



Submission to the Productivity Commission Inquiry into New models of tertiary education

Universities New Zealand -Te Pokai Tara

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Submission to the Productivity Commission Inquiry into New Models of Tertiary Education

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Universities New Zealand Contact

This submission has been signed out by the Vice-Chancellors of the eight New Zealand universities.

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Executive Summary

The Terms of Reference for the Productivity Commission Inquiry is focussed on how current international trends in tertiary education may impact on the New Zealand tertiary education system.

In this submission, we focus on the university sector in New Zealand. The submission reflects the shared views of the Vice-Chancellors of New Zealand's eight universities. It answers 68 of the 78 questions posed by the Productivity Commission. Rather than answering each question in turn, we address questions (or groups of questions) through a higher-level analysis.

This submission is in four sections:

1. The university sector business model
2. Key challenges in the government policy and operating space
3. The other main issues identified by the Commission
4. The future

Key findings [and the sections to refer to in the body of this submission] include:

1. **Contribution to national productivity.** The Productivity Commission notes the OECD's analysis indicating that the net present value of both private and public benefits of higher education are among the lowest in the OECD. We note that this analysis includes both Type A (degree level) and Type B (sub-degree level) tertiary education. We draw the Commission's attention to the 2013 Treasury analysis¹ that highlights the methodological problem with these data and shows that the returns from sub-degree qualifications drag down the national average. When considered on their own, the completion rates, employments rates, and earnings outcomes that result from a New Zealand university education are among the best in the world and

¹ Zuccollo J, Maani S, Kaye-Blake B, Zeng L, Private Returns to Tertiary Education, How Does New Zealand Compare to the OECD, Treasury Working Paper 13/10, July 2013.

unemployment rates and under-employment rates are among the lowest. [Sections 3c & 3d]

2. **University Sector Productivity and Innovation.** To the outside world, universities often seem caught up in tradition – carrying out teaching and research in buildings that externally appear much as they did 20 or 100 years ago. In reality, every aspect of university life has seen extensive innovation and change over the past decade. [Section 1b, 1e, 1f, 2a, 3a, and Appendix 1]
3. **System quality and effectiveness.** The New Zealand university system is unique internationally with all eight universities world-ranked and with excellent graduate outcomes and strong research performance. This outcome is due, in part, to a strong commitment to high-quality research-informed teaching and strong quality systems (via The Committee for University Academic Programmes (CUAP) and the Academic Quality Agency (AQA)). [Sections 1f, 3a, & 3b]

However, the New Zealand university system is also a system that is at risk.

- There is considerable funding pressure that is limiting the capacity of the system to enhance (or even maintain) quality. [Sections 1b, 1c, & 1f]
- The undifferentiated nature of the Tertiary Education Strategy (i.e., one strategy for the entire sector) does not reflect the ambitious nature of the universities and the fragmentation of policy objectives across different government agencies steals time and hinders progress. [Sections 2b, 2c, 2e, & 2f]
- There is insufficient funding to advance important government policy objectives in areas such as lifting Māori and Pasifika participation and achievement, increasing numbers of Science, Technology, Engineering and Mathematics (STEM) graduates and improving graduate work-readiness. [Sections 1c & 2a]

Overall, Universities New Zealand (Universities NZ) believes that the New Zealand university sector is highly prepared for future trends in university education. We believe:

1. Teaching will continue to be significantly more effective and satisfying for students when delivered in a campus-based environment. We also know that technology will continue to expand into every aspect of the teaching and learning experience. Although we do not see technology-enabled distance learning replacing campus-based learning any time soon (particularly for the youngest or most disadvantaged students who need the most support), we believe demand for reskilling and upskilling in the workforce will grow significantly. Universities with particular expertise with students of this kind are already responding to this need [Section 3a]
2. International competition for staff and students will continue to intensify, making it even more important that New Zealand university teaching and research are of the highest quality. [Section 1f, 3f, & 4a]

A university qualification will become an even more important way for New Zealanders to future-proof themselves against the impact of technology in the workplace. [Sections 3d, & 4b]

International evidence has shown repeatedly that a highly educated society is more likely to be democratic, tolerant, open-minded, adaptive, productive and stable. [Section 3d]

Introduction & Overview

Background:

- New Zealand is the only country in the world where all of its universities are world-ranked².
- New Zealand has some of the best qualification completion rates in the world. Only 16%³ of full time students who start a bachelors-level qualification at a university in New Zealand do not have a qualification within eight years. By comparison, non-completion rates at polytechnics/institutes of technology are 28%⁴ and 32%⁵ for Wānanga. International comparisons are problematic as different countries track completion rates over different time periods, but reported non-completion rates are 18%⁶ in the UK, 27%⁷ in Australia, 41%⁸ in the US, and around 50–55% in South America and Asia.
- The New Zealand universities have some of the best graduate outcomes in the world. Three years after graduating, 97–98% of university graduates are in employment⁹. For graduates aged 29–38 at the time of the 2013 Census, 88% were in jobs that either needed a specific degree (doctor, teacher, etc) or for which a degree was highly useful (general manager, consultant, policy advisor, etc)¹⁰.
- International education is New Zealand's fifth largest export earner at \$2.85 billion annually¹¹. Universities generate \$1 billion of this and is the sector that makes the largest individual contribution¹². New Zealand has the fifth highest proportion of international students in the world (12.9% of all

² Using the QS World Rankings – www.topuniversities.com/university-rankings.

³ Education Counts - https://www.educationcounts.govt.nz/statistics/tertiary-education/retention_and_achievement Com.35 cells P7 (European), P22 (Maori) and P31 (Pasifika)

⁴ Education Counts - https://www.educationcounts.govt.nz/statistics/tertiary-education/retention_and_achievement Com.34 cell P58

⁵ Education Counts - https://www.educationcounts.govt.nz/statistics/tertiary-education/retention_and_achievement Com.34 cell P85

⁶ <https://www.timeshighereducation.com/news/how-student-completion-rates-vary-across-europe>

⁷ Completion Rates of Domestic Bachelor Students – a Cohort Analysis, 2005-2013, Australian Government, Department of Education, Page 4.

⁸ National Centre for Education Statistics, US Department of Education, 2015. <https://nces.ed.gov/fastfacts/display.asp?id=40> Note that this is 4 year degrees completion rates after 6 years.

⁹ What Young Graduates Earn when they Leave Study, NZ Ministry of Education, May 2013.

¹⁰ Universities NZ, Graduate Return on Investment Study – unpublished, February 2016.

¹¹ http://www.enz.govt.nz/sites/public_files/Infograph.pdf

¹² From the eight university annual reports for 2014

students)¹³. There were 14,815 international equivalent full-time students (EFTS) at New Zealand universities in 2014¹⁴.

- The New Zealand university system delivers these strong results efficiently. For example, for 2014, using New Zealand dollars in 2014 \$NZ exchange rates¹⁵:
 - New Zealand delivered its outputs with 19% less infrastructure than did Australian universities. That is, Australian universities had \$57,280 of buildings, plant and equipment per EFTS compared with \$46,381 for New Zealand universities.
 - New Zealand produced its outputs for only 70% of what it cost in Australia. That is Australian expenditure was \$34,351 per university EFTS compared with \$23,949 for New Zealand.

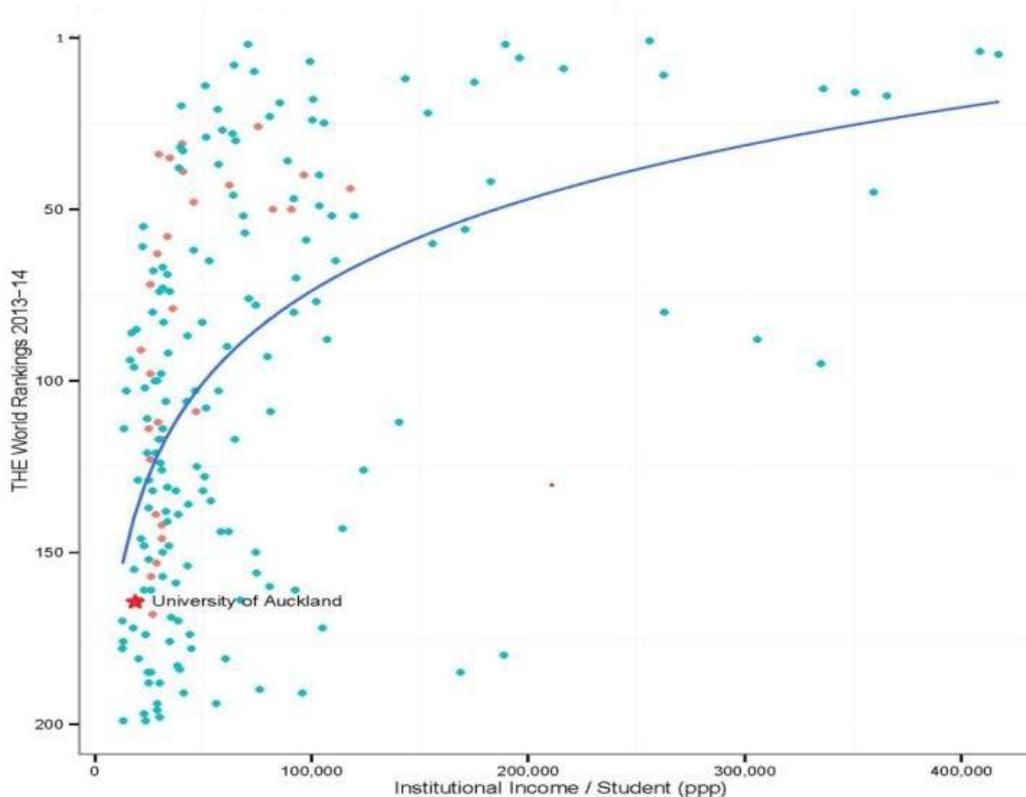
The graph below shows the universities that are ranked in the top 200 by Times Higher Education 2013/14. On the Y-axis is their ranking from best (#1) at the top, to the worst (#200) at the bottom. On the X-axis is the expenditure per student. The University of Auckland was the only New Zealand university in the top 200 (175th), but if the other seven universities were mapped onto the same graph, all would be below and to the left of the University of Auckland.

The graph clearly shows that the level of funding per student is a key element in maintaining quality and rankings.

¹³ Education at a Glance 2015: OECD Indicators Table C4.1

¹⁴ Calculated by adding international student numbers reported in each of the eight universities audited annual reports.

¹⁵ These figures were calculated from the combined Annual reports of NZ's eight universities and the combined 2014 financial information provided by Australian universities to the Australian Government's Department of Education and Training. <https://docs.education.gov.au/node/38416>



Although the New Zealand university system is not perfect, it is extremely strong by international standards and is stellar when compared with other parts of the New Zealand tertiary education system.

The New Zealand university system is also operating in line with current and likely future best practice. Internationally, regardless of what ranking system used, the top 500 universities are all research-led, predominantly focused on campus-based learning and offer a wide range of graduate and post-graduate programmes.

These highly consistent features of successful universities sit at the heart of the university business model. These elements include:

- Students learn better and enjoy learning more when they are with other students and with their teachers.
- A significant proportion of university education has a practical element requiring time in physical facilities where students can practice and demonstrate what they are learning.
- The best teachers are research-active and able to handle flexible, wide-ranging, high-level discussions with their students.
- Better research occurs when researchers are co-located and generate new ideas as they mix and mingle.

New Zealand universities have remained successful over the past few decades by adapting and innovating across all areas of their practice. See Appendix 1 for a full list of adaptations and innovations, but they include:

- major technology initiatives to improve research, the student learning experience, and to simplify administration
- increased quality, quantity, and internationalisation of research
- internal efficiency gains through automation and self-service
- innovation in programmes that meet student and employer needs such as increased specialisation, semesterisation, and shorter programmes of study
- adoption of shared services models supported by technology
- significantly increased numbers of Māori and Pasifika students, students with disabilities and women in the STEM disciplines
- improved space utilisation rates and creation of multi-purpose and social study space
- enhanced external stakeholder engagement and delivery on the needs of stakeholders – students, schools, employers
- improved strategic planning, budgeting and resource management

These innovations have been achieved in an environment where funding on a per-student basis has declined in real terms while competition for staff and students has become even more intense.

The capacity of the system to continue to innovate and advance policy objectives is facing several inter-linked resource-driven challenges:

- **Return on Investment Challenges:** Universities are under considerable financial pressure, driving them to focus investment in areas that are generally lower risk and with more certain returns. In general, universities optimise existing channels and business models rather than investing in new ones.
- **Funding Setting Challenges:** Just over half the sector's income is through Government and Government determines the level of domestic fees. Funding is largely the same for all providers – e.g., any provider of a SAC Cost-Category 1 course will receive the same funding as any other provider. Together, these factors constrain the amount of innovation, differentiation and adoption of new business models that is possible across the sector. In general, the level of Student Achievement Component (SAC), Performance Based Research Fund (PBRF) and Equity Funding sets the upper limit on the amount that universities can spend on new or improved ways of teaching, researching and broadening access to university. Significant additional progress is unlikely in areas that are priorities for Government (lifting Maori and Pasifika participation, growing STEM numbers and improving graduate work-readiness) within current funding settings.

In general, this submission takes a myth-busting approach in addressing the questions posed by the Productivity Commission. Areas considered in this submission include:

- Myth: *Technology will make campus-based learning irrelevant.* Reality: The opposite is true. All things being equal, students prefer and are more successful when studying in a campus environment where their learning is supported by others and where they have access to libraries, laboratories, workshops and a range of social and recreational opportunities that facilitate wider personal growth. Distance and electronic learning will have a major role to play in future for second-chance learners or adults who are shifting fields, but is unlikely to supplant campus-based learning. Technology, in any case, is already highly integrated into campus-based teaching and learning.
- Myth: *Students will prefer the new learning channels (like Massive Open Online Courses (MOOCs)), which reduce the cost and time of gaining a qualification.* Reality: Students (and their employers) prefer traditional qualifications with rigorous assessment of capabilities from proven providers over products that are unfamiliar and provide little evidence of the learning outcomes for each student. It is no coincidence that Harvard, Stanford, MIT and the like offer their for-credit programmes under their own (elite) brand but their MOOCs under another brand (Coursera).
- Myth: *The traditional university is dead.* Reality: What the public popularly imagine as being a traditional university disappeared years ago. Universities have, for years, been actively adapting and differentiating in response to a hugely competitive environment while remaining true to the ethos of quality, research-led, accessible, and engaging education.
- Myth: *Universities are producing poor quality graduates or graduates that are not work-ready.* Reality: Universities are strongly linked to employers in designing and reviewing their qualifications and curricula. New Zealand university graduates have some of the best employment rates in the world.
- Myth: *The university system is moribund, conservative, and slow to adapt.* Reality: The opposite is true. The level of adaptation and change over the past 10 years and currently underway is extraordinary. The main risk now is that government funding and policy settings may be impeding the New Zealand universities' ability to adapt fast enough and to adopt some of the more innovative differentiation models successfully operating internationally.
- Myth: *Universities could be doing more to contribute to productivity and innovation.* Reality: The sector is making a strong contribution to productivity and innovation through its commitment to employer-informed qualifications and curriculum, and its large curricula and high-quality contribution to research (including considerable amounts of contract and applied research). New Zealand university graduates have some of the best completion rates, and employment rates, and lowest under-employment rates of any OECD country, and the income premium they obtain from a university education is substantially higher than that obtained by students with qualifications from other parts of the tertiary sector.

- Myth: *The university quality systems are inefficient or barriers to innovation.*
Reality: The New Zealand university quality system is one of its greatest assets and the main reason why all our universities are world-ranked and our graduates are so highly employable. The system is so strong because universities oversee their own quality frameworks through CUAP (the Committee for University Academic Programmes) and AQA (the Academic Quality Agency).

In this submission, we argue that the features that make the New Zealand university system so effective include:

- A relatively untagged funding environment gives each university significant freedom to innovate and an ability to differentiate themselves.
- The system is internationally recognised for the quality of its institutions, its research and its qualifications. This allows universities to recruit staff internationally and retain them over their careers, allowing New Zealand universities to produce excellent research and teaching. In turn, this means New Zealand universities can provide New Zealand students with a world-class education and can generate international education revenue for the New Zealand economy
- The majority of our universities are comprehensive (teach most or all academic subjects) and all offer qualifications from sub-degree to PhD levels. This feature gives them the scale that makes them efficient and the ability to develop innovative multi-disciplinary and inter-disciplinary programmes quickly.
- Our legislative environment is serving New Zealand well. A world-class quality system, qualification framework and protections around who can and cannot call themselves a university and confer university qualifications have combined to create one of the best university systems internationally. We are able to compete for staff and students internationally and there are no wrong choices for New Zealand students when it comes to getting high quality teaching and well-regarded qualifications.

Recommendations

We suggest that different settings would produce greater outcomes for New Zealand in the following areas:

1. Rethink funding settings for areas of strategic importance. Where Government believes particular policy objectives are not being met (for example, lifting Maori and Pasifika participation, growing STEM numbers and improving graduate work-readiness) they must consider ways to lifting funding levels to allow universities the opportunity to continue to advance successful initiatives in these areas.
2. Tertiary Education Strategy – sub-sector plan. The tertiary education sector is not homogeneous. Universities, institutes of technology and polytechnics, wānanga and private training providers all have different roles

and business models. The university sector would benefit from clearer sub-sector specific strategies and objectives. A TES sub-sector plan would be useful for the university sector as long as it was not so prescriptive as to inhibit appropriate levels of innovation and differentiation.

3. Early involvement in design of new initiatives. Where universities are going to play a part in implementing or supporting government policy, they should be involved in early framing, scoping and design.
4. Better management of transitions from compulsory to post-compulsory education. Transitions from compulsory to post-compulsory education need better ownership, funding support, strategies and capability. The lessons from successful initiatives such as the Auckland Starpath Project¹⁶ should be taken up nationally and the traditional guidance counselling and careers planning functions in schools should be replaced by nationally supported academic and vocational pathway planning functions.
5. Consider supplementing existing funding where more differentiation is sought. All New Zealand universities receive a similar amount of funding (fee and tuition subsidies) for courses offered under particular Student Achievement Component (SAC) cost categories. This constrains the amount of differentiation and innovation that is possible in New Zealand universities. Government should consider supplementing SAC funding where it wants to see more differentiation or innovation – for example, in getting all students degree-relevant work experience as a part of the academic curriculum, or where particular programmes to support Maori students has been shown to be effective.
6. Develop a more coherent approach to advising young people on study and career options. Government is seeking to improve the information available to potential students and their advisors. This advice is being developed in a largely uncoordinated and inefficient manner across at least five different agencies through at least eight different initiatives. We recommend having a national strategy and overall programme management plan to ensure this is designed and implemented to best meet the needs of students and their advisors.
7. Formalise employer involvement in graduate profiles and curriculum design. All New Zealand university qualifications now have a graduate profile, but not all are being developed with employer input and many qualifications are being delivered without employer input into curriculum design. Formalising employer involvement in programmes where graduate employment outcomes are below average would contribute to lifting graduate work-readiness and productivity.
8. Take a more holistic approach to international education objectives. Government should think about international education in a more holistic way and link export education objectives with wider trade, diplomatic, security and internationalisation objectives with a number of New Zealand's

¹⁶ <http://www.education.auckland.ac.nz/en/about/research/starpath-home.html>

key trading partners – all of whom are increasingly adopting strategies based on reciprocity.

Section 1: The University Sector Business Model

1a. Overview (Q3)

As detailed in the introduction, the New Zealand university system is of exceptionally high quality by international standards. All New Zealand universities are ranked in the top 3% of the world's universities and they have the best qualification completion and graduate employment outcomes of any country we are aware of.

The New Zealand university sector has evolved into its current form in response to the need to balance a complex mix of factors. The most important ones relative to this submission are:

1. **Role requirements:** To recruit and retain academic staff and students and to have qualifications recognised and valued, New Zealand universities need to be consistent with the norms of international universities in form and function. Though there is major variation in the range of forms and functions that a university takes (see the taxonomic analysis later in this section), the most highly regarded universities internationally are typically comprehensive, delivering campus-based learning, offering undergraduate and post-graduate teaching and carrying out research that informs teaching.
2. **Government policy objectives:** As Crown Entities and with a little over half of university funding coming direct from government via SAC funding, PBRF, Equity Funding and other tagged funding, universities are expected to support and advance government objectives – particularly those laid out in the Tertiary Education Strategy.
3. **Funding incentives (and competitive pressure):** Universities need money to operate and, given a long-term decline in real funding per student (covered below), have become increasingly driven to maximise student numbers (to maximise fees and government tuition subsidies). This is not a sustainable business model in the long term.

The New Zealand university system has innovated and adapted extensively over the past decade in response to opportunities, signals and challenges in all three areas (see Appendix 1), but the extent of response and the capacity to respond has been heavily influenced by (1) financial pressures on the current system, and (2) return on investment considerations. These issues are considered under the next two sub-headings.

1b. Financial Pressures (Q39, 40)

Table 1 shows a range of figures taken from the combined annual reports of the eight New Zealand universities, comparing 2005 with 2014. The table shows that nominal fees per student have increased by nearly 33% and average SAC funding by 39%.

Over the same period, university sector operating costs have increased by just over 50% on a per-student basis – mostly driven by rising salary costs, compliance costs, building maintenance costs, rising utilities costs, the cost of purchasing ICT equipment and licences from overseas and increasing costs of libraries as a consequence of subscriptions to online electronic resources.

Note that CPI has risen by 25.5% over the same period, but none of the operating costs listed above are included in CPI.

Table 1 – Comparison of University Costs 2005 vs 2014.

Calc	University Sector	2005	2014	10 Yr Change
x	Avg domestic tuition fee per EFTS	\$4,097	\$5,436	32.7%
y	Avg SAC Rate per EFTS ¹⁷	\$7,045	\$9,794	39.0%
a	SAC Funding Total	\$763,637,860	\$1,151,419,000	50.78%
b=(c*x)	Domestic Student Fee revenue	\$444,064,484	\$639,053,000	43.91%
c	Domestic Student EFTS	108,388	117,560	8.46%
z	International Student EFTS	23,041	14,815	-35.70%
d	Total EFTS (Domestic & Int)	131,429	132,375	0.72%
e	Total operating costs	\$2,207,643,000	\$3,342,860,000	51.42%
f=(a/c)	Per capita SAC Funding	\$7,045	\$9,794	39.02%
g=(b/c)	Per capita student fees	\$4,097	\$5,436	32.68%
h=(e/d)	Per capita operating costs	\$16,797	\$25,253	50.34%

University costs increase as a step-variable function of overall student numbers. A university can accommodate one extra student at relatively little cost, but will, for example, on average need to recruit an additional academic staff member for every 20–25 EFTS.

The requirement to build additional library, teaching, laboratory, workshop and administrative space is similarly driven by a step-variable model – but with the steps generally being much larger and being triggered once other options (such as using teaching spaces over longer hours) have been exhausted.

As such, it is to be expected that per-student funding should decrease in real terms as numbers rise. Universities should be able to realise volume efficiencies and this has happened in many areas over the past decade. Many of the areas where savings or efficiencies have been made are listed in Appendix 1.

Although costs have traditionally continued to rise faster than offsetting savings and efficiencies, all of the New Zealand universities are engaging in major cost-cutting (and staff-cutting) exercises to reduce financial pressure.

Some of the indicators of this financial pressure are obvious and include:

¹⁷ The SAC funding rates were provided by the Tertiary Education Commission.

- The average student:staff ratio for New Zealand universities worsened from 17.1:1 to 18.6:1 between 2006 and 2014.¹⁸
- New Zealand universities have, while remaining world class, tended to slip in the key international rankings in recent years¹⁹.

Some of the less-obvious indicators of financial pressure include:

- a sector that has less available capital for innovating and experimenting and less capacity or appetite for taking significant financial risk.
- a sector that needs to be careful in making changes given it is operating on small margins with limited reserves.

These are playing out in return on investment considerations.

1c. Return on Investment Considerations (Questions 39, 53, 54, 56, and 57)

Flowing on from the issue of financial pressure is the closely related matter of return on investment.

Universities are expected to be financially viable. They are required to generate small surpluses on an ongoing basis and to be sustainable in the long term by maintaining and replacing assets, and by protecting capabilities and capacity.

In a constrained funding environment, many worthy and innovative ideas compete for funding and long-term investment; funding one initiative using means not funding another, equally valuable initiative.

The example below illustrates the tension for funding and was developed following a round table discussion with the Vice-Chancellors of the eight universities.

ROI Consideration Example: Lifting participation and achievement of Māori and Pasifika youth.

Universities receive SAC funding for courses they actually deliver. The government has carried out several benchmarking exercises in recent years to ensure that SAC funding is generally in line with the cost of providing the courses. This limits the amount of SAC funding available for reinvestment elsewhere.

¹⁸ Determined from information provided in the 8 annual reports for the eight universities in 2006 and 2014. The spreadsheet containing the information is available on request.

¹⁹ For example, universities have slipped an average of 50 places in the QS rankings over the past five years. There was a rise in 2015, but this was mainly a one-off benefit arising from a change in the QS rankings methodology.

The universities are already doing a lot of work on improving access, participation and achievement for Māori and Pasifika students, and they are committed to improving parity in both access and achievement.²⁰

The types of programmes that have collectively enabled universities to achieve significant shifts in Māori and Pasifika participation and achievement rates have targeted three key areas:

- 1. Preparation:** Targeted projects that remove barriers and better prepare and motivate secondary school students for university study and success
- 2. Academic and Pastoral Support:** Bespoke approaches for supporting students in their first year at university
- 3. Progression:** Initiatives to support progression of students into post-graduate studies

The key constraint that universities have faced when seeking to do even better is not a lack of knowledge about what works, but rather a lack of financial resources and the time and people that are required to extend the reach of proven programmes.

