

MATCHING SUPPLY AND DEMAND

*Industry-led Vocational Education
and Training*

Foreword

New Zealand has been facing a productivity challenge for many years. Given the current economic crisis, meeting this challenge is more critical than ever before. One of the very best levers government has to improve productivity in both the short and medium-term, is to look urgently at the quality of its investment in tertiary education and training.

The research, evidence and analysis in this report is compiled from information from a range of different government databases. It is supported by the *Industry Skills Toolkit* that provides an up-to-date overview on how the government's investment in tertiary education and training supports different industries and sectors. The result provides an evidence-base for industries and Industry Training Organisations (ITOs), government, and providers of education and training to have meaningful discussions on how to get the most benefit out of the investment government and industry make in vocational education and training.

It makes the case for an industry-led vocational education and training system that addresses the challenge of better matching the supply of tertiary education and training with the skill demand of New Zealand's industries – a key driver for improving productivity and outcomes for businesses and employees.

Furthermore, such a change would provide individual students and trainees with more confidence that the time, energy and money they commit to education and training is relevant to future work and career opportunities.

It does not necessarily require more money, but will require a range of policy, regulatory and structural changes which have been suggested in the report. Most importantly, it requires a new way of thinking for key decision-makers in order to improve government's return on its existing investment.



Jeremy Baker
Executive Director
Industry Training Federation

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Summary

This report was developed by the Industry Training Federation, which represents the interests of all 39 Industry Training Organisations (ITOs) in New Zealand. ITOs are industry bodies recognised by government under the Industry Training Act 1992 and are responsible for:

- setting skill standards and qualifications for industry and vocational education;
- arranging for the delivery of workplace learning and training for industry;
- providing industry leadership by identifying skill needs, developing strategic training plans, and promoting learning that meets industry needs.

Both government and industry make direct financial contributions to support workplace-based vocational education and training for more than 180,000 employees each year.

However, industries have an interest in all vocational education and training that is related to the supply of skills they need to maintain and improve levels of productivity in their workplaces.

This report shows that it is possible to match the supply of tertiary education and training with the skill needs of industries so as to develop a more responsive tertiary education and training system to support improvements in productivity, profits and pay.

It promotes an industry-led model to ensure a more useful and cost-effective vocational education and training system that responds to labour market needs. It also outlines issues that need to be considered with regard to non-vocational or general education and training.

In its election policy manifesto, the Government signalled a desire to work to give industry more say on skills development funding decisions. This report outlines how this can be achieved.

New Zealand, along with almost all developed economies, faces the ongoing challenge of matching the supply of education and training with the needs of its workers, employers and communities. We face short and long-term challenges in seeking to improve growth rates, productivity, profitability and returns on investment in skill and capital.

In the short-term, the global economic recession has highlighted the importance of effective investments in all areas – including skills – and of maintaining investments to enable recovery. In the medium to longer-term, New Zealand's industries are at risk of skill and labour shortages, and lagging behind our trading partners in terms of productivity.

To counteract this risk we need a more focused tertiary education and training system – one that recognises and responds to the interest that industry has in the quality and type of education and training that is supported by government.

Improving this match between skills supply and demand is complex. It requires good quality information about what the future demand is likely to be and recognition of the aspects of tertiary education and training that link to that demand.

This report suggests an overall concept and highlights practical approaches that can be taken to achieve the desired outcomes.

It starts by identifying three broad categories of tertiary education and training, each with different purposes and intended outcomes:

- **Industry-related vocational education and training;**
- **Cross-sectoral vocational education and training; and**
- **General education and training.**

Industry-related vocational education and training can be directly linked to work in a particular industry. This currently applies to around 56% of all education and training activity and 56% of government expenditure on tertiary education and training. It directly relates to industries and sectors covering 90.4% of the New Zealand workforce.

Cross-sectoral vocational education and training has a clear vocational outcome across multiple industries (e.g. management, information technology, law). This currently applies to around 22.4% of tertiary education and training activity and 20.5% of government expenditure on tertiary education and training. This training relates directly to 9.6% of the New Zealand workforce (in enterprises such as management consultancies, law firms and accounting practices), but individuals with these skills also work in most other industries across the whole workforce.

General education and training does not directly apply to work in a particular industry but provides broad learning in a particular area or subject (e.g. classics, philosophy, foundation studies) – this represents around 21.6% of tertiary education and training activity and 23.5% of government expenditure on tertiary education and training. It has a broad relevance across New Zealand's workforce.

Different groups and individuals are better placed to determine how supply and demand should be matched for each of these types of education and training. Each category also requires different tools and approaches. This includes how skills are specified, how training is regulated, and how investment is allocated and performance measured.

Industry-related vocational education and training (supply of skills) should be, by definition, closely linked to the demand for skills from the relevant industries. As such, those with a direct interest in the development of these skills can be clearly identified.

There is a need to ensure that the development and operation of policies and regulations acknowledges the crucial role of industry bodies, ITOs and other industry and professional organisations in matching supply and demand for industry-related vocational education and training.

There is a wealth of readily available information to support industry in the strategic analysis of its needs and its links to tertiary education and training. Some of this information has been compiled for the first time in a software-based toolkit developed by the Industry Training Federation to support this report. The information should be seen as a starting point for discussion.

Case studies of the transport and hospitality sectors show the level of detail available and explain how those industries might use the information as a base for understanding their industry's demand for education and training.

For cross-sectoral vocational education and training, and general education and training, the links to industry are not as close but consideration still needs to be given to better matching supply and demand. This report suggests policy and regulatory implications for achieving that aim.

In all three categories the approach needs to focus on what should be matched, who should do the matching, and the way this matching can be best achieved through alignment of data and information, specification of skill outcomes, regulation, allocation of resources, and performance assessment.

In a report last year the New Zealand Treasury sums up why matching skill and demand is critical to long-term productivity and growth performance:

“The contribution of skills to productivity depends not only on the overall level of educational achievement, but on how the supply of skills is matched to changing demand (through labour market responses, responsive tertiary education and training systems, and migration) and on firms’ ability to effectively utilise workforce skills.”¹

Summary of key findings

Government expenditure on tertiary education and training activity (excluding student support) can be broadly grouped into the following three categories:

- Industry-related vocational education and training.
- Cross-sectoral vocational education and training.
- General or non-vocational education and training.

More than half of all tertiary education and training activity and spending (56%) is **industry-related vocational education and training**. This can be matched to around 90% of the workforce.

Given this close link, it is possible and makes good sense, to give applicable industries more say in the shape of the supply of tertiary education and training for that workforce.

This can be achieved by involving industry associations, ITOs and other bodies that have a mandate and expertise on skill and workforce development.

ITOs already have gazetted coverage for industries covering 78% of the New Zealand workforce and have considerable expertise in planning and strategies to advise on skill development in these industries. This is a resource that can, and should be, utilised more effectively.

The remaining 10% of the workforce can be described as working in cross-sectoral areas that provide support across the other industries.

In 2007, of the \$1,608 million investment in vocational education and training:

- 26.8% (or \$431 million) was spent on **cross-sectoral vocational education and training**, which can be *loosely* matched with 10% of the New Zealand workforce.
- 26.6% (or \$427 million) was spent on vocational education and training that is industry-related, but was not at that time covered by an ITO. This could be matched to 13% of the NZ workforce.
- 46.6% (or \$750 million) was spent on vocational education and training that is industry-related, and covered by an ITO. This directly relates to 78% of the New Zealand workforce.

1. NZ Treasury Productivity Paper 08/06, *Working Smarter: Driving Productivity Growth Through Skills* (April 2008), p 2.

Introduction

In its election policy manifesto, the current Government signalled a desire to work to give industry more say on skills development funding decisions. Most government funding for skills development is through the tertiary education and training system.

This report proposes a new way of thinking about matching the supply of skills through tertiary education and training with the demand for skills by industry and wider society.

It defines different categories of tertiary education and training and promotes a system whereby New Zealand industries, through ITOs and other recognised industry and occupational bodies, have a greater influence over supply of industry-related vocational education and training.

It embraces the New Zealand Treasury's assertion that: *"High quality information is needed to identify and respond to changes in employer and student demand, and to assess the quality of tertiary education programmes. Planning and resource allocation will need to adjust responsively to changing demands and priorities."*²

Demand

To gain an understanding of the skills required from tertiary education and training, consideration of New Zealand's skills and productivity challenges in both the current global economic recession and the long-term outlook is required.

Understanding what the industry workforce may look like in the future requires analyses of quantitative trends in industries (which can be gained from official statistics such as the Census), combined with sound industry knowledge about qualitative trends and likely developments.

New Zealand's skills and productivity challenges

New Zealand faces both short-term challenges arising from the current global economic recession, and the medium to longer term challenges of meeting the skill needs of industry and lifting productivity, profits and pay while improving the careers of workers.

The current economic outlook is challenging. In the short-term, the response of New Zealand's business and political leadership to the current downturn will influence efforts to increase New Zealand's skills, productivity and wealth. A committed programme of greater investment by the Government in infrastructure and skills is needed now to set the platform for long-term improvements in productivity. This will ensure New Zealand remains open for business during the recession, and is ready with a highly skilled and trained workforce when economic conditions return to some degree of normality.

A critical aspect of that response will be the extent to which New Zealand businesses and industry sectors maintain their commitment to, and investment in, education and training – particularly workplace-based skill development. Only with ongoing investment will New Zealand industry be able to grow out of the recession.

A short while ago, New Zealand firms and organisations were facing record skill and labour shortages, and longer-term demographic and economic trends will ensure that this will once again become an issue. In fact, even in the current downturn, many firms are still having considerable difficulty finding the skilled workers they need.

Over the medium to longer term New Zealand will continue to face the sorts of issues it has faced over the last decade or so, particularly issues of skills shortages and productivity gaps with our major trading partners. Demographic changes will continue to be key factors in future employment growth and the composition and skills of the workforce.

2. NZ Treasury Productivity Paper 08/06, p 4.

For the purposes of this report, the Industry Training Federation commissioned Business and Economic Research Limited (BERL) to provide a report looking at projections that need to be considered for a skilled and productive New Zealand workforce.³

BERL's assumption is that between 2007 and 2026, projected employment growth will be in the range of 30,000 to 35,000 full-time equivalent (FTE) employees per year. This equates to average FTE employment growth of 1.5% per annum. This is slightly lower than the annual average over the last 20 years.

This assumption of employment growth is based on population growth of 1.0 percent per annum to 2026, which also allows the total available labour force to grow by an average of 1.5% per annum. The population growth assumption is based on a combination of an annual natural increase of 30,000 and an average net inflow of migrants of 10,000 per year.

These projections suggest that there will be variations in employment growth across different industries. They suggest comparatively lower employment growth in the construction, primary and communication services sectors. In turn, they suggest comparatively strong employment growth may be experienced in the business services, health and community services, and retail trade sectors. Within all these sectors, however, there are considerable variations in terms of which occupations are likely to grow, requiring careful analysis of these trends by industry bodies.

