Bachelors degree or higher		Other tertiary qualification	
	1999	2009	1999	2009
	Percentages			
Europeans	9.9	16.7	37.2	35.6
Māori	2.7	7.5	27.5	31.0
Pasifika	3.5	5.9	22.6	22.6
Other	22.6	29.4	21.8	24.4

Source: Statistics New Zealand (2010), Household Labour Force Survey.

Figure 4.4: Population aged 15 years and over (June quarter) by highest qualification and ethnic group



TERTIARY QUALIFICATIONS AND GENDER

The proportions of men and women in the population aged 15 years and over with a bachelors or higher qualification converged in 2007. In 2009, females were more likely than males to hold a bachelors or higher qualification (17.4 percent and 16.5 percent, respectively). This corrects an imbalance that existed in the past.

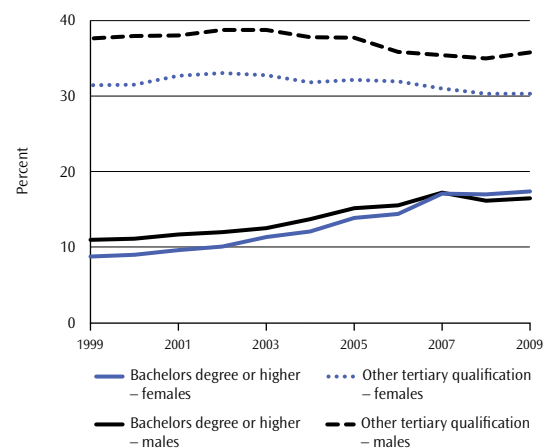
The gap between men and women with tertiary certificates and diplomas remained constant at about 5 percentage points. In 2009, the proportion of men with other tertiary qualifications was higher, at 36 percent, than that for women.

The proportions of the population aged 15 years and over with a tertiary qualification by gender in 2009:

Bachelors degree or higher – females	17.4%	(12% in 2004)
Bachelors degree or higher – males	16.5%	(14% in 2004)
Other tertiary qualification – females	30%	(32% in 2004)
Other tertiary qualification – males	36%	(38% in 2004)

Source: Statistics New Zealand (2010), Household Labour Force Survey.

Figure 4.5: Population aged 15 years and over (June quarter) with a tertiary qualification by gender



LOWER UNEMPLOYMENT FOR THE TERTIARY QUALIFIED

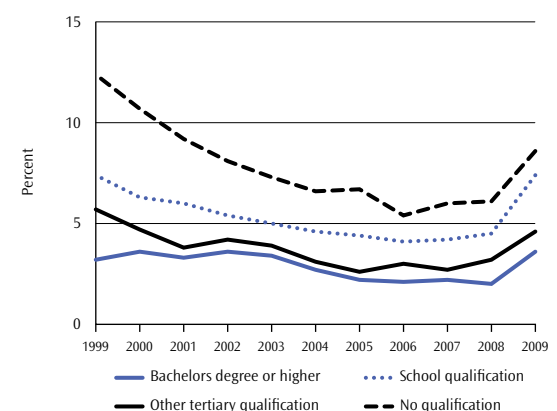
People with higher qualifications have lower unemployment than those with a low-level or no qualification. From 1998 to 2007, when the labour market was strong, more people with low-level qualifications gained employment. In 2008 and 2009, when the economy was at its weakest, unemployment increased for all groups but the rise was more pronounced among those with school and low-level qualifications.

The unemployment rate of the population aged 15 years and over by highest qualification in 2009:

All qualification levels	6.1%	(4.3% in 2004)
Bachelors degree or higher	3.6%	(2.7% in 2004)
Other tertiary qualification	4.6%	(3.1% in 2004)
School qualification	7.4%	(4.6% in 2004)
No qualification	8.6%	(6.6% in 2004)

Source: Statistics New Zealand (2010), Household Labour Force Survey.

Figure 4.6: Unemployment rates (June quarter) for the population aged 15 years and over by highest qualification



4. The sampling errors for the smaller ethnic groups such as Māori and Pasifika are generally larger, requiring caution to be exercised in interpreting changes in this data over time.

LABOUR FORCE PARTICIPATION

Females continue to participate in the labour market at lower rates than males. The gap between males and females is widest for people with no formal qualifications, and smallest for people with bachelors or higher qualifications.

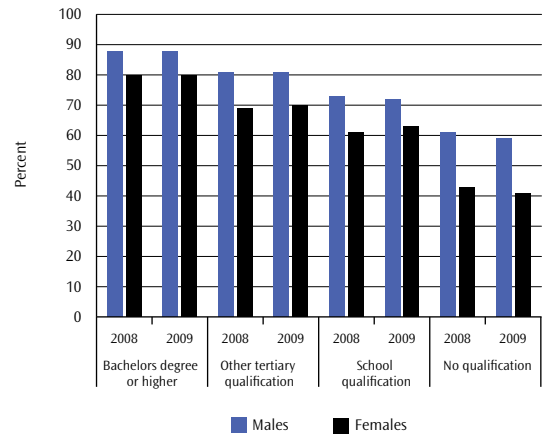
The labour force participation rate decreased from 2008 to 2009 for men and women without a qualification but remained stable for other people.