This issue is not new for the universities; equity funding is too low and must be split too many ways²¹.

The best way to increase participation and completion rates would be to increase Equity Funding for the specific purpose of lifting Māori and Pasifika participation and achievement and to allocate that funding equitably between the universities in a way that carries low overhead and compliance costs.

Universities receive Equity funding of \$320 for every Māori and Pasifika student on the roll in any given year. Equity funding is provided through the TEC with an expectation that it will be supplemented with SAC funding²². However, current constraints on total funding make supplementation impossible without disadvantaging another, important activity.

This funding situation restricts the opportunity to invest in longer-term, less certain, or more expensive outreach programmes that lift the aspirations of school-aged Māori and Pasifika²³, and focus more on providing foundation, bridging and induction programmes that kick in for students at the end of school. As a consequence, generally only Māori and Pasifika students who are already close to being ready for university actually get to go to university.

²⁰ Programmes include: Bridging and Foundation Courses, Mentoring Schemes, Entry Programmes, Māori & Pasifika Specific Support Services, Pastoral Care Services, Māori Learning Environments, Career Services etc.

²¹ The universities are happy to provide examples of their programmes and how they have worked to improve participation and completion rates.

²² <http://www.tec.govt.nz/Funding/Fund-finder/Equity-Funding/>

²³ Though there are highly successful smaller-scale outreach programmes run by universities.

Until Māori and Pasifika are achieving at a much better rate in the compulsory and non-compulsory schooling system, any significant participation increases will be both costly and challenging to achieve.

Assisting Māori and Pasifika learners from Years 9 and 10 needs to happen in the schooling system through shaping aspirations, planning, and supporting teaching and learning experiences in order to put more students on a university pathway. From there, the universities can work with these learners to ensure their success at university. However:

- much of the existing funding is already invested in bridging and student support programmes
- returns from investing on students in Years 9 and 10 are uncertain and take at least five years to realise
- the costs are much greater than the amount of equity funding that is available to support the students who are actually part of the university system

With more funding, each of the universities could scale up and broaden those programmes already proven to work.

In a large number of other areas either (a) the return on investment is insufficient and/or (b) uncertain enough that universities are either unable or unwilling to realise national benefits to the extent hoped for by government. The other areas include:

- improving access for those with limited access to traditional campus-based education
- growing the number of young people wanting to pursue qualifications and careers in STEM subjects and equipped through their school studies to do so. (Requires interventions from around school Year 8 onwards)
- improving graduate work-readiness through the more widespread adoption of internships and other forms of work experience (adds cost to universities that are already under financial pressure with no additional income)
- implementing (on any significant scale) new technology-enabled forms of distance or mass education (risk associated with return on investment is too high)
- scaling up (mainstreaming) new capital intensive and high up-front capital cost education channels like MOOCs (risk associated with return on investment is too high)
- developing new business models for supporting possible new markets such as adult re-skilling or up-skilling (risk associated with return on investment is too high)

- developing off-shore international education capability (risk associated with return on investment is too high)
- improving access for the small number of students with disabilities that are particularly costly to support.

No matter how open the university sector is to innovation, the extent and speed of innovation is necessarily constrained by issues such as increasingly limited amounts of available capital and, at a time when the system is under extraordinary financial pressure, a need for reasonable certainty as to levels of return and a quick payback period.

More generally, the history of the New Zealand university sector shows that any significant change to role requirements, policy drivers, or funding incentives will drive significant changes to university outputs over time, but nearly always with unintended consequences and trade-offs.

1d. Taxonomy of a University Business Model

A number of elements are common to all potential university business models – now and in the future. The elements are useful for understanding the range of ways in which universities configure themselves around teaching and research. They are:

1. **Brand** – universities range from internationally recognised brands (such as Oxford, Harvard) to universities with names that are mainly recognised nationally or locally (regional universities).
2. **Scale** – At one end of the spectrum, universities can be massive multi-site, multi-channel (campus based, online, etc) entities providing services into a number of (or all) countries. At the other end of the spectrum, universities can be small single-site or single channel. By global standards, New Zealand universities are generally medium sized.
3. **Curriculum Focus** – Universities range from being comprehensive (offering courses and qualifications across all academic disciplines) to niche – focussing on just one or two disciplines. New Zealand universities are mostly comprehensive.
4. **Teaching Levels** – Universities can be fully vertically integrated – offering qualifications from sub-degree through to doctorate level. Or, they can be specialist. A specialist university may be like a US College offering taught programmes at sub-degree level or it may be a post-graduate university offering few, if any, programmes at undergraduate levels.
5. **Capability Model** – At one end of the spectrum, universities can own and operate the majority of their assets and infrastructure and employ the majority of their teachers and researchers. This is most common where universities expect to be operating indefinitely and therefore to be using assets for their entire economic life. At the other end of the spectrum, universities may operate in more of a virtual or casualised mode – for

example, distance providers may run laboratories for science students by hiring facilities from existing universities during times of the year when they are otherwise unused. Likewise, these universities may engage tutors or lab assistants on a casual basis as-and-when required.

6. **Service Model** – This can range from full-service where universities teach, research, provide student support services, accommodation, and run their own corporate support services, to part-service. In the part-service model, universities always offer teaching and qualifications, but may not do research, may not provide student services or may have outsourced some or all corporate services. The part-service model is most likely when the business model is distance or online.
7. **Ethos** – this ranges from traditional to transformative. A traditional university is pretty much what any person in the street would list if asked to describe what a university looked like and how it worked (lectures, tutorials, campuses, academics and so on). A transformative university departs from the more traditional model and may use technology more in teaching, or may be co-located with industry, or carry out a significant proportion of teaching in the workplace.
8. **Differentiation Strategy** – this is how universities promote themselves to potential staff and students and how they claim to be different or better than other competitors. Differentiation strategies usually involve some combination of their brand, scale, curriculum focus, teaching levels, capability model, service model and ethos. Universities can be broadly differentiated or narrowly differentiated. A broadly differentiated university typically promotes itself on the quality and reputation of its brand. A narrowly differentiated university typically promotes itself on something it does better than anyone else – that is, its record of getting graduates into jobs, having links into the local community, employing superstar teachers, and so on²⁴.

New Zealand universities are all well known within New Zealand, but their names are not necessarily well known in the countries where they source international students. There, the brand of New Zealand as an education destination, combined with brand-linked factors (such as international ranking) are used to differentiate our universities for marketing purposes.

²⁴ Examples;:

- A traditional multi-national university with an international brand is likely to differentiate itself on its reputation and how well qualifications are respected by global employers.
- A traditional regional university may differentiate itself on the convenience of studying locally, the ways its qualifications are valued by local employers and its strong links to the local community.
- A specialist or transformative university will target their offerings to a particular segment of the student market. A distance provider may target offerings to students who need a qualification but can't practically attend a campus-based university because of work or family commitments. A niche- provider may focus on students who are career -minded by emphasising their links to industry and by guaranteeing work-integrated learning.

The international competition for staff and students is fierce and reflects:

1. Differentiation – regional or national universities have established international profiles by developing a strong internationally acknowledged business model. (See the Ethos section above.)
2. Rankings – countries are spending significant sums in an attempt to lift rankings of key universities so they can attract the best staff and students. Most leading universities now have staff dedicated to optimising rankings results. Significant effort and investment goes into gaining an international profile, citations and influencing the staff:student ratios that drive rankings scores²⁵.
3. Discounting – some countries are actively trying to position themselves as student destinations by providing generous scholarships and fee discounts. Discounting is most common where countries are non-traditional student study destinations (e.g., China or Malaysia) and where there is no brand or reputation to attract students²⁶.
4. Incentives to attract superstar academic staff – countries like Australia, Saudi Arabia, Singapore and Ireland, and regional or national universities elsewhere have all tried to enhance their international reputation and rankings by recruiting superstar academic staff and/or building expensive research facilities around a few key subject areas²⁷.
5. New qualifications and educational products – see the section on Curriculum Change in Appendix 1 for examples of what is happening here. The focus is on offering qualifications that will stand out to international employers and that can be completed in a shorter time with at least a portion of study in the home country.
6. Reducing barriers to participation – non-English speaking countries are increasingly offering courses and programmes in English. Countries are relaxing immigration requirements and increasingly allowing students to work, bring family, etc.
7. Countries that were net exporters of students (such as China²⁸) are now seeking to become net importers. Universities in those countries are now competing for a share of the students that would have traditionally gone abroad for their studies.

²⁵ <http://www.universityworldnews.com/article.php?story=2013062216300718>

²⁶ <http://monitor.icef.com/2013/02/international-tuition-trends-reflect-competitive-nature-of-todays-recruitment-environment/>

²⁷ Pg 44, Salmi, James, The Challenge of Establishing World-class Universities, The World Bank, 2009.

²⁸ <http://www.bbc.com/news/business-35776555>

1e. Implications of the different business model settings for New Zealand universities

In the experience of Universities New Zealand, both students and the employers of graduates tend to be risk-averse in their choices.

- The majority of students appear to make choices about what they study and where they study based on what they think will demonstrate they are smarter, more hard working and employable to future employers. This means they appear to steer away from programmes that employers may perceive as easier, shorter, or cheaper and are likely to continue to prefer traditional qualifications from proven respected institutions with reputations for high quality, demanding programmes and competitive entry requirements²⁹.
- Similarly, a significant proportion of employers tend to favour qualifications from traditional universities that have required the student to complete a challenging programme over an extended period. However, where a student studied is typically less important to employers than what they studied, and the student's broader soft-skills and experience³⁰.

A large majority of students are also strongly influenced by funding support – if they can get Study Link support and loans to cover study at one university but not at another university with a comparable reputation/brand, then they will go with the option that provides funding support. This means domestic students are more likely to prefer a New Zealand university over, say, a similar or slightly better ranked Australian university where there is no financial support.

Students then choose between different universities by considering factors relating to brand, ethos and differentiation.

Factors commonly identified as being most important for domestic students³¹ are:

- **Employability** – the perceived ability to gain employment as a result of gaining a useful and well-regarded qualification.
- **Location of the university** – whether the university is in the student's home town or region, or is in a location that the student is attracted to.

²⁹ There are many studies, but some recent ones include;:

<http://monitor.icef.com/2016/04/survey-says-employment-prospects-key-postgraduate-applicants/>, and <http://higheredstrategy.com/systematically-valuing-the-wrong-things/>

³⁰ Again, there are many studies, but some examples include;:

<http://www.topuniversities.com/student-info/careers-advice/graduate-jobs-what-employers-look>, <https://www.quora.com/Do-companies-care-about-the-university-you-got-your-degree-from-and-how-effective-are-degrees-from-top-universities>, <http://www.news.com.au/finance/work/careers/university-degrees-irrelevant-to-big-employers/news-story/8a0340dd2b8e70e35b8ce3302c8d0cc5>, <http://www.nydailynews.com/news/national/employers-online-degrees-article-1.1372092>, and <http://www.theatlantic.com/business/archive/2014/08/the-thing-employers-look-for-when-hiring-recent-graduates/378693/>

³¹ Veloutsou et al, *University Selection: Information Requirements and Importance*, The International Journal of Educational Management, Vol 18, No. 3, 2004.

- **Programmes/Courses** – the belief that the university offers courses that are interesting, relevant and likely to deliver a positive learning experience.
- **Institution reputation** – the extent to which the university is regarded as credible and its qualifications valuable.
- **University campus** – the quality of facilities and the general atmosphere and surroundings.
- **Non-academic lifestyle** – the entertainment and recreation opportunities on and off campus.

Factors that influence choice between universities for international students are similar. Students will typically choose a country first, then select between universities. Key factors in choosing between universities are:

- **Institution reputation** – where the university appears on international rankings for quality of teaching, research, graduate employability and facilities.
- **Information gleaned from websites, friends, agents, parents, current students and presentations** – to confirm the likely experiences around learning (such as courses, teachers, teaching spaces) and living (campus environment, social life, accommodation, cost of living, etc).
- **Cost of living and studying at the university** – for accommodation, course fees, transport and recreation.

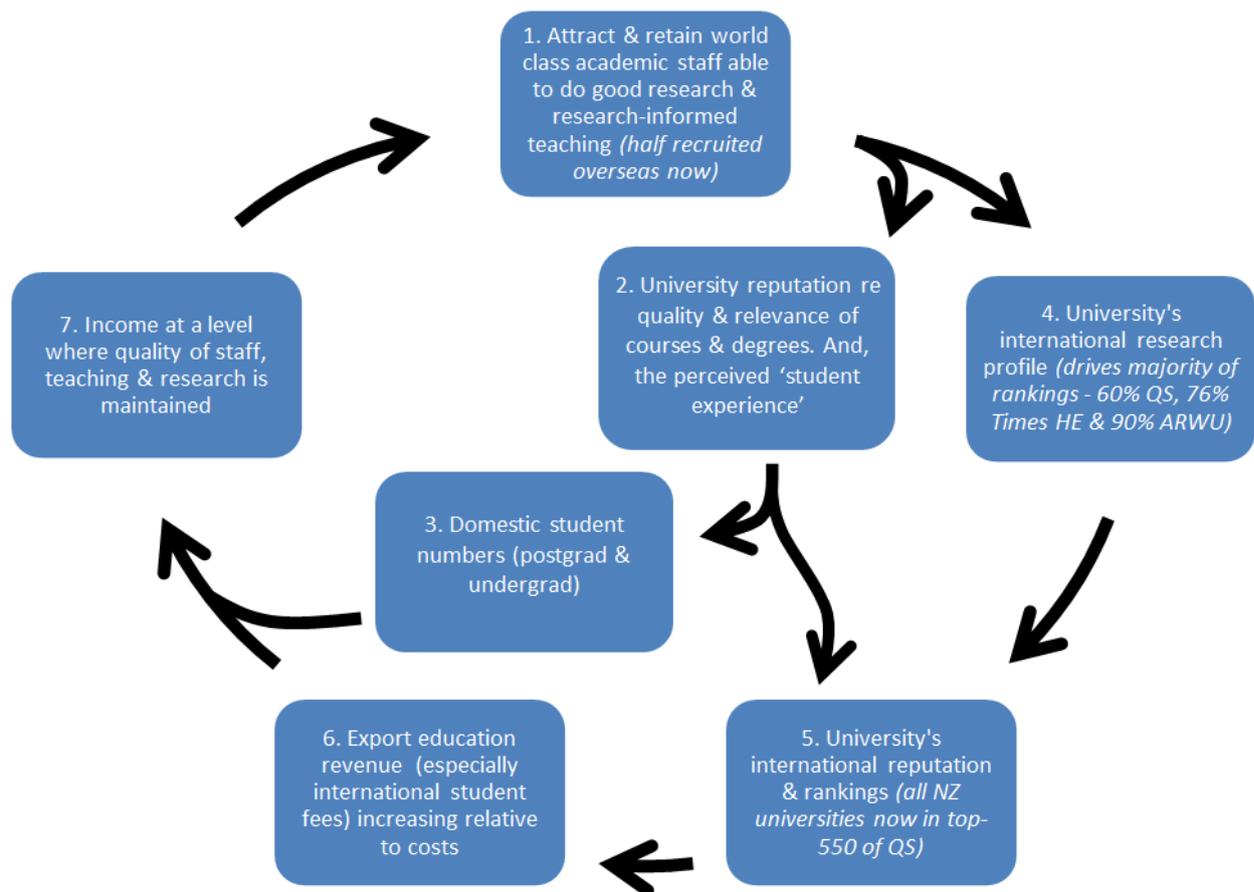
The newer transformative models (like MOOCs) appear to work best when they are either supported by proven high-profile university brands or when they are provided as one of a number of offerings from proven traditional national or regional providers.

New Zealand universities are actively monitoring the international university environment. They benchmark themselves against comparable international universities with similar differentiation strategies and are actively investigating new technologies and channels. The adaptation and change across the New Zealand university system over the past decade (Appendix 1) has been informed by an awareness of changes and adaptations in the international environment.

The market internationally does not yet seem to have settled on any self-sustaining alternative model for delivering a university education that is recognised and valued by both students and employers.

1f. What all this means for the New Zealand University Business Model (Q7, Q8, Q28, Q36, Q39)

The high-level university business model included in the Productivity Commission Inquiry Issues Paper as Figure 7 (reproduced below) was developed to demonstrate some of the key interdependencies informing the priorities of New Zealand universities.



The write-up of this business model is contained in the “Universities New Zealand Issues and Responses Document” provided to the Productivity Commission in December 2015.

The model is deliberately circular and self-reinforcing and is based on maintaining brand, reputation and scale.

- If universities reduce international research collaborations and publication of results in international journals, they will drop rapidly in international rankings. This drop will affect their ability to recruit the world-class academic staff that have the research profile and capability to initiate and successfully complete international research collaborations and be published in international journals³².
- If universities cannot remain highly ranked, they will lose domestic and international students. As previously noted, a majority of students consider an institution’s reputation and rankings when they choose where to study³³. But, when New Zealand universities are generating 3% surpluses annually, an increase of even a small percentage of students makes it possible to

³² See Universities NZ – Universities at a Glance, Issues and Responses pages 20-23, September 2015.

³³ For example, <http://www.thecompleteuniversityguide.co.uk/courses/choosing-a-course/choosing-a-university-course-applicants'-top-five-factors/> , or Hobsons <http://monitor.icef.com/2014/05/new-survey-highlights-international-students-top-priorities-when-considering-where-to-study-abroad/>

remain viable and to continue to be able to invest in the infrastructure necessary to support high quality teaching and research and to offer an excellent student experience.

- Students generally regard gaining knowledge and skills as only one part of the value proposition of a university education. They rate gaining those skills in a supportive, engaging environment as a critical part of the learning experience and, similarly, the non-academic social and recreational experience of student life. (Incidentally, these are also the main reasons why distance or online education is unlikely to supplant campus-based learning any time in the near future). If universities do not also invest in this infrastructure, they will also struggle to differentiate themselves to students.
- Scale (being comprehensive) and concentration (focussing on one or two key channels or areas for differentiation) significantly reduce the marginal cost of both teaching and research in a university context. Although some overhead costs are relatively variable, some are not. For example, the cost to a university of a Financial Management Information System, Payroll System, or Student Management System are similar regardless of the size of the institution. Each is typically millions of dollars to implement and operate and that cost at a large institution might be just 1–2% of a typical annual capital budget, but 5–10% at a smaller institution. Similarly, having one campus is generally cheaper than having two campuses. For example, with one campus you generally only need one library and one student centre. With two campuses, you need two of each. Similarly, having just one channel for teaching and learning is typically cheaper than operating two or three channels (traditional on-campus, distance, MOOC, etc).

Overall, the New Zealand university business model is primarily a highly competitive student volume-driven model with no price recognition for quality. Student volumes are the target because New Zealand universities have so little control over most other key elements that generate revenue. Specifically:

- Domestic student fees for new programmes have to be in line with fees for existing programmes and approved by the TEC – for example, universities cannot just establish a new bachelor’s degree programme and charge students what they like for it.
- Increases to domestic student fees are capped annually by the TEC policy and historically limited to 3–4%.
- International student fees are limited by what the market will bear and so cannot be increased arbitrarily. These fees are already at the limit of what the market will bear, and exchange rate fluctuations are an ongoing factor.
- Most research revenue is provided on a cost-recovery basis (or below cost, typically without overheads) and provides little or no money that can be reinvested in other teaching, research or infrastructure.
- The amount of commercial revenue from patents, consulting, and commercial spin-offs of intellectual property represents around 15% of

the sector's income. It is unlikely to grow significantly in the near future. This income is in line with countries like Australia, where revenue from these areas is 17%³⁴.

- The revenue from philanthropic support is typically no more than 1% of total income. Again, this income is in line with Australia and, again, it is unlikely to grow to become a major component of university revenue in future. New Zealand does not have a tradition of philanthropic giving to educational institutions.

Therefore, universities cannot significantly reduce costs without compromising or sacrificing the quality of their broader teaching, research and student experience.

As a consequence, the New Zealand university business model is driven by trying to maximise student numbers in ways that balance return on investment considerations. This is done by (a) offering qualifications that are well regarded and sought-after by employers via (b) a high quality learning experience accompanied by (c) a positive social and recreational experience that facilitates the broader growth of the student.

For example, when faced with the opportunity of establishing a new course that may attract 100 new students and that can be taught using existing classrooms and infrastructure, universities can invest without much concern or effort. Where the 100 new students require new, dedicated, capital infrastructure (such as purpose-built laboratories or new ICT infrastructure) and income streams are uncertain, universities are (unsurprisingly) significantly more cautious.

Universities cannot increase the number of young New Zealanders coming out of school every year, but each university can and does aim to grow its pipeline in the following areas:

- ensuring more school-leavers are aspiring to go to university and have the academic preparation necessary to succeed
- competing for a larger share of the school-leavers
- growing markets – such as adult education or adult skill maintenance/retraining
- attracting more international students, both offshore and those already studying in New Zealand at a lower level (such as at school).

In all cases, success in growing the pipeline is more likely to occur when it is supported by appropriate marketing, a strong reputable brand, and channels for providing advice, support or delivery in both pathways planning and in delivering the qualification.

³⁴ Australian universities combined financial statements are provided by the Australian Government's Department of Education & Training.
<https://docs.education.gov.au/node/38416>

In New Zealand, the statutory oversight for quality assurance sits with Universities New Zealand via the Committee on University Academic Programmes (CUAP) and the Academic Quality Agency. This is a unique arrangement internationally and is one of the key reasons why all New Zealand universities are so highly ranked. It is described in more detail in Appendix 4, but key features include:

1. Via CUAP, all eight universities jointly peer review proposals to create new qualifications.
 - a. Proposals start with a graduate profile detailing what skills and competencies a graduate will have if they successfully complete the qualification. The proposal then shows how curriculum and assessment will progressively develop those skills and competencies over the period of study.
 - b. Universities peer reviewing another university's proposal cannot oppose it on the grounds that a programme is already being offered elsewhere, they can only challenge it on academic criteria such as:
 - i. Is there any chance that it will cause confusion for students or employers – for example, a one-year taught masters with a similar name to a two-year research-based masters qualification?
 - ii. Is the graduate profile appropriate for the qualification? Has it had suitable input from relevant employers and sign-off by industry bodies? Where appropriate, has it had input from community and Iwi, whānau, hapū, and hāpori Māori?
 - iii. Is the proposed curriculum likely to produce graduates who conform to the graduate profile?
 - c. A graduating year review is held once the first class successfully completes the programme. The review seeks input from industry, employers, graduates and other stakeholders, and demonstrates that the programme is meeting its original objectives at an acceptable standard of delivery. If it does this satisfactorily, the programme may continue to operate.
2. The Academic Quality Agency carries out independent quality assurance audits of New Zealand universities every five years to evaluate overall quality systems operating within each university.

Note that the TEC has the ultimate say on whether it will fund the programmes established by a university. In addition to demonstrating the value of a particular programme to a student, the university must also demonstrate it to the satisfaction of the TEC.

1g. Other parts of the University System business models

All of the above provide some sense of some of the challenges facing the university sector and its business models. Of course, the business models have many more dimensions than just those listed so far and a number of them are relevant to questions posed by the Inquiry Issues papers. They are:

- Teaching Focus: The need to maintain high quality teaching and learning and to offer relevant qualifications that are likely to be attractive to students and employers.
- Research-Informed Teaching: The commitment to research-informed teaching.
- Graduate Outcomes Focus: The need to produce employable work-ready graduates with the skills and broadly in the numbers sought by industry. The closely associated need to manage pipelines and student pathways – from school, through university and out into careers and life with good advice and support. The need to support student aspirations, choices and preferences in areas ranging from choice of qualification through to preferred learning style and learning environment.
- Research Focus: The need to work within a larger science and research system – nationally and internationally.
- Focus on equitable access: The need and desire to support students from traditionally under-represented groups – such as Māori or Pasifika.
- Internationalisation focus: The need to address other government priorities and policy objectives around internationalisation and export education.

All of these are considered later in Section 3 of this paper as a part of Universities NZ's response to a number of specific questions posed by the Inquiry.

1h. Summarising differentiation in the business models of New Zealand's eight universities. (Q77)

From all of the above the New Zealand university sector can be characterised as having:

- Seven comprehensive universities and one specialised non-comprehensive university (Lincoln).
- Specialisation within the comprehensive universities where the capital cost of offering particular programmes or channels is particularly high (engineering, medicine and veterinary studies). The universities that offer these programmes generally began offering them earlier than any other university. The number of students is limited enough that neither the Government nor

another university has been willing (or some cases permitted) to invest in entering the market for these subjects.

- Strong differentiation across all eight universities. Though all the comprehensive universities offer traditional BA or BSc type degrees and all promote their rankings and history of academic excellence, they all also strongly differentiate their degrees to students and employers for factors such as graduate profiles, courses offered, the campus environment, the university setting, the learning experience and other relevant factors.

Universities understand these factors well and spend significant time and resources on emphasising different aspects to promote and differentiate themselves to potential students.

For example, the main campuses of the University of Auckland and Auckland University of Technology (AUT) are separated by one road.

The University of Auckland differentiates itself as New Zealand's top-ranked university internationally and a research-focussed institution producing the most academically capable graduates.