Table 1 - New Zealand employment projection by industry

| New Zealand employment growth | 2007 to 2016 | | 2016 to 2026 | | 2007 to 2026 |
|---------------------------------------|----------------|------------|----------------|------------|---------------|
| | change | %pa chge | change | %pa chge | 000s pa |
| Agriculture, forestry and fishing | 9,326 | 0.7 | 6,426 | 0.4 | 829 |
| Mining | 1,454 | 3.2 | 1,421 | 2.2 | 151 |
| Manufacturing | 52,832 | 2.2 | 50,155 | 1.6 | 5,420 |
| Electricity, gas and water supply | 1,067 | 1.6 | 1,202 | 1.4 | 119 |
| Construction | 16,072 | 1.1 | 21,885 | 1.2 | 1,998 |
| Wholesale trade | 14,026 | 1.2 | 21,196 | 1.4 | 1,854 |
| Retail trade | 24,949 | 1.3 | 37,297 | 1.5 | 3,276 |
| Accommodation, cafes and restaurants | 21,729 | 2.5 | 20,658 | 1.8 | 2,231 |
| Transport and storage | 12,879 | 1.8 | 14,505 | 1.6 | 1,441 |
| Communication services | 1,963 | 0.8 | 3,235 | 1.1 | 274 |
| Finance and insurance | 6,589 | 1.2 | 10,256 | 1.5 | 887 |
| Property and business services | 66,901 | 2.5 | 68,457 | 1.9 | 7,124 |
| Government administration and defence | 6,379 | 1.0 | 13,804 | 1.8 | 1,062 |
| Education | 8,154 | 0.7 | 20,552 | 1.5 | 1,511 |
| Health and community services | 26,962 | 1.8 | 40,112 | 2.0 | 3,530 |
| Cultural and recreational services | 6,601 | 1.5 | 6,808 | 1.2 | 706 |
| Personal and other services | 4,899 | 0.8 | 10,682 | 1.4 | 820 |
| TOTAL | 282,781 | 1.6 | 348,652 | 1.5 | 33,233 |
| <i>including tourism</i> | <i>22,134</i> | <i>2.0</i> | <i>23,866</i> | <i>1.6</i> | <i>2,421</i> |

These projections provide a useful **baseline** for industries considering the future skill and training requirements of their sectors. They need to be combined with detailed qualitative knowledge from each sector, and with other quantitative data available from each industry.

3. BERL, *Projections for a skilled and productive New Zealand, a report for the Industry Training Federation*, (March 2009).

Supply

A closer alignment of the skills developed by the tertiary education and training system with those needed by industries requires a good understanding of what is currently being delivered by that system.

In considering the current tertiary education and training system it is important to recognise its diversity and the varying purposes of different types of education and training.

The current tertiary education and training system

New Zealand taxpayers invest more than \$4 billion each year in tertiary education and training. Around \$2.1 billion of this is invested in the direct costs of education and training, while another \$2 billion is spent on student support through student loans and allowances.

This investment has grown substantially over the last two decades. In the 1990s, most of this growth was driven by increases in student enrolments and increased investment in workplace learning.

Student choice was the main mechanism for allocating resources across types of provision and tertiary education providers. While this approach to determining demand had a number of benefits in terms of responsiveness to student preferences, it led to significant over-provision in some areas and under-provision in others. This matters less in general education and training than in vocational education and training where it can be a serious issue.

From around 2000 onwards, the focus has been on increasing investment by type of tertiary education provider.

Currently, the \$2.1 billion dollars for the support of education and training activities is largely allocated through various types of tertiary education providers and organisations, including ITOs (see Appendix 2 for further details).

To receive funding, each organisation develops an Investment Plan and uses it to bid for funding within an overall sum of funds allocated by Government for that type of organisation. The focus is on investing in tertiary education organisations rather than the needs of industry or other objectives.

That focus makes matching tertiary education and training supply with demand from industry difficult.

Industries, through their ownership of ITOs, help determine how industry training funding is best used to meet skill development in their workforces. However Industry training funding is currently less than 8% of the \$2.1 billion tertiary education funding and the needs of industries are much broader.

Currently, few effective policy or regulatory mechanisms exist to enable industry to inform and influence investment decisions in the tertiary education and training system.

In other words, neither the current approach (focussing principally on providers), nor its predecessor (focussing principally on students), are optimal solutions to the challenge of matching supply and demand.

There is a need for a new approach that recognises the multiple legitimate sources of demand, and for practical policy settings that enable each of those groups to play an appropriate role in matching supply and demand.

Matching supply and demand

There are a range of purposes and objectives for different types of tertiary education and training. For some types of tertiary education and training, it is both critical and possible to match that training with industry need, while for others it is less directly relevant and comparatively difficult.

An approach to effective matching of supply and demand should focus on **what** can be matched, **who** should do the matching, and **how** this matching can best be achieved. This will include alignment of data and information, specification of skill outcomes, regulation, allocation of resources, and performance assessment.

The steps to enable improved matching of supply and demand can be summarised as follows:

1. Identify **what** can be matched (i.e. have a clear, logical concept of what matching actually means).
2. Identify where logical links can be made between data sets, and provide tools to make this a real possibility (the **how** of matching).
3. Be clear about **who** should be making decisions about matching **what** kinds of tertiary education and training.

What kinds of supply are we matching?

Defining types of tertiary education and training

Tertiary education and training can be categorised using three factors:

- The ability to **specify** and define the skills, knowledge and capabilities required for a particular industry or sector.
- The **ease of identification** of groups and/or individuals with a direct interest in the skills supplied by that type of tertiary education and training.
- The **directness** of the application of skills supplied by that education and training to a particular industry or sector.

Categories identified

On this basis we have identified three categories of tertiary education and training:

- **Industry-related vocational education and training.**
- **Cross-sectoral vocational education and training.**
- **General education and training.**

Industry-related vocational education and training

Education and training that has the clear objective of developing skills, knowledge and capabilities for a particular, clearly definable, sector or industry.

In this context, there is a clearly identifiable group of industry bodies, employers and workers who have the strongest interest in defining the desired outcomes of this education and training. Similarly, the skills and capabilities required are generally able to be more precisely defined.

The majority of these areas have an ITO established by those industries or sectors, and with gazetted coverage formalised by the Minister for Tertiary Education. ITOs have gazetted coverage for industries covering 78% of the New Zealand workforce.

ITO coverage exists in the following broad sectors:

- **Services and transport sectors.**
- **Manufacturing, engineering and electronics sectors.**
- **Building, construction and infrastructure sectors.**
- **Primary sectors.**
- **Public, community and health sectors** (shared coverage with other bodies).

In the public, community and health sectors, ITOs share coverage with a range of other bodies, including professional regulatory bodies with their own statutory mandates (particularly in the regulated health professions).

There remain a further two broad sectors of industry-related vocational education and training where ITO coverage is minimal, although even in these areas some activities and businesses are covered by ITOs. The major sectors that do not have significant ITO coverage are as follows:

- **Teaching and education sector.**
- **Creative and performing arts sector.**

The establishment of an ITO by an industry or sector is a voluntary, bottom-up process, and this explains why some sectors are not fully covered – they have simply chosen not to establish an ITO covering their industry or sub-sector. In most cases, this is because other bodies with roles and responsibilities that overlap those of ITOs already exist, particularly in the areas of health and education. These sectors are also often heavily dominated or influenced by the public rather than the private sector.

Cross-sectoral vocational education and training

There is a further area of tertiary education and training that is clearly vocational. It is intended to provide skills for individuals to gain work and be productive in work, but which relates to skills, knowledge and capabilities that cross a range of sectors or industries.

In this context there may be a wider range of groups, each with their own clearly defined interest in the skills, knowledge and capabilities required. This makes defining the capability requirements more difficult (given the wider application of this education and training) and the overall requirements are likely to be less clear.

General education and training

Finally, there is an area of tertiary education and training which is non-vocational. There is no strong direct link between the specific skills, knowledge and capabilities gained and any particular sector or industry.

In this context, there may be many different interests in the skills, knowledge and capabilities required, and the specificity with which they can be defined is relatively low. These skills, knowledge and capabilities are applied in many different sectors and industries.

The table that follows provides an overview of the distribution of tertiary education and training when defined by these categories.

Table 2 - Summary of tertiary education and training by broad category

| Tertiary education and training (2007 figures) | STMs ⁴ (incl. MAs) | EFTS ⁵ | STMs & EFTS (% of all STMs & EFTS) | \$m (GST inc) (% of all STM and EFTS funded tertiary spending) |
|---|-------------------------------------|-------------------|--|---|
| Industry-related vocational education and training | 61,543 | 104,156 | 165,968 (56%) | \$1,177 (56%) |
| Services and transport | 17,820 | 24,709 | 42,530 (14.4%) | \$247 (11.5%) |
| Manufacturing, engineering and electronics | 14,687 | 12,412 | 27,099 (9.2%) | \$175 (8.3%) |
| Building, construction and infrastructure | 10,479 | 9,157 | 19,637 (6.6%) | \$122 (5.8%) |
| Primary | 11,921 | 9,985 | 21,906 (7.4%) | \$145 (6.9%) |
| Public, community and health | 6,621 | 21,688 | 28,309 (10.1%) | \$278 (13.2%) |
| Teaching and education | 9 | 18,042 | 18,051 (6.1%) | \$147 (7.0%) |
| Creative and performing arts | 5 | 8,162 | 8,167 (2.8%) | \$69 (3.3%) |
| | | | | |
| (with ITO coverage) | 61,528 | 62,521 | 124,049 (42%) | \$749 (35.7%) |
| | | | | |
| Cross-sectoral vocational | 3,654 | 62,492 | 66,146 (22.4%) | \$431 (20.5%) |
| Management and accounting | 1,335 | 32,406 | 33,742 (11.4%) | \$212 (10.1%) |
| Computing, information and internet | 62 | 8,205 | 8,266 (2.8%) | \$61 (2.9%) |
| Administration | 260 | 6,842 | 7,102 (2.4%) | \$42 (2.0%) |
| Law and legal services | 24 | 7,450 | 7,475 (2.5%) | \$48 (2.3%) |
| Design | 67 | 4,495 | 4,562 (1.5%) | \$41 (1.9%) |
| Work skills | 14 | 2,383 | 2,397 (0.8%) | \$15 (0.7%) |
| Health and safety | 1,892 | 364 | 2,256 (0.8%) | \$9 (0.4%) |
| Literacy and numeracy | 0 | 347 | 347 (0.1%) | \$2 (0.1%) |
| | | | | |
| All vocational education and training | 65,197 | 166,648 | 231,845 (78.4%) | \$1,608 (76.5%) |
| | | | | |
| General education and training | 193 | 63,619 | 63,812 (21.6%) | \$494 (23.5%) |
| Humanities | 188 | 24,692 | 24,880 (8.4%) | \$173 (8.3%) |
| Mathematics and sciences | 5 | 14,813 | 14,818 (5.0%) | \$147 (7.0%) |
| Languages | - | 11,220 | 11,220 (3.8%) | \$69 (3.3%) |
| General and mixed field | - | 9,704 | 9,704 (3.3%) | \$84 (4.0%) |
| Foundation skills | - | 3,191 | 3,191 (1.1%) | \$21 (1.0%) |
| | | | | |
| All tertiary education | 65,390 | 230,267 | 295,657 (100%) | \$2,102 (100%) |

4. STMs are 'Standard Training Measures', equivalent to 120 credits.

5. EFTS are 'Equivalent Full-Time Students', equivalent to 120 credits.

What are the implications for policy and regulation?