The labour force participation rates of the population aged 15 years and over by highest qualification:

	Females			Males		
	1999	2008	2009	1999	2008	2009
	Percentages					
Bachelors degree or higher	79	80	80	88	88	88
Other tertiary qualification	70	69	70	80	81	81
School qualification	55	61	63	68	73	72
No qualification	39	43	41	61	61	59

Source: Statistics New Zealand (2010), Household Labour Force Survey.

Figure 4.7: Labour force participation rates (June quarter) by qualification level and gender



HIGHER EARNINGS FOR THE TERTIARY QUALIFIED

The median hourly earnings of people with a bachelors degree or higher qualification were 66 percent higher in 2009 than for those with no qualification – in 2008 they were 67 percent higher.

The median hourly earnings for people with tertiary certificates and diplomas or a school qualification also decreased from 2008 to 2009, compared with those with no qualification.

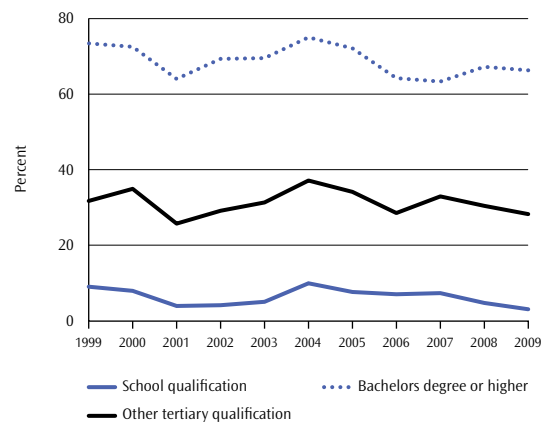
The decreases from 2008 to 2009 in the hourly earnings premiums are likely to be due to increases in the minimum pay rates at a time of general wage restraint due to the weaker labour market.

Median hourly earnings premiums by highest qualification in 2009, compared with those with no qualification:

Bachelors degree or higher	66%	(74% in 1999)
Tertiary certificates and diplomas	28%	(32% in 1999)
School qualification	3.1%	(9.1% in 1999)

Source: Statistics New Zealand (2010), Household Labour Force Survey.

Figure 4.8: Median hourly earnings premiums (June quarter) by highest qualification compared with those with no qualification



YOUTH INACTIVITY⁵

The proportion of the youth population not in employment, formal/informal study or a care-giving role increased between 2008 and 2009, due to the effects of the economic downturn.

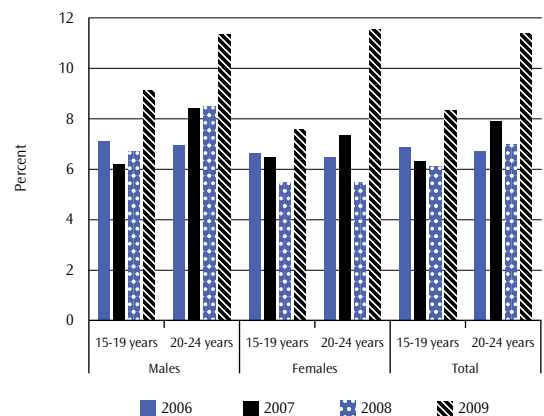
Of the young people who were not in employment, formal/informal study or a care-giving role in 2008 and 2009, the proportion aged 20 to 24 years increased more than the proportion of 15 to 19 year-olds. This suggests a weakening of the labour market for low-skilled occupations and it may also have led to increased retention in formal education of 15 to 19 year-olds.

The proportion of youth not in employment or formal/informal study or in a care-giving role:

	Males			Females			Total		
	2004	2008	2009	2004	2008	2009	2004	2008	2009
	Percentages								
15-19 years	6.6	6.7	9.1	6.9	5.5	7.6	6.8	6.1	8.3
20-24 years	6.3	8.5	11.3	9.7	5.5	11.5	8.0	7.0	11.4

Source: Statistics New Zealand (2010), Household Labour Force Survey.

Figure 4.9: Proportion of youths not in employment, formal/informal study or a care-giving role by gender and age group



5. The sampling errors for the smaller age groups such as 15 to 19 years and 20 to 24 years are larger than for the larger groups. Therefore caution should be exercised in interpreting changes in this data over time.

What do students earn after their tertiary education?

This article presents the results of a study of people's earnings in the years following tertiary education. The study, published in 2009, looked at a group of 30,000 young people who were last enrolled at a tertiary education institution in 2003. It examined people's earnings one year and three years after studying.