AUT differentiates itself as a place where less traditional university students are supported to succeed academically and be prepared for successful careers and lives. To this end, AUT opened a second campus in Manukau at the start of 2014.

Although both universities have at their core a broadly similar range of qualifications, the way they are packaged and delivered varies significantly.

Section 2 – Government arrangements & priorities

This section addresses a number of other broader issues currently facing the university sector: (a) government settings, (b) measures and incentives used to support government policy objectives, and (c) specific policy questions and operating models under consideration.

2a. Government Settings (Q1, Q22, Q23, Q74)

There are some challenges for the university sector in working with government. The elements that create the most challenges include:

- The Tertiary Education Strategy (TES) identifies areas of focus for the education system, but does not always set particular goals or targets at either a system or a sub-sector (e.g., university sector) level.
- Policy leadership of the TES is split between the Ministry of Education (MoE) (education objectives) and the Ministry of Business, Innovation and Employment (MBIE) (science, innovation, skills, employability, labour force planning, etc).
- Implementation or operation of the TES is further split between TEC, NZQA, Careers New Zealand, and Education NZ.

Because the TES is broadly framed, interpretation of what it means and the determination of relative priorities rests with a wide range of officials.

The different officials tend to see solutions to TES priorities through the lens of their agency. For example, MBIE officials are focussed on research and knowledge transfer. MoE officials are focussed on pathways and graduate profiles. TEC is focussed on risk and assurance for purchasing outcomes. On the face of it, these elements all combine towards the same TES ends, but at an operational level, officials rarely have the end-to-end picture of all the different drivers that influence university decision making.

These issues around fragmentation of policy, operational oversight and implementation become even more problematic in the current funding environment.

As outlined in Section 1, universities are under significant financial pressure, limiting the amount they are able to invest in areas with uncertain or unduly long-term returns. These 'Return on Investment Challenges' are compounded by the way the university funding environment operates.

51% of university funding comes direct from Government through Student Achievement Component (SAC) funding, Performance Based Research Funding (PBRF) or Equity Funding. All tertiary education organisations receive exactly the same level of SAC funding, PBRF funding and Equity Funding when they offer

programmes, carry out research or teach priority groups. Government also generally limits the amount that can be charged in domestic tuition fees and there is very little difference in fee levels across the system.

Together, this funding environment significantly limits the amount of differentiation possible across the system. For example, it is not possible for any one provider to offer a significantly higher quality range of programmes than any other provider.

Similarly, the SAC funding levels are periodically tested to ensure that funding is broadly in line with the cost of provision. This significantly limits the extent to which any individual institution can do much more to advance Government priorities in areas such as improving graduate work readiness. If, for example, a university decided that all students should complete a degree-relevant work placement as part of their academic programme, the additional costs would need to be found within existing funding streams.

These 'Funding Setting Challenges' are best illustrated by a practical example;

Funding Setting Challenge: Graduate employability

Universities are expected to do more to improve the work-readiness and employability of graduates. All students in professional programmes (like medicine, teaching, and engineering) have had work practicums integrated into their academic programmes for decades. New Zealand Universities have to pay access charges to the agencies that provide these practicums (e.g., district health boards), and the cost of these practicums has been built into their government tuition subsidies (now SAC funding) for as long as there have been tuition subsidies.

Officials are pushing hard for universities to do more for students in other areas – but are not proposing an increase in SAC funding to cover costs of practicums, internships, etc.

Officials are undoubtedly correct in saying that employers and New Zealand as a whole will benefit from graduates with work experience in areas relevant to their degrees. Work experience is likely to yield a payback to New Zealand in terms of employment rates, more graduates working in degree-relevant jobs, higher lifetime earnings, greater productivity, higher employee satisfaction and better job retention rates.

Few of these benefits accrue directly to universities. The payback to universities comes from their ability secure SAC funding, to promote the employability of their graduates and to influence recruitment. All universities are pursuing internship and other graduate employability initiatives with that goal in mind.

In the end, officials and universities are pursuing the same policy goal, but they have different investment objectives and return-on-investment calculations. Current funding settings are impeding opportunities.

2b. Ability for Tertiary Education Organisation (TEOs) to inform policy & strategy (Q2, Q74, Q78)

A key challenge for Tertiary Education Organisations (TEOs) is that they are rarely able to contribute to the framing of policy and strategy until after key decisions have already been made.

Officials are dedicated and professional, but typically have little or no experience in the university system or within their particular agency portfolio. Although they were students at one time, it was often a long time ago. Given this, interactions with officials are often theoretical and supported by international literature reviews and large datasets, but lack practical New Zealand-relevant solutions.

The development of policy and strategy is typically conducted under the cloak of advice to ministers or as Budget-secret and tends to emerge fully formed and signed off – to the surprise of the TEOs that have to respond to them. When we identify issues or challenges with policy or strategy, we often hear that they reflect a ministerial decision that cannot be changed or challenged.

Two current examples of this include:

- Education NZ has chosen a number of international markets that it will attempt to grow in future. The list of target countries was developed by Education NZ's board and was signed off by the Minister before it was discussed with the universities. The list does not align at all well with university sector priorities and there is potential for a significant mismatch of effort over the coming year as universities focus on markets for which Education NZ has no mandate and Education NZ focusses on markets in which universities have no interest.
- Currently, there are a half-dozen initiatives underway or implemented across MBIE, NZQA, TEC, the MoE and Careers New Zealand to improve the range of tools, information, and advice on study and career options available to young people. From the perspective of the university sector, all of these initiatives have been implemented following a ministerial decision and all of them have significant methodological and operational flaws—flaws that could have been identified early had universities been part of the original discussions.

2c. Measures, Incentives and Funding Settings (Q24, Q30, Q62, Q68, Q72, Q74)

The education system has an extensive range of measures that are used as proxies for assessing effectiveness, efficiency, and performance against policy objectives. At one end, they include recruitment, retention, progression and completion measures that are extensively tracked by Education Counts and published in a range of official sources.

At the other end, they include measures that linked to incentives to drive performance. The main ones are:

- SAC funding, which is capped if a TEO over-delivers against its investment plan by more than 2%, or is reduced for under-delivery
- PBRF, which allocates nearly \$300 million of funds to TEOs according to the assessed quality of their academic researchers
- Educational Performance Indicators (EPIs), which put up to 5% of a TEO's government funding at risk if it is in the lower 50% of comparable institutions.

In general, universities are very responsive to funding incentives.

For example, since PBRF was introduced in 2002, and universities have shifted to recruiting academic staff on their potential to be ranked PBRF A or B (the two top PBRF rankings). The proportion of staff with a PBRF 'A' rating has nearly doubled since 2002.

We strongly suggest that any changes to measures and incentives for system performance that might be introduced following this review should:

1. Take a multiple-measures approach and complement quantity targets with quality targets – for example, numbers completing degrees (quantity) and successfully entering into qualification-relevant employment (quality). SAC funding actually works as a multiple-measures method – where the TEC only provides funding when it is confident about wider (generally well-understood and agreed) evidence of institutional performance, employer demand and student satisfaction.
2. Ensure incentive-based funding is not of a size or level of uncertainty that it has the potential to make a TEO fail. Most TEOs are aiming for 2–3% surpluses. Anything that puts more than the equivalent of a 2–3% surplus or that allows income swings from year to year at that level will threaten viability. SAC, PBRF and the EPIs all work well at present in this space. PBRF quality assessments are only done once every six years, institutions are generally good at predicting student numbers and the associated SAC funding, and EPIs are generally also predictable unless a TEO makes a radical change to its quality systems. Moving to something like awarding funding on graduate employment outcomes would be more problematic as no TEO can control their local job market or the economic conditions that drive employment levels.

2d. Approaches to Funding – bulk funding versus tagged funding (Q13, Q64, Q65, Q74)

At present, the levels of SAC funding and PBRF funding are driven by well-understood formulas that are informed by the costs of teaching and research. Although the level of funding is informed by these calculations, the funding itself

is provided as bulk-funding, allowing universities some discretion as to where they apply it.

Bulk funding is not just desirable, it is essential for a modern university. Bulk funding allows universities to be responsive to changing opportunities and for choices such as:

- how much to invest in direct delivery of teaching or research as opposed to how much to invest in centralised and shared teaching facilities, libraries and research infrastructure
- how much to invest in developing new courses and programmes, versus maintaining or exiting from existing ones
- how much support to provide to post-graduate students who are carrying out research while receiving teaching (receiving both SAC and PBRF funding support)
- how much to invest in capital (which may save operating expenditure or increase the outputs from operating expenditure) versus operating expenditure.

Universities would strongly oppose anything that reduced or removed this operating flexibility. At a time when funding is limited, universities need to have as many choices as possible for optimising operations in ways that maintain the quality and effectiveness of teaching, research and the campus experience.

The Government has started experimenting with mechanisms for addressing areas where the tertiary education system has been seen as responding inadequately to market demands. The primary example of this experimentation has been in the establishment of ICT Graduate Schools over the last year.

The ICT Graduate Schools were established because of feedback to Government from the ICT industry. The ICT industry said that they were struggling to get sufficient numbers of work-ready graduates who had the skills that they needed.

The ICT Graduate Schools were established via a competitive procurement process using requests for proposals. Government was looking for creative solutions to the industry problem and hoped that the procurement process would yield some innovative new ideas.

The first ICT Graduate School was formally launched in Auckland in February 2016 and two more will be launched later this year.

In all three cases, the schools involved partnerships between at least one university and at least one Institute of Technology/Polytechnic (ITP).

The universities' views of ICT Graduate Schools initiate are:

- They have not generated any particularly innovative business model, but they have provided much-needed additional funding for the education and up-skilling of ICT graduates.

- They have added significant administrative overhead and administrative complexity because they are managed as discrete contracts with separate performance and reporting arrangements and separate governing bodies.
- They are unwieldy – requiring at least two organisations to collaborate on delivery.

At a time when funding is under huge pressure, anything that adds additional funding into the system is welcome, but only if it does not add significant additional overhead cost or complexity.

2e. The Government’s Education Sector Architecture (Q22, Q23, Q24, Q25, Q74)

The size of the education system makes it hard to identify one optimal architecture for improving performance.

The university sector can see opportunities for improving the overall architecture and system performance through the following:

1. Tertiary Education Strategy sub-sector implementation plans – clear and agreed planning is needed detailing the roles, priorities and objectives for TEOs in ways that do not unduly restrict individual institutions’ ability to innovate and to differentiate themselves.
2. The TEC has been talking about moving to an investment approach for nearly two years now but we are still not certain what it will look like. We think the TEC would add the most value if it developed a better understanding of the issues referred to in this submission around (a) Return on Investment Challenges, and (b) Funding Setting Challenges. Better understanding in these areas would then assist the Government in forming decisions around where to invest and how much to invest in tertiary education.
3. Universities are expected to be doing more to lift participation and achievement of young Maori and Pasifika and to grow numbers of STEM graduates. Universities are willing to do this, but it depends upon choices students make back in the compulsory school system and the advice and support they receive when doing so. Many of these choices are more likely to succeed if universities are working with schools and are able to show students what a university education looks like.

At present, the pipeline and pathways management between the compulsory and post-compulsory systems are fairly ad hoc and need better ownership and support.

MoE is primarily focussed on compulsory education, with one division responsible for post-compulsory education and vocational pathways. From outside the Ministry it appears that there is insufficient ownership or management of the transitions from compulsory to post-compulsory education and how this works for students so they are supported with the

most appropriate mix of academic and vocational pathways planning from Year 8 onwards.

We think New Zealand would see a large lift in the performance of its education system with the following elements in place around managing transitions.

- Provide clearer ownership and a national strategy for managing transitions.
- Have formal pathways planning introduced across schools.
- Replace or supplement careers services with pathway services, where students and their teachers are able to get the most appropriate mix of academic and vocational advice and planning. Support this with a set of national standards and a code of professional practice.
- Amend current funding settings that require schools to give up funding where TEOs provide classes to their students. School students are more likely to aspire to tertiary education when they have experienced it. This is particularly important for Māori or Pasifika youth who may have had no experience of university previously and for whom it would not have otherwise been an option.
- Increase equity funding to TEOs so they can work with schools and their students on developing curriculum plans for those who should be on an academic pathway.

2f. Unclear Government policy objectives (Q29)

There is a general expectation that universities should be doing more to assist with national productivity, in matching graduate supply to industry demand (workforce planning), and in helping students move through and across the education system. These expectations are problematic.

a. Productivity

There is no agreed view across government as to the role of the university sector in contributing to national productivity. This issue is considered in more detail in Section 3 in a separate section on Productivity.

b. Workforce planning and matching graduate numbers and skills to industry demand

The TES aims to produce graduates with the skills required by industry. This is a worthy goal and is supported by the university system. However, the practical realities are:

1. Universities cannot tell students what to study, they can only be a part of a system that provides advice and information on the known demand for different types of graduate.
2. Universities cannot respond easily to short-term changes in demand for graduate numbers. In all cases, the pipeline starts back in the school

system, with students making choices about what they study, what they plan to do after they leave school and their understanding of different study and career options. For example, if New Zealand decided it needed another 1000 physicists each year, it would probably take at least 10 years to realise this goal– starting with schools encouraging more students to pursue electives in science, mathematics and technology from Years 10 onwards.

3. Universities can respond to changing demand for particular skills and capabilities – for example, incorporating new technology into the curriculum where it is being widely adopted by industry. However, the range of tools and diversity of workplaces generally makes use of specific tools or approaches impractical and so universities focus on producing graduates that can learn new skills and adopt new tools quickly, because that is what they will actually need for a future of continual change.
4. Universities are responsible for providing their graduates with the skills and attributes they will require for a lifetime, not simply for their first job after graduation.

The fact that the employment rates of New Zealand graduates are so high indicates that the system is generally working well.

c. Unbundling

Unbundling is used here to refer to a range of options currently being considered within Government to improve pathways for students. Unbundling includes:

- Multi-institution pathways – Students complete their first year at one institution and complete their post-graduate degree at another.
- RPL (Recognition of Prior Learning) – Institutions credential students (award degrees) based largely on assessment of prior learning and also transfer credit from prior study.
- Credentialing – Students complete a mix of courses from a range of institutions and obtain a credential (certificate, diploma or degree) from a credentialing authority.

All three of these mechanisms already exist to varying extents in the New Zealand education system and more are in development.

For example:

- The Bay of Plenty Alliance has five ITPs providing pathway programmes that lead students to study (and degrees) from the University of Waikato. There are similar pathway programmes for the University of Canterbury Engineering programme with the Christchurch Polytechnic and Institute of Technology.
- All universities already have articulation agreements with international universities allowing students to complete a year or two at the international university before coming to New Zealand to complete the degree. Most require the student to attend at least one year at a New Zealand university but more usually two years.

- All universities have credit transfer and recognition of prior learning policies. Credit transfer is common with around 16% of students coming to university having gained credits at a similar or lower level in the same field for which they are enrolling. RPL is much less common but does take place, particularly where practical experience is a requirement for gaining academic credit.
- Credentialing does occur, but generally only where two universities are jointly offering a degree programme and strong curriculum and academic quality controls are placed around the courses and degree programme.

New Zealand universities typically see their multi-year degree programmes as a coherent bundle of courses that combine to produce graduates with an intended set of skills and attributes. They are also necessarily a mix of subsidising (net income) and subsidised (net cost) courses that cumulatively are self-funding over the period of the full qualification. Unbundling would probably put this in jeopardy.

In recent years, MoE has carried out several exercises to assess the average cost of delivering undergraduate programmes and have set SAC funding rates based on an average across the three or four years it takes to complete the qualification. SAC funding comes at the same rate for undergraduate programmes whether it is for a first year lecture-based course with 1000 students or a third year laboratory-based course with thirty students.

The income from a faculty's first year courses typically equals or exceeds the combined income from second and third year courses where the cost of delivery for each year is probably broadly similar³⁵.

If a large proportion of first year programmes were delivered by different institutions, universities would see a significant reduction in the real funding available for maintaining teaching quality at later years.

³⁵ Based on feedback from the Planning Directors of the universities.

Section 3 – Other Issues of Interest to the Inquiry

This section draws on material covered in the first two sections, but goes into detail on a number of the more discrete questions raised by the Productivity Commission.

3a. Technology and pedagogy – Does campus-based education have a future? (Q35, 42, 43, 49, 62, 63)

Every time a new technology comes along it tends to spark popular media comment claiming that existing older models will soon be extinct. This section shows that technology has an important role to play in supporting and enriching learning, but it is rarely the best option by itself.

Key terms in what follows are:

- **Online learning** that relies on digital technology, potentially accessed from any location (including on campus) via a web-connected device.
- **Distance learning** that takes place off campus.
- **On Site learning** that mostly takes place on campus.
- **Blended learning** that uses a combination of 'Online', 'Distance', and 'On Site'.

3a(i) Taxonomy of pedagogical features

Table 3a(i) shows some likely delivery mechanisms across four currently available teaching situations. The lines between them are porous and students may easily migrate back and forth or be simultaneously taking courses that sit across more than one category. Universities have developed extensive Bring-Your-Own-Device (BYOD) policies and campus-wide free Wi-Fi. The result has been the blurring of the boundary between on-site and distance learning.

For example, a student might attend their 10am lecture in a lecture theatre, watch their 11am lecture live on their smartphone in the campus cafeteria, participate in their 2pm tutorial chatroom on their tablet at home, and view a recording of their 4pm lecture that evening after getting home from their part-time job.

Table: 3a(i)

<p>Traditional on-site learning Student will be physically present on campus and will have many opportunities to socialise and mix with peers while learning. A student's ability to learn, research, and apply skills will be dependent upon access to a space dedicated to that function (e.g., a library, workshop, laboratory, lecture hall or tutorial room).</p> <p>Lectures</p> <ul style="list-style-type: none"> ○ Emphasis on transmission of content with knowledge presented in well-argued lectures, often through 'chalk and talk', supported by appropriate visual aids <p>Tutorials</p> <ul style="list-style-type: none"> ○ Variation in use of seminars and tutorials includes 'mini lecture' formats and students preparing a specific topic for presentation to peers <p>Lab-work and field-work</p> <ul style="list-style-type: none"> ○ Laboratory and field work used to develop skills and reinforce key knowledge areas 	<p>Blended on-site learning Students are physically present on campus for many aspects of their learning, but most activities are supported by technology and many can be carried out anywhere that the student has a computer and an internet connection. There are still many opportunities to socialise and mix with peers while learning.</p> <p>Lectures</p> <ul style="list-style-type: none"> ○ Use of tools such as clickers and mobile apps for immediate interaction and feedback to teachers in large lectures ○ Specialised software to simulate real life problems ○ Students may watch lectures online in their own time then use face-to-face time to test and extend knowledge in tutorials <p>Tutorials</p> <ul style="list-style-type: none"> ○ Collaborative, problem-based projects and, where appropriate, field work ○ Access to support via chatrooms, social networks and online tutors <p>Lab-work</p> <ul style="list-style-type: none"> ○ Learning takes place at on-site dedicated laboratories or in the field, fully supported by specialised and often expensive equipment ○ Experts present in the lab providing guidance and direction ○ Students may have read preparatory material online before laboratory or field-work session ○ Software simulations enhancing on-site lab or field work, e.g., Human anatomy classes may replace cadaver dissection with digital simulation
<p>Traditional distance learning Student possibly geographically isolated. Generally reliant on mail or telephone for communication.</p> <p>Lectures</p> <ul style="list-style-type: none"> ○ Hard-copy transcripts mailed out to students or lectures accessed via television or radio broadcasts at fixed times <p>Tutorials</p> <ul style="list-style-type: none"> ○ Groups of students who lived in the same locality might meet to discuss lecture material <p>Lab-work</p> <ul style="list-style-type: none"> ○ Traditional distance learning would not normally allow lab-work 	<p>Online distance learning Student as active off-site learner. Distance education depends critically on technology and will vary along a spectrum of basic to rich technology use. Bench science will normally require some blended learning but will vary in the proportion of on-site content delivery.</p> <p>Lectures</p> <ul style="list-style-type: none"> ○ Digitally accessed lectures either: <ul style="list-style-type: none"> ▪ accessible to enrolled students only or ▪ publicly available (MOOCs model) <p>Tutorials</p> <ul style="list-style-type: none"> ○ Tutorials replaced with chat-room either: <ul style="list-style-type: none"> ▪ accessible to enrolled students only or ▪ publicly available (MOOCs model) <p>Lab-work</p> <ul style="list-style-type: none"> ○ Software simulations replacing lab or field work to a greater or lesser degree ○ Bachelor programmes may teach primarily concepts and factual knowledge with lab or field work saved for postgraduate degrees ○ Lab or field work may be taught during intensive residential schools; length will vary depending on course level and/or subject, perhaps 2–3 days each semester for a first year course and up to 2 weeks at higher level. ○ Lab-kits containing equipment and materials can be purchased by and couriered to students; students video themselves performing experiments at home; these videos are assessed and form the basis of practical assignments

3a(ii) Some components of blended and online learning

The features noted in the right-hand column of Table 3a(i) may be implemented in a wide variety of ways. Some possibilities are indicated below. Factors such as subject matter, student expectations, cost, preparation time and staff capacity will all be relevant in determining the most appropriate level of online implementation.

Table 3a(ii)

Components	Less technologically intensive	More technologically intensive
Simulation software	Static diagrams and text accessible in digital form by individual learners to view in their own time	Highly detailed 3-D representations that may be accessed, manipulated and discussed simultaneously by a virtual group, including an instructor who can monitor individual contributions using learning analytic.
Technology enhanced interaction software	Teamwork and collaboration made possible between participants in different locations through interactive online discussion of case-study work	Interactive discussion of case-study work is supplemented by communication features such as video conferencing, remote links to material and resources held at other locations and recording discussions for later review and analysis
Digitally accessed lectures	Simple video or audio recordings of entire lectures that may be accessed remotely, either by enrolled students only or by anyone. Pause, rewind and fast-forward are the only means of interactivity available	Digital lectures containing a host of interactive features – smart add-ons such as subtitles, glossaries, links to advanced material or references to further reading Lectures may be broken up into shorter topics incorporating tests on topic material. Learner analytics can allow evaluation of student performance in these tests and also provide feedback on whether some topics are skipped by many students. This can enable redesigning of content to engage learners more fully. (E.g.: If many students are skipping a topic when a particular example is introduced to illustrate a certain point this example could be replaced)
Virtual tutorials	A text-only public chat-room environment open to all as a supplement to a free MOOC. Participants will be treating the course with varying amounts of seriousness. Content may or may not be regularly monitored by tutor and standards of respect and politeness may or may not be adhered to	Secure desktop message/chat platform potentially incorporating video and audio and restricted to enrolled students only. Tutor is an active participant and ensures discussion is focused and beneficial to all participants
On-campus requirements	Students are directed to attend the lab-work or other hands-on components of an on-campus short course or summer school	Intensive residential schools are specifically designed to complement a distance qualification and contain elements tailored to individual learners based on their specific

Components	Less technologically intensive	More technologically intensive
	programme as a mandatory part of their distance qualification	achievements and problem areas encountered during their online learning
Student retention	Simple CRM/SMS software keeps track of enrolments, submission of assignments and student marks	Live analysis of student participation and achievement allows early identification of students who may be in difficulty so that intervention can occur

3a(iii) Student experience

From the student perspective the specific technical means by which learning is delivered may be less relevant than providing opportunities to achieve learning objectives. For example, a student may participate in a virtual tutorial online simply because it allows them to save five hours a week travel time and parking fees, rather than a virtual tutorial necessarily being considered of better quality than a face-to-face tutorial.

The following four mini-scenarios give an indication of how some specific student profiles and needs might be met with flexible technology-assisted learning:

- A first-year domestic student studying social sciences may live on campus in a hall of residence taking advantage of their physical proximity to attend most lectures in person but access some lectures online two days a week to accommodate the demands of a part-time job.
- An international student with English as a second language may trial free business management lectures in a MOOC format from a number of different universities before deciding which university to enrol at as an on-site student. Then, once they have begun their degree, they may find that using their smartphone or laptop to watch subtitled versions of lectures they have just attended improves their understanding.
- An adult student in full-time employment may take a series of short courses for professional reasons and complete all of the administrative and most of the academic requirements of these courses entirely by distance on their work computer, their laptop at home and their smartphone, supplementing this with short, focussed residential periods on campus.
- A first-year student may have previously attempted an online course and discontinued half way because it was hard to stay motivated. They are now on campus in their first semester and finding it much easier because they have friends around them to help them with assignments and to have fun with outside of study periods. They like the campus environment and the support they can get from lecturers and tutors. The highlight of each week is the laboratory sessions where they get to put theory into practice.

3a(iv) Teaching online

Designing and delivering a convenient online learning experience may be more time intensive for instructors than an on-site course. A 2012 study at Washington State University found that total teaching time per week, per student did not vary greatly between face-to-face and online courses. Evaluation of work was more time consuming in an online context.

Category: Minutes per student	Face-to-face		Online	
	Median	Mean	Median	Mean
Interacting with Students	31.70	44.17	20.42	21.97
Evaluating Student's Work	14.77	22.49	48.72	47.84
Lecture Prep/ Modification to Course	12.60	21.10	0.00	0.61
Recording Grades	2.25	2.03	4.82	4.46
Technical Issues	0.00	0.11	1.21	0.86
Grand Total less Technical Issues and Lecture Prep/Mod to Course	48.72	68.69	73.78	74.27
Average per week	13.88	14.98	12.32	12.70

Source: Van de Vord and Pogue

The study above included preparation time while the course was ongoing, but did not compare the time taken to prepare a new online course from scratch, or examine how long it might take to convert an existing on-site course into an online-ready format. Everson (2009) suggests the effort involved can be considerable.