These categories of tertiary education and training provide all parties with a new way of thinking about their investment in skill development. They provide a basis to decide whether it is appropriate to meet current and future skill and labour needs, and also the skills and productivity challenge.

Instead of allocating funding by provider type, the broad categories can be used to design funding, regulatory and performance measurement approaches that focus on outcomes.

For each category the following needs to be considered:

- Who does the matching?
- How are skill requirements specified?
- What information is needed for allocation of investment?
- How is performance assessed?

Industry-related vocational education and training

Where it is possible to clearly identify those with a strong and direct interest in the outcomes (i.e. in industry-related education and training), then those interests should have a strong say and involvement in both determining what is allocated, and how education and training takes place. In this area, industry should determine what qualifications are offered and what standards are to be met, since the purpose of this activity is to meet industry needs.

Any investment in vocational education and training needs to match the skills that are required and that will be used by industry. Industry and individual businesses themselves have the best information on what is needed for their workplaces to operate effectively and productively. At an individual business level, employers already make direct demand and supply matching decisions through their own investment in vocational education and training.

Across industry areas with ITO coverage, ITOs have been charged by Government to facilitate and articulate the aggregation of this direct demand for skills at a national level. ITOs consider this information alongside the labour market needs of the relevant industries and, in this way, can provide Government with robust information for matching the supply of skills needed by industries.

Skill requirements are specified by industry at a national level through the qualifications and standards developed by ITOs. The close engagement of industry with ITOs in the development of national standards ensures a direct match between the skills demanded and the skills supplied via vocational education and training arrangements.

In areas without ITO coverage, industry bodies and professional associations have the potential to articulate directly to government what skills are needed by their industries.

For all industry-related vocational education and training, the skills and labour market needs should be the key factor in determining how much to allocate to those categories. Analysis of current labour market characteristics and projected trends will be a key source of information in determining the skill demand for each industry. ITOs and industry bodies also have the best access to additional qualitative information about anticipated changes in an industry – essential for interpreting labour market and supply-side data.

By measuring industry's take up of national qualifications and industry standards, the government can assess the performance of ITOs, industry bodies, and professional associations with regard to their success in matching the skill demand of their industries with supply. Other performance measures could include monitoring the level of investment by industries and firms in the vocational education and training arrangements developed for their industry.

Cross-sectoral vocational education and training

For cross-sectoral vocational education and training, a broader range of interests will have a legitimate role in determining allocations, and thus government will need to establish a process for moderating those interests.

This broad range of interests (including industry groups, professional bodies, and tertiary education providers) will have a role in defining what is taught, and how.

Allocations for cross-sectoral vocational education and training require an assessment of a greater range of factors, as these skills, knowledge and capabilities will be deployed across a range of industries and sectors.

By looking at the occupation destinations of individuals completing this category of training, government can get information about the value of their investment in this type of tertiary education. Combined with tools like employer satisfaction surveys, this can provide performance information relating to how well the input from the broad range of interests has resulted in a good match between the demand and supply of skills.

Measures of the quality of generic vocational education and training delivery will also inform assessments of performance (this might include tools such as student satisfaction surveys, course completions etc).

General education and training

The allocation for general education and training will relate to government's assessment of the overall need for investment in these broad-based skills and knowledge.

Once government has determined how much it wishes to invest in this area, making specific resource allocations will be very difficult at a central level. Government may wish to focus on tertiary education providers developing what they consider to be appropriate offerings and also allow student choice to dictate allocations.

Performance measures for non-vocational or general education and training might also include occupation destination information and employer and student satisfaction surveys.

Table 3 - Summary table of policy and regulatory implications by category

| | Industry-related vocational education and training | | Cross-sectoral vocational education and training | Generic or non-vocational or general education and training |
|---|---|---|--|--|
| | With ITO coverage | Without ITO coverage | | |
| Who does the matching | ITOs | Industry bodies and professional associations | Government will need a process to moderate a broad range of interests including industry bodies, professional associations and tertiary education providers | Government's assessment of the overall need for investment in broad-based skills and knowledge |
| How skill requirements are specified | National qualifications and industry standards developed in partnership with industry | Qualifications and industry standards developed in partnership with industry | Likely to be a range of courses and programmes developed in partnership with industry and tertiary education providers | Likely to be a range of courses and programmes developed by tertiary education providers |
| Allocation of investment | Skills and labour market needs of relevant industries | Skills and labour market needs of relevant industries | Labour market analysis of generic and cross-cutting vocational skill needs across a range of occupations | More complex. Government may wish to focus on tertiary education providers developing appropriate offerings and allowing student choice to dictate allocations |
| Performance assessment | <ul style="list-style-type: none"> - Vocational education and training take-up by industry - Employer satisfaction surveys - Occupation destinations | <ul style="list-style-type: none"> - Vocational education and training take-up by industry - Employer satisfaction surveys - Occupation destinations | <ul style="list-style-type: none"> - Employer satisfaction surveys - Occupation destinations - Student satisfaction surveys | <ul style="list-style-type: none"> - Employer satisfaction surveys - Occupation destinations - Student satisfaction surveys |

Broad alignment of industries' skill demands with supply

To make sense of the relationship between tertiary education and training supply and the skill demands of industry, it is necessary to group New Zealand industries into clusters that best match official industry statistics (ANZSIC), available education and training data (NZSCED), and the way in which industries organise themselves (such as through ITO coverage).

Characteristics of New Zealand's industries and workforce

Industries in New Zealand and Australia are classified using the Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006⁶. The Australian Bureau of Statistics and Statistics New Zealand jointly developed this classification to improve the comparability of industry statistics between the two countries and with the rest of the world. ANZSIC is hierarchical with four levels of classification.

The highest level of the ANZSIC classification is the 'division' level. At the division level, the main purpose is to provide a limited number of categories that provide a broad overall picture of the economy.⁷ There are 19 categories at the division level; the number of people employed in each at the time of the 2006 Census is shown in the table below.

Table 4 – Workforce distribution by ANZSIC divisions

| Industry | People employed | % of workforce |
|---|------------------------------|----------------|
| Agriculture, forestry and fishing | 135,438 | 7.2% |
| Mining | 4,155 | 0.2% |
| Manufacturing | 217,758 | 11.6% |
| Electricity, gas, water and waste services | 9,738 | 0.5% |
| Construction | 149,364 | 8.0% |
| Wholesale trade | 98,334 | 5.2% |
| Retail trade | 196,065 | 10.5% |
| Accommodation and food services | 111,099 | 5.9% |
| Transport, postal and warehousing | 81,774 | 4.4% |
| Information media and telecommunications | 37,653 | 2.0% |
| Financial and insurance services | 64,155 | 3.4% |
| Rental, hiring and real estate services | 54,540 | 2.9% |
| Professional, scientific and technical services | 154,215 | 8.2% |
| Administrative and support services | 66,189 | 3.5% |
| Public administration and safety | 81,324 | 4.3% |
| Education and training | 142,119 | 7.6% |
| Health care and social assistance | 160,290 | 8.6% |
| Arts and recreation services | 32,682 | 1.7% |
| Other services | 77,802 | 4.2% |
| Total | 1,874,694⁸ | |

6. ANZSIC 2006 has only been used in New Zealand since 2006. Prior to the introduction of ANZSIC 2006 the classification used was ANZSIC 1996. The two classifications are not directly comparable but over time historical data will be reclassified using ANZSIC 2006 to allow comparisons.

7. Australia Bureau of Statistics and Statistics New Zealand publication on the ANZSIC 2006 Classification.

8. There were 1,985,778 people in the New Zealand workforce in the Census 2006, but 111,084 were not able to be allocated to an industry classification, and have been excluded from this analysis.

How industries organise themselves

Industries do not necessarily organise themselves in accordance with official statistics. ITOs are one way in which industries group themselves.

ITOs are the bodies established by industries and sectors under the Industry Training Act 1992, and recognised by the Minister for Tertiary Education as having the capability to define the industry-related vocational education and training needs of their industries and sectors. At present, there are 39 ITOs in New Zealand. Each ITO has a defined area of industry or sectoral 'coverage', as set out in the New Zealand Gazette. The current 39 ITOs cover approximately 78% of the New Zealand workforce in 2009.

Matching clusters of New Zealand industries

Industry clusters or sectors that best align with the way industry organises itself and with available education and training data are:

Table 5 – Workforce distribution by broad industry sectors

| Broad industry sectors ⁹ | Employees | % of workforce |
|--|------------------|----------------|
| Services and transport | 730,902 | 39.0% |
| Manufacturing, engineering and electronics | 221,904 | 11.8% |
| Building, construction and infrastructure | 183,834 | 9.8% |
| Primary | 160,599 | 8.6% |
| Public, community and health | 230,475 | 12.3% |
| Teaching and education | 151,554 | 8.1% |
| Creative and performing arts | 14,709 | 0.8% |
| Cross-sectoral business and technical services | 180,717 | 9.6% |
| Total | 1,874,694 | |

9. See Appendix 1 for details of how ANZSIC code industries are allocated to these sectors.

Aligning tertiary education and training with demand

Clearly, alignment of tertiary education and training investment with industry demand is most possible with industry-related vocational education and training, and to some extent with cross-sectoral vocational education and training. General education and training can apply across the whole of New Zealand society, and while matching can be loosely carried out, it is always much more problematic.

The focus in **matching** should therefore be on those parts of tertiary education and training that are industry-related, or cross-sectoral across a range of industries. Thus, the matching below is between industries and the \$1.61 billion allocated to **vocational education and training**, which accounted for 231,845 EFTS and STMs in 2007 (78.4% of all tertiary education EFTS and STM activity).

Within this broad category, a range of matches are possible – the matches that follow have important caveats. Linking education and training supply with a particular industry will always require a judgement on the part of those undertaking the matching, and current categories of classification both in terms of education and training activity or industry classification are far from perfect. This reinforces the importance of involving industry bodies in carrying out this activity. Nevertheless, this report demonstrates that matching is possible, and with the right tools and participants (particularly industry groups), useful analysis can be carried out.