Key points

The study⁶ found that three years after studying:

- the median annual earnings of people with a bachelors degree were 51 percent higher than those with a level 1 to 3 certificate (upper-secondary level equivalent) and 30 percent higher than those with a diploma
- the median annual earnings of people with a diploma were 16 percent higher than those with a level 1 to 3 certificate
- the median annual earnings of people with a masters degree were 16 percent higher than those with a bachelors degree, and
- the median annual earnings of people with a doctorate were 46 percent higher than those with a bachelors degree.

The study also found that completing qualifications mattered:

- Young students who completed their degree earned 29 percent more than those who left without completing their study.
- The median post-study earnings increased by 30 percent after three years for young people who completed a tertiary qualification, while across all age groups the national median increased by 8 percent.

The benefits from investment in tertiary education

Tertiary education in New Zealand is diverse, encompassing a large range of provision across several hundred institutions and several thousand courses and qualifications – from one-week non-formal community classes to four-year doctorates. About half a million New Zealanders enrol in some form of institution-based learning each year and over 100,000 qualifications are awarded each year. This makes it particularly important to have information on the relative benefits of these different forms of learning, so that government, providers and students can make better-informed decisions about what to invest in.

Both government and students contribute significant funding to tertiary education. Total government spending on tertiary education in 2008 was \$4.8 billion, or 2.7 percent of gross domestic product. Both government and students have an expectation that the money they spend represents an investment, that the financial benefits (of a well-paying job) will eventually outweigh the costs of this education. Knowing more about the nature of these benefits can help both government and students decide what they should be investing in.

6. Scott, D. (2009) *What do students earn after their tertiary education?* Wellington: Statistics New Zealand and Ministry of Education.

Another finding was that the subject people studied made a significant difference to their earnings. For young people who had completed a bachelors degree the study found that three years after study:

- people who had specialised in medical studies earned 2.59 times more than those who had studied humanities
- other high-earning fields, compared with humanities, were veterinary studies (1.61 times more), law (1.47), electrical engineering (1.44), pharmacy (1.43), accountancy (1.42), computer science (1.36) and nursing (1.26)
- people who had studied science subjects earned between 1.22 and 1.30 times more than those who had studied humanities; the exception was biology, where the earnings premium was 1.12 times more
- people in teaching earned 1.27 times more in their first year after studying than those who had studied humanities, although by their third year after studying this premium had dropped to 1.16 times
- people in tourism, the performing arts, visual arts, or graphic and design arts earned between 10 percent and 20 percent less than people who had studied humanities, and
- communication and media degrees earned 11 percent more than degrees in humanities.

Across qualification levels other than degrees, the study found that, three years after study, people who had studied:

- engineering, information technology, architecture and building, and health generally earned the most
- science and management and commerce qualifications were in the middle range of earnings, with society and culture, creative arts, and food, hospitality and personal services earning less than other fields, and
- people with teaching and education qualifications started out with relatively higher earnings than those with other qualifications, but after three years their earnings tended to sit in the middle range.

In terms of post-study earnings, the labour market differentiated course completion from qualification completion:

- Young students who had passed most, or all, of their courses without gaining a qualification earned more than those who did not pass most of their courses.
- The study found support for the commonly held view that, for young people, gaining a qualification matters more than passing courses as those who completed a qualification earned more than those who passed all their courses but did not complete the qualification.

The study population

The study this article draws on formed one of the initial outputs from a joint government agency project on employment outcomes of tertiary education (EOTE).⁷ This project involved the linking of administrative education data with information on earnings and firms, to create a new longitudinally linked dataset that can track students' employment and income over time.

The study population comprised 118,000 domestic students last enrolled in a tertiary education institution in 2003. The study focused on a subgroup of young leavers, defined as anyone aged 20 years or under who was studying at certificate level, 22 years or under studying at diploma level, 24 years or under at degree level (25 years or under if this degree was a medical degree), 25 years or under for anyone who was enrolled in a one-year post-bachelors qualification, 26 years or under for masters, and 28 years or under in the case of doctoral students. These young leavers represent the more traditionally defined students who moved to tertiary education more or less directly after school, were more likely to be completing their tertiary education for the first time, and were entering the labour market on a longer-term basis for the first time. Education is likely to have more of a direct influence on the earnings of young leavers than on those of older students who perhaps already hold qualifications or have a number of years of work experience. Compared with other countries, New Zealand's tertiary education system has a lower proportion of such traditional students. In fact, of the 118,000 students last enrolled in 2003, only around 25 percent (or 29,500) were young leavers.

Young New Zealanders also have a tradition of travelling overseas after their education. Some will work for a year or two before embarking overseas, and their choice of work initially may reflect these aspirations more than any longer-term career goals that make use of their tertiary education. Of the 29,500 domestic young leavers in 2003, only 69 percent had linked earnings for all three years following study.

Care is needed in interpreting the differences in earnings and, in particular, the extent to which these differences can be attributed to education. There is a range of both educational and non-educational factors that influence how much one earns after tertiary education. Direct comparisons of post-study earnings for different educational characteristics can be misleading, for example, where one of the groups being compared has an older or more experienced composition than another. In this case, group composition is likely to explain more of the higher earnings than the specific characteristic being compared.