3a(v) Challenges to adopting technology in learning

Cost and Complexity

It takes significant infrastructure, strong organisational commitment and investment, and a lot of work (and some loss of control) for individual academic staff to move a course into a blended learning or distance learning environment.

It takes around 150 hours of effort³⁶ from academic staff, teaching assistants, web administrators, translators, camera operators, editors, coders and testers to put one week's worth of a course on line. That's NZ\$10,000–\$15,000 per lecture on average. A typical course will contain 12–18 lectures, at a cost of \$150,000–\$200,000 in total.

³⁶ <http://www.hastac.org/blogs/cathy-davidson/2013/06/23/are-moocs-really-worst-threat-future-universities> [23 June 2013]

Pastoral and academic support

Even where technology and content is fully integrated in an online offering, the pastoral support (both technical assistance and help with comprehension) available to students must sufficiently underpin the student experience. A university may have staff available to provide support within its 'normal opening hours' (e.g., 8am–6pm), but students are potentially accessing online learning around the clock or from different time zones.

Access to internet

Clearly, participation in online learning depends on being able to go online regularly. At the time of the 2013 Census three out of four households had access to the internet, so a quarter of households did not at that time. Even allowing for an increased uptake since 2013, there could be a significant proportion of potential students for whom online distance education at home is not an option. This could be due to a lack of internet access or where access is limited to dial-up speeds, or there are significant issues with latency and bandwidth.

The four challenges noted above are representative. Other challenges associated with technology-assisted learning delivery are detailed in the NMC Horizon Report 2015.

3a(vi) Case Study 1 – 'Active Learning'

If you asked a university graduate to describe their learning experience, what are the most likely things they would include in their answer?

Ask someone who attended a university more than a decade ago what teaching looks like at a university and they will probably start by talking about the tiered lecture theatres and sitting in them receiving information from a lecturer.

Ask someone at university now the same question and you are just as likely to be told about learning in ways that require active participation and engagement by the student. The tiered lecture theatres of the past are progressively being replaced with large flat-floor rooms with moveable tables and chairs. Students may be given a problem and asked to break into groups to discuss how to approach it – in ways that simulate how they would approach similar real-world problems in a work place. They will then discuss their approaches and ideas with the wider group.

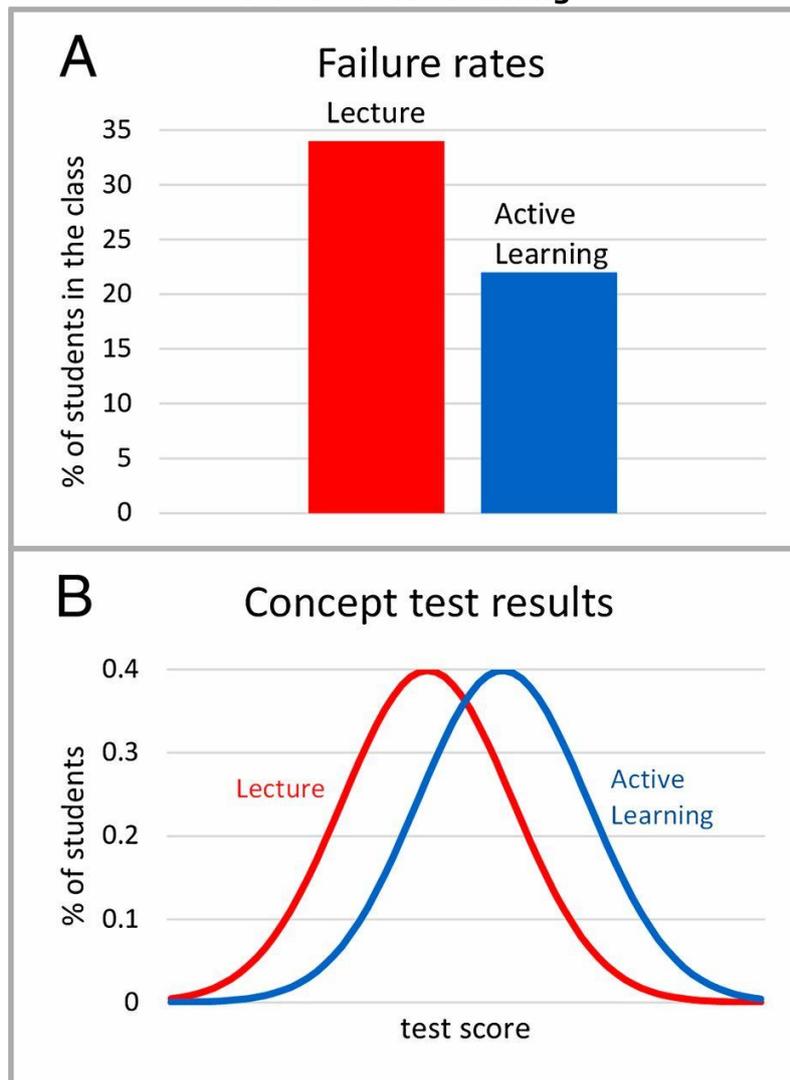
This 'active learning' approach may incorporate technology – for example, students using simulation software to solve a problem, or electronic clickers to vote on options. However, technology is optional.

This approach needs teachers who are able to handle flexible, wide-ranging discussions with their students. These are usually people who are research active and expert in their fields – hence the commitment to research-informed teaching.

Professor Carl Weiman is a recipient of a Nobel Prize in Physics and now holds joint appointments as a Professor of Physics and Professor in the Graduate School of Education at Stanford University.

He has evaluated the use of active participation methodologies in teaching large mathematics and science courses³⁷. As shown in the following illustrations, failure rates are lower when students are in an active learning environment versus a lecture environment and test scores are higher.

Comparing traditional lecture teaching versus active learning



³⁷ Weiman C, Large-scale comparison of science teaching methods sends clear message, *Proceedings of the National Academy of Sciences in the United States*, vol. 111 no. 23, 8319-8320. And, Weiman C and Gilbert S, *The Teaching Practices Inventory: A New Tool for Characterizing College and University Teaching in Mathematics and Science*, in *CBE Life Sciences Education*, Vol 13 pgs 552-569, Fall 2014.

As a consequence of this work, more than half of Stanford’s teaching has now moved to being delivered via active learning from research-active teachers.

New Zealand universities are going through a similar adoption path.

3a(vii) Case Study 2 – University of Otago

Since 2003, all universities have been required to confirm to the MoE and TEC the extent to which each paper offered makes use of the internet and/or web technologies. This confirmation is by a mechanism called the Internet Based Learning indicator.

For this indicator, each paper is categorised as follows:

- **No Access** is where no part of the paper or course is accessible online.
- **Web-Supported** is where a paper or course provides students access to limited online materials and resources. Access is **optional**, as online participation is likely to be a minor component of study.
- **Web-Enhanced** is a paper or course where students are expected to access online materials and resources. Access is **expected**, as online participation is likely to make a major contribution to study.
- **Web-Based** is where a paper or course requires students to access the accompanying online materials and resources. Access is **required**, as online participation is **required**.

By way of example, at Otago, a campus-based University, only 3% of EFTS-weighted enrolments in 2015 were in papers categorised as ‘No Access’. Web-supported or web-enhanced enrolments were 88 % and web-based enrolments 9%.

Internet Based Learning Indicators for the University of Otago

IBL Indicator	2007	2008	2009	2010	2011	2012	2013	2014	2015
1 – No access	25%	23%	20%	18%	6%	5%	5%	4%	3%
2 – Web supported	41%	44%	46%	47%	56%	54%	53%	52%	52%
3 – Web enhanced	25%	24%	24%	25%	29%	32%	33%	35%	36%
4 – Web based	9%	9%	9%	10%	9%	9%	9%	8%	9%
Total	100%								

The use of technology and the internet is now ubiquitous – even in campus-based learning.

3b Quality in University Teaching and Links with Research³⁸ (Q11, Q12, Q14, Q15, Q16, & Q70)

New Zealand universities undergo academic quality audits every five years

³⁸ The material in this section was prepared by Jan Cameron -- the former Director of the Academic Quality Agency for NZ Universities, AQA and an international academic auditor. She was previously Assistant Vice-Chancellor (Academic) at the University of Canterbury and was a long-standing member of the Committee for University Academic Programmes, (CUAP.).

through the Academic Quality Agency (AQA).

AQA audit standards are internationally benchmarked. All audit panels include at least one overseas reviewer and, typically, at least one local reviewer has international experience.

The most recent audit round was the AQA's Cycle 5. Cycle 5 focused specifically on teaching and learning and student support.³⁹ For teaching quality, the audit evaluated universities under seven topics:

1. Staff recruitment and induction (GS 6.1⁴⁰)
2. Assessment, monitoring and enhancement of teaching quality (GS 6.3)
3. Teaching development (GS 6.4)
4. Support for teachers and teaching (GS 6.4 and 6.5)
5. Recognition of teaching capability (GS 6.6)
6. Qualification of postgraduate supervisors (GS 7.1)
7. Effectiveness of research supervision (GS 7.3)

Related to the above, the audit also evaluated

8. Feedback from students (GS 5.5 and 7.5)
9. Feedback from graduates (GS 5.6)
10. Input from stakeholders (including employers) (GS 3.1 and 3.4)
11. Research activity of teaching staff (GS 6.2)

Other areas evaluated during the audit also touched on topics that directly or indirectly reflected approaches to teaching, and aspects of teaching quality, such as:

- development of teaching, learning and assessment strategies appropriate to institutional and programme graduate attributes (GS3.2 and 3.3),
- support for student learning and student engagement (GS 4.1-4.5),
- assessment (GS 3.6 and 7.4), and
- academic advice (GS2.3).

All of these fall within the activity of an effective university teacher.

The audit process is based on detailed self-review portfolios developed and submitted by universities to AQA.

Robust quality assurance and enhancement involves a range of mechanisms that are relevant, aligned, applied consistently and mutually reinforcing. For assuring and enhancing teaching quality, these mechanisms include:

- recruitment and appointment processes, including minimum qualifications required
- induction processes (both for new appointees and for new roles once appointed)

³⁹ www.aqa.ac.nz/cycle5framework accessed 230316.

⁴⁰ GS refers to one of the forty Guideline Statements that constitute the Cycle 5 audit framework.

- professional development opportunities, including sharing good practice
- professional development requirements
- informal evaluation and support through monitoring, mentoring and peer review
- formal evaluation
- promotion processes, including specified criteria
- awards and other rewards.

These overlap significantly with the areas flagged by the Productivity Commission as being of interest. As such, the findings of these Cycle 5 audits are summarised in several places in this section.

3b(i) Teaching as a priority for universities

Almost all of New Zealand's universities highlight teaching excellence as a key strategic purpose, for example:

- the University of Auckland's mission is to be "... recognised for excellence in teaching, learning, research, creative work and administration..."⁴¹.
- the University of Canterbury aspires to being a university "...where research, teaching and learning take place in ways that are inspirational and innovative."⁴²
- Massey University aspires "to ensure an exceptional and distinctive learning experience ... for all students"⁴³.
- Victoria University's mission is to "undertake excellent research, teaching and public engagement ..."⁴⁴.
- the University of Otago states that excellence in teaching is a "strategic imperative"⁴⁵.
- Auckland University of Technology aims to "provide a high quality learning experience, inspired by innovative teaching that promotes both educational and career success"⁴⁶.

High-level strategic statements are underpinned by more specific objectives, for example:

- The University of Waikato intends to provide "a relevant, future-focused curriculum and world-class student experience" by, *inter alia*, investment in teaching and delivery modes that are responsive to student and societal needs⁴⁷.

⁴¹ University of Auckland Academic Audit Report 2014, p2.

⁴² University of Canterbury Academic Audit Report, 2015, p3.

⁴³ Massey University Academic Audit report 2014, p2.

⁴⁴ www.victoria.ac.nz/documents/policy/strategies/strategic-plan.pdf accessed 230316.

⁴⁵ www.otago.ac.nz/otago069833.pdf accessed 230316.

⁴⁶ www.aut.ac.nz/data/assets/pdf_file/0006/263139/AUT_Strategic_Plan_2012-16_FINAL.PDF accessed 230316.

⁴⁷ University of Waikato Academic Audit Report 2015, p3.

Most universities have specific Learning and Teaching Plans beneath the institutional Strategic and Investment Plans. These have achievable actions and, in most cases, relevant and measurable KPIs. In recent years some universities have undertaken significant projects that explicitly or implicitly foster enhancements in teaching, learning and/or curricula – for example, Victoria University’s “Learning Partnership” initiatives; the University of Canterbury’s “UC Futures” plan; the University of Auckland’s “Academic Standards” initiative; Auckland University of Technology’s academic space development; Lincoln University’s “Connecting the Knowledge Networks” project.⁴⁸

The evidence emanating from universities’ strategic documents confirms that notwithstanding their status as research-based institutions, teaching excellence has parity with research in the mission of New Zealand universities.

3b(ii) Teaching Skills and the Recruitment, Appointment and Induction of University Staff

All universities have clear recruitment and appointment procedures⁴⁹. Usually these define the minimum requirements of academic teaching staff. For example, the University of Auckland has a set of ‘Academic Standards’, which include the criteria for academic staff appointment, continuing employment and promotion. These refer to teaching, research, creative work, service, and leadership and are aligned to the University’s Strategic Plan⁵⁰. For teaching, for instance, the Standards document states that:

*Applicants are expected to demonstrate ‘teaching and supervision that is intellectually challenging, well-informed by relevant research, and takes account of evidence from students to increase student understanding’ and (for promotion to SL 6 and above) ‘engagement’.*⁵¹

Applicants are encouraged to submit a teaching portfolio in support of their claims.

Universities employ various mechanisms to ensure recruitment and appointment requirements are met, including training for academic managers. AQA audits assess the application of these mechanisms. Examples from two recent audit reports included the following:

⁴⁸ Victoria University Academic Audit Report 2014, p9; University of Canterbury Academic Audit Report 2015, p7; University of Auckland Academic Audit Report 2014, p38; Auckland University of Technology Academic Audit Report; 2016, p9; Lincoln University Academic Audit report 2012 (Cycle 4), p25 and Draft Self-review report (Cycle 5) p39, Council agenda 230216.

⁴⁹ For example, <https://www.auckland.ac.nz/en/about/the-university/how-university-works/policy-and-administration/human-resources1/recruitment--appointment-and-induction/academic-staff-recruitment--selection-and-appointment-procedures.html> accessed 230316

⁵⁰ University of Auckland Academic Audit Report, 2014, pp 38-39.

⁵¹

<https://cdn.auckland.ac.nz/assets/central/about/the-university/how-the-university-works/policy-and-administration/academic-standards-rwww.otago.ac.nz/otago069833.pdf-srf-l-sl-ap-p.pdf> accessed 230316.

[The Panel noted] the attention paid to confirming proof of qualification details. [University of Waikato]⁵²

The University [of Canterbury] has comprehensive processes, including policies, templates and flow charts, to guide the processes of recruitment and induction. ... The University has a Qualification Verification and Validation Policy and is confident that staff are appropriately qualified for the positions to which they are appointed. The Panel examined staff qualifications records and verified the University's claim. Selection processes are expected to include work samples and demonstrations of competence by such activities as work samples, research seminars and/or mock lectures.⁵³

All universities provide induction for new staff, and in most it is required. In some cases (e.g. the University of Auckland; Victoria University) induction commences pre-arrival, from the date of appointment⁵⁴.

Universities do vary somewhat in the extent to which teaching is included in the induction process. At the University of Auckland, for instance, the Staff Orientation and Induction Policy states that "*CLear will provide orientation for academic staff to teaching and research supervision*" and at Victoria University induction to academic work has been developed in association with the Centre for Academic Development and the Student Learning Support Service, with reference also to Ako Aotearoa resources⁵⁵.

The University of Canterbury has a comprehensive induction package, spanning five years and including workshops on learning and teaching; it is left to academic heads to guide new staff through it "*in a manner which is appropriate to their experience, need and availability*"⁵⁶. At the University of Waikato staff commented that formal induction tended to focus on administrative matters; most induction is expected to take place in the appointee's work unit⁵⁷. At Massey University at the time of the 2014 academic audit, induction materials including a teaching and learning module were available but the university relied on new staff to respond to invitations to participate⁵⁸.

All universities employ small numbers of teaching-only staff. These fall

⁵² University of Waikato Academic Audit report, 2015, p44.

⁵³ University of Canterbury Academic Audit Report, 2014, pp 44-45.

<file:///C:/Users/sport/Downloads/Qualification-Verification-And-Validation-Policy.pdf> accessed 230316.

⁵⁴ Victoria University Academic Audit Report 2014, p47; The University of Auckland's "RedCarpet" online portal for new staff. University of Auckland Academic Audit Report, 2014, p39.

⁵⁵ Victoria University Academic Audit Report 2014, p47;

<https://www.auckland.ac.nz/en/about/the-university/how-university-works/policy-and-administration/human-resources1/recruitment--appointment-and-induction/staff-orientation-and-induction-policy-and-procedures-.html> accessed 300316.

⁵⁶ University of Canterbury Academic Audit Report, 2014, p45.

⁵⁷ University of Waikato Academic Audit report, 2015, p45.

⁵⁸ Massey University Academic Audit Report 2014, p46.

predominantly into three groups:

1. Postgraduate students who are employed as tutors, teaching assistants, research assistants and laboratory demonstrators;
2. 'Practice-informed staff'⁵⁹ such as:
 - a. sessional assistants or contract staff who are professionals or clinicians
 - b. sessional or contract staff who provide industry experience and expertise
3. Staff teaching in pre-degree programmes (e.g., certificates of foundation studies).

Note that postgraduate students, while mainly employed to assist with teaching, are research active. Also, staff teaching in pre-degree programmes would not necessarily be expected to be engaged in research (the Education Act applies to degree-level teaching).

The requirements of PBRF mean that all universities emphasise research experience and practice for their academics.

3b(iii) Professional Development and Teaching Credentials for University Academic Staff

No New Zealand university requires that teaching staff hold a formal tertiary teaching qualification, though universities do increasingly encourage it.

For example, the University of Canterbury *"is actively encouraging all academic staff to complete teaching qualifications, strongly promoting the Postgraduate Certificate in Tertiary Teaching... and [has] a KPI in its Learning and Teaching Plan of 15% of academic staff holding teaching qualifications by the end of 2017"*⁶⁰.

Most universities offer a postgraduate qualification in tertiary or higher education teaching as shown in the table below⁶¹:

Table 3b(iii)1: Awards in Tertiary Teaching

University	Tertiary Teaching Awards offered
Auckland	PGCert in Academic Practice
Auckland University of Technology	Grad Certificate and Diploma in Tertiary Teaching
Waikato	PGCert in Tertiary Teaching
Massey	PGCert in Tertiary Teaching
Victoria	PG Certificate and Diploma in HE Learning and Teaching
Canterbury	PGCert in Tertiary Teaching
Otago	Postgraduate Certificate, Diploma and Master of Higher Education

⁵⁹ University of Auckland academic Audit Report 2015, p40.

⁶⁰ University of Canterbury Academic Audit Report 2014, p50.

⁶¹ Information from university websites accessed 250316.

All universities provide opportunities for academic staff to engage in professional development of their teaching and, in some, specific provision is made to enable staff to do this. For example, Auckland University of Technology expects all staff to pursue professional development and gives them an entitlement of time to carry this out⁶².

How professional development of teaching is provided varies; some universities have significant organisational units specialising in this support. For example, the University of Otago Higher Education Development Centre HEDC lists 32 staff, including three at professorial level⁶³; the Auckland University of Technology lists 44 staff in its Centre for Learning and Teaching (CfLAT)⁶⁴. These units tend to bring together staff expertise in pedagogy, the scholarship of teaching and learning, digital learning, and teaching evaluation.

Some other universities have adopted a dispersed model. For example, the University of Waikato has a Teaching Development Unit (TDU) and a Centre for eLearning within its Centre for Tertiary Teaching and Learning (CTTL)⁶⁵. The University of Canterbury appeared to have only two staff in a designated professional development unit and, instead, expects Colleges to provide or access support for teaching staff.

In addition to workshops, seminars, discussion fora and newsletters provided by formal professional development groups, some library staff and ITS staff in all universities also offer workshops, seminars and staff support.

Several universities provide mentoring for staff. Mostly these are staff peers, although the Auckland University of Technology also has student mentors, LATTES (Learning and Teaching Technology Enablers) who coach staff in using new technologies.⁶⁶

All universities offer contestable grants to staff for special projects to develop their teaching. These range from modest amounts of several hundred dollars to sizeable grants of around \$20,000. Project outcomes are usually shared internally and sometimes more widely. Examples of the topics for which teaching development grants have been used in three universities are shown in the table below:

Table 3b(iii)2: Examples of Teaching Development Grant Projects at three universities

University of Canterbury, 2015 ⁶⁷	<ul style="list-style-type: none"> • Clinical specialisation in Speech Therapy early childhood intervention • Connecting Courses and Collections: Interviews with Contemporary Artists • Implementing and evaluating a community and work-
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⁶² Auckland University of Technology Academic Audit Report 2014, p51, emph. added.

⁶³ <http://hedc.otago.ac.nz/hedc/about-us/our-people/> accessed 250316.

⁶⁴ www.aut.ac.nz/s/search.html?query=CfLAT accessed 250316.

⁶⁵ University of Waikato Academic Audit Report 2015, p49.

⁶⁶ Auckland University of Technology Academic Audit Report, 2016, p50.

⁶⁷ www.canterbury.ac.nz/academic-services/awards/development.shtml accessed 250316

	<ul style="list-style-type: none"> integrated course on social media • Online learning environments supporting graduate attributes • Supported Communication for Adults with Aphasia • 100-level Law Study • Design Thinking and Serious Play for Student Stakeholder Engagement
University of Otago, 2014 ⁶⁸	<ul style="list-style-type: none"> • How do University teachers 'teach, foster' or otherwise 'influence the development of the Otago graduate attribute 'global perspective'? • Let's talk! A tutorial dialogue system for FYHS • Teaching and Learning Experimentation • Statistics support for postgraduates at the University of Otago – A Pilot Scheme. • Locals Transition Programme • Framework for teaching clinical reasoning skills to undergraduate physiotherapy students and models for learning • Using evaluation data to improve teaching researchers • Development of an Interactive Online Pathology Tutoring System (AKA Pictation) • Supporting Distant Postgraduate Students • Developing postgraduate academic writing support through writing group pedagogies.
Auckland University of Technology, (selection – the University has supported over 100 projects in the last three years) ⁶⁹	<ul style="list-style-type: none"> • Increasing the retention rate in tertiary STEM subjects • To develop in-class and online resources to support the diverse learning needs of students studying employment relations within the Management discipline. • Teaching occupational health and safety (OHS) in an international context using a systems approach and the development of a continual improvement framework. • Development of a computer-based tutorial for database design. • Pen-Enabled Tablets in Teaching and Learning of STEM Subjects • Podiatric radiology diagnostic tool: Peer-assisted learning for the interpretation of x-rays • Coaching 'Oscar' performances out of Millennial healthcare students: Enhancing simulated learning environments • Talking heads: The creation of resources for assisting postgraduate students with the ethics process. • Effective strategies for teaching statistics to non-specialists. • Students as agents of change: Empowering households and communities through the use of mobile social media in a clinical paper.

Small numbers of university academic and teaching support staff are involved in Ako Aotearoa workshops and benchmarking projects and such educational

⁶⁸ <http://hedc.otago.ac.nz/hedc/wp-content/uploads/2015/04/Research-Report-2014.pdf> accessed 250316

⁶⁹ www.aut.ac.nz accessed 250316.

organisations as HERDSA, EDUCAUSE, and ACODE⁷⁰. Such involvement contributes to individual professional development and informs professional practice more widely.

3b(iv) Assessing Teaching Quality

All universities require staff to undertake formal student evaluations of their teaching, usually on a regular basis and in some cases at additional specific points in their academic career (such as within two years of appointment; prior to applying for promotion)⁷¹. There is some variability about what happens to the data emanating from student evaluation surveys: in some universities, teaching data are private to the teacher; in others, they are inputs to performance reviews that might, in turn, prompt an academic manager to encourage a staff member to undertake some form of professional development.

The last 10 years have seen a progressive shift in the approach to using survey data, from reliance on academics' own professionalism to take the initiative to enhance their teaching to a more managerial approach, which formalises how this happens. For example:

- At Victoria University "*[t]he Head of School is responsible for reviewing the teaching feedback results and identifying with the staff member any action that needs to be taken in the light of the student feedback*"⁷².
- At Lincoln University "*Divisional Directors are responsible for the quality of teaching, the delegation of teaching responsibilities, feedback on teaching and learning, and academic staff development and performance management*"⁷³.

In addition to in-house satisfaction surveys, relatively sophisticated internationally benchmarked questionnaires such as the Course Experience Questionnaire (CEQ) and the Australasian Survey of Student Engagement (AUSSE) are also used in all universities, and provide rich data about overall student experience.

Current accepted wisdom is that teaching quality itself is not intrinsically measurable. But notwithstanding the challenges in measuring teaching quality,

⁷⁰ HERDSA is the Higher Education Research and Development Society of Australasia; ACODE is the Australasian Council on Open, Distance and e-Learning; EDUCAUSE® is a community of IT leaders and professionals committed to advancing higher education.