Industry-related vocational education and training

A key finding of this report is that more than half of all tertiary education spending can be relatively closely matched to identifiable industries or sectors in that it is **industry-related vocational education and training**. Industry-related vocational education and training makes up over 70% of all forms of vocational education and training, which can be matched to the skills needs of 90% of the workforce. In 2007, government invested \$1,177 million (not including student support payments and loans) in this form of tertiary education and training.

As noted earlier, 78% of the New Zealand workforce, or 1.4 million people, are explicitly covered by the statutory mandate of an ITO. In 2007, \$749 million was allocated to education and training which related to these industries, both through ITOs and through tertiary education and training providers. This was 46.6% of all investment in vocational tertiary education and training.

Table 6 – Workforce and training distribution for industry-related vocational education and training

| Broad industry sectors | Employees | EFTS & STMs | \$ millions |
|--|-------------------|------------------------------|-----------------------------|
| Services and transport | 730,902 (39.0%) | 43,704 (18.3%) ¹⁰ | \$242 (15.1%) ¹⁰ |
| Manufacturing, engineering and electronics | 221,904 (11.8%) | 27,099 (11.7%) | \$176 (10.9%) |
| Building, construction and infrastructure | 183,834 (9.8%) | 19,637 (8.5%) | \$122 (7.6%) |
| Primary | 160,599 (8.6%) | 21,906 (9.4%) | \$145 (9.0%) |
| Public, community and health | 230,475 (12.3%) | 28,309 (12.2%) | \$66 (17.3%) |
| Teaching and education | 151,554 (8.1%) | 18,051 (7.8%) | \$147 (9.1%) |
| Creative and performing arts | 14,709 (0.8%) | 8,167 (3.5%) | \$69 (4.3%) |
| | | | |
| Totals | 1,693,977 (90.4%) | 165,698 (71.5%) | \$1,177 (73.2%) |

10. Percentages relate to the total for vocational education and training, not all tertiary education and training.

The largest sector in this category is services and transport, which covers 39% of the workforce, or around 730,000 people. Despite this, only 15.1% of expenditure on vocational education and training was allocated to this area of the economy, resulting in 18.3% of all vocational education and training activity.

The areas of manufacturing, engineering, and electronics; building and construction; and primary sectors all have a slightly smaller share of vocational education and training expenditure than their share of the workforce.

The areas of public, community and health; and teaching and education both receive a significantly greater percentage of vocational education and training spending than their proportion of the workforce. This is also the case for the creative and performing arts sector although some of this education and training could be classified as non-vocational.

In all of these cases, the identification of the match between tertiary education and training activity, expenditure and the numbers of people in each sector or industry is only the beginning. A range of factors need to be considered to determine if the level of tertiary education and training activity or expenditure is appropriate. This includes projections of future demand, the relative complexity of skills, knowledge and capability required in those sectors, and the relative contributions of those sectors to GDP and international revenue generation.

Future demand

In terms of **future demand**, BERL projections for employment growth over the longer-term (2007 – 2016, and 2016 – 2026) indicate that across most of these sectors, demand will outstrip current supply to a considerable extent.

Analysis of future trends, however, should be carried out by individual ITOs. Projections need to take into account a number of different variables and will always require certain judgements to be made as to the weighting on these variables. ITOs have more detailed industry and labour market knowledge for the industries in their coverage. This knowledge needs to be brought to bear on any projections that are developed.

Cross-sectoral vocational education and training

Around 180,000 people (or 9.6% of the workforce) work in cross-sectoral areas or occupations, which cannot be easily allocated to a particular industry. Often they work for firms and enterprises that provide business or technical support services to a range of sectors or industries, making classification complex.

In 2007 28.5% of all vocational education and training activity (EFTS and STMs) and 26.8% of all vocational education and training expenditure (\$431 million) could be classified as cross-sectoral vocational education and training.

While the match between generic or cross-cutting sectors or occupations to qualifications grouped under this category is relatively direct, it is important to note that many individuals who gain generic or cross-cutting skills (such as managers or ICT workers) consider themselves to be within one of the more clearly defined industries in the previous categories. There is not, therefore, a one-to-one correlation between generic vocational education and training and the enterprises and workers in the sectors and occupation groupings in the table below.

Table 8 - Workforce and training distribution for generic vocational education and training

| Broad industry sectors | Employees | EFTS & STMs | \$ millions |
|----------------------------------|---|---|-----------------------------|
| Management and accounting | 55,314 (3.0%) | 33,742 (14.6%) ¹¹ | \$211 (13.2%) ¹¹ |
| Computing and internet services | 29,598 (1.6%) | 8,266 (3.6%) | \$59 (3.8%) |
| Administration | 28,137 (1.5%) | 7,102 (3.1%) | \$42 (2.6%) |
| Law and legal services | 16,638 (0.9%) | 7,475 (3.2%) | \$48 (3.0%) |
| Design | (no specific identifiable ANZSIC codes) | 4,562 (2.0%) | \$41 (2.5%) |
| Work skills | | 2,397 (1.0%) | \$15 (0.9%) |
| Health and safety | | 2,256 (1.0%) | \$9 (0.5%) |
| Literacy and numeracy | | 347 (0.1%) | \$2 (0.1%) |
| Other activities | 33,306 (1.8%) | (no specific identifiable NZSCED codes) | |
| Scientific research and services | 17,724 (0.9%) | (covered by mathematics and sciences) | |
| Totals | 180,717 (9.6%) | 66,146 (28.5%) | \$431 (26.8%) |

General education and training

As noted, matching the investment in non-vocational or general education and training is much more complex than for the previous categories. Other methodologies would need to be utilised to determine if allocations are appropriate to the needs of society and the economy as a whole.

Nevertheless, this report has identified the amount of general or non-vocational education and training. In 2007, 21.6% of all tertiary education activity, or nearly 64,000 EFTS (and a smaller number of STMs) were generic or non-vocational education and training, and 23.5% of all EFTS and STM expenditure related to this category. This provides a starting point for consideration by government and society as to whether the allocation across this area is appropriate.

Table 9 - Workforce and training distribution for general education and training

| General education and training | EFTS | \$ millions |
|---|-----------------------------|----------------------------|
| Humanities | 24,692 (8.4%) ¹² | \$174 (8.3%) ¹² |
| Mathematics and sciences | 14,818 (5.0%) | \$147 (7.0%) |
| Languages | 11,220 (3.8%) | \$69 (3.3%) |
| General and mixed field | 9,704 (3.3%) | \$84 (4.0%) |
| Foundation skills | 3,191 (1.1%) | \$21 (1.0%) |
| Total general education and training | 63,812 (21.6%) | \$494 (23.5%) |
| All tertiary education and training | 295,657 | \$2,102 |

11. Percentages relate to the total for *vocational education and training*, not all tertiary education and training.

12. Percentages relate to **all** EFTS and STM tertiary education expenditure.

Examples of matching at industry level

To understand what the data used in this report looks like and to demonstrate how it could support an industry-led vocational education and training system, we have examined two industry sectors in detail – hospitality and transport.

They are both industries with ITOs that arrange training linked to the workplace through the STM system. They are also industries where there are many different providers (and types of providers) independently offering courses and qualifications through the EFTS system that have been developed and marketed towards specific jobs in their industries.

With the *Industry Skills Toolkit*, industry leaders can access detailed information showing what is currently being supplied by the tertiary education system for their industries and compare it with current labour market and workforce data. This provides an evidence and information base on which to consider future vocational education and training investment (both what and how much) for a particular industry or sector.

In other words, it's a starting point for interpreting and making recommendations on the current vocational education and training provision for an industry. The qualitative information that ITOs (and industry bodies and other key stakeholders) gather as part of their core legislated industry skills leadership role, provides them with the context for making sense of the data.

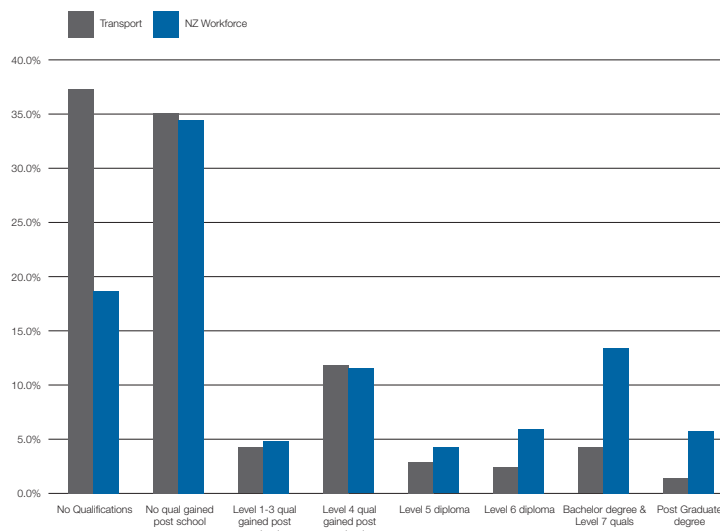
The transport sector

The context for skill demand

At the time of the 2006 Census there were 37,983 people working in the transport sector. This represents 1.91% of all people working in New Zealand at that time. The most up-to-date business demography data available relates to February 2009. At that time there were 39,040 people working in the sector or 1.98% of all workers. In the five years to February 2008 the number of workers in the transport sector increased from 34,959 to 39,040, an increase of 11.7%.

In 2006, 73.1% of workers in the transport sector had no post-school qualifications, 16% had a certificate (level 1 – 4) gained after leaving school, 5.2% had a diploma (level 5 or 6) and 5.6% had a bachelor or higher degree. This compares to 53.5% of all workers who had no post-school qualifications, 16.6% with a certificate, 10.6% with a diploma and 19.4% with a bachelor or higher degree.

Figure 1 - The proportion of people working in the transport sector by highest post-school qualification



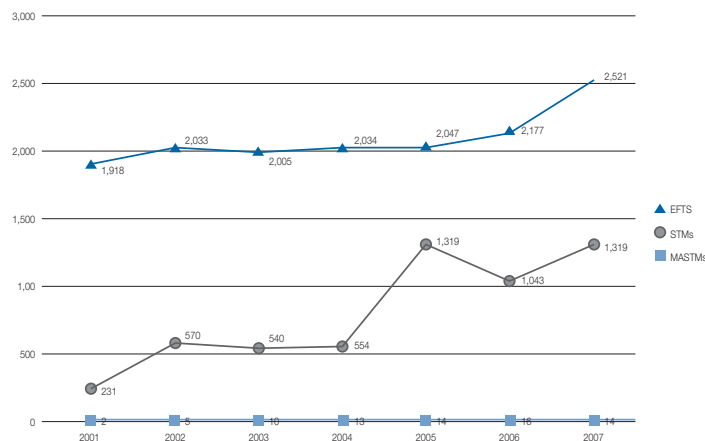
Source: 2006 Census of Population and Dwellings, Statistics New Zealand.