Even when limited to young leavers, there are likely to be differences in the innate ability of some groups being compared. While some education characteristics are likely to capture this, it may be that it is these differences in ability (or other unmeasured characteristics) that are contributing to the resulting earnings differences, rather than the educational characteristics being compared. Some factors adjusted for in this study include age, sex, ethnic group, level of study, field of study, provider type, industry, and the size of firms.

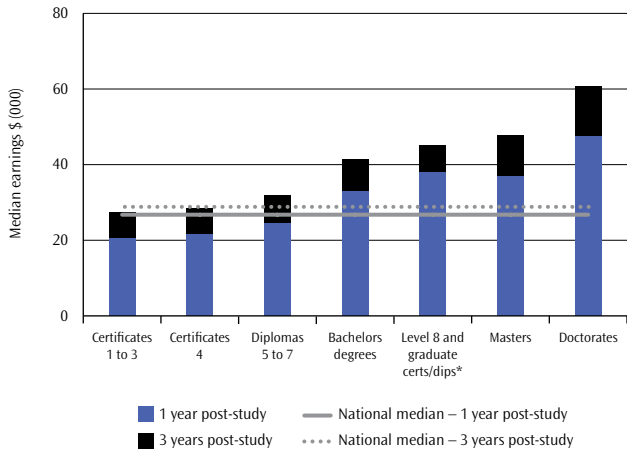
7. See, for example, www.stats.govt.nz/browse_for_stats/corporate/corporate/corporatecommunications_mrsept09.aspx.

Level of study and qualification completion

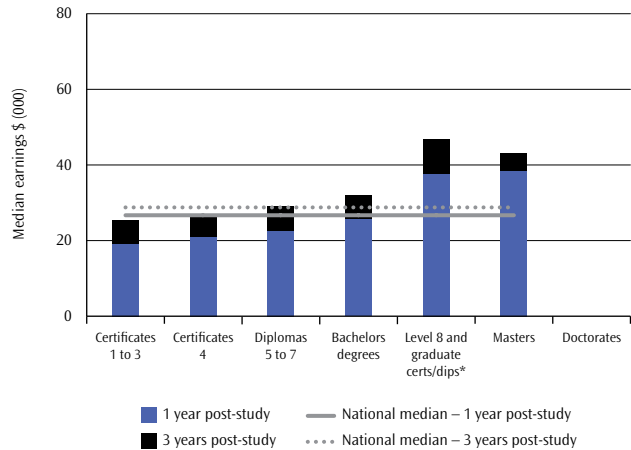
Figure 4.10 shows median earnings one year and three years post-study for young people last enrolled as domestic students in 2003. All earnings are annual and are based on those who had pre-taxed income from wages and salary, or non-zero income from self-employment.

Figure 4.10: Earnings of young people with and without an educational qualification by level of study

A: Median earnings of young people with a completed qualification



B: Median earnings of young people without a completed qualification



*This category covers graduate diplomas and certificates, honours degrees, and postgraduate diplomas and certificates.

Notes:

- Earnings based on fewer than 25 people have not been reported.
- The national medians are based on the earnings of people included in the Linked Employer-Employee Database (LEED) for the 2005 to 2007 tax years.

The effect of level of study on earnings was evident. Higher levels of study were associated with higher earnings. The exception was at masters level, where one year after studying the earnings were less compared with people who, after completing a bachelors degree, enrolled in a one-year vocation-specific qualification such as a graduate diploma in teaching. Other one-year post-bachelors qualifications include bachelors degrees with honours, and it may be that these types of qualifications influence higher first-year earnings. Three years after studying, however, the advantage of one-year post-bachelors qualifications had disappeared.

For young people who had completed a qualification in 2003, Table 4.1 shows their three-year post-study earning differences relative to those who completed a level 1 to 3 certificate (upper-secondary level equivalent). The earnings premiums in Table 4.1 have been adjusted for differences in age, sex, ethnic group, field of study, provider type, industry, and the size of firms.

Table 4.1: Post-study earnings premiums for young people who completed a qualification

	Earnings premiums for a completed qualification			
	1 year after study		3 years after study	
	Actual	Adjusted	Actual	Adjusted
Certificates 1 to 3	1.00	1.00	1.00	1.00
Certificates 4	1.06	1.00	1.04	1.16**
Diplomas 5 to 7	1.20	1.03	1.16	1.14**
Bachelors degrees	1.60	1.06	1.51	1.27**
Graduate dips/certs, honours degrees and postgraduate dips/certs	1.85	1.15**	1.64	1.30**
Masters	1.80	1.03	1.74	1.37**
Doctorates	2.30	1.28*	2.20	1.83**

Notes:

- All premiums are expressed in relation to those completing level 1 to 3 certificates and cannot be compared across columns.
- Applies to domestic students last enrolled at a tertiary education institution in 2003.
- Two asterisks (**) indicate statistically significant at the 5 percent level and one asterisk (*) means statistically significant at the 10 percent level. Adjusted figures with no asterisk are not statistically significant at the 10 percent level.