⁷¹ <https://flexiblelearning.auckland.ac.nz/evaluate/>;
www.victoria.ac.nz/search?q=teaching+surveys;
[www.canterbury.ac.nz/academic-services/survey_support/student%20evaluation%20of%20teaching.shtml](http://www.canterbury.ac.nz/academic-services/survey-support/student%20evaluation%20of%20teaching.shtml); www.massey.ac.nz/massey/staffroom/teaching-and-learning/centres_tl/ctl/surveys/surveys_home.cfm;
[http://registry.lincoln.ac.nz/cache/LPP/Teaching%20and%20Learning%20\(ATLP\).pdf](http://registry.lincoln.ac.nz/cache/LPP/Teaching%20and%20Learning%20(ATLP).pdf);
www.aut.ac.nz/being-a-student/student-surveys;
www.waikato.ac.nz/tdu/resources/appraisal-evaluation.shtml;
www.otago.ac.nz/administration/policies/otago003251.html accessed 270316.

⁷² www.victoria.ac.nz/search?q=teaching+surveys accessed 2700316.

⁷³ [http://registry.lincoln.ac.nz/cache/LPP/Teaching%20and%20Learning%20\(ATLP\).pdf](http://registry.lincoln.ac.nz/cache/LPP/Teaching%20and%20Learning%20(ATLP).pdf) accessed 270316.

survey scores, as produced from standard teaching surveys, are useful as a mechanism for flagging areas where there might be potential problems, or particular strengths. The University of Canterbury, for instance, has a long-standing system of using survey data to identify courses that are outliers (both positively and negatively) and where action is required to be taken.⁷⁴

A recent OECD report noted that institutions globally:

...are still struggling to understand the causal link between their engagement in teaching and the quality of learning outcomes. Exploring the correlation among inputs, processes and outcomes of higher education calls for pioneering and in-depth evaluation instruments⁷⁵.

But, there is consensus on how good teaching is characterised. In most universities the processes for assessing teaching quality are multi-faceted. Universities acknowledge this in their criteria for promotion and for teaching awards with the most common strategy being to encourage (or require) staff to assemble a range of evidence in a portfolio. The University of Otago, for instance, advises in its document on preparing and assessing teaching evidence:

No single instrument is adequate to evaluate quality teaching because of the complexity of teaching, and particularly the complexity of what makes a 'good' teacher. ... [Staff] need to triangulate evidence from multiple sources.⁷⁶

Peer review is commonly used, albeit on a discretionary basis in some universities.

In all universities formal performance review pays attention to teaching capability.

As one example, the University of Otago advises a wide range of resources for staff when providing evidence about the quality of their teaching – as shown in the table below:⁷⁷

Table 3b(iv)3: University of Otago resources for evaluating teaching

Otago Teaching Profile	Appendix 3 in the Academic Promotion Policy includes advice about The Otago Teaching Profile http://www.otago.ac.nz/humanresources/otago087767.pdf The HEDC web site: http://hedc.otago.ac.nz/hedc/teaching/evaluating-your-teaching/teachingprofile/ Higher Education Development Centre, ext. 7581.
Guidelines for teaching at Otago	http://www.otago.ac.nz/staff/otago027122.pdf

⁷⁴ www.canterbury.ac.nz/ucpolicy/?SearchBy=Letter&Value=T accessed 270316. While this process refers to course surveys, not teaching surveys, it does imply the teaching process.

⁷⁵ Learning our lesson: Review of Quality Teaching In Higher Education, OECD, not dated, <https://www.oecd.org/edu/imhe/44058352.pdf> accessed 240316.

⁷⁶ <http://s://www.otago.ac.nz/humanresources/otago121878..pdf> accessed 230316.

⁷⁷ www.otago.ac.nz/humanresources/otago121878..pdf accessed 230316.

Evaluating your teaching	http://hedc.otago.ac.nz/hedc/teaching/evaluating-your-teaching/
Course evaluations	http://hedc.otago.ac.nz/hedc/teaching/evaluating-your-teaching/courseevaluation/
Coordinator/team leader evaluation	http://hedc.otago.ac.nz/hedc/teaching/evaluating-yourteaching/coordinator-team-leader-evaluation/
Peer review of teaching	http://hedc.otago.ac.nz/hedc/teaching/evaluating-your-teaching/peerreview/
Peer review of supervision	http://hedc.otago.ac.nz/hedc/teaching/evaluating-your-teaching/peerreview/
Evaluating small groups	http://hedc.otago.ac.nz/hedc/teaching/evaluating-your-teaching/evaluating-small-groups/

University teaching includes postgraduate supervision. As with undergraduate teaching a range of mechanisms is available for monitoring supervision quality. All universities have mandatory, regular reporting systems that both the student and the supervisor complete. Such systems enable compromised supervision quality to be identified and addressed. Formal reporting of individual student progress to a postgraduate board or postgraduate dean in all universities also provides an avenue for quality issues to be identified,

The intimate nature of thesis supervision, usually involving more than one supervisor, can produce a somewhat different dynamic to the notion of 'quality' than might be identified for undergraduate classroom teaching. Formal evaluation thus tends to be of 'supervision' rather than 'supervisor'. Universities are usually prompt to act on any supervision anomalies.

All universities recognise the specific expertise needed to supervise postgraduate research students effectively.

Firstly, universities are extremely careful about ensuring the staff who supervise and examine postgraduate research are well qualified to do so. In most universities an accreditation or registration system exists for supervisors. For example:

- At the University of Auckland *"all supervisors must be accredited. To reach and maintain accreditation they must hold at least a master's degree or equivalent research or professional experience (for master's supervision) or a doctoral degree or other appropriate qualification and experience (for doctoral supervision) and be engaged in research. ... Doctoral supervisors must have attended a CLear doctoral orientation seminar and then attend a doctoral briefing every five years. Main supervisors must have prior experience of co-supervision. ... Supervisors must be actively involved in research in the candidate's general field."*⁷⁸
- At the Auckland University of Technology all supervisors must attend a postgraduate training workshop before undertaking supervision and thereafter a workshop every second year. If an appointed supervisor has not already supervised a thesis to completion he or she is required to

⁷⁸ University of Auckland Academic Audit Report 2014, p46.

have an approved mentor supervisor who observes supervision practice, reports to the Associate Dean (Postgraduate) on any difficulties and who must oversee and sign off key decisions (such as appointment of examiners) and milestone reports⁷⁹.

- At the University of Canterbury, “[b]efore being appointed a primary supervisor for a PhD student an academic must complete the thesis supervisor course Each supervisor who enrolls in the course is assigned a supervisory mentor. It is expected that all supervisors will have a research interest and/or methodological expertise relevant to the student’s proposed research”⁸⁰.

Secondly, all universities have staff, resources and processes aimed at ensuring supervision of research students is of high quality, for instance: handbooks, mentoring systems, workshops, seminars, web resources. There is commonly a Code of Practice of some kind for supervisors. Furthermore, almost all universities have a comprehensive administrative structure devoted to ensuring supervision is effective and the postgraduate experience fulfilling, in particular Boards of Postgraduate Studies, Deans and Associate Deans, Postgraduate Centres.

These systems are of high quality across all universities, no doubt due in no small part to the shared ethos that places a high value on postgraduate research. The robustness of the system is tested not just by academic audits but also by the scrutiny that comes from involving external examiners⁸¹.

3b(v) Promotion and rewards for teaching excellence

All universities include teaching performance within the criteria for promotion. For example, the University of Waikato includes “recognition of teaching in a comprehensive way”⁸². Victoria University states that good teaching performance is essential and gives guidance on what constitutes evidence in both its Academic Promotions Booklet and in its Collective Agreement for Academic Staff⁸³. In addition to providing evidence of effective teaching practice, promotion applicants at the Auckland University of Technology must provide evidence of the research and scholarship they have undertaken to demonstrate a scholarly foundation to their teaching⁸⁴. The University of Auckland’s Academic Standards Policy states that applicants for promotion are required to submit a teaching portfolio:

⁷⁹ Auckland University of Technology Academic Audit Report 2016, p54.

⁸⁰ University of Canterbury Academic Audit Report 2015, p54.

⁸¹ The reasons for such robust postgraduate processes are explored further in Jan Cameron “Wet Paint, Wallpaper, Frameworks and Foundations: Building for Quality Culture in New Zealand Universities” paper to Macau Polytechnic and Asia-Pacific Quality Network Higher Education conference, Macau, November 2015.

⁸² University of Waikato Academic Audit Report 2015, p51.

⁸³ Victoria University Academic Audit Report 2015, p52.

⁸⁴ Auckland University of Technology Academic Audit Report 2015, p52.

*The portfolio will detail their teaching and supervision contributions and demonstrate how reflection on the learning experiences and achievements of their students has been used to refine their practice. Staff members will be expected to secure formal feedback from students through University-endorsed course and lecturer evaluations on all courses to which they have made substantial contributions.*⁸⁵

Furthermore, Auckland staff members seeking promotion to or continuation at associate professor and professor level must include a report from a peer review team appointed by their Academic Head, which addresses teaching and leadership⁸⁶.

All universities have teaching award systems, some (for example the University of Canterbury) having had them for nearly 20 years. These pre-date the national awards. The categories for awards are commonly sophisticated, recognising excellence in such specialised areas as Kaupapa Māori teaching, e-learning, postgraduate supervision, team teaching as well as awards for early career academics⁸⁷.

Another example is the Committee for Advancement of Learning and Teaching (CALT) at the University of Otago:

*The primary purposes of the CALT Awards for Enhancing Teaching and Learning with Technology are to recognise the pedagogically-sound use of technology at Otago and sustain existing efforts in advancing teaching and learning with technology. Winners will be awarded: \$5000 (1st); \$3500 (2nd); or \$1500 (3rd) to be used towards your own academic development. HEDC support may also be available to sustain and expand your teaching enhancement. [University of Otago]*⁸⁸

Universities have dominated the national Tertiary Teaching Excellence Awards since their inception, with most universities appearing multiple times⁸⁹.

Universities like Waikato have structured systems whereby excellent teachers share good practice, act as mentors and facilitate teaching projects⁹⁰.

⁸⁵ <https://cdn.auckland.ac.nz/assets/central/about/the-university/how-the-university-works/policy-and-administration/academic-standards-rf-srf-l-sl-ap-p.pdf>, p28, accessed 230316.

⁸⁶ *Op.cit.*

⁸⁷ See, for example, University of Waikato Academic audit report 2015, p51; Lincoln University Excellence in Teaching awards policy <http://registry.lincoln.ac.nz> accessed 250316.

⁸⁸ www.otago.ac.nz/council/committees/committees/otago000942.html accessed 250316.

⁸⁹ Two-thirds of recipients from 2008-2015 were from universities (personal calculation) <https://ako.aotearoa.ac.nz/ako-aotearoa/resources/pages/ttea-recipients> accessed 250316.

⁹⁰ University of Waikato Academic audit report 2015, p51.

The Guidelines produced by Ako Aotearoa for the Tertiary Teaching Excellence Awards are available for universities⁹¹. These affirm the multiple dimensions of excellent teaching practice.

3b(vi) Teaching-Research Nexus

Emphasis on the research role of university teachers long pre-dates the introduction of the PBRF assessment. The teaching-researching nexus is fundamental to universities, as defined in the Education Act⁹². The Education Act requires that all degree teaching is undertaken mainly by people engaged in research⁹³.

As noted in section 3b(iii) above, academic staff are expected to hold appropriate research qualifications (or professional expertise of equivalent level). Academic audits assess how universities manage workloads to ensure degree-level teaching is undertaken mainly by staff engaged in research. Universities use some kind of workload formula or algorithm to ensure this⁹⁴. While all universities employ tutors or teaching assistants who might not also have research responsibilities, many such tutors are postgraduate students who are engaged in doctoral research. In such cases programme teaching is normally overseen by academic staff.

The most recent AQA Cycle 5 audits did not explore the impact of staff research activity on undergraduate teaching. However, Cycle 2 audits (2000–2001) focussed on university research, including the relationship to teaching. A summary of findings by New Zealand Universities Academic Audit Unit (NZUAAU)⁹⁵ Director John Jennings for that cycle reported:

The self reviews carried out by universities in preparation for audit exposed a general lack of formal mechanisms to test and measure the nexus, which is not surprising since universities regarded the nexus as 'self-evident'. ... Universities took up the challenge offered by audit to investigate the nature of the nexus. ... The findings of universities ... demonstrated the richness and complexity of the two-way links and influences between research and teaching - the influence and impact of

⁹¹ <https://ako.aotearoa.ac.nz/sites/default/files/TTEA%202016%20-%20Criteria%20and%20Guidelines.pdf> accessed 240316.

⁹² Education Act 1989 S162 4(b): A university is characterised by a wide diversity of teaching and research, especially at a higher level, that maintains, advances, disseminates, and assists the application of, knowledge, develops intellectual independence, and promotes community learning.

⁹³ Education Amendment Act 2011 s532B (3): The [degree] award recognises the completion of a programme of advanced learning that (a) is taught mainly by people engaged in research; and (b) emphasises general principles and basic knowledge as the basis for self-directed work and learning.

⁹⁴ Most commonly this is a 40/40/20 model (research/teaching/administration, professional development or service, which might include special consideration of community responsibilities for Maori/Māori or Pacific staff).

⁹⁵ NZUAAU is the former name for AQA.

*research on teaching (more readily recognised), and of teaching on research (less readily acknowledged).*⁹⁶

The issue has been explored in detail within the sector⁹⁷. Scholarly articles commonly refer to Boyer's model of scholarship as the basis of the nexus, summarised as:

- *the scholarship of discovery*—original research and the advancement of knowledge
- *the scholarship of integration*—connecting ideas and synthesis across discipline boundaries
- *the scholarship of application*—assembling knowledge through an interaction between intellectual and 'real world' problems of practice
- *the scholarship of teaching*—transforming knowledge through bridging the gap between the scholar's understanding and the student's learning⁹⁸.

Another scholar⁹⁹ has referred to a tangible and an intangible nexus:

- the *tangible* nexus relating to the transmission of advanced knowledge and skills
- the *intangible* nexus consisting of two processes—(a) the development in students of an (analytical) approach and a (positive) attitude/approach towards knowledge, and, (b) for academics, the stimulation of new thinking (from their students' questions), and clarification of their thinking about their ideas, through having to structure their research concepts clearly
- the *global* nexus referring to the interaction between teaching and research at the departmental level, and to the direction and framework this provides for courses.

A paper by the University of Canterbury prepared for the Cycle 2 audit identified three types of links between teaching and research:

- transmission links – teaching as a means of transmitting new research knowledge (research-teaching); involvement in teaching that informs and enriches the research process (teaching-research)
- process links – teaching models that encourage students to engage in a research/critical enquiry approach to learning
- research culture – teachers and students work together in a community of inquiry, in which learning provides the vital link between research and teaching¹⁰⁰.

⁹⁶ John Jennings "Research audit of New Zealand universities 2000-2001: a summary of findings" NZUAAU, August 2002, p17.

⁹⁷ See Spronken-Smith and Patrick & Willis (below) for an overview of the more influential research.

⁹⁸ Summary from Ramsden, 1998, in Rachel Patrick and Deborah Willis "Enhancing learning with research: A working paper", Victoria University of Wellington, 1998. www.utdc.vuw.ac.nz/documentation/spectrum1/paper11.htm accessed 290316.

⁹⁹ Ruth Neumann, 1996, cited in Patrick and Willis, 1998.

¹⁰⁰ Jennings, p18.

Jennings summarised student perceptions of the positive value of staff research involvement as:

- The enthusiasm of those staff active in research, and their enthusiasm for their areas of research, made staff highly motivated teachers.
- Students appreciate the immediacy conveyed through their contact with staff who are active in research, and the currency of the ideas of staff as a result of their research.
- Students acquire transferable skills through research methods and problem-solving courses.
- Students value involvement in research. At undergraduate level, such involvement has often helped students decide to undertake postgraduate work.

To these might be added other values identified by Patrick and Willis in their paper for Victoria University, including

- credibility of staff
- the similarity between research and learning since both involve learning, discovery or construction of knowledge¹⁰¹.

Negative value was reported by some New Zealand students in Cycle 2, where they perceived staff were prioritising their research over their teaching and where they saw themselves being “used” as unpaid research assistants on staff projects¹⁰².

The most recent round of AQA Cycle 5 audits did not hear these criticisms from students.

Patrick and Willis agreed with previous scholars that research and teaching are “symbiotic” in that they benefit each other through:

- the use of research findings in the classroom
- the use of research to model ways of thinking
- teaching research methods and attitudes, and having students carry out their own research
- carrying out collaborative research with students
- research into teaching practice and student learning
- getting research ideas from student questions.

Rachel Spronken-Smith of the University of Otago uses a model of curriculum design to differentiate research-led, research-based, research-oriented and research-tutored teaching as reflecting whether pedagogy is student-focussed or teacher-focussed and whether it is focussed on process or content¹⁰³.

¹⁰¹ Patrick and Willis, 1998.

¹⁰² Jennings, p20.

¹⁰³ Rachel Spronken-Smith, University of Otago, *Experiencing the Process of Knowledge Creation: The Nature and Use of Inquiry-Based Learning in Higher Education*, p9. (not dated). <https://akoaootearoa.ac.nz/sites/default/files/u14/IBL%20-%20Report%20-%20Appendix%20A%20-%20Review.pdf> accessed 290316.

While much of the literature cited above is over 20 years old, it persists in pedagogical discussion as remaining relevant, although the emphasis might be shifting from teaching to learning, by both students and teachers. For instance, recent approaches to inquiry-based learning would appear to reinforce the centrality of a research-*learning* nexus. Inquiry-based learning has been characterised as pedagogy that best enables students to experience the *processes* of knowledge creation¹⁰⁴.

Spronken-Smith explains that this form of learning "*is about exercising the intellect to learn, use, test and revise ideas, concepts, theoretical constructs, propositions and methodological principles in active inquiry*". Two benefits, she argues, are enhanced learning outcomes for students and opportunities for teachers to integrate their research and their teaching¹⁰⁵. Citing other authors, Spronken-Smith concludes that tertiary teaching and learning should occur in communities of inquiry in which teachers and staff are co-learners¹⁰⁶. She notes one author's argument that such communities of inquiry should be accessible to all undergraduates, not just the high achievers or elite institutions¹⁰⁷.

From the brief overview above it is clear that for university staff the research-teaching/learning nexus is intrinsic to what they do and, as indicated in the New Zealand Education Act, is fundamental for higher learning. It follows that such experience requires the community of scholars referred to above.

3c. Graduate Outcomes Focus – the Student/Employer/Productivity Nexus. (Q17, Q21, Q29, Q31, Q32, Q33, Q34)

In 2015, New Zealand university students were pursuing qualifications across three broad areas:

- **28% profession-led qualifications** – these are qualifications where an industry body specifies what a graduate must be capable of. The industry body typically has a role accrediting and auditing the programmes of education providers. This covers the disciplines of accounting, law, architecture, engineering, the various health sciences professions and teaching.
- **53% industry-focussed qualifications** – these are qualifications that are producing graduates with an expectation that the majority will end up working in a particular sector (agriculture) or functional area (IT). This covers the disciplines such as ICT, agriculture, forestry and aquaculture,

¹⁰⁴ Spronken-Smith, p5, emph. added.

¹⁰⁵ Spronken-Smith, p2.

¹⁰⁶ Spronken-Smith, p10.

¹⁰⁷ A. Brew 2003 Teaching and research: New relationships and their implications for inquiry based teaching and learning in higher education. Higher Education Research and Development 22, 3-18.

commerce, marketing and finance, library studies, journalism, economics, sports and recreation, the performing arts, graphic design, and food and hospitality).

- **19% other (arts) qualifications** – these are the disciplines producing graduates in areas such as society and culture (the arts) and languages.

As previously described in Section 1, all qualifications have an agreed graduate profile that says what skills and capabilities a student will have by the time they graduate. The curriculum (courses and their content) that must be successfully completed to achieve the qualification is designed to progressively develop the student along the lines of the graduate profile.

The graduate profiles and curriculum for profession-led qualifications are always developed with the industry bodies responsible for accreditation and audit.

The graduate profiles for industry-focussed qualifications are nearly always developed with input from relevant industry bodies and employers. Many departments have advisory bodies with members drawn from industry that advise on curriculum and assessment.

The graduate profiles for arts graduates are increasingly being developed with employer input, but this is significantly more variable than for other subject areas.

All universities complement these more formal quality arrangements with a range of other mechanisms for assessing employer satisfaction with the skills and generic capabilities of graduates. These include:

- formal surveys and employer focus groups
- feedback from industry bodies
- structured meetings with key employers – particularly where they provide work-placement and internship opportunities.

A fact-sheet on how the university sector produces employable graduates is attached as **Appendix 3**. It provides more information on the material above and gives examples.

New Zealand does not have a national survey of employers, but many of the universities do their own internal surveying. The typical finding of surveys is that the skills rated as important by employers are not degree-specific skills, but are, instead, a broader range of more transferable capabilities.

For example, the 2015 Victoria University of Wellington survey of student employability asked employers to rate the importance of 20 skills and attributes. 'Degree-relevant skills' was one of the 20 options provided and it did not even make the top 10¹⁰⁸. The top 10 skills and attributes sought by employers of

¹⁰⁸ Though Although we are sure it would be more highly rated if universities were producing graduates that were unskilled.

VUW graduates were (in order of most important to least important with the mean for expected competency levels shown):

Skills and Attributes	Mean
Work ethic	8.6
Written communication skills	8.1
Problem solving	7.6
Team work	7.4
Analytical & critical thinking	7.2
Initiative & enterprise	7.2
Self-management	7.1
Interpersonal skills	7.0
Verbal communication	6.5
Energy & enthusiasm	Not calculated

Similarly, the University of Otago surveys its students 18 months after graduation and asks them what attributes they have most needed in their work to that point. The top eight attributes cited in the most recent survey were (most important first),

1. Problem Solving Ability
2. A Willingness to Learn
3. Skills to Plan their Own Work
4. Flexibility and Adaptability
5. Independent Judgement
6. Oral Communication
7. Written Communication
8. Self Confidence

The mechanisms for developing graduate profiles and the associated curriculum are good, but there are opportunities to strengthen them further. Some of the key issues have been covered in Section 2 in the material on Workforce Planning – including the fact that not all graduate profiles are developed with employer input.

Surveying employers of graduates is also very challenging. Australia has recently attempted this and their lessons are usefully summarised in an Employer Satisfaction Survey Trial Report available at <https://www.qilt.edu.au/about-this-site/employer-satisfaction-survey-%28ess%29>

3c(i) What the graduate outcomes focus means for graduate earnings and employment outcomes

As previously mentioned, employment and earnings outcomes for university graduates are generally good in New Zealand.

Universities New Zealand examined the Census data for everyone in employment in 2013 and broke it down by their highest level of study to assess earnings outcomes. Ministry of Education data¹⁰⁹ on the numbers of graduates

¹⁰⁹ Park Z, Mahoney P, Smart W, Smyth R, What Young Graduates Earn when they leave study, Ministry of Education, 2014.

on a benefit two and five years after graduation was included in this exercise and the results are shown below:

People in the workforce at the time of the 2013 Census.	No post-school qualification	Lvl 4 (Certificate)	Lvl 5-6 Diploma	Lvl 7 (Bachelor's)	Lvl 8 (Honours)	Lvl 9 (Master's)	Lvl 10 (Doctorate)
Total Annual Income 20-65+ Yr Olds Full Time & Part Time	\$43,412	\$41,359	\$47,949	\$57,654	\$64,544	\$64,202	\$83,112
Total Annual Income 20-65+ Yr Olds Full Time Only	\$58,183	\$54,007	\$62,695	\$75,618	\$81,850	\$82,559	\$99,279
Avg Annual Income 30-39 Yr Olds	\$54,148	\$53,526	\$58,679	\$71,326	\$77,084	\$74,749	\$83,041
Total people aged 30-39	127,122	31,639	28,332	74,992	15,511	13,711	2,841
Additional lifetime earnings above a school leaver 20-65+ Yr Olds	\$0	\$671,161	\$942,179	\$1,381,743	\$1,643,726	\$1,623,010	\$2,088,255
Whole of life Net Present Value (NPV) for grads at Lvl 4 & above in full time employment 20-65+ Yr Olds	\$0	\$295,685	\$383,856	\$538,738	\$637,360	\$609,301	\$727,318
Age when better off as a graduate (NPV goes positive) Lvl 4+ only 20-65+ Yr Olds	NA	26	31	33	33	34	36
% on a benefit 2 years after graduating 20-65+ Yr Olds	11%	7%	4%	2%	1%	2%	0%
% on a benefit 5 years after graduating 20-65+ Yr Olds	14%	9%	7%	2%	1%	0%	0%
NPV of income tax paid to Govt above school leaver 25-65+ Yr Olds	\$0	\$59,686	\$89,770	\$150,385	\$182,061	\$174,912	\$232,120

As can be seen, the more educated you are in New Zealand the more you are likely to earn and the more likely you are to be in employment.

Universities NZ also analysed all graduates aged 29–38 by the job title they were reported as working under. This showed the following:

Job title cluster	%
Degree a professional requirement (Doctor, Lawyer) - this includes some technician roles at sub-degree level (e.g. engineers)	42.1%
Degree normal and probably expected (Policy Analyst, management consultant, IT professional, etc)	25.8%
Degree may be useful to support a general management role (retail manager, farmer)	12.9%
Degree not uncommon, but possibly not necessary (actors, musicians)	5.2%
Degree may be useful later for progression within same industry but currently not required (Police officer, non-commissioned defence force personnel)	2.3%
Degree almost certainly not necessary (Groundskeeper, gardener, courier, receptionist – includes unemployed)	11.7%
Total	100.0%

Although there is some under-employment of graduates, the majority of graduates are in roles that, on the face of it, would use the skills and competencies gained in their qualification.