The current pattern of training supply

In 2007 there were 1,975 EFTS, 2,521 STMs and 14 Modern Apprenticeships STMs enrolled in qualifications in transport.

- EFTS – There were 1,975 EFTS provided in transport in 2007. This is a 471% increase since 2001 when 231 EFTS were provided. EFTS increased in four of the six years to 2007. In 2007 EFTS in transport made up 0.6% of all EFTS.
- STMs – In 2007 there were 2,521 STMs arranged in transport. This is a 31% increase since 2001 when 1,918 STMs were arranged, and STMs increased in five of the six years to 2007. In 2007 STMs in transport made up 4.2% of all STMs.
- MAs – Of the above STMs, 14 were Modern Apprenticeships in 2007. This represented 0.2% of all Modern Apprenticeships STMs arranged in 2007. This was seven times the number of Modern Apprenticeships in transport in 2001 when two were provided.

Figure 2 - EFTS, STMs and MAs in the transport sector 2001-2007



Source: Tertiary funding data, Tertiary Education Commission

There were 2,173 completions of transport qualifications in 2007, an increase of 185% since 2001. In 2007 the largest number of completions in transport was by students funded as STMs, followed by those funded as local qualification EFTS.

The hospitality sector

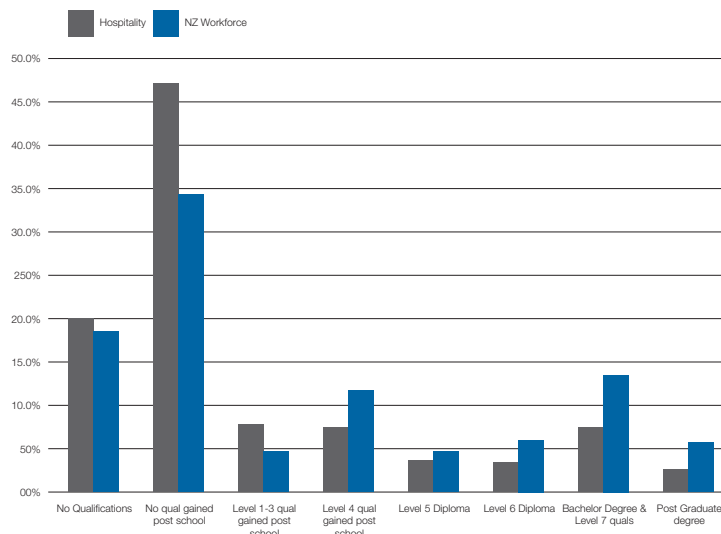
The context for skill demand

At the time of the 2006 Census there were 111,105 people working in the hospitality sector. This represented 5.6% of all people working in New Zealand at that time.

At the time of the most recent business demography survey, there were 137,080 people working in the sector or 6.96% of all workers. In the five years to February 2008 the number of workers in the hospitality sector increased from 117,010 to 137,080, an increase of 17.2%.

In 2006, 67.7% of workers in the hospitality sector had no post-school qualifications, 15.2% had a certificate (level 1 – 4) gained after leaving school, 6.9% had a diploma (level 5 or 6) and 10.2% had a bachelor or higher degree. This compares to 53.5% of all workers who had no post-school qualifications, 16.6% with a certificate, 10.6% with a diploma and 19.4% with a bachelor or higher degree.

Figure 3 - The proportion of people working in the hospitality sector by highest post-school qualification



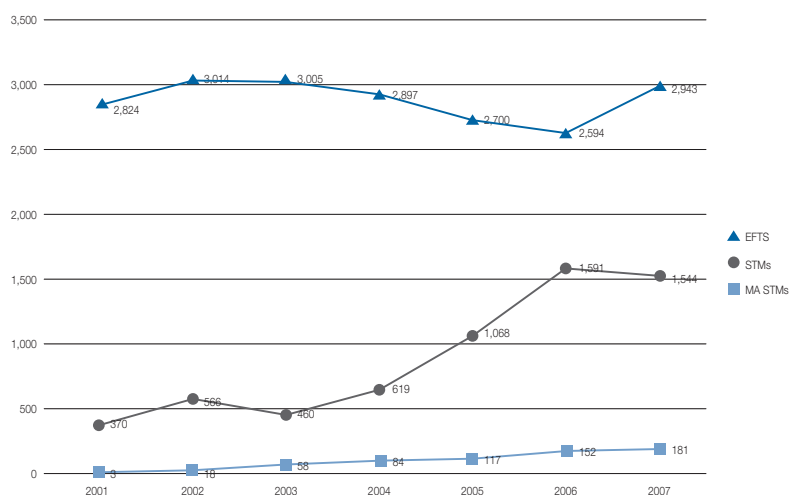
Source: 2006 Census of Population and Dwellings, Statistics New Zealand

The current pattern of training supply

In 2007 there were 2,109 EFTS, 1,544 STMs and 181 Modern Apprenticeships STMs enrolled in qualifications in hospitality.

- EFTS – There were 2,109 EFTS provided in hospitality in 2007. This was a 4% increase since 2001 when 2,361 EFTS were provided. EFTS increased in two of the six years to 2007. In 2007 EFTS in hospitality made up 1.3% of all EFTS.
- STMs – In 2007 there were 1,544 STMs arranged in hospitality. This is a 317% increase since 2001 when 370 STMs were arranged. STMs increased in four of the six years to 2007. In 2007 STMs in hospitality made up 2.6% of all STMs.
- MAs – Of the above STMs, 181 were Modern Apprenticeships in 2007. This represented 3.1% of all Modern Apprenticeships STMs arranged in 2007. This was 51 times the number of Modern Apprenticeships in hospitality in 2001 when three were provided.

Figure 4 - EFTS, STMs and MAs in the hospitality sector 2001-2007



Source: Tertiary funding data, Tertiary Education Commission

There were 2,540 completions of hospitality qualifications in 2007, a decrease of 29% since 2001 when 3,579 EFTS were provided. In 2007 the largest number of completions in hospitality was by students funded as local qualification EFTS followed by those funded as STMs.

Understanding the relationship between supply and demand

The above figures provide a snapshot of the current workforce in two industries, and the current amount of training supply for those industries. This information provides a base level from which to start discussing issues of skill supply and demand.

Identifying skill demand is a complex process. As a starting point, using basic information about the industry such as historic growth patterns, industry demographics etc. It is possible to estimate the level of 'new' skill demand – in other words, the number of new entrants to the industry that need to be trained as businesses expand or replace workers that leave the industry, in order to keep current skill levels as they are.

For example, using some generic modelling, in 2016 there would be around 6,000 more workers in the transport sector due to growth, and 57.5% of workers in the transport sector will be workers who are currently working in the industry. In the hospitality sector, there would be around 29,940 more workers due to growth, and 54.5% of workers in the hospitality sector will be workers who are currently working in the industry.

However, this cannot be the point where discussion stops. To accurately understand the true relationship between supply and demand requires an appreciation of the specific skill-related issues facing an industry. These can affect two aspects of skill supply – the amount of training that needs to occur, and the nature of the training that needs to occur.

The issue of 'new demand' is a clear example of the importance of understanding the nature of the industry. For example, some industries may be characterised by high rates of staff turnover, which suggests that more training will be needed than in an industry with similar predicted growth patterns but lower turnover rates. Even in a high-turnover industry, though, it's important to distinguish between 'intra-industry' turnover, where staff move jobs but stay within the same industry, and 'inter-industry' turnover, where people shift to another industry completely. In the first instance, an employee's skills remain available to the industry even if they're utilised by another employer, while in the second they're lost to the industry and will probably need to be replaced.

Similarly, the consideration of supply must account for future factors that may change the pattern of likely demand. The Hospitality Standards Institute, for example, has identified that the upcoming Rugby World Cup is likely to have a significant impact on the need for hospitality staff. In other words, estimating the demand for skills needs to be a forward-looking process that takes account of how an industry, and the context in which it does business, will change in the future,

Furthermore, sometimes it is not enough to simply maintain the existing stock of skills. According to Tranzqual, for example, 2006 research from the Road Transport Forum identified an existing shortage of around 1,300 drivers in the road freight transport industry. This may mean that a level of apparent 'over-supply' of training may be needed in order to meet the actual demand from industry for an appropriately skilled workforce.

A second, and perhaps more important, key to interpreting demand is understanding the nature of the skill supply-demand relationship. For example, Tranzqual has noted a widespread perception across the road freight transport sector that there is a critical shortage of 'good' drivers across the sector – possibly caused by fragmented institution-based training in the early 2000s. In this situation, training supply needs to not only meet the needs of industry expansion and address the replacement of workers that leave the industry, but also upgrade the skill needs of existing workers that have already been trained.

Similarly, changes to the nature of the industry or its practices can lead to the need for upskilling and retraining. The introduction of new technologies or changes in legislation can significantly impact on the way people do their job, and therefore the skills and knowledge they need.

It is this interpretation role that is one of the most critical for bodies such as ITOs, and why it is vital that they are involved in the process of matching skills supply and demand. Bringing information about the specific situation in an industry – whether obtained by formalised research or based on day-to-day interactions with firms and relevant organisations – is critical to making sense of supply and demand.

Further work and supporting tools

This report sets out a broad approach to how industries' skill demands can be better matched by the supply of post-compulsory or tertiary education and training.

It makes it clear that an “across-the-board” approach to this task is fundamentally flawed and bound to fail; different participants, approaches and tools are required for the three different types of tertiary education and training.

Equally, within each of these three types or forms for skill development, there will be highly variant needs or demands, and equally variant appropriate responses in terms of supply.

The Federation has worked with its member ITOs to develop a range of tools, including the *Industry Skills Toolkit*, a set of analytical tools that enable analysis of supply and demand related data at a detailed level. This will enable industry groups, government and sector groups to work to better match supply and demand and thus achieve better outcomes for employees, employers, and industries in terms of skill development and utilisation.