For people with a bachelors degree, the median earnings were generally significantly higher than for those who studied at lower levels. However, after adjusting for differences in field of study, industry of employment, age, sex, ethnic group, provider type, and firm size, statistically significant differences only appeared in the third year after studying. In particular, after adjusting for differences in field of study, the earnings premiums one year after studying reduced significantly for people with a bachelors degree. This lack of difference in the first-year earnings premium may, in part, reflect the temporary work choices of some graduates, for example, those who are working to save money for travel overseas. Some of these may leave New Zealand before having worked a full year. Also, it could reflect delays in securing satisfactory employment, or accepting a temporary job until a more desired career-oriented position is obtained. As a result, some graduates may have worked for less than a full tax year, or temporarily opted for a job which required a lower level of qualification than the one they had.

Three years after studying, the premiums earned at every qualification level were statistically significant at the 1 percent level. This, again, may reflect a settling-in period as people who have left study move from part-time work to full-time work, or from temporary jobs to career-oriented positions.

Three years after studying, the median earnings of young people with a bachelors degree were 51 percent higher than for those who had completed a level 1 to 3 certificate and 30 percent higher than for those who had completed a diploma.

The median earnings of young people with a masters degree were 16 percent higher three years post-study than for those with a bachelors degree. Young people who completed a doctorate earned 46 percent more three years post-study than those with a bachelors degree.

When we look at the effects of actually completing a qualification, we see that people with a bachelors degree earned 28 percent more than those who started but did not complete their degree. This difference remained in the third year after studying. In contrast, not completing a postgraduate qualification was less critical to one's first-year earnings. Virtually all people who had not completed their postgraduate degree had completed a bachelors degree and received an earnings premium for this qualification.

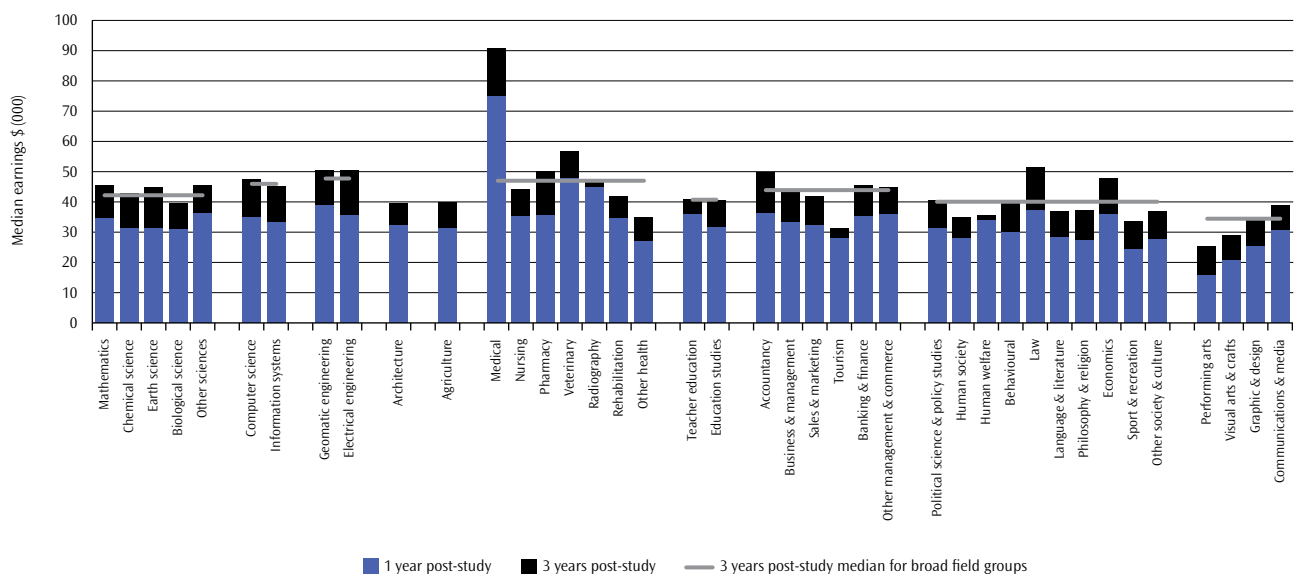
Three years after leaving study, the median earnings for young people who had completed a qualification increased by 30 percent. Across most qualification levels, the increase in the median earnings for young people who studied but did not complete their qualification was only a few percentage points less. By comparison, the national median earnings premium for all age groups increased by only 8 percent between 2005 and 2007.