3d Productivity (Q29 & Q35)

Productivity appears to have four dimensions in the context of this inquiry.

3d(i) The productivity of universities as institutions

Material provided earlier in this paper (and in Appendix 1) has shown that New Zealand universities have become significantly more productive over the past decade and are continuing to innovate and adapt as they maintain quality across their teaching and research with less funding and greater competition.

3d(ii) The productivity of graduates

Universities are producing graduates who, on average, are achieving employment rates and earning levels in line with their level of education.

There are the direct economic benefits to graduates themselves. In addition to these direct economic benefits, there are a number of other tangible benefits to graduates and society. As most recently by McMahon¹¹⁰ these are:

- The private non-economic benefits of higher education to graduates and their families is typically around 122% of the value of the direct economic benefits. These non-economic benefits include elements such as being able to make smarter household purchasing decisions, being more productive in the non-work environment, being able to live in healthier and more desirable areas, living longer, being healthier and having healthier, more successful children.
- The additional non-economic benefits of higher education to society are typically another 89% of the economic benefits. These additional benefits come from elements such as a more stable society, greater participation of graduates in their communities, savings in expenditure on health, lower crime rates, and so on.

See Appendix 2 for a full list of the benefits and how they were assessed.

Looking forward, the nature of work is changing because globalisation encourages the equalisation of international incomes for a given task and increases the flow of capital and ideas between countries. The increasing extent of the market that has resulted from globalization has exposed all open economies to a much larger and wider range of ideas. The ability of a country to benefit from that exposure to ideas – its “absorptive capacity” - depends to a significant extent on the extent of its investment in the education of its workforce.¹¹¹ A university-educated workforce is better able to adopt and adapt those ideas that are available in the rest of the world. Technological change

¹¹⁰ McMahon, Walter W (2009). Higher Learning, Greater Good: The Private and Social Benefits of Higher Education. Baltimore: The Johns Hopkins University Press.

¹¹¹ Romer, Paul (2010) “Which Parts of Globalization Matter for Catch-Up Growth?” NBER Working Paper 15755.

associated with globalization and local innovation allows increased substitution of capital for labour, and this will in turn increase the social and private returns to university education.

Since that path of technical change and innovation cannot accurately be predicted, New Zealand universities believe they best serve graduates by preparing them for multiple careers with competencies that are transferrable and built upon the ability to continue learning and adapting beyond the university environment.

3d(iii) The productivity arising from university research and knowledge transfer

According to the biennial research and development (R&D) survey conducted by Statistics New Zealand, universities account for 30% of research activity in New Zealand, which in turn generates around 25% of total university income. Much of the research income comes from government sources and in recent years there have been calls for research funding to be linked to the outcomes of the research and the impact that it makes on the community outside of the university.

A similar situation exists in comparable jurisdictions, such as the UK, Australia and the US. Defining research impact is relatively straightforward, with a typical definition being that it is the demonstrable contribution that research makes to the economy, society, public policy, health, environment or quality of life, beyond a contribution to academia. However, despite many trying to grapple with the issue, no one has been able to devise a satisfactory way of measuring the cumulative economic impact of university research.

Measuring the cumulative academic impact of university research is relatively simple and has been carried out for a number of years in New Zealand through the PBRF. In the UK it is measured through the Research Excellence Framework (previously the Research Assessment Exercise), where academics are assessed through using relatively easily quantifiable measures such as refereed journal articles and monographs, research grants, projects, awards, editorships, patents, plant breeder's rights, designs, and commercialisation income. No one measure is perfect, but bundles of measures (such as those used for international university rankings) have value. Other measures have their faults (e.g., the number of patents can be misleading as often large numbers are taken out in order to provide a shield around one process) and are not suitable as a measure of innovation.

University research is different from research carried out in the private sector in that much of it is not designed to have immediate application in the commercial world. But, as a minimum, all university research contributes to the economy by increasing the stock of knowledge and research skills in our society. The fact that we do not see a short-term commercial impact from university research should not be taken as an indication that there is no commercial impact.

A key activity of the universities is developing the skills of the next generation of researchers. Research training builds up a pool of qualified researchers who can work with the public and private sectors. This development is not just of new researchers but development of new networks and new capabilities that enhance individual and institutional reputation, facilitating access to overseas research. Another key activity is conducting basic research: research that pushes knowledge forward for its own sake, and is the foundation that others will draw upon at a later stage for research that may have commercial applications.

One of the main problems with assessing the impact of research is the time that can elapse from the generation of an idea to a discernible return in the marketplace. For example, Albert Einstein's work in 1917 on radiation led to the development of lasers in the 1970s – long after his death – with other research added in between.

An associated problem with that of the length of time research can take to have an impact is that the passage of time allows for the original research to be diluted: while a link can be shown to earlier research, other research will inevitably be drawn upon and it is practically impossible to ascribe the benefits to any one particular piece of research.

A further complication is that only a small proportion of ideas lead to successful innovation. A UK study estimated that 3000 to 4000 ideas are investigated in order to achieve commercial innovation of any significance (with the figure for drugs being 6000 to 8000). This does not mean that the time spent on the other ideas was wasted; in fact, many useful lessons can be learned and experience built up from research that has no direct impact, best summed up by Edison who is recorded as saying "*I have not failed. I have just discovered 10,000 ways that won't work.*"

In the absence of obvious impact measures, proxy measures have been suggested, with the UK's Research Evaluation Framework (REF), for example, favouring adopting case studies, looking at research conducted 15 years earlier in an attempt to assess economic impact. A similar situation exists in New Zealand, where in 2014 the Royal Society produced a number of case studies of Marsden Fund research from a decade before that are only now being implemented. However, although case studies can demonstrate impact, they can't be used to measure it in aggregate.

While New Zealand university researchers are rated highly under the PBRF and the universities are all ranked well in the major international ranking systems (which place most emphasis on research performance), their contribution would be greater if not for a number of obstacles. Of the Vote: Science and Innovation allocation of just under \$1 billion, around \$320 million is available on a fully contestable basis, with another \$180 million being allocated through the National 12 Science Challenges and the 10 Centres of Research Excellence. (Although the CoREs can be hosted by any Tertiary Education Institution, universities have in all cases been the host institution.)

A major issue in the past has been that the contestable funds have been distributed through a large number of small pools. While in recent years they

have been consolidated into a smaller number of funds with more flexible arrangements, the amount of funds available remains small and the number of players chasing the funds relatively large; the eight universities, seven Crown Research Institutes (and Callaghan Innovation) are competing for the same funding. The result is that for funding such as that from the Marsden Fund and the Health Research Council, success rates are around 10%. This means that a lot of time that could be spent on research is used preparing unsuccessful applications. These same players are also involved in competing for the relatively small amount of funding available through the Challenges, while the universities are all vying for the CoRE funding (which also involves participation by five Crown Research Institutes and Callaghan Innovation).

3d(iv) Productivity in lifting economic and social performance in New Zealand.

Productivity growth normally requires investment in both physical capital (such as labour-saving technology) and human capital (such as skills and knowledge). An analysis of why New Zealand's productivity is so far below that of the OECD average is the 2013 Treasury paper by Zuccollo, Maani, Kaye-Blake and Zeng¹¹² (already referenced in the Productivity Commission's Issues paper). This paper finds that about half the discrepancy is methodological and the main factors for the rest include distance to market and the lack of many very large companies.

Other research has also drawn attention to New Zealand's relatively low level of investment in non-residential fixed capital formation, which is important because, all other things equal, labour productivity will be higher the larger the investment in physical capital for production processes.¹¹³ Zuccollo et al. also find that the large number of sub-degree qualifications (type B), which are almost exclusively offered by the non-university tertiary sector, are dragging down national averages.

Nevertheless, when we look at international literature on where and how universities should be contributing to productivity, it appears that the main things universities should be doing are:

1. **Increasing worker productivity.** Increasing the capabilities and competencies of graduates in areas that make them:
 - a. employable throughout their careers (increasing labour force participation)
 - b. more productive personally
 - c. able to lift the productivity of their teams and wider organisation.

¹¹² Zuccollo J, Maani S, Kaye-Blake B, Zeng L, Private Returns to Tertiary Education, How Does New Zealand Compare to the OECD, Treasury Working Paper 13/10, July 2013.

¹¹³ Syverson, Chad (2010) "What Determines Productivity" *Journal of Economic Literature*.

Recent literature on competency-based education seems to have been encouraged by a combination of the following:

- research on the contribution of primary and secondary education to developing cognitive skills that suggested skills-based measures were better measures of the wage premium for education than the qualification attained
- attempts to improve the short-term employability of graduates and their long-term adaptability to the changing economy.

Definitions of competency-based education and research on the measurement of the competencies gained from tertiary education appear to still be at the formative stage and mainly emerging from the European Union (EU):

- Mulder (et al.)¹¹⁴ provide a survey of the development of the principles of competence-based education and the importance attached to competence-based education in achieving EU objectives of developing a 'reference knowledge economy'. This analysis is contrasted with a case study of universities in the Netherlands that considered both the differences in competence-based education and the current model, as well as the costs of implementing a competence-based system
- an OECD initiative "*Assessment of Higher Education Learning Outcomes*" published a three-volume report on a feasibility study of an international framework for comparing the outcomes from graduate education in three subject areas – 'generic skills, economics and engineering'¹¹⁵
- there are examples of good practice guides for competency-based education at a general¹¹⁶ and case study level¹¹⁷.

However, former EU education ministers have proposed and applied a framework for assessing how EU higher education policies can help universities to: "*...face the challenges of quickly changing societies which are dependent on innovation to cater for future well-being*¹¹⁸."

¹¹⁴ Mulder M, Gulikers J, Wesselink R, Biemans H. 'The new competence concept in higher education: error or enrichment?', Paper presented at the AERA, New York, March 25, 2008' Department of Education and Competence Studies, Wageningen University

¹¹⁵ <http://www.oecd.org/education/skills-beyond-school/AHELOFSReportVolume1.pdf>

¹¹⁶ McClarty K L and Gaertner M N. (2015). *Measuring mastery best practices for assessment in competency-based education* Center for College & Career Success, Pearson.

¹¹⁷ Baaken T, Kiel B and Kliewe T. (2015). *Real World Projects with Companies Supporting Competence Development in Higher Education*, Münster University of Applied Sciences, Münster, Germany, *International Journal of Higher Education Vol. 4, No. 3; 2015*

¹¹⁸ Ritzen, J., Marconi, G., & Sasso, Simone. (2014). *University policy needs to beef up for Europe to be more innovative* (Technical report). Retrieved from http://empowereu.org/wp-content/uploads/2015/01/FINAL_EEU_2014_v2.pdf. P5

Some of the key conclusions of the report are:

- very few EU countries have high innovation and low expenditure per student (relative to GDP per capita)
- employer satisfaction is the only available measure of graduate skill and employer satisfaction seems to be higher in countries with higher research performance
- successful transition of graduates to the labour market still receives little attention, both in government policy and in university policy.

Through the increasing involvement of employers in graduate profiles (determining what competencies and skills are developed) and curriculum review (detailing how the competencies and skills are developed), New Zealand universities are already doing a lot in this space. Involving employers more systematically in these processes could generate further benefits, as could a more structured consideration of what competencies and skills contribute most to workplace productivity.

2. **Providing education to a greater proportion of the population.** As globalisation and technology change has lifted workplace productivity, demand for unskilled and semi-skilled labour has fallen and demand for skilled labour has risen. This has increased industry demand for a more skilled and educated workforce¹¹⁹.

In general terms, universities have capacity for growth in student numbers but it is capped in areas where the teaching/learning environment depends upon specialised infrastructure (for example, engineering, medicine).

3. **Producing and transferring knowledge.** In theory, universities generate knowledge through research and then transfer it to industry and society directly through publications, commissioned work, conference presentations, media articles, and so on.

There are relatively few New Zealand examples of the estimated returns to New Zealand from R&D. Hall and Scobie¹²⁰ estimated the average returns to research and development from government-funded agricultural research in New Zealand and found returns of about 17%, but also noted that a key benefit from the R&D was preserving access to a stock of foreign knowledge.

Growth accounting models provide a 'top-down' aggregate approach to estimating the long run contribution of R&D to economic growth. Deloitte

¹¹⁹ Acemoglu, D., & Autor, D. (2011). Skills, tasks and technologies: Implications for employment and earnings. *Handbook of Labor Economics*, 4, 1043–1171. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0169721811024105>

¹²⁰ Hall, J. & Scobie, G M. (2006). The Role of R&D in Productivity Growth: The Case of Agriculture in New Zealand: 1927 to 2001 *New Zealand Treasury Working Paper 06/01 MARCH 2006*, p32

Access Economics¹²¹ estimated that a 10% increase in education R&D per capita will increase steady state output by about 1.8% of GDP. This was based on a cross-country growth accounting model across a sample of 37 countries (including New Zealand) using data from 1980 to 2010.

4. **Teaching entrepreneurship and/or converting research into commercial intellectual property**

We were unable to locate research showing how (and whether) universities can create entrepreneurs where students are not naturally entrepreneurial in the first instance. However, there are many examples in New Zealand and overseas of universities delivering programmes that help entrepreneurs gain the skills to successfully get their ideas to market.

- All New Zealand universities offer qualifications in entrepreneurship.
- All New Zealand universities also have incubator-type services to help staff and students commercialise their ideas.
- New Zealand universities also all support a range of commercial activities ranging from patents and the sale of intellectual property to the operation of large commercial research and knowledge transfer entities (like the University of Auckland's UniServices, and the University of Otago's Otago Innovation Limited).

Generating knowledge for commercial purposes is not something that has motivated the majority of academics. Instead, as publicly funded institutions, universities in New Zealand have tended to see their research outputs as a public good and have encouraged free publication and dissemination of new ideas.

3e. Impact of fees on student demand (Q37, Q31, & Q38)

There is extensive literature examining the impact of fees and other associated costs of studying on demand. The findings can be summarised as follows.

- If students are required to contribute to the cost of their education they are more likely to commit themselves to their studies and complete studies successfully¹²².

¹²¹ Deloitte Access Economics. (2015). The importance of universities to Australia's prosperity A report prepared for Universities Australia. <https://www.universitiesaustralia.edu.au/news/commissioned-studies/The-Importance-of-universities-to-Australia-s-prosperity#.VvmS2zjou70>

¹²² Centre for American Progress, *The Relationship Between Student Debt and College Completion*, June 2015, <https://www.americanprogress.org/issues/higher-education/news/2015/06/26/116019/the-relationship-between-student-debt-and-college-completion/> Or, The Australian, Some Student Debt May be a Good Thing, June 2015 <http://www.theaustralian.com.au/higher-education/some-student-debt-may-be-a-good-thing/news-story/5c4335194b8550920f49d335a746dd97>

- The cost of study (after any applicable financial support) does affect the ability or willingness of some students to take up study¹²³.
- However, for a significant proportion of students, price is not the main obstacle to study and they will pay more for qualifications they perceive as being likely to lead to better employment and life outcomes¹²⁴.
- University education is perceived as one of the main ways for young people to achieve social mobility and to have better careers and lives. Parents and students are more likely to pay as much as they can to get the branded qualifications they believe will lead to better employment and life outcomes¹²⁵.
- For students from backgrounds where there is little experience with university education, any significant fees or loans are often enough to dissuade them from participating¹²⁶.

In general, the history of western university education in the past 30 years has been one of finding fee, loan, scholarship and other student support settings that hit the 'sweet spot' between managing costs while maximising participation of target groups (usually young people and those from traditionally disadvantaged/under-represented backgrounds).

3f. Internationalisation focus (Q28, Q44 & Q45)

As described in Section 1, universities are now dependent upon international student fee revenue to remain financially viable. International students generated 9.9% of the university sector's income in 2014 at a time when the sector as a whole reported a net surplus of 3.6%¹²⁷.

International students become brand ambassadors for New Zealand when they return to their home country, and have a strong influence on their peers'

¹²³ Page 51, Baxter, *Sharing the Public and Private Costs of Tertiary Education*, Policy Quarterly, Volume 8, Issue 2, May 2012

<http://ips.ac.nz/publications/files/4295b3c417c.pdf>

¹²⁴ Page 77, 98-9, European Commission, *Do changes in cost-sharing have an impact on the behaviour of students and higher education institutions?*, May 2014,

http://ec.europa.eu/education/library/study/2014/cost-sharing/comparative-report_en.pdf

¹²⁵ US Department of Education, *Fact Sheet: Focusing Higher Education on Student Success*, July 2015, <http://www.ed.gov/news/press-releases/fact-sheet-focusing-higher-education-student-success> and Page 23, Atherton et. al., *Does Cost Matter? Students' understanding of the higher education finance system and how cost affects their decisions*, National Education Opportunities Network, 2015

http://www.educationopportunities.co.uk/wp-content/uploads/DoesCostMatter_ANEONReport.pdf

¹²⁶ Callender, C., & Jackson, J. *Does the fear of debt deter students from higher education?* Journal of social policy, 34 (4), 2005. Palameta, B., & Voyer, J.P. *Willingness to pay for Post-secondary Education Among Under-represented Groups – Report*. Toronto: Higher Education Quality Council of Ontario, 2010.

¹²⁷ From the cumulative 2014 Annual Reports of the eight universities.

education country destination¹²⁸, which in turn has the ability to increase the number of international students studying in New Zealand.

Also, as described in Section 1, half of New Zealand's academic staff were recruited from overseas. The New Zealand university system is now dependent on international rankings for recruiting staff and students and those are driven by international reputation, publications and citations.

International PHD students are an important contributor to the development of international research partnerships. Often the relationships between a New Zealand University and an international university are built from the ground up, through an alumnus.

New Zealand universities also recognise they are producing graduates for a globalised society and workforce. These graduates are more likely to gain employment and succeed in their work if they can work across borders and with different cultures.

The fact that 11% of students at New Zealand universities are international students assists with this. It allows domestic students to mingle and work with students from other cultures.

All universities have study abroad and student exchange arrangements to support a proportion of students in getting some experience of living and studying in a foreign country.

Overall, internationalisation is a good (and necessary) part of the New Zealand university system albeit with some challenges. Key challenges are:

- The system has become very dependent upon international students. If there is another crisis leading to a significant reduction in international student numbers, such as happened in 2002, the system would be at significant risk of failure. The system is under significantly more pressure than was the case in 2002.
- New Zealand's key international student markets are all moving from being exporters of students to being importers. They are increasingly looking for relationships built upon the principle of reciprocity. This means two way student-flows, research collaborations and matched-research funding, and institutional partnerships that help both countries play the international rankings game. New Zealand does not currently have a clear system-wide strategy around how to respond to this trend.
- Opportunities for students to get international experience are rarely built into academic curriculum and may not attract academic credit. Similarly, students are not currently able to gain financial support for study-abroad experiences. We understand that Government is currently exploring options that will

¹²⁸ FPP EDU Media; and International Education Advantage, LLC. (2016). *Know Your Neighborhood: International Recruiting Fueled by Regional Insights*. Retrieved from <http://cdn2.hubspot.net/hubfs/166727/Intl-Student-Insights-2016-FPP-Intead-Research.pdf?t=1459286056779>

make it easier for students to add study abroad costs to their loan where it is a part of the academic programme. Universities NZ strongly supports this.

- The international student market has been significantly affected by the Global Financial Crisis. Though numbers of students choosing to study abroad continues to grow, students are increasingly looking for qualifications they believe will lead to employment outcomes after graduation. Any settings that would assist with getting international students degree-relevant work experience (such as internships) while studying would significantly assist in differentiating New Zealand in the international student marketplace.

The five most important factors for international students when considering study abroad are consistent regardless of where they intend to study. These five factors in order of importance are (1) quality of education (compared to their home country), (2) international recognition of qualifications, (3) the country's attitude to international students, (4) safety, and (5) ease of getting a visa¹²⁹.

This further illustrates the importance of maintaining a quality reputation and world ranking. Universities work collaboratively to market New Zealand internationally as a high quality, safe and friendly education destination. However, even the best promotion of Brand NZ in market cannot compete with unwelcoming immigration policies, impediments to being able to work, or most crucially, incidents of crime against international students and racial prejudice.

An NZ-Inc approach is necessary to ensure that the overall experience of international students in New Zealand align with in market messaging. Universities strive to provide an experiential package that isn't limited purely to the academic. In addition, universities work with government agencies to ensure immigration and visa policies are cohesive with their messaging in target markets, and are working to promote awareness of the benefits of international education domestically.

3g. The benefit of two quality assurance systems – CUAP & NZQA (Q26)

The dual quality system (described in Appendix 4) currently serves New Zealand very well.

International best practice is for universities to benchmark themselves against other universities following international standards. The main international standards body is the International Network for Quality Assurance Agencies in Higher Education (INQAAHE). Universities New Zealand is a member.

¹²⁹ Hobsons. (2014). *Beyond the data: Influencing international student decision making*. Retrieved from: <https://www.hobsons.com/resources/entry/beyond-the-data-influencing-international-student-decision-making>

New Zealand Universities are all so highly ranked internationally because they have strong quality arrangements overseen by people who have a deep understanding of university education, the discipline expertise, and the pedagogy associated with it.

It would be inappropriate to subject universities to the same quality frameworks as ITPs, wānanga and Private Training Educators (PTEs) given the expectation of a research-teaching nexus and the premium placed on universities providing students with a more academic education focussed on developing broader capabilities and competencies.

The reality is that universities and NZQA operate as part of the same system.

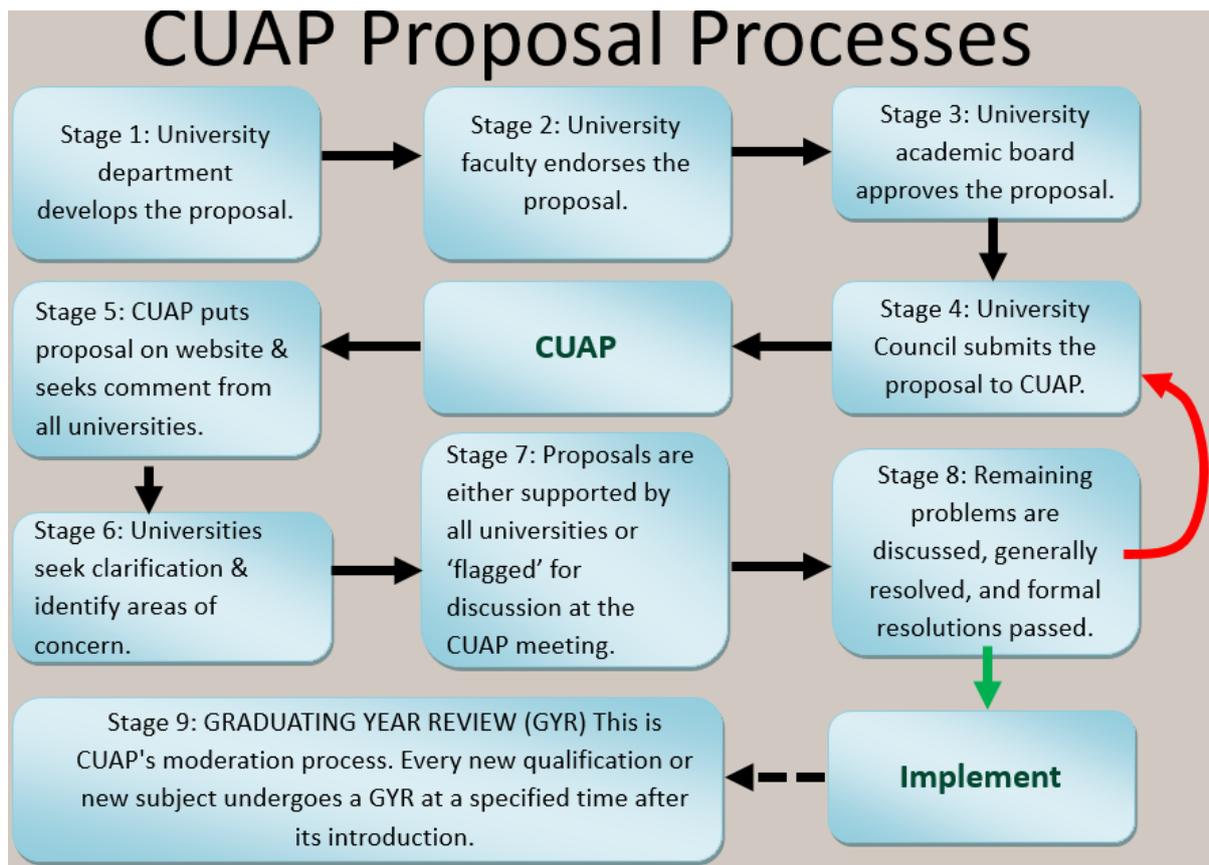
- Universities assess the quality of their programmes (CUAP) and quality systems (AQA).
- Universities then put their qualifications on the national qualification framework.
- Universities work with NZQA to have their qualifications and the national qualifications framework recognised internationally.

That is not to say that there are not challenges and issues with the current system. The main issue is that degree level programmes offered by other parts of the tertiary education system are not subject to the same quality controls as university programmes.

3h. Does the CUAP process hinder innovation? (Q50 & Q67)

As has been argued elsewhere in this submission, the sector has been extremely innovative in establishing new programmes and courses wherever there is student demand and funding settings are supportive.