Appendix 1: Alignment of broad industry sectors with ANZSIC code groups

Table 10 – Broad industry sectors

| (Source: Census data 2006) | Employees | % of workforce |
|---|------------------|----------------|
| Industries with ITO coverage | | |
| Services and transport | 730,902 | 39.0% |
| Manufacturing, engineering and electronics | 221,904 | 11.8% |
| Primary | 160,599 | 8.6% |
| Building and construction | 183,834 | 9.8% |
| | | |
| Industries with shared ITO coverage | | |
| Public, community and health | | |
| with full ITO coverage | 159,747 | 8.5% |
| with shared or partial ITO coverage | 70,728 | 3.8% |
| | | |
| <i>Workforce with ITO coverage</i> | 1,456,986 | 77.7% |
| | | |
| Industries with no or limited ITO coverage | 166,263 | 8.9% |
| Teaching and education | 151,554 | 8.1% |
| Creative and performing arts | 14,709 | 0.8% |
| | | |
| Cross-sectoral 'industries' or services | 180,717 | 9.6% |
| Management and accounting services | 55,314 | 3.0% |
| Computing and internet services | 29,598 | 1.6% |
| Law and legal services | 16,638 | 0.9% |
| Administration | 28,137 | 1.5% |
| Scientific research and services | 17,724 | 0.9% |
| Other activities | 33,306 | 1.8% |
| | | |
| Total | 1,874,694 | |

Services and transport sectors – included ANZSIC codes

| |
|--|
| C161100 Printing |
| C161200 Printing Support Services |
| F331100 Wool Wholesaling |
| F331200 Cereal Grain Wholesaling |
| F331900 Other Agricultural Product Wholesaling |
| F332100 Petroleum Product Wholesaling |
| F332200 Metal and Mineral Wholesaling |
| F332300 Industrial and Agricultural Chemical Product Wholesaling |
| F333100 Timber Wholesaling |
| F333200 Plumbing Goods Wholesaling |
| F333900 Other Hardware Goods Wholesaling |
| F341100 Agricultural and Construction Machinery Wholesaling |
| F341900 Other Specialised Industrial Machinery and Equipment Wholesaling |
| F349100 Professional and Scientific Goods Wholesaling |
| F349200 Computer and Computer Peripherals Wholesaling |
| F349300 Telecommunication Goods Wholesaling |
| F349400 Other Electrical and Electronic Goods Wholesaling |
| F349900 Other Machinery and Equipment Wholesaling n.e.c |
| F350100 Car Wholesaling |
| F350200 Commercial Vehicle Wholesaling |
| F350300 Trailer and Other Motor Vehicle Wholesaling |
| F350400 Motor Vehicle New Part Wholesaling |
| F350500 Motor Vehicle Dismantling and Used Part Wholesaling |
| F360100 General Line Groceries Wholesaling |
| F360200 Meat, Poultry and Smallgoods Wholesaling |
| F360300 Dairy Produce Wholesaling |
| F360400 Fish and Seafood Wholesaling |
| F360500 Fruit and Vegetable Wholesaling |
| F360600 Liquor and Tobacco Product Wholesaling |
| F360900 Other Grocery Wholesaling |
| F371100 Textile Product Wholesaling |
| F371200 Clothing and Footwear Wholesaling |
| F372000 Pharmaceutical and Toiletry Goods Wholesaling |
| F373100 Furniture and Floor Coverings Wholesaling |
| F373200 Jewellery and Watch Wholesaling |
| F373300 Kitchen and Dining Ware Wholesaling |
| F373400 Toy and Sporting Goods Wholesaling |
| F373500 Book and Magazine Wholesaling |
| F373600 Paper Product Wholesaling |
| F373900 Other Goods Wholesaling n.e.c. |

| |
|---|
| F380000 Commission Based Wholesaling |
| G391100 Car Retailing |
| G391200 Motor Cycle Retailing |
| G391300 Trailer and Other Motor Vehicle Retailing |
| G392100 Motor Vehicle Parts Retailing |
| G392200 Tyre Retailing |
| G400000 Fuel Retailing |
| G411000 Supermarket and Grocery Stores |
| G412100 Fresh Meat, Fish and Poultry Retailing |
| G412200 Fruit and Vegetable Retailing |
| G412300 Liquor Retailing |
| G412900 Other Specialised Food Retailing |
| G421100 Furniture Retailing |
| G421200 Floor Coverings Retailing |
| G421300 Houseware Retailing |
| G421400 Manchester and Other Textile Goods Retailing |
| G422100 Electrical, Electronic and Gas Appliance Retailing |
| G422200 Computer and Computer Peripherals Retailing |
| G422900 Other Electrical and Electronic Goods Retailing |
| G423100 Hardware and Building Supplies Retailing |
| G423200 Garden Supplies Retailing |
| G424100 Sport and Camping Equipment Retailing |
| G424200 Entertainment Media Retailing |
| G424300 Toy and Game Retailing |
| G424400 Newspaper and Book Retailing |
| G424500 Marine Equipment Retailing |
| G425100 Clothing Retailing |
| G425200 Footwear Retailing |
| G425300 Watch and Jewellery Retailing |
| G425900 Other Personal Accessories Retailing |
| G426000 Department Stores |
| G427100 Pharmaceutical, Cosmetic and Toiletry Goods Retailing |
| G427200 Stationery Goods Retailing |
| G427300 Antique and Used Goods Retailing |
| G427400 Flower Retailing |
| G427900 Other Store-Based Retailing n.e.c. |
| G431000 Non Store Retailing |
| G432000 Retail Commission Based Buying and/or Selling |
| H440000 Accommodation |
| H451100 Cafes and Restaurants |
| H451200 Takeaway Food Services |

| |
|---|
| H451300 Catering Services |
| H452000 Pubs, Taverns and Bars |
| H453000 Clubs (Hospitality) |
| I461000 Road Freight Transport |
| I462100 Interurban and Rural Bus Transport |
| I462200 Urban Bus Transport (Including Tramway) |
| I462300 Taxi and Other Road Transport |
| I471000 Rail Freight Transport |
| I472000 Rail Passenger Transport |
| I481000 Water Freight Transport |
| I482000 Water Passenger Transport |
| I490000 Air and Space Transport |
| I501000 Scenic and Sightseeing Transport |
| I502100 Pipeline Transport |
| I502900 Other Transport n.e.c. |
| I510200 Courier Pick-up and Delivery Services |
| I521100 Stevedoring Services |
| I521200 Port and Water Transport Terminal Operations |
| I521900 Other Water Transport Support Services |
| I522000 Airport Operations and Other Air Transport Support Services |
| I529100 Customs Agency Services |
| I529200 Freight Forwarding Services |
| I529900 Other Transport Support Services n.e.c |
| I530100 Grain Storage Services |
| I530900 Other Warehousing and Storage Services |
| J541100 Newspaper Publishing |
| J541200 Magazine and Other Periodical Publishing |
| J541300 Book Publishing |
| J541400 Directory and Mailing List Publishing |
| J541900 Other Publishing (except Software, Music and Internet) |
| J561000 Radio Broadcasting |
| J562100 Free-to-Air Television Broadcasting |
| J562200 Cable and Other Subscription Programming |
| K622100 Banking |
| K622200 Building Society Operation |
| K622300 Credit Union Operation |
| K622900 Other Depository Financial Intermediation |
| K623000 Non-depository Financing |
| K624000 Financial Asset Investing |
| K631000 Life Insurance |
| K632100 Health Insurance |

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|---|
| K632200 General Insurance |
| K633000 Superannuation Funds |
| K641100 Financial Asset Broking Services |
| K641900 Other Auxiliary Finance and Investment Services |
| K642000 Auxiliary Insurance Services |
| L661100 Passenger Car Rental and Hiring |
| L661900 Other Motor Vehicle and Transport Equipment Rental and Hiring |
| L662000 Farm Animals and Bloodstock Leasing |
| L663100 Heavy Machinery and Scaffolding Rental and Hiring |
| L663200 Video and Other Electronic Media Rental |
| L663900 Other Goods and Equipment Rental and Hiring n.e.c. |
| L664000 Non-financial Intangible Assets (except Copyrights) Leasing |
| L671100 Residential Property Operators |
| L671200 Non-Residential Property Operators |
| L672000 Real Estate Services |
| M694000 Advertising Services |
| M695000 Market Research and Statistical Services |
| N722000 Travel Agency and Tour Arrangement Services |
| N729300 Credit Reporting and Debt Collection Services |
| N729400 Call Centre Operation |
| N732000 Packaging Services |
| P821100 Sports and Physical Recreation Instruction |
| R891000 Museum Operation |
| R892100 Zoological and Botanic Gardens Operation |
| R892200 Nature Reserves and Conservation Parks Operation |
| R911100 Health and Fitness Centres and Gymnasias Operation |
| R911200 Sport and Physical Recreation Clubs and Sports Professionals |
| R911300 Sports and Physical Recreation Venues, Grounds and Facilities Operation |
| R911400 Sport and Physical Recreation Administrative Service |
| R913100 Amusement Parks and Centres Operation |
| R913900 Amusement and Other Recreation Activities n.e.c. |
| R920100 Casino Operation |
| R920200 Lottery Operation |
| R920900 Other Gambling Activities |
| S941100 Automotive Electrical Services |
| S941200 Automotive Body, Paint and Interior Repair |
| S941900 Other Automotive Repair and Maintenance |
| S942100 Domestic Appliance Repair and Maintenance |
| S942200 Electronic (except Domestic Appliance) and Precision Equipment Repair and Maintenance |
| S942900 Other Machinery and Equipment Repair and Maintenance |
| S949100 Clothing and Footwear Repair |

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| S949900 Other Repair and Maintenance n.e.c. |
| S951100 Hairdressing and Beauty Services |
| S951200 Diet and Weight Reduction Centre Operation |
| S952000 Funeral, Crematorium and Cemetery Services |
| S953100 Laundry and Dry-Cleaning Services |
| S953300 Parking Services |
| S953900 Other Personal Services n.e.c. |

Manufacturing, engineering and electronics sectors – included ANZSIC codes

| |
|---|
| C111100 Meat Processing |
| C111200 Poultry Processing |
| C111300 Cured Meat and Smallgoods Manufacturing |
| C112000 Seafood Processing |
| C113100 Milk and Cream Processing |
| C113200 Ice Cream Manufacturing |
| C113300 Cheese and Other Dairy Product Manufacturing |
| C114000 Fruit and Vegetable Processing |
| C115000 Oil and Fat Manufacturing |
| C116100 Grain Mill Product Manufacturing |
| C116200 Cereal, Pasta and Baking Mix Manufacturing |
| C117100 Bread Manufacturing (Factory-based) |
| C117200 Cake and Pastry Manufacturing (Factory-based) |
| C117300 Biscuit Manufacturing (Factory-based) |
| C117400 Bakery Product Manufacturing (Non-factory-based) |
| C118100 Sugar Manufacturing |
| C118200 Confectionery Manufacturing |
| C119100 Potato Crisps and Corn Chips Manufacturing |
| C119200 Prepared Animal and Bird Feed Manufacturing |
| C119900 Other Food Products Manufacturing n.e.c. |
| C121100 Soft Drink, Cordial and Syrup Manufacturing |
| C121200 Beer Manufacturing |
| C121300 Spirit Manufacturing |
| C121400 Wine and Other Alcoholic Beverage Manufacturing |
| C122000 Cigarette and Tobacco Product Manufacturing |
| C131100 Wool Scouring |
| C131200 Natural Fibre Textile Manufacturing |
| C131300 Synthetic Fibre Textile Manufacturing |
| C132000 Leather Tanning, Fur Dressing and Leather Product Manufacturing |
| C133100 Textile Floor Covering Manufacturing |
| C133200 Rope, Cordage and Twine Manufacturing |
| C133300 Cut and Sewn Textile Product Manufacturing |