Field of study

In general, qualifications in the vocation-specific or profession-associated fields, such as engineering, information technology, architecture and building, and health, earned the most. The earnings of people with qualifications in science or management and commerce were in the middle range, while people with qualifications in society and culture, creative arts, or food, hospitality and personal services earned less than those in other fields. Young people qualified in teaching started relatively higher, but after three years their earnings were similar to those near the middle range.

Figure 4.11 shows the one-year and three-year median annual earnings by field of study for young people who completed a bachelors degree. Only fields with 25 or more graduates are able to be reported, affecting fields such as dentistry, physics, agriculture and several engineering disciplines. The remaining fields, however, covered 95 percent of the total graduates.

Figure 4.11: Median post-study earnings of young people with a bachelors degree by field of study



Notes:

1. Applies to domestic students who were last enrolled at a tertiary education institution in 2003.
2. Earnings for fields with fewer than 25 people have been suppressed. The remaining categories represent 95 percent of the total cohort.

Earnings premiums for the various fields of study were estimated in comparison with those of students who had completed a degree in humanities. Three years after studying, graduates who had specialised in medical studies had the highest premium, earning 2.59 times more than people who had completed a degree in humanities. Other high-earning fields, compared with humanities, were veterinary studies (1.61 times three years after studying), law (1.47), electrical engineering (1.44), pharmacy (1.43), accountancy (1.42), and computer science (1.36). Science subjects earned between 1.22 and 1.30 times more (except biology where the premium was smaller at 1.12 times). Degrees in nursing earned 1.26 times more than degrees in humanities.

Degrees in teaching earned 1.27 times more in the first year, but 1.16 times by the third year. Degrees in tourism, the performing arts, visual arts, or graphic and design arts earned between 10 and 20 percent less than degrees in humanities. However, degrees in communication and media studies earned 11 percent more.

While these premiums reduced after adjusting for differences in age, sex, ethnic group, industry, and firm size, the relative positions remained similar.

Course versus qualification completion

The study also found that the labour market differentiated course completion from qualification completion in terms of post-study earnings. Young leavers who had passed some courses without completing a qualification earned more than those who had failed their courses.

In fact, in some cases, particularly for first-year earnings, those who passed all their courses without completing a qualification earned more than their colleagues who completed a qualification. However, the effect was much reduced by the third year after studying, and in most cases it became negative after adjusting for other factors.

Results from this study support the generally held view that, for young people, completing a qualification matters most and that course success, once adjusted for known demographic, study-related and work-related differences, does not, in general, attract the earnings rewards enjoyed by those holding a qualification.

Raising the literacy, language and numeracy of the adult population

This article reviews the latest evidence on literacy, language and numeracy in New Zealand, its link with education and the labour market, and requirements for successful provision of literacy, language and numeracy education within tertiary education.

Literacy, language and numeracy skills have become increasingly important in modern society, in work, at home and in wider activities. Results from international surveys show that, as the skill demands of work and everyday life increase, many New Zealand adults need to improve their literacy, language and numeracy skills.

Successive governments have focused on raising adult literacy and numeracy through shifting provision from a mix of voluntary and funded activity to an integral part of tertiary education provision. Government initiatives over the last 10 years have included:

- developing recognised teacher qualifications for literacy and numeracy
- providing for professional development of the teaching workforce
- increasing the funding for workplace literacy and numeracy
- providing support for tertiary education organisations to embed literacy and numeracy within vocational level 1 to 3 certificates
- improving the quality assurance of literacy, language and numeracy programmes, and
- developing a literacy and numeracy assessment tool to support teaching and learning.

These initiatives have been supported by a programme of research into effective provision. The current tertiary education strategy includes a priority to improve literacy, language and numeracy outcomes from level 1 to 3 study in provider- and work-based learning.

Adult literacy, language and numeracy in New Zealand

Literacy is the ability to use written and oral language in everyday life and work; it includes reading, writing, speaking and listening. Skills in this area are essential for good communication, critical thinking and problem solving. Language includes the ability not just to speak and understand the most commonly spoken language, but also to successfully communicate within a range of contexts, including the workplace. Numeracy is the ability to use and understand numbers and mathematics in everyday life, including family and financial matters, work and community tasks.

The demands of the modern society and economy are becoming increasingly complex. If New Zealand is to maintain and improve its standard of living relative to the rest of the world, it must develop a workforce with high levels of general and technical skills. Literacy, language and numeracy are important basic skills that are necessary to support the development of more complex general and technical skills.

The 2006 Adult Literacy and Life Skills (ALL) Survey found that 13 percent of New Zealand adults aged 16 to 65 years had very low literacy.⁸ People in this group are generally able to read simple documents and identify obvious information. A small proportion has very limited reading ability. The ALL result was an improvement on the 1996 International Adult Literacy Survey (IALS), which estimated the proportion in this group to be around 20 percent.

Both surveys showed that about 30 percent had literacy below the level required to function well in a knowledge society.⁹ People in this group are able to search for information within documents and filter out simple distracting information but would struggle to work with complex information.