The strong quality controls built into the CUAP process typically involves eight steps that can take up to a year to complete. The majority of that time is taken up with internal university processes and the actual CUAP stage is typically around three months. The steps are shown in the following diagram.



The number of steps are deliberate and reflect around 25 years of development and refinement to balance the needs of:

- ensuring there is genuine support and resourcing for the qualification within the university
- ensuring the qualification will meet national quality standards and the needs of students and employers
- being able to demonstrate to the TEC that there is demand for a qualification, it will be of high quality and that it should be funded.

Timeframes can be truncated when needed. When ICT Graduate Schools were established in 2015, some proposals were moved through the CUAP process in a few months.

Note that NZQA follows a similar set of steps for its qualification approvals but with one extra step, where TEOs are required to seek approval before they start developing any new proposal.

3i. How do intellectual property protections in tertiary education foster or hinder innovation (Q73)

The New Zealand Copyright Act 1994 has a number of exceptions that were enacted for the benefit of educational institutions. The use and generation of copyright works is fundamental to teaching and research. These exceptions are

necessary to enable educational institutions to undertake their statutory purpose without incurring excessive transaction costs. As a number of commentators have observed, the public domain (and creative works) are a key to innovation, since new ideas are formed from existing ideas¹³⁰. Also, new creative works incorporate and build on existing works; therefore, any barrier to accessing existing works is a barrier to innovation. The more a creator can borrow from previous works (e.g. exercising fair use/dealing), the lower the cost of creating new works. Conversely, the harder it is to access works (e.g., access and licensing costs), the more expensive it becomes to create new works, potentially resulting in a lower number of new works created.¹³¹ It follows that the longer works are kept from the public domain, the higher the cost of creating new works.¹³² The implementation of changes required as a result of entering into the Trans-Pacific Partnership Agreement (TPPA) will see the term of copyright in New Zealand extended from 50 years plus life to 70 years plus life. This will diminish the public domain New Zealanders could have looked forward to in the next few years, and will do nothing to encourage innovative use of New Zealand content in the educational context. It is important that greater flexibility to use content for teaching purposes is incorporated into the Act to counteract the extension of the term of copyright.

Not only can we look forward to changes in the Copyright Act that will diminish the public domain by extending the term of copyright, but requirements for implementation of the TPP require greater use of technological protection measures (tracking useage and limiting access). This will affect universities by making it more difficult to access copyright works and public domain works for educational purposes.

While the current Act has a number of exceptions for copying, the pace of technological change is such that universities' content delivery systems must remain flexible to satisfy the needs of staff and students. The current exceptions in the Act have also not kept pace with technological change and are likely to hinder innovation or prevent the full benefit of the advances in e-learning to be felt. A typical e-learning module has text, graphic and audio-visual features and delivers not only content, but will test a student's knowledge, allowing them to review material to master a particular skill or learning outcome.

An important component of e-learning is the use of excerpts from films to assist students understanding. The current Act makes it difficult to use films in teaching. The failures of the current Act to keep up with changes in technology and the way in which teaching and learning is delivered is exemplified by the difficulties of using

¹³⁰ Lessig, L. (2001) *The Future of Ideas: The Fate of the Commons in a Connected World*, NY Random House

¹³¹ Zielinski, Chris, Penny Duquenoy, Kai Kimppa, in *The Information Society: Emerging Landscapes: IFIP International Conference*, Springer, p 220 quoting from Landes, W. & Posner, R (1989) *An Economic Analysis of Copyright Law* Journal of Legal Studies, Vol XVIII (June 1989)

¹³² George, Carlisle E. *Copyright Management Systems* in Zielinski et al, at page 220

commercial DVDs for teaching purposes. Universities buy multiple copies of commercial DVDs for student viewing and teaching purposes. While the University has a licence to copy aired broadcasts, they are not of the same quality as commercial DVDs, nor do they provide the supplementary materials that enhance teaching and learning available in overseas-purchased DVDs.

Innovation in education typically involves making content available electronically on multiple platforms. This inevitably means making a copy in order to upload it onto the system and then multiple copies to deliver it to students. The Act has no broad general exception that would allow works to be uploaded and used in this way. As a result of pressure from the film and recording industries, New Zealand copyright law has no exception to allow for even a single frame of a film to be copied. There are also no licences available for this type of copying

While tertiary educational institutions benefit from the current exceptions, the Act now requires a broad and flexible exception such as the US 'fair use' defence, which has benefited educational institutions in the US. This would allow for transformative uses of works, as long as they didn't interfere with the normal exploitation of a work by the copyright owner. It would enable educational institutions to keep up with rapid technological advances as they occur rather than having to wait for legislative changes. The current Copyright Act has not been updated since 2008.

In the US making short clips (i.e., a copy of a short extract) solely for classroom use would be considered fair use as it would not damage the rights owners' economic interests, and in fact the use arguably enhances the economic value of the films being showed.

Venturing into the public space has the potential to encourage innovation in the wider community. Failure to address the orphan works problem and fear of an action for breach of copyright hinders universities and their staff and students from making works, including third party works, publicly available. Territorial and sublicensing issues make it difficult to take full advantage of technology to make courses, such as MOOCs that include third party content, available to the wider community.

Section 4 – The Future (Questions 9, 10, 27, 35, 41, 42, 43, 45, 46, 47, 48, 49, 51, 52, 59, 60, 61, 62, 63, 71, & 72)

The New Zealand university system has undergone and continues to undergo extensive change as it responds to changing drivers in the policy, funding and competitive operating environment. The changes are summarised in Appendix 1 and the main impediments to change are those detailed in Section 1: availability of funding and return on investment considerations.

This section now tries to look at the future and to assess what universities will need to do to meet likely future scenarios and where there may be barriers or challenges.

4a. Key forces for change in the coming decade in the New Zealand university sector

Universities may evolve in future in any number of ways, but there is little agreement about which is more likely. In the opinion of Universities NZ, the key forces for change are all interlinked and are largely covered in the current university business model. They are:

- 1. Costs are likely to increase faster than funding from government and tuition fees.** Universities will continue to respond in a multi-pronged way by maximising student volumes, pursuing economies of scale, and by implementing changes that reduce cost without materially impacting on quality of teaching and research.
- 2. There will be greater competition for staff and students nationally and internationally.** Technology and global mobility mean that universities will be facing competitors from further afield and competing further afield than was the case in the past. The quality and reputation of national universities and university systems will be of increasing importance to governments in attracting and creating the human capital that drives innovation, productivity and social and economic improvements.
- 3. There will be increased pressure for universities to differentiate their offerings to students.** To be in the market at all, universities will need to demonstrate they are offering credible, respected qualifications valued by employers. However, to differentiate themselves from other universities, they also need to recognise and respond to the range of other factors that are of varying importance to different groups of students. It includes such elements as financial support, the physical campus environment, the ability to study at a distance, meeting teachers, and having the opportunity to get work experience and an education experience by travelling as a part of their studies.
- 4. The proportion of the population pursuing a tertiary qualification will continue to grow.** Education is likely to be increasingly seen as the best

way of ensuring a successful life and career as technology automates an increasing number of tasks. There will be a point at which supply of graduates exceeds demand, leading to a reduction in graduate employment and earning rates¹³³.

5. **Technology will play an even greater part in every aspect of university activities and student life.** Anything that helps maintain quality while reducing cost will be prioritised for adoption. Similarly, universities will continue adopting and extending technology where it enhances and enriches teaching and research. Technology is likely to add new channels and options for teaching and research, but is unlikely to significantly supplant any existing ones in the coming decade.
6. **The workforce profile will continue to evolve as will the mix of skills required by industry.** Some graduate capabilities are likely to be relatively timeless (e.g., critical thinking, creative thinking, problem solving, communication skills, technology savvy, life-long learning). Other capabilities and skills will continue to evolve as technological change impacts across industries, jobs and tasks. Universities already invest significantly in making sure students are being taught with tools and systems that are most common in industry, but the numbers of different types of graduates and the particular competencies they possess will keep changing. A range of traditional entry-level professional jobs is likely to disappear as technology supplants them, which will affect where and how graduates enter the workforce¹³⁴.
7. **There will be a significant growth in the need to reskill or upskill people already in the workforce.** The number of MOOCs being offered internationally continues to grow, although mainly in areas focussed on maintaining or extending skills for people already in the workforce¹³⁵. As more people already in the workforce seek up-skilling or re-skilling, they will look for options that allow them to learn in places and times that suit their work and family constraints. Universities are going to need to extend capabilities around distance delivery of education and training. Overseas models that are likely to appear here include degree apprenticeships¹³⁶ (complete a degree in the workplace with costs covered by government tuition subsidies and employer contributions) and stair-casing qualifications that can be completed at a distance at a pace and in stages that suit the learner.

¹³³ <http://www.theguardian.com/money/2016/mar/12/growth-in-university-education-is-affecting-graduate-earning-power>

¹³⁴ http://www.nzherald.co.nz/university-of-auckland/news/article.cfm?c_id=1503679&objectid=11608023

¹³⁵ <http://thepienews.com/news/moocs-move-from-free-to-fee-as-skills-demand-grows/> March 24, 2016.

¹³⁶ <http://www.universityworldnews.com/article.php?story=20160316191317601>

8. **By 2030–2038 30% of New Zealand’s population will be Māori or Pasifika¹³⁷ and half of the Māori population will be younger than 28 years¹³⁸.** If Māori and Pasifika are to participate equitably in the future workforce, having a higher education will play a significant role. For universities, this means that configurations and teaching pedagogies will need to be adapted appropriately. This may include a move to smaller teaching groups with larger emphasis on kanohi-ki-te-kanohi (face to face), and whanaungatanga (relationship building) teaching and learning environments that have been proven to work for these ethnic groups, rather than the traditional individualised and somewhat disconnected lecture theatre-styled approach.
9. Where governments continue to provide a significant proportion of the funding of tertiary education, there will be even **greater emphasis placed on ensuring good returns on investment** to students and to the country from university teaching and research. This will include pressure to offset costs and to generate economic returns from export education earnings.

4b. Main threats to the New Zealand university system now and in the next decade

New Zealand differs significantly from many other countries in two important ways: (a) the term ‘university’ is protected under legislation and (b) anyone who wishes to confer a qualification in New Zealand must meet nationally agreed standards and undergo performance monitoring and ongoing audits.

Throughout regions like Asia and South America neither of these legislative protections exist and thousands of private institutions calling themselves universities offer degree-level qualifications that vary significantly in quality and value. They exist in large numbers in every country and there are few, if any, nationally generated quality indicators. This means these markets operate very much on a buyer-beware basis with low-cost providers surviving by over-promising and under-delivering.

The fact we have a small number of universities, surrounded by strong quality controls and performance monitoring arrangements, has actually removed many of the competitive threats facing other university systems internationally.

In our opinion, the main threats to the New Zealand university system in the next 10 years are therefore as follows.

- **Providers offering internationally recognised brand degrees in New Zealand (likely)** – A multi-campus/multi-channel university with an internationally recognised and valued name (like Harvard or MIT) sets up a campus in New Zealand and starts offering its programmes and qualifications

¹³⁷ Ministry of Education, Māori Education Strategy, Ka Hikitia – Accelerating Success, 2013-2017

¹³⁸ http://www.stats.govt.nz/browse_for_stats/people_and_communities/maori/maori-population-article-2015.aspx

in New Zealand. The learning experience and graduate quality is at the same level as that of those who graduate from the parent institution. If they register as a PTE and put their qualifications on the national framework, they may be eligible for SAC funding and their students may be eligible for Study Link support.

- **An aggregator sets up shop in New Zealand (possible)** – The aggregation model is that currently being explored by the main MOOCs providers. Under this model, the aggregator bundles up courses offered by other typically highly respected brand name providers, and limits its role to running assessment centres and awarding qualifications. In New Zealand, this model would work if the provider registered their qualifications on the national qualifications framework and subjected their qualifications to NZQA review and audit.
- **A successful transformation model actually emerges (possible, but not in the near future)** – A model emerges that satisfies the requirements of (a) conferring education and degrees that are credible to students and employers, (b) does not require the sunk capital infrastructure of the campus environment, and (c) does not require extensive subsidising. This model does not currently exist (other than the aggregator model listed above).

In our opinion, there are 6 main challenges that could undermine the ability of the New Zealand university sector to remain competitive and relevant over the coming decade:

1. **International student recruitment out of New Zealand** – universities from Australia and the US are now actively recruiting top students from within New Zealand and this is only likely to grow as all western university systems respond to the same funding pressures and need to grow student volumes, as is the case here.
2. **Reputation and rankings** – the single most important differentiator for universities internationally is their reputation in one or more areas. For all of the more traditional comprehensive universities, this is usually quality of teaching and research. Internationally the proxy measure for these is now rankings.

Countries and universities are under huge pressure to maximise rankings as everyone competes in the global talent pool for the best academics and the best students (and therefore the best potential skilled researchers, migrants, and so on). If the New Zealand university system continues to slip in international rankings, at some point it will struggle to attract and retain the best staff and students – leading to the vicious downward cycle implied by the high-level business model shown under Question 3 of the Issues Paper.

3. **International education markets will increasingly be driven by reciprocity.** In the past, governments and universities in developing countries were willing to send students to New Zealand to complete degrees; now the expectation is that they will send students only when there are two-way flows of researchers and students so as to benefit both countries. This

needs government and universities to take more of a system-level investment approach when thinking about countries that are both important education markets and important trading partners. If the wider New Zealand government and university system cannot find an appropriate system-level approach to these markets, New Zealand universities will find themselves increasingly shut out of them.

4. The need for universities to become more efficient without compromising quality or reputation will see more pressure for **cutting back-office costs**. Overseas this is increasingly being done through shared-service models and outsourcing. These take time and significant investment to implement (moving from two systems and two sets of business processes to just one) and factors such as current scale, available capital and geographical dispersal of the New Zealand system may complicate similar arrangements here.
5. **The need to differentiate New Zealand universities to potential staff and students** generally involves investment to develop or maintain points of difference. The current New Zealand SAC funding system provides funding at the same rates for courses in the same disciplines and limits student fees to broadly similar levels across the universities. This means that universities can only spend as much on differentiation as SAC funding and student fees cumulatively allow. The ability for universities to earn more from higher cost, but higher value-added differentiation is missing. For the New Zealand university system to remain competitive internationally, it will need to differentiate itself more rather than less in the coming years.
6. Recognising the large investment in education, government is likely to try to realise specific outcomes by increased **use of incentives, results-based funding, tagged funding and ring-fenced funding**. All of these carry transaction costs and are likely to force the university system to focus on a small number of areas at the expense of wider objectives and longer-term viability and competitiveness.

In short, New Zealand universities believe they are able to respond to likely trends in technology and evolving business models and remain viable as long as the six factors above are recognised and appropriately handled.

Appendix 1 – Innovation and change in the university sector over the past 10 years

Introduction

Universities are among the longest-lived organisations in the western world. That they have survived and prospered over the centuries is evidence of their ability to thoughtfully innovate and adapt to change. The view that universities are inward-looking or resistant to change would be held only by those who either have no personal experience of universities or whose experience is limited to their own university education, however long ago that may have been.

It is true that public university events such as graduation ceremonies tend to be imbued with formality and tradition, and it is also true that skilled graduates, one of the ‘core products’ delivered by universities, take years to produce. Nevertheless, universities are among the most innovative, up to date, flexible and internationally well-connected organisations in existence in the 21st century.

The university sector has innovated and evolved extensively over the past decade in response to the wider social, economic and competitive landscape.

The material below was collated from a series of 28 interviews with university staff in positions that give them a view of the changes and innovations that have occurred in universities over the last decade. The resulting summary gives a high-level overview of the university sector as a whole, although occasional brief case studies are provided as illustrative examples.

Technology

Only 10% of the university sector’s asset base is tied up in information technology, but 16% of its annual capital spend goes into this area. Some of the changes over the last 10 years include:

10 years ago	Now
Most student computer access was via computer labs on a wired network.	Most student computer access is over networks through the student’s own laptops, tablets and cellphones.
Around a third of students had a laptop computer. A tiny proportion of students had a smart phone.	Nearly all students have a laptop, tablet and smartphone.
Students went to the library to access books and electronic resources. Library searches were conducted via the library catalogue using a library terminal.	Students now access the library catalogue and most library resources from their Wi-Fi-connected device anywhere they have an internet connection.
60–70% of a library’s expenditure on collection was on physical resources (books and magazines)	70–80% of a library’s expenditure on its collection is on electronic resources and online materials.
A library’s physical resources were increasing on an annual basis.	A library’s physical resources are decreasing annually.

Technology is an area that has seen extensive change in the past 10 years. New Zealand universities have watched and responded to key international trends. Although tight funding limits the speed

and extent to which New Zealand can implement new ideas, technology has and continues to radically reshape all aspects of teaching, research and administration.

Teaching

See the material on pedagogy and technology in teaching at the start of Section 3 of this submission. It summarises changes over the past decade.

Research

10 years ago	Now
The New Zealand Government introduced the Performance-Based Research Fund in 2002 with the aim of encouraging and rewarding excellent research in the tertiary sector.	
27% of academic staff were awarded a PBRF 'A' rating (research of international standing), or PBRF 'B' (research of national standing).	42% of academic staff were awarded a PBRF 'A' or 'B' rating.
Universities were spending \$522m on research.	Universities are spending \$817m on research.
2.2% of New Zealand published research was being cited internationally.	By 2011, 5% of NZ published research was being cited internationally.
In 2002 47 Māori and 24 Pasifika successfully completed master's or PhD level qualifications.	In 2013, 279 Māori and 137 Pasifika successfully complete master's or PhD level qualifications.
University sector external research income was \$194m in 2002.	University sector external research income was \$517m in 2014.
Research tended to be aimed primarily at academic publication.	Internally clear systems and structures were created through which research with commercial potential is identified and recognised. There may even be a role such as Dean of Commercialisation of Research. Research is expected to be focussed on much more than just academic publication.
Research was generally conducted by individuals or groups within their own institution.	Technology is now used to link researchers on research projects across multiple institutions (and countries). An extensive range of electronic collaboration tools facilitates these research networks.

In addition to the introduction of the Performance-Based Research Fund, a range of changes across the university system has contributed to the improvements in research outputs. These include:

- provision of big data storage capacities for researchers, providing the large quantities of space required for data-intensive projects in areas like gene sequencing
- access to shared research infrastructure. This includes [NeSI \(New Zealand eScience Infrastructure\)](#), which provides shared access to high-performance computers, NZGL (New Zealand Genomics Limited), which provides access to high-end genomics and bioinformatics

infrastructure, and REANNZ, which provides access to a high speed network for transmitting and sharing massive amounts of data

- introduction by the government of the [Centres of Research Excellence \(CoREs\)](#) and [National Science Challenges](#), which bring researchers together from across the wider research system in disciplines such as neuroscience, ecology, nanotechnology, healthcare and photonics
- increased numbers of international research collaborations – fostered by advances in technology
- the adoption of online library resources and better search engines
- provision of fully searchable academic books and journals electronically via library catalogues. This makes a wide variety of research resources available to students in their homes or while away from the university, on internships, at teaching hospitals or in schools. It also enables more efficient space utilisation because electronic books and journals do not take up shelf space, and can be accessed by multiple users simultaneously
- centralised storage and indexing of information. Academics have access to global databases for research funding opportunities, research management systems and research outputs databases.

New Zealand universities are at a broadly similar level of development across these areas – mainly because of groups such as CONZUL (the Council of New Zealand University Librarians), Universities NZ Research Committee and ICT-Directors all meeting as a sector to freely share knowledge and best practice, and to collaborate on common standards and solutions.

Future step change for research is likely to be as a consequence of technology and collaboration tools. Universities are likely to have enhanced ability to work with big data and to use skills in supercomputing and data analysis to drive advances.

Similarly, step change is likely as a consequence of the National Statement of Science Investment 2015–2025, which is promoting a fundamental change in research policy and is directing Crown investment. The new emphasis will be on excellence and impact as the overriding factors that should drive investment decisions across the suite of investigator-led, mission-led and industry-led instruments.

The following evolutionary changes are likely over the coming two to five years:

- a continuing focus on recruiting academic staff who are assessed as having the potential to achieve a PBRF A or B rating
- the majority of library and other research resources being digitised and/or made available on-line for use by researchers at any institution nationally or internationally
- having completed a project, researchers are more likely to make source data visible to search tools so other researchers can use it for other projects. This will also include making material available to researchers from other institutions
- increasing scientific research linkages fostered by tech-transfer units, translational research units and national technology transfer networks.

University Administration & Operations

10 years ago	Now
Large numbers of disparate systems (Human Resource Management, Financial Management, Procurement, Student Management, Learning Management, Identity Management, etc). All of it	Fewer systems with much greater integration. Systems are increasingly hosted remotely or operate in a 'software as a service' model where a

10 years ago	Now
was managed on-site using campus-based servers. All of it was linked to varying degrees by bespoke middleware.	vendor hosts the software and servers off-campus.
Students would complete manual forms to enrol and this information would be transcribed manually into student management systems.	Enrolment, course approval, paying fees, timetabling and more can all be done online by the student using their mobile devices.
The majority of systems were only accessible on campus via the wired network. Network security was relatively straightforward.	The majority of systems are now delivered over a web interface and can be accessed from anywhere on any device that can operate a browser. Network security is now a complex, continually evolving challenge requiring ongoing investment in time and infrastructure.
Universities had large records rooms with physical files.	The majority of records are now electronic.
Internal administration was paper-based and completed by administration staff	Internal administration such as leave, grant applications and management, performance reviews, course planning and other workflow tools are all being delivered to and completed by staff via desktop/laptop.
Procurement was paper-based and might be done individually by each department/faculty	Procurement is done electronically from a central hub, with All of Government (AOG) contracts used where possible.
Project management was relatively decentralised and projects were focussed on relatively discrete outcomes (a new building, a new IT system, etc)	Project management is now typically supported by organisation-wide project management offices and disciplines with a focus on overseeing all aspects of project and programmes, including implementing change and organisational risk management.

Technology has enabled the same efficiencies in university administration and process management as have been adopted across every other industry. Key drivers of change have been:

- Universities have actively pursued cost-savings wherever automation and technology provide opportunities to realise them.
- The main limits to the adoption of new technology include finite capital and competing priorities for it. Additionally, adopting new technology incurs other flow-on costs to inter-related systems and business processes.

All universities are aiming to improve the agility of how they develop process and system changes over the coming years. The impact of technology change is significant and change has become the norm across the university system as technology allows universities to tailor services and support the needs of students, staff and alumni. In the next three to five years, university investment is likely to continue focussing across four areas.

1. Progressively integrating previously separate systems, and reducing the complexity and operating cost of the ICT environment.

2. Continuing to automate business processes.
3. Extending business intelligence tools across areas such as targeting student academic support or targeting student welfare support services.
4. Anything that lifts student completion, progression, retention and satisfaction rates will continue to be seen as a good area for investment.

Innovation example: All New Zealand universities are part of the [Peerwise](#) student learning platform, an interactive site allowing students to create and to explain their understanding of course-related assessment questions, and to answer and discuss questions created by their peers.

[Bestchoice](#) is a similar initiative developed by the University of Auckland to support learning in chemistryChemistry by simulating the interchange of a student with an experienced teacher.

Curriculum – Courses & Qualifications

Universities are continually introducing new programmes and qualifications where needs are identified and removing them where demand has disappeared. Within programmes, courses are under continual revision to ensure they remain current and relevant.

10 years ago (2005)	Now (2015)
<p>There were 1,139 qualifications offered across NZ's eight universities.</p> <ul style="list-style-type: none"> • 53 at doctoral level • 225 at master's level • 77 at honours level • 171 at bachelor's level • 180 sub-degree level. 	<p>There are 1,540 qualifications offered now at the eight universities (35% increase)</p> <ul style="list-style-type: none"> • 56 at doctoral level (5% increase) • 365 at master's level (62% increase) • 111 at honours level (44% increase) • 206 at bachelor's levels (20% increase) • 276 sub-degree level (53% increase)
<p>It took 240 points to complete a master's degree after a bachelor's degree (or 120 points after an honours or postgraduate diploma).</p>	<p>There are now 80 masters' degrees that can be completed in 180 points direct from a bachelor's degree.</p> <p>There are now 285 masters' degrees that require 240 points (or 120 pts after an honours or postgraduate diploma).</p>
<p>Qualifications were relatively homogenous – Bachelor of Science, Bachelor of Arts.</p>	<p>Qualifications are much more differentiated and descriptive – Bachelor of Applied Science in Sport Technology, Bachelor of Environmental Management, Bachelor of Agri-Science.</p>

The range and types of qualifications offered by universities is driven by demands and evolving expectations in both the domestic and international marketplace. Demands and expectations include:

- the ability to gain qualifications that have specialisations and/or descriptive titles that are likely to assist graduates in landing jobs that interest them when they ultimately enter the workforce.

Where a Bachelor of Commerce was acceptable 10 years ago, now universities need to offer specialisations such as a Bachelor of International Marketing, or a Bachelor of Supply Chain Management. This specialisation has been most evident at honours and master's levels.

- a move to semesterisation and summer schools. Where first-year degree programmes were historically built around two semesters starting in February or March of each year, universities are now accommodating international students who finish school in May or June in the Northern Hemisphere and want to start first-year study in July or August in the Southern Hemisphere. First-year programmes are now structured so they can be started in either semester, and summer schools facilitate efficient completion.
- traditional 240-point and 120-point research master's qualifications are being complemented and, in some cases, replaced by 180-point taught master's qualifications. These have been developed over the past five years in response to international student demand for masters' programmes that can be entered straight from a bachelor's degree and completed in a single year.
- a significant focus on employability. Students are encouraged to gain work experience while they study, and internship and degree-relevant work-placements are increasingly being integrated into academic programmes.