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| C133400 Textile Finishing and Other Textile Product Manufacturing |
| C134000 Knitted Product Manufacturing |
| C135100 Clothing Manufacturing |
| C135200 Footwear Manufacturing |
| C149100 Prefabricated Wooden Building Manufacturing |
| C149200 Wooden Structural Fittings and Components Manufacturing |
| C149300 Veneer and Plywood Manufacturing |
| C149400 Reconstituted Wood Product Manufacturing |
| C149900 Other Wood Product Manufacturing n.e.c. |
| C151000 Pulp, Paper and Paperboard Manufacturing |
| C152100 Corrugated Paperboard and Paperboard Container Manufacturing |
| C152200 Paper Bag and Sack Manufacturing |
| C152300 Paper Stationery Manufacturing |
| C152400 Sanitary Paper Product Manufacturing |
| C152900 Other Converted Paper Product Manufacturing |
| C170100 Petroleum Refining and Petroleum Fuels Manufacturing |
| C170900 Other Petroleum and Coal Product Manufacturing |
| C181100 Industrial Gases Manufacturing |
| C181200 Basic Organic Chemical Manufacturing |
| C181300 Basic Inorganic Chemical Manufacturing |
| C182100 Synthetic Resin and Synthetic Rubber Manufacturing |
| C182900 Other Basic Polymer Manufacturing |
| C183100 Fertiliser Manufacturing |
| C183200 Pesticide Manufacturing |
| C184100 Human Pharmaceutical and Medicinal Product Manufacturing |
| C184200 Veterinary Pharmaceutical and Medicinal Product Manufacturing |
| C185100 Cleaning Compound Manufacturing |
| C185200 Cosmetic and Toiletry Preparation Manufacturing |
| C189100 Photographic Chemical Manufacturing |
| C189200 Explosives Manufacturing |
| C189900 Other Basic Chemical Product Manufacturing n.e.c. |
| C191100 Polymer Film and Sheet Packaging Material Manufacturing |
| C191200 Rigid and Semi Rigid Polymer Product Manufacturing |
| C191300 Polymer Foam Product Manufacturing |
| C191400 Tyre Manufacturing |
| C191500 Adhesive Manufacturing |
| C191600 Paint and Coatings Manufacturing |
| C191900 Other Polymer Product Manufacturing |
| C192000 Natural Rubber Product Manufacturing |
| C201000 Glass and Glass Product Manufacturing |
| C202100 Clay Brick Manufacturing |

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| C202900 Other Ceramic Product Manufacturing |
| C203100 Cement and Lime Manufacturing |
| C203200 Plaster and Gypsum Product Manufacturing |
| C203300 Ready-Mixed Concrete Manufacturing |
| C203400 Concrete Product Manufacturing |
| C209000 Other Non-Metallic Mineral Product Manufacturing |
| C211000 Iron Smelting and Steel Manufacturing |
| C212100 Iron and Steel Casting |
| C212200 Steel Pipe and Tube Manufacturing |
| C213100 Alumina Production |
| C213200 Aluminium Smelting |
| C213300 Copper, Silver, Lead, and Zinc Smelting and Refining |
| C213900 Other Basic Non-Ferrous Metal Manufacturing |
| C214100 Non-Ferrous Metal Casting |
| C214200 Aluminium Rolling, Drawing, Extruding |
| C214900 Other Basic Non-Ferrous Metal Product Manufacturing |
| C221000 Iron and Steel Forging |
| C222100 Structural Steel Fabricating |
| C222200 Prefabricated Metal Building Manufacturing |
| C222300 Architectural Aluminium Product Manufacturing |
| C222400 Metal Roof and Guttering Manufacturing (except Aluminium) |
| C222900 Other Structural Metal Product Manufacturing |
| C223100 Boiler, Tank and Other Heavy Gauge Metal Container Manufacturing |
| C223900 Other Metal Container Manufacturing |
| C224000 Other Sheet Metal Product Manufacturing |
| C229100 Spring and Wire Product Manufacturing |
| C229200 Nut, Bolt, Screw and Rivet Manufacturing |
| C229300 Metal Coating and Finishing |
| C229900 Other Fabricated Metal Product Manufacturing n.e.c. |
| C231100 Motor Vehicle Manufacturing |
| C231200 Motor Vehicle Body and Trailer Manufacturing |
| C231300 Automotive Electrical Components Manufacturing |
| C231900 Other Motor Vehicle Parts Manufacturing |
| C239100 Shipbuilding and Repair Services |
| C239200 Boatbuilding and Repair Services |
| C239300 Railway Rolling Stock Manufacturing and Repair Services |
| C239400 Aircraft Manufacturing and Repair Services |
| C239900 Other Transport Equipment Manufacturing n.e.c. |
| C241100 Photographic, Optical and Ophthalmic Equipment Manufacturing |
| C241200 Medical and Surgical Equipment Manufacturing |
| C241900 Other Professional and Scientific Equipment Manufacturing |

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| C242100 Computer and Electronic Office Equipment Manufacturing |
| C242200 Communications Equipment Manufacturing |
| C242900 Other Electronic Equipment Manufacturing |
| C243100 Electric Cable and Wire Manufacturing |
| C243200 Electric Lighting Equipment Manufacturing |
| C243900 Other Electrical Equipment Manufacturing |
| C244100 Whiteware Appliance Manufacturing |
| C244900 Other Domestic Appliance Manufacturing |
| C245100 Pumps and Compressors Manufacturing |
| C245200 Fixed Space Heating, Cooling and Ventilation Equipment Manufacturing |
| C246100 Agricultural Machinery and Equipment Manufacturing |
| C246200 Mining and Construction Machinery Manufacturing |
| C246300 Machine Tool and Parts Manufacturing |
| C246900 Other Specialised Machinery and Equipment Manufacturing |
| C249100 Lifting and Material Handling Equipment Manufacturing |
| C249900 Other Machinery and Equipment Manufacturing n.e.c. |
| C251100 Wooden Furniture and Upholstered Seat Manufacturing |
| C251200 Metal Furniture Manufacturing |
| C251300 Mattress Manufacturing |
| C251900 Other Furniture Manufacturing |
| C259100 Jewellery and Silverware Manufacturing |
| C259200 Toy, Sporting and Recreational Product Manufacturing |
| C259900 Other Manufacturing n.e.c. |
| J580100 Wired Telecommunications Network Operation |
| J580200 Other Telecommunications Network Operation |
| J580900 Other Telecommunications Services |
| M692300 Engineering Design and Engineering Consulting Services |

Building, construction and infrastructure sectors – including ANZSIC codes

| |
|---|
| D261100 Fossil Fuel Electricity Generation |
| D261200 Hydro-electricity Generation |
| D261900 Other Electricity Generation |
| D262000 Electricity Transmission |
| D263000 Electricity Distribution |
| D264000 On Selling Electricity and Electricity Market Operation |
| D270000 Gas Supply |
| D281100 Water Supply |
| D281200 Sewerage and Drainage Services |
| D291100 Solid Waste Collection Services |
| D291900 Other Waste Collection Services |
| D292100 Waste Treatment and Disposal Services |
| D292200 Waste Remediation and Materials Recovery Services |
| E301100 House Construction |
| E301900 Other Residential Building Construction |
| E302000 Non-Residential Building Construction |
| E310100 Road and Bridge Construction |
| E310900 Other Heavy and Civil Engineering Construction |
| E321100 Land Development and Subdivision |
| E321200 Site Preparation Services |
| E322100 Concreting Services |
| E322200 Bricklaying Services |
| E322300 Roofing Services |
| E322400 Structural Steel Erection Services |
| E323100 Plumbing Services |
| E323200 Electrical Services |
| E323300 Air Conditioning and Heating Services |
| E323400 Fire and Security Alarm Installation Services |
| E323900 Other Building Installation Services |
| E324100 Plastering and Ceiling Services |
| E324200 Carpentry Services |
| E324300 Tiling and Carpeting Services |
| E324400 Painting and Decorating Services |
| E324500 Glazing Services |
| E329100 Landscape Construction Services |
| E329200 Hire of Construction Machinery with Operator |
| E329900 Other Construction Services n.e.c. |
| M692100 Architectural Services |
| M692200 Surveying and Mapping Services |
| N731100 Buildings Cleaning Services |
| N731200 Buildings Pest Control Services |

Primary sectors – included ANZSIC codes

| |
|---|
| A011100 Nursery Production (Under Cover) |
| A011200 Nursery Production (Outdoors) |
| A011300 Turf Growing |
| A011400 Floriculture Production (Under Cover) |
| A011500 Floriculture Production (Outdoors) |
| A012100 Mushroom Growing |
| A012200 Vegetable Growing (Under Cover) |
| A012300 Vegetable Growing (Outdoors) |
| A013100 Grape Growing |
| A013200 Kiwifruit Growing |
| A013300 Berry Fruit Growing |
| A013400 Apple and Pear Growing |
| A013500 Stone Fruit Growing |
| A013600 Citrus Fruit Growing |
| A013700 Olive Growing |
| A013900 Other Fruit and Tree Nut Growing |
| A014100 Sheep Farming (Specialised) |
| A014200 Beef Cattle Farming (Specialised) |
| A014300 Beef Cattle Feedlots (Specialised) |
| A014400 Sheep-Beef Cattle Farming |
| A014500 Grain-Sheep and Grain-Beef Cattle Farming |
| A014600 Rice Growing |
| A014900 Other Grain Growing |
| A015100 Sugar Cane Growing |
| A015200 Cotton Growing |
| A015900 Other Crop Growing n.e.c. |
| A016000 Dairy Cattle Farming |
| A017100 Poultry Farming (Meat) |
| A017200 Poultry Farming (Eggs) |
| A018000 Deer Farming |
| A019100 Horse Farming |
| A019200 Pig Farming |
| A019300 Beekeeping |
| A019900 Other Livestock Farming n.e.c. |
| A020100 Longline and Rack (Offshore) Aquaculture |
| A020200 Caged (Offshore) Aquaculture |
| A020300 Onshore Aquaculture |
| A030100 Forestry |
| A030200 Logging |
| A041100 Rock Lobster and Crab Potting |
| A041200 Prawn Fishing |

| |
|---|
| A041300 Line Fishing |
| A041400 Fish Trawling, Seining and Netting |
| A041900 Other Fishing |
| A042000 Hunting and Trapping |
| A051000 Forestry Support Services |
| A052100 Cotton Ginning |
| A052200 Shearing Services |
| A052900 Other Agriculture and Fishing Support Services |
| B060000 Coal Mining |
| B070000 Oil and Gas Extraction |
| B080100 Iron Ore Mining |
| B080200 Bauxite Mining |
| B080300 Copper Ore Mining |
| B080400 Gold Ore Mining |
| B080500 Mineral Sand Mining |
| B080600 Nickel Ore Mining |
| B080700 Silver-Lead-Zinc Ore Mining |
| B080900 Other Metal Ore Mining |
| B091100 Gravel and Sand Quarrying |
| B091900 Other Construction Material Mining |
| B099000 Other Non-Metallic Mineral Mining and Quarrying |
| B101100 Petroleum Exploration |
| B101200 Mineral Exploration |
| B109000 Other Mining Support Services |
| C141100 Log Sawmilling |
| C141200 Wood Chipping |
| C141300 Timber Resawing and Dressing |
| M697000 Veterinary Services |
| N731300 Gardening Services |
| R912100 Horse and Dog Racing Administration and Track Operation |
| R912900 Other Horse and Dog Racing Activities |