8. Very low literacy refers to skills assessed at level 1 of the International Adult Literacy Survey (IALS) and ALL scales.

9. This refers to people with skills assessed at level 2 of the IALS and ALL scales.

The ALL survey also found that 20 percent of New Zealand adults have very low numeracy. People in this group can only perform simple one-step calculations and often lack basic knowledge about numbers. A further 31 percent have numeracy skills below the level required to function well in a knowledge society. People in this group may be able to complete one- or two-step calculations and estimations, but would have difficulty with more complicated numeric problems.¹⁰

The ALL results for New Zealand in literacy and numeracy were very close to those of Australia and Canada (Satherley, Lawes and Sok, 2008a).

Education and literacy, language and numeracy

Overall, there is a definite relationship between educational achievement and literacy and numeracy skills. However, literacy and numeracy skills are not entirely determined by education. There is a significant group of people with low or no qualifications with adequate literacy and numeracy and, conversely, people with tertiary qualifications who have poor literacy and/or numeracy (Ministry of Education, 2009; Smyth and Lane, 2009).

The number and proportion of New Zealanders with English as an additional language have grown in recent years. In 2006, around 17 percent of people aged 25 to 65 years had English as an additional language. More than half of this group had arrived in New Zealand within the previous 10 years, mostly from Asian countries. Nearly half have a degree qualification or above.

On average, people with English as an additional language have lower English-based literacy and numeracy skills. The ALL survey estimated that 75 percent of people aged 25 to 65 years with English as an additional language had a literacy or numeracy score below the overall average for the New Zealand population. The lowest average literacy and numeracy scores were for people whose first language was an Asian or Pacific language. Having received some education in New Zealand was associated with improved English-based literacy and numeracy.

Analysis of the ALL survey shows that people with English as an additional language are more likely to be unemployed and likely to have lower incomes, even once their education and English-based literacy have been controlled for (Earle, 2009b).

Both education and literacy and numeracy skills are rewarded in the labour market. An increase in literacy or numeracy skills by one level on the ALL scale has similar benefit to gaining a tertiary certificate or diploma in terms of hourly wages (Earle, 2009a). However, improving literacy and/or numeracy on its own has limited benefit in the New Zealand labour market. The major benefit comes from improving literacy or numeracy while gaining a higher-level qualification. Increases in literacy or numeracy alone do improve the chances of employment for people with no qualifications, but having a higher-level qualification is associated with greater employment opportunities and access to higher-paid jobs (Earle, 2010a and 2010b).

Accessing literacy, language and numeracy provision

In general, people with lower levels of literacy are as likely to participate in formal education (study contributing towards recognised qualifications) as people with higher literacy levels. However, people with lower levels of literacy are much less likely to participate in non-formal education or self-directed learning (Satherley, Lawes and Sok, 2008a).

This finding holds true for people in employment aged 25 years and over, who are as likely to access formal industry training or provider-based education irrespective of literacy levels. However, lower-literacy employees are less likely to access short, non-formal courses and employees with very low literacy are somewhat less likely to attend formal courses. Also low-literacy employees who had only school or no qualifications are less likely to participate in formal study (Dixon and Tuya, 2010).

This pattern does not hold true for people aged under 25 years. Young people with lower levels of literacy are less likely to participate in formal education than younger people with higher levels of literacy. Participation in non-formal education is very low in this age group irrespective of literacy level (Satherley and Lawes, 2008).

People do not necessarily have a good sense of their own literacy and numeracy skill levels. The ALL survey asked respondents to rate their own ability with 'numbers and calculations'. When this self-assessment was compared with the actual assessed scores, 73 percent of people with low or very low assessed numeracy rated themselves as being good with numbers and calculations. People who had low numeracy but assessed themselves as being good with numbers and calculations were more likely to participate in formal education than those with low literacy who had a more realistic assessment of their own skills (Satherley, Lawes and Sok, 2008b).

The implication of these findings is that there is significant opportunity to address the needs of people aged 25 years and over with low levels of literacy and numeracy within formal education – both work-based and provider-based. Offering literacy and numeracy as stand-alone provision, through non-formal education, is less likely to attract people with low levels of skills. This is due partly to their lower participation in this kind of education and partly due to lack of self-recognition of the need to upskill. For younger people, however, other approaches may be needed to attract them into education and training in the first place.

10. Numeracy was only included in the ALL survey. There are no comparable figures from IALS.

Requirements for successful provision of literacy, language and numeracy

Learners engaged in meaningful and relevant learning

Adults engage in learning for a wide range of purposes beyond acquiring literacy, language and numeracy skills. They develop these skills best when they can see how the skills will contribute to their longer-term goals and the value of learning to achieve these goals (Thomas and Ward, 2009). For young people, building the skills they need to get a job is a strong motivator for learning (Whatman, 2010).

Successful teaching requires an understanding of the learner's background and helping the learner make a connection between their learning and their life goals (May, 2009). The learning needs to build on the learner's existing knowledge, skills and experience and relate to contexts that have meaning for them. Where literacy, language and numeracy are embedded in vocational qualifications, clear links need to be made between the literacy, language and numeracy content and the vocational learning (Thomas and Ward, 2009). Learners also need to have a clear understanding of what is being taught and how the literacy and numeracy components will contribute to their learning goals (Thomas and Ward, 2009; Department of Labour, 2010).

Learners with low literacy and numeracy have often had poor experiences of education at school. This was particularly noted in research on Māori learners, who have been significantly disaffected by their school experience (May, 2009). Adults can be anxious about learning and become demotivated by not getting the 'right' answer. Learning needs to focus on building confidence and understanding of the underlying concepts. For young people, particularly, it needs to offer a range of interesting and relevant activities and not be 'like school' (Thomas and Ward, 2009; Department of Labour, 2010; Whatman, 2010).

Learners may also face financial and family barriers in getting to classes (May, 2009). Evaluation of a series of work-based courses found that those held on-site and within work time were better attended than those held outside work (Department of Labour, 2010).

Information and communications technologies can make learning more appealing and encourage learner motivation and persistence. These technologies are not limited to computers. They include mobile devices, such as phones and video/audio players. Uses can range from making learning content more available, for example through podcasts, to interaction across the internet and to highly developed learning applications. Proficiency with technology is also becoming an integral part of literacy, language and numeracy skills in the 21st century.

Technology can be used to extend learning beyond the classroom, open new networks of support for learners and address specific needs and interests of learners. Technology can also be used to acknowledge skills that learners have already acquired. However, for literacy, language and numeracy, technology is best used as a way of supporting face-to-face learning, rather than offering completely

online programmes. Technology-based approaches work best for learners who already have some literacy, language and/or numeracy skills and are seeking to extend them (Thomas and Ward, 2010; Davis and Fletcher, 2010; Whatman, 2010).

Supporting professional teaching

Professional support for teachers is essential to raise the quality of literacy, language and numeracy programmes. Embedding literacy, language and numeracy within wider learning still requires specialist knowledge about how to address specific language, literacy and numeracy needs (May, 2009). Where vocational tutors and specialist teachers work as a team, learners are more likely to succeed (Thomas and Ward, 2009; Whatman, 2010). Teachers have to be able to deal with a range of learner needs, including emotional and social issues. This is particularly true for those working with young people, Māori learners and learners who have been disaffected with education (May, 2009; Whatman, 2010).

Effective assessment is an important element for teachers to understand learners' needs and for learners to receive formal and informal feedback on their progress. Teachers can also use assessment data to review and improve their teaching practice (Thomas and Ward, 2009).

Professional development programmes are an important part of improving teacher practice. Effective programmes help teachers examine how their practice influences learning in the context within which they are teaching (Thomas and Ward, 2009). Formal qualifications help assure that teaching staff have a proper grounding in the teaching of literacy, language and numeracy (Leach et al, 2010). However, professional development also needs to be relevant to the teaching and learning context (May, 2009). If programmes are to include the use of information and communications technology, teachers need specific support on how to make best use of this in their practice (Davis and Fletcher, 2010). Professional development, both formal and informal, needs to be supported by the organisation (Leach et al, 2010).

Organisational development and support

For literacy, language and numeracy provision to be successful, organisations need to support it as an integral part of their educational programmes. Developing an embedded approach within an organisation requires someone to act as champion, to drive development and motivate people. This does not have to be someone in top management. However, involvement and commitment across the organisation are required. Organisations need to understand the contribution that literacy, language and numeracy makes to their wider educational goals and philosophy. These findings apply equally to tertiary education providers and companies seeking to deliver literacy and numeracy programmes in the workplace (Thomas and Ward, 2009; Leach et al, 2010; Department of Labour, 2010).

Successful delivery of literacy, language and numeracy within programmes requires a strong focus on learners and learning. It is not sufficient to see it as a separate activity or offering. There needs to be

commitment to addressing the range of learner needs and contexts (Leach et al, 2010). Assessment data provides important information for organisations and workplaces to improve and revise programmes and ensure that the needs and goals of learners are being met (Thomas and Ward, 2009). Successful implementation requires deliberate and explicit planning by the organisation, including aspects such as supporting the use of learning technologies. In the workplace, this requires joint planning between the provider and the company (Leach et al, 2010; Davis and Fletcher, 2010; Department of Labour, 2010).

While there are characteristics common to organisations that are successful in delivering literacy, language and numeracy, there is no single approach that fits all circumstances. The learning needs to fit the context for which learners are being prepared, and this in turn will affect how the organisation best supports the learning. It would be counterproductive to lock literacy and numeracy provision into a single 'best practice' approach. Decisions about good practice need to be made in the context of the background, needs and goals of the learners. Programmes need to reflect and respond to the cultural context of the learners (May, 2009; Leach et al, 2010; Department of Labour, 2010; Whatman, 2010).

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