Public, community and health sectors – included ANZSIC codes

Areas with full ITO coverage

| |
|--|
| K621000 Central Banking |
| O751000 Central Government Administration |
| O752000 State Government Administration |
| O753000 Local Government Administration |
| O754000 Justice |
| O755100 Domestic Government Representation |
| O760000 Defence |
| O771100 Police Services |
| O771200 Investigation and Security Services |
| O771300 Fire Protection and Other Emergency Services (except Ambulance Services) |
| O771400 Correctional and Detention Services |
| O771900 Other Public Order and Safety Services |
| O772000 Regulatory Services |
| Q853900 Other Allied Health Services |
| Q859100 Ambulance Services |
| Q859900 Other Health Care Services n.e.c. |
| Q860100 Aged Care Residential Services |
| Q860900 Other Residential Care Services |
| Q879000 Other Social Assistance Services |

Areas with shared or partial ITO coverage

| |
|---|
| Q840100 Hospitals (except Psychiatric Hospitals) |
| Q840200 Psychiatric Hospitals |
| Q851100 General Practice Medical Services |
| Q851200 Specialist Medical Services |
| Q852000 Pathology and Diagnostic Imaging Services |
| Q853100 Dental Services |
| Q853200 Optometry and Optical Dispensing |
| Q853300 Physiotherapy Services |
| Q853400 Chiropractic and Osteopathic Services |

Teaching and education sector – included ANZSIC codes

| |
|---|
| P801000 Preschool Education |
| P802100 Primary Education |
| P802200 Secondary Education |
| P802300 Combined Primary and Secondary Education |
| P802400 Special School Education |
| P810100 Technical and Vocational Education and Training |
| P810200 Higher Education |
| P821200 Arts Education |
| P821900 Adult, Community and Other Education n.e.c. |
| P822000 Educational Support Services |
| Q871000 Child Care Services |

Creative and performing arts sector – included ANZSIC codes

| |
|---|
| C162000 Reproduction of Recorded Media |
| J551100 Motion Picture and Video Production |
| J551200 Motion Picture and Video Distribution |
| J551300 Motion Picture Exhibition |
| J551400 Postproduction Services and Other Motion Picture and Video Activities |
| J552100 Music Publishing |
| J552200 Music and Other Sound Recording Activities |
| M699100 Professional Photographic Services |
| R900100 Performing Arts Operation |
| R900200 Creative Artists, Musicians, Writers and Performers |
| R900300 Performing Arts Venue Operation |
| S953200 Photographic Film Processing |

Management and accounting – included ANZSIC codes

| |
|---|
| M693200 Accounting Services |
| M696100 Corporate Head Office Management Services |
| M696200 Management Advice and Other Consulting Services |

Computing, information and internet – included ANZSIC codes

| |
|--|
| J542000 Software Publishing |
| J570000 Internet Publishing and Broadcasting |
| J591000 Internet Access Services |
| J592100 Data Processing and Web Hosting Services |
| J592200 Electronic Information Storage Services |
| J601000 Libraries and Archives |
| J602000 Other Information Services |
| M700000 Computer Systems Design and Related Services |

Administration services – included ANZSIC codes

| |
|---|
| N721100 Employment Placement and Recruitment Services |
| N721200 Labour Supply Services |
| N729100 Office Administrative Services |
| N729200 Document Preparation Services |
| N729900 Other Administrative Services n.e.c. |

Law and legal services – included ANZSIC codes

| |
|------------------------|
| M693100 Legal Services |
|------------------------|

Other activities – included ANZSIC codes

| |
|---|
| I510100 Postal Services |
| O755200 Foreign Government Representation |
| S953400 Brothel Keeping and Prostitution Services |
| S954000 Religious Services |
| S955100 Business and Professional Association Services |
| S955200 Labour Association Services |
| S955900 Other Interest Group Services n.e.c |
| S960100 Private Households Employing Staff |
| S960200 Undifferentiated Goods-Producing Activities of Private Households for Own Use |
| S960300 Undifferentiated Service-Producing Activities of Private Households for Own Use |

Scientific research and services – included ANZSIC codes

| |
|--|
| M691000 Scientific Research Services |
| M692400 Other Specialised Design Services |
| M692500 Scientific Testing and Analysis Services |
| M699900 Other Professional, Scientific and Technical Services n.e.c. |

Appendix 2: Comparing tertiary education sectors

New Zealand has a wide variety of different tertiary education organisations (TEOs), each of which plays a distinctive part in the overall pattern of tertiary education. Table 11 below illustrates the size of each TEO sector in 2007 by the number of people and EFTS/STMs, and how much the Government spent on training or tuition subsidies. It also provides a rough picture of the average amount of subsidy spent on a learner or EFTS/STM in that year.

Table 11 - Comparative TEO size and government expenditure, 2007

| TEO sector | No. of trainees / domestic students and STMs / EFTS ¹³ | Expenditure on training / tuition ¹⁴ | \$ per learner and STM / EFTS ¹⁵ |
|---|---|---|--|
| Industry Training Organisations | 185,660 trainees 59,940 STMs | \$153 million | \$824 / trainee \$2,553 / STM ¹⁶ |
| Private Training Establishments and OTEPs | 65,442 students 23,032 EFTS | \$144 million | \$2,199 / student \$6,252 / EFTS |
| Institutes of Technology and Polytechnics | 186,948 students 67,237 EFTS | \$499 million | \$2,669 / student \$7,415 / EFTS |
| Wānanga | 40,327 students 22,045 EFTS | \$125 million | \$3,100 / student \$5,689 / EFTS |
| Universities | 147,128 students 110,271 EFTS | \$1106 million | \$7,517 / student \$10,031 / EFTS |

The following definitions, taken from the Ministry of Education's *Profile and Trends 2007* report, briefly describe each of the sectors.

Institutes of Technology and Polytechnics (ITPs)

Institutes of Technology and Polytechnics are public tertiary education institutions that are characterised by a wider diversity of vocational and professional programmes.

Other Tertiary Education Providers (OTEPs)

Other Tertiary Education Providers are organisations that deliver programmes of tertiary education or in support of tertiary education of some national significance, and are recognised by the Minister of Education under section 321 of the Education Act 1989.

Private Training Establishments (PTEs)

A Private Training Establishment is defined in the Education Act 1989 as "an establishment, other than a public tertiary education institution, that provides post-school education or vocational training". PTEs include not only privately owned providers, but also those operated by iwi, trusts, and other organisations.

13. ITO data supplied by TEC. Provider student numbers data taken Ministry of Education, http://www.educationcounts.govt.nz/statistics/tertiary_education/participation, downloaded 01/06/2009.

Provider EFTS data taken from Ministry of Education, 2008, Profiles and Trends 2007, Wellington: Ministry of Education (p 213).

14. Data taken from Ministry of Education, 2008, Profiles and Trends 2007, Wellington: Ministry of Education (p 213). ITO data includes STM funding only.

15. \$ / EFTS taken from Ministry of Education, 2008, Profiles and Trends 2007, Wellington: Ministry of Education (p 213).

16. The actual \$ / STM is lower than the single per-STM funding rate because most ITOs over-achieve against the number of STMs for which they are funded.

University

Universities are public tertiary education institutions that are primarily concerned with advanced learning and knowledge, research, and teaching to a postgraduate level.

Wānanga

Wānanga are public tertiary education institutions that provide programmes with an emphasis on the application of knowledge regarding ahuatanga Māori (Māori traditions) according to tikanga Māori.

Industry Training Organisations

Industry Training Organisations (ITOs) facilitate workplace learning for trainees in employment by setting national skills standards for their industry. In addition to providing leadership on skill and training needs, ITOs develop appropriate training arrangements for their industry, monitor training quality and arrange for the assessment of trainees. ITOs also provide information and advice to trainees and their employers.

About the Industry Training Federation

The Industry Training Federation is a membership-based organisation that represents the interests of New Zealand's 39 Industry Training Organisations. The Industry Training Federation's vision is a skilled and productive New Zealand, and its mission is leading a skilled future: supporting Industry Training Organisations' transformation of New Zealand's workforce and workplaces.

Agriculture ITO

www.agricultureito.ac.nz

Apparel & Textile ITO

www.atito.org.nz

Aviation, Tourism & Travel ITO

www.attto.org.nz

Boating ITO

www.nzmarine.com

Building & Construction ITO

www.bcito.org.nz

Building Service Contractors ITO

www.bsc.org.nz

Careerforce

www.careerforce.org.nz

Communications & Media ITO

www.cmito.co.nz

Competenz

www.competenz.org.nz

Creative Trades ITO

www.creativetradesito.co.nz

Electricity Supply ITO

www.esito.org.nz

ETITO

www.etito.co.nz

Equine ITO

www.equineito.co.nz

Extractives ITO

www.exito.org.nz

Fire & Rescue Services ITO

www.frsito.org.nz

Flooring ITO

www.flooringito.org.nz

FITEC

www.fitec.org.nz

Funeral Service Training Trust of NZ

www.fsst.org.nz

Hairdressing ITO

www.hito.org.nz

Horticulture ITO

www.hortito.org.nz

Hospitality Standards Institute

www.hsi.co.nz

Infratrain

www.infratrain.co.nz

Joinery ITO

www.jito.org.nz

Learning State

www.learningstate.govt.nz

Local Government ITO

www.lgito.org.nz

MITO

www.mito.org.nz

NZITO

www.nzito.co.nz

Opportunity Training

www.opportunitytraining.org.nz

Pharmacy ITO

www.pito.org.nz

Plastics & Materials Processing ITO

www.pampito.org.nz

Plumbing, Gasfitting, Drainlaying & Roofing ITO

www.ito.co.nz

REINZ ITO

www.reinz.org.nz

Retail Institute

www.retailinstitute.org.nz

Retail Meat ITO

www.retailmeat.org.nz

Seafood ITO

www.sito.co.nz

Skills Active

www.skillsactive.org.nz

Sports Turf ITO

www.nzstito.org.nz

Social Services ITO

www.socialservices.org.nz

Tranzqual ITO

www.tranzqual.org.nz

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