The university sector has become significantly more competitive nationally and internationally over the past decade and this is unlikely to change in the coming decade. The following trends are likely in future:

- further creation of new courses and qualifications where there is an opportunity to attract students and where courses and qualifications can be offered on a sustainable basis given government tuition subsidies and permitted domestic student tuition fee limits.
- further growth of pathway and bridging programmes at sub-degree levels to assist people into university who would otherwise lack the necessary academic skills
- innovation in qualification design and programme delivery around adult education as more people seek re-skilling or up-skilling mid-career. The degree of innovation and the extent to which new delivery channels are developed to support this will be subject to funding settings.
- more pressure to offer smaller programmes targeted and customised to particular segments of the student population (e.g., Agri-business for Iwi) but the degree of customisation and ability to serve more specialist market segments will also be constrained by government funding settings and the ability to at least cover costs
- further collaboration with overseas jurisdictions and qualification frameworks on recognition of New Zealand qualifications, increasing student mobility and the international standing of New Zealand university qualifications.

The organisation and structure of the university

Universities in New Zealand do not have a common structure. Although most are organised into academic colleges with a set of centralised academic and administrative support services, the range of subjects within each college and the organisation of support services differs in each university. Nevertheless, there have been some common themes in university organisation and structure over the past 10 years.

10 years ago	Now
<p>Centralisation of support services and administrative functions was less common.</p> <p>Functions such as IT support, recruitment, commercialisation, procurement and external engagement were likely to be duplicated in different faculties and departments.</p>	<p>Centralisation and shared services are becoming more common.</p> <p>Review of the effectiveness of structures and processes is now carried out regularly and refinement and change in both areas is now common.</p> <p>Universities have consolidated functions such as IT support, recruitment, commercialisation, procurement and external engagement together in a central hub for increased efficiency.</p>
<p>Universities often lacked the reporting to identify which courses or programmes were self-funding and which were being subsidised. Universities typically had a larger number of small academic departments.</p>	<p>There is typically good reporting around the income and costs at departmental, programme and course level. Non-strategic loss-making programmes and courses have largely disappeared and departments have been consolidated.</p> <p>There is a similar level of reporting, analysis and benchmarking across all other parts of the university business model.</p>

University Facilities (Buildings & Equipment)

10 years ago	Now
<p>University space was more likely to be dedicated to just one purpose.</p>	<p>University space is increasingly being configured so it can be used for multiple purposes – e.g., workshops that used to have equipment fixed in place now have storage space where equipment can be put away when not in use and brought out when required.</p>
<p>Teaching space (lecture theatres and flat-floor classrooms) was typically allocated by a small planning unit that would iteratively build on previous years' timetables to ensure all lectures and tutorials could be accommodated. Manual processes saw space used about 60% of the time on average.</p>	<p>Automated space allocation software has pushed space utilisation rates to around 80–85%, significantly reducing the need to build new classrooms and lecture theatres where student numbers have increased.</p> <p>Universities now base their timetabling around utilisation of resources, rather than on staff teaching preferences. This has led to the timetable being spread over the week rather than being focussed on popular teaching times.</p>

10 years ago	Now
	Lectures are now more likely to be delivered at 8am or 6pm during the week or during weekends.
Libraries were built around bookshelves and desks for quiet study.	Bookshelves are disappearing from libraries. Libraries are now constructed around a mix of individual and group study spaces with areas where students can meet and talk in small groups. PowerPoints and Wi-Fi connections are now critical in library fit-outs.
Departments would often have a building or a floor in a building. Academic and professional support staff would typically have a private office.	Departments are more likely to share buildings and floors. Professional support staff are now likely to work in a shared open-plan environment. Academic staff are increasingly sharing office space where they are part time or spend a large proportion of their time outside the office.
Students were more likely to go to the library to access library resources and to study.	Internet access and the almost universal access to laptops, smart phones and other internet-connected devices means that students have the ability to access library resources and study individually and collectively anywhere. University buildings are increasingly configured with foyers and ground floors as flexible student study spaces. They often incorporate a cafeteria or kitchen and always include flexible relocatable furniture. They also always include a large number of PowerPoints and Wi-Fi connections.
Very little teaching took place during the summer period. The majority of teaching was confined to two semesters.	Most universities now offer an extensive range of summer courses.

Universities are under considerable financial pressure and this has focussed them on minimising the requirement to construct new buildings and maximising utilisation of existing buildings.

The trends listed in the table above are expected to continue for the foreseeable future with the majority of investment in buildings being focussed on (a) improving the utilisation of existing space, (b) repurposing space to support new learning and teaching approaches, and (c) constructing new space only where absolutely required.

Innovation example: University of Canterbury's new engineering workshops are built to a state-of-the-art standard mimicking genuine professional working conditions with all health & safety requirements to prepare students to transition easily to work.

Student profile

Ten years ago	Now
In 2007 international student enrolments at NZ universities were: <ul style="list-style-type: none"> • 15,827 Bachelor's • 1,520 Master's • 1,522 Doctorates • 23,252 total (includes all levels) 	In 2014 international student enrolments at NZ universities were: <ul style="list-style-type: none"> • 13,367 Bachelor's • 3,245 Master's • 3,889 Doctorates • 24,970 total (includes all levels)
In 2007 Māori enrolments at NZ universities were: <ul style="list-style-type: none"> • 9,633 Bachelor's • 863 Master's • 307 Doctorates • 14,240 total (includes all levels) 	In 2014 Māori enrolments at NZ universities were: <ul style="list-style-type: none"> • 10,976 Bachelor's • 1,075 Master's • 407 Doctorates • 15,590 total (includes all levels)
In 2007 Pasifika enrolments at NZ universities were: <ul style="list-style-type: none"> • 5,672 Bachelor's • 314 Master's • 117 Doctorates • 8,612 total (includes all levels) 	In 2014 Pasifika enrolments at NZ universities were: <ul style="list-style-type: none"> • 7,987 Bachelor's • 549 Master's • 167 Doctorates • 10,772 total (includes all levels)

Between 2005 and 2014, university costs per student increased by 17% more than funding per student. Universities (and every other part of the tertiary education system) were able to offset this decline in per-capita funding by a combination of growing overall student numbers and prudent cost cutting.

New Zealand demographics are now putting pressure on this. In 2014, the number of 17 year olds coming out of school dropped for the first time and numbers of school leavers are projected to continue to fall each year until 2019 when numbers will begin to grow again.

The current funding model and its dependence upon universities being able to maintain or increase numbers of students to remain in surplus has led to intense competition for attracting new students within the university sector and across the tertiary education system.

Students are not homogenous in their motivations regarding study choices, but the following factors are most common in their choices.

For domestic students, important factors are¹³⁹:

- a. **Employability** – the perceived ability to gain employment as a result of gaining a useful and well-regarded qualification.

¹³⁹ Veloutsou et al, *University Selection: Information Requirements and Importance*, The International Journal of Educational Management, Vol 18, No. 3, 2004.

- b. **Location of the University** – whether the university is in the student’s home town or region, or is in a location that the student is attracted to (e.g., they are attracted to Dunedin because it is perceived as a student city).
- c. **Courses** – the belief that the university offers courses that are interesting, relevant and likely to deliver a positive learning experience.
- d. **Institution Reputation** – the extent to which the university is regarded as credible and its qualifications as valuable.
- e. **University Campus** – the quality of facilities and the general atmosphere and surroundings.
- f. **Non-academic lifestyle** – the entertainment and recreation opportunities on and off campus.

International students are similar. They will typically choose a country first, then select between universities. Key factors in choosing between universities are:

- g. **Institution Reputation** – where the university appears on international rankings for quality of teaching, research, graduate employability and facilities.
- h. **Information gleaned from websites, friends, agents, parents, current students and presentations** – to confirm the likely experiences around learning (courses, teachers, teaching spaces, etc) and living (campus environment, social life, accommodation, cost of living, etc).
- i. **Cost of living and studying at the university** – for accommodation, course fees, transport and recreation.

These decision-factors account for many of the most significant trends over the past decade:

10 years ago	Now
International rankings were in their infancy. There were just two main ranking systems and they were not playing a major role in the recruitment of staff and students.	The global marketplace for academic staff and international students has become much more competitive. Rankings have become a key tool for marketing an institution to potential staff and students.
Iconic buildings and teaching facilities were used by universities to differentiate themselves to potential staff and students.	Iconic buildings and teaching facilities are now qualifiers for attracting the best staff and students. Universities continue to focus on high quality facilities for teaching and research.
The international student market was less sophisticated than it is now and student expectations were lower.	Universities provide accommodation, high quality recreation facilities, multi-faith prayer spaces, attractive campus environments and excellent student support services as a part of recruiting and retaining international students.
Having a university degree was less common. Qualifications offered by universities were relatively undifferentiated. For example, you could get a BA in History or a BSc in Chemistry.	Having a university degree is now an expectation of applicants for nearly all professional jobs. There is international demand for qualifications that will help differentiate students to potential employers and signal their skills. Universities now offer a large range of specialisations (for example, a BSc in Sustainable Chemistry) and

	interdisciplinary or multi-disciplinary programmes.
There was high employment and the Global Financial Crisis was unforeseen.	Students place a huge focus on employability and work readiness. Academic programmes are now built around graduate profiles that emphasise the skills and competencies sought by employers, and universities are increasingly expected to be able to demonstrate successful employment outcomes for their graduates. Employment outcomes and links to industry are increasingly being used in marketing universities and their programmes to potential students.
Less funding pressure and less competition for students meant university offerings were relatively traditional in format and modes of delivery (campus-focussed delivery, built around traditional lectures and tutorials).	Intense funding pressure and competition for students means universities are offering a wider range of products in increasingly non-traditional formats. These include more teaching at night, at weekends and over summer periods; online lectures and student support; the ability to complete studies offshore and to gain credits for study experiences carried out overseas; increased ability to gain credit for studies completed elsewhere; and growing recognition of prior learning.
Less funding pressure meant less drive to explore new business models and to develop new learning/teaching modalities.	Intense funding pressure is severely constraining the sector's ability to take on undue risk or to invest in new business models or learning/teaching modalities where cost is relatively high and return relatively unproven.

All of the trends listed in the 'now' column of the table above are likely to continue for the foreseeable future unless the current university funding environment changes radically. Over the coming three years, the following changes are most likely:

- increased investment in extending existing business models, and existing learning/teaching modalities so they maximise utilisation and returns from existing infrastructure and capability
- a large number of new courses and degree programmes aimed at maintaining competitiveness in the international student marketplace and in maximising graduate employment outcomes within New Zealand
- an increased focus on realising and demonstrating graduate employment and social benefits
- unless the current government funding environment changes radically, the already extreme tension between a need to cut costs while maintaining curriculum quality will hit a crisis point in at least a part of the sector.

Innovation example: Universities are developing an increased number of specific occupationally-linked one-year master's degrees, as named specialist masters' are more attractive to employers.

For example, VUW's [Master of e-Government Programme](#) focusses on successful management of complex transformational e-Government initiatives.

Staff profile

10 years ago	Now (2014)
<ul style="list-style-type: none"> • FTE all staff: 19,021 • FTE academic staff: 8,045 • Academic staff as proportion of total: 42% • Academic staff:student ratio: 1 to 11.3 	<ul style="list-style-type: none"> • FTE all staff: 19,966 • FTE academic staff: 8,471 • Academic staff as proportion of total: 42% • Academic staff:student ratio: 1 to 15.6

The impact of PBRF on the university staff profiles cannot be exaggerated; in almost every case it was noted that the effect had been to increase the average age of university staff as older well-established researchers are retained¹⁴⁰.

Innovations that universities have pursued in order to increase their PBRF funding include flexible phased retirements rather than full retirements of older researchers so that their research outputs can continue to contribute to the university research profile, and recruiting younger staff at the beginning of the six-year PBRF Quality Evaluation cycle to give them an opportunity to build up an Evidence Portfolio.

Universities have become more active in managing and developing their workforce. Career pathways are better defined and managed for teachers and researchers. More emphasis is placed on measuring and managing performance. More support is provided to academic staff in areas such as developing and maintaining their teaching skills, gaining a research profile and pursuing research grant applications.

There is better gender balance and a higher proportion of women: and also more minorities in senior posts; this is not an accident but is due to deliberate HR policies such as recognising that maternity leave explains a research gap.

The combination of an increased focus on research performance, worsening staff:student ratios and increased requirements for teaching quality and curriculum design have seen a long-term decline in reported academic staff satisfaction rates.

Innovation example: New Zealand universities actively encourage diversity and increasing equity in senior positions. For example, women make up one-quarter of the University of Waikato's professors, and more than one-third of its associate professors.

¹⁴⁰ It is also important to note that PBRF has not negatively impacted had a negative impact on either teaching indicators or commercialization commercialisation performance – Smart W, Analysis of the impact of PBRF Interim Findings, Ministry of Education, February 2013.

External Stakeholders & Partners

Universities have always maintained external links and these have become even more of a focus in the last decade.

10 years ago	Now
<p>School system</p> <p>Students more likely to choose the geographically closest university. Less pressure in universities to market to them.</p> <p>Links between schools and universities more likely to be driven by individual staff wanting to recruit for their subject area.</p> <p>Focus was on marketing to students and selling the institution.</p>	<p>School system</p> <p>Students more mobile and willing to travel to do university study.</p> <p>Universities all have school liaison teams that coordinate marketing to schools. Links to schools more likely to be managed at a university level or at a college level within the university.</p> <p>There is a range of pathway and familiarisation programmes that expose students to the university.</p> <p>Bridging and pathway programmes are targeted to lifting university enrolment rates among particular groups of students – such as young Māori and Pasifika.</p> <p>Universities have developed scholarship programmes creating pathways to university from year 12 and not just year 13.</p> <p>Engagement with schools is more sophisticated – including working with school principals to help access information resources and with careers advisors to engage secondary students prior to university enrolment.</p>
<p>Employers and industry bodies</p> <p>Majority of links to industry were from:</p> <ul style="list-style-type: none"> • Academic staff offering consulting services. • Work placements and industry-relevant projects in the profession-led qualifications like engineering, teaching, and medicine. 	<p>Employers and industry bodies</p> <p>Industry and/or relevant professional bodies are often now consulted in the design of new qualifications and programmes and on changes to existing ones. Industry representatives often serve on academic advisory boards overseeing curriculum delivery and assisting in ensuring it is relevant and of high quality.</p> <p>Growing use of internships and industry-relevant projects outside the profession-led qualifications is increasing the number of employers and industry bodies engaging with universities. For example, at the University of Canterbury, final-year projects are sponsored by industry who pay for students to do real-world projects to meet industry needs. 250 undergraduates all have an industry mentor.</p>

10 years ago	Now
	<p>Universities now have research centres entirely funded by industry.</p> <p>An increasing number of university Chairs and other academic positions are being sponsored by industry.</p>
<p>Government (local and national)</p> <p>Recognition of the role universities play in economic activity and producing skilled graduates.</p> <p>Performance measured most commonly in terms of inputs and outputs (for example, dollars in for graduates produced)</p> <p>From the late 1990s to early 2000s, tertiary education was funded on a demand-driven model. If tertiary providers could attract students, the government would provide a tuition subsidy.</p>	<p>Government (local and national)</p> <p>Purchaser-driven system under the TEC means that programmes and courses are only funded where the tertiary education provider has good quality systems to ensure the education is likely to be effective and useful.</p> <p>Universities increasingly expected to demonstrate how their outputs contribute in areas such as national productivity, economic competitiveness, innovation and global trade.</p> <p>Performance focus moving to outcomes and universities being able to frame their products in terms of consumer benefits. Consumers include students, industry and government.</p> <p>Strong expectation that universities respond rapidly and accurately to market signals from their stakeholders.</p> <p>Increasing pressure to frame graduate outcomes in terms of vocational outcomes.</p>
<p>Other Universities in New Zealand</p> <p>Regular meetings across the university system of librarians, chief information officers, research leaders, etc. Often focussed on sharing information and maintaining networks.</p> <p>Some benchmarking around facilities and space utilisation.</p> <p>Little shared infrastructure.</p>	<p>Other Universities in New Zealand</p> <p>Structured meetings across the university system of the leaders of most key academic functions or support services. Most oversee joint projects, shared infrastructure or services, or shared work plans.</p> <p>Extensive benchmarking across all key parts of university operations.</p> <p>Fairly extensive range of shared infrastructure between all eight universities. This ranges now from shared supercomputing and networks for research through to shared storage for older and less used library resources.</p>

The dual focus on attracting and retaining students through providing degree high quality programmes with proven employment outcomes, combined with the continuing focus of government on outcomes for students and the economy, means all the trends listed above are likely to continue for the foreseeable future.

Innovation example (links with schools): University of Otago in partnership with other local organisations has developed the [Lab-in-a-box](#) concept; this is a shipping container transformed into a mobile science lab to help with STEM teaching in rural schools and communities.

Strategic direction

A more competitive environment and budget constraints has influenced strategy; a more business-like approach is concerned with maintaining market share and international reputation.

All universities now have strategic plans, and these cover areas that in the past would not have necessarily been a focus, such as having an IT strategy and an engagement strategy.

10 years ago	Now
<p>Strategy was important but not necessarily always a focus.</p> <p>Strategies were often relatively discrete and developed within organisational silos.</p> <p>Councils were often content to devolve the majority of strategy and planning to university leadership.</p>	<p>Strategy is now far more important. Strategies are inter-related and supported by capital planning.</p> <p>Councils are more likely to include professional directors and are to include skills around financial management and risk management. Councils are much more involved in strategy and planning, and satisfying themselves that institutional risks are identified and systematically managed.</p> <p>Strategy is now drawn up in a consultative way with government and industry with an eye to specific key performance indicators. These plans show a greater awareness of risk than in the past.</p> <p>More focussed on objectives, goals, KPIs, performance measures than 10 years ago</p>
<p>Universities regarded themselves as more or less solely institutions of higher learning</p>	<p>Universities are more accepting of the idea that they are also commercial enterprises that must try to generate a prudent level of surplus.</p> <p>More focussed on the entire enterprise value chain that contributes to delivering on key outcomes. This includes maintaining international rankings, being able to recruit and retain excellent teachers and researchers, and being able to recruit and retain domestic and</p>

10 years ago	Now
	<p>international students in a more competitive environment.</p> <p>Moves towards more civic engagement and more engagement with Māori and Pasifika students, which requires specific programmes.</p>

Appendix 2 – Social Benefits of University Education

Definitions/Key Concepts

- **Economic benefits** – these are the earnings-related benefits of a higher education qualification.
- **Non-Economic benefits** – these are all the other private benefits of a higher education qualification.
- **Private benefits** – these are economic and non-economic benefits that mainly accrue to the graduate.
- **Societal or Social benefits** – these are economic and non-economic benefits that are realised by society as a whole from having an educated population.

Introduction

This paper lists every 'non-economic' benefit of an education identified through an online literature review. All these non-economic benefits have been evaluated in at least one major study and a methodology has been developed for determining their economic benefit.

Three studies were identified as being most useful because they were fairly recent and contained extensive literature reviews. These were (in decreasing level of usefulness) McMahon (2009), DeClou (2014) and Universities UK (2012).

McMahon (2009) does the most comprehensive meta-analysis of non-economic benefits from a private and societal perspective. He finds that the private non-economic benefits are around 122% larger than the economic benefits, with the societal non-economic benefits being 89% larger than the economic benefits. (See Table 4.3 at the end of this paper for private non-economic benefits and Table 5.4 for societal non-economic benefits). In 2007 US\$ he finds the non-economic benefits of an education average around US\$8,462 per year of tertiary education – an average of \$38,080 for a typical bachelor's graduate.

This is in line with calculations done by other researchers, such as Wolfe and Haveman (2007) who assessed private non-economic benefits as being about the same (100%) as economic benefits. McMahon draws on all of their analyses and notes that all tend to omit at least a few measures. His slightly higher percentage for private non-economic benefits is a consequence of including all the measures identified in the literature.

The sorts of calculations carried out to reach these numbers all look as if they could be replicated with varying levels of difficulty and reliability in New Zealand. For example, the NZ General Social Survey (NZGSS) has information that could provide national level information on a range of social benefits.

All studies note significant challenges with causality/attribution in calculating non-economic benefits to graduate studies and disaggregating education from other factors such as socio-economic background, intrinsic abilities/attitudes, and opportunity/luck.

Appendix 2, table 1: Non-economic benefits of an education (social/private and public)

The table below has three columns.

- Column 1 outlines each non-economic benefit associated with education.
- Column 2 indicates whether we think we could generate metrics in New Zealand based on currently available information. Note that **GSS = New Zealand General Social Survey** – carried out every two years with sections added or omitted periodically. **GLSNZ = Graduate Longitudinal Study NZ** – carried out periodically on 8,719 graduates who completed study in 2011 with the second follow up completed in 2014.
- Column 3 provides notes and factoids associated with each non-economic benefit.

Non-Economic Benefit	Can we report on this now in NZ? Yes/Somewhat/No	Factoids/Statistics & useful source material
1. Active Citizens		
a. Volunteering or doing unpaid work.	Yes – volunteering and unpaid work was available from the NZGSS for 2008, 2010 and 2012. It is not available for 2014. The survey going into the field for the NZGSS 2016 has a section on volunteer work. 17.9% of the GSLNZ follow-up study indicated that they expect to be “Doing voluntary work” within the next 10 years.	2014 NZGSS found a steady rise in voluntary work by level of qualification – 41.8% of Lvl 7 or higher graduates volunteer in NZ compared with an overall average of 32.6%. Gallup Poll in the US (National Centre for Education Statistics 1998) found that 22% of those with higher education gave time to civic, political and charitable institutions – about double the rate of those with just a school qualification.
b. Participation in the community (School Trustee Boards and other leadership type roles).	Somewhat – this is not tracked, although NZGSS includes neighbourhood and club community participation.	The college educated give 3% or more of their income to charity – about twice as often as high school graduates with the same income levels (McMahon Pg 202).
c. Donating/Philanthropy	Yes – the survey going into the field for the NZGSS 2016 has a section on donating.	Dee (2004) found large effects on voting participation and on support for free speech and the quality of civic participation.
d. Greater level of political interest and engagement	Yes – voting in the general election is collected in the 2008, 2010 and 2012 NZGSS. Political club membership was collected in the 2014 NZGSS. Political participation is a section in the 2016 GSS.	Universities UK (2012) found graduates were 14% more likely to be interested in politics than non-graduates. GLSNZ found that voting behaviour was higher at the national level (e.g., national government

Non-Economic Benefit	Can we report on this now in NZ? Yes/Somewhat/No	Factoids/Statistics & useful source material
		elections/referendums) than at the local level (e.g., city/district council elections), with 84% and 57%, respectively, indicating that they usually or always voted in each of these situations.
2. Contributing to an open and tolerant society		
a. Higher level of interpersonal trust	Yes - trust in people was collected in the 2014 NZGSS and will be in the 2016 survey. Institutional trust was collected in the 2014 NZGSS and will be in the 2016 survey.	Universities UK (2012) – graduates were 10% more likely to feel a high level of interpersonal trust than non-graduates. This meant they were more likely to mix and mingle with people from different religions, races or socio-economic backgrounds to themselves. They were less afraid of crime and less tolerant of hate crime and other forms of intolerance.
b. More open-minded and tolerant	Yes – NZGSS has questions on acceptance of diversity in both the 2014 and 2016 survey	
c. Higher level of aspiration	Somewhat – 2014 GSLNZ Report provides information on NZ Graduates but no comparison	
d. More confident and able to persevere in challenging situations	No	
3. More productive and innovative in the non-work environment.	No	Michael (1982) calculated each year of education translated to US\$290 of additional household income (4 years of college added US\$1160 in 1975 dollars) Graduates were more likely to be able to use the internet to optimise the price paid on items and to find out how to do things. [Cited in McMahan pg 153]
4. Happier as a consequence of typically earning more.	Somewhat – this isn't tracked directly anywhere, but the House Economic Survey does track adequacy of income to meet everyday needs.	Layard (2005) reported in McMahan (2009) pg 150, says happiness increases with income but only up to a point (\$US20,000 per capita). Education contributes to income and therefore plays a role in happiness. Work also gives purpose to life by providing self-respect, social relationships, and meaning. Graduates are more likely to be employed.

Non-Economic Benefit	Can we report on this now in NZ? Yes/Somewhat/No	Factoids/Statistics & useful source material
5. More likely to have developed leadership skills and confidence to travel, work with people from other cultures, run clubs and societies as a consequence of having done the same in a university environment.	Somewhat – GLSNZ tracks this. GLSNZ participants were most likely to participate in sports, hobby, or leisure groups (54%), with smaller numbers participating in trade unions or professional organisations (40%), charitable organisations (34%), church or religious organisations (26%), political parties or associations (13%), or neighbourhood associations or groups (11%).	McMahon Pg 156-7
6. Women more likely to be in the workforce with a university degree.	Yes – from general Census data.	In each age group in the US, 10–20% more females are employed when then have a bachelor’s degree. This reduces poverty and inequality and encourages diversity in the workforce. McMahon Pg 160.
7. Where a spouse has a lower level of education, their health, wellbeing, productivity and longevity is lifted.	Somewhat – health and wellbeing would be available from the NZGSS but productivity and longevity would not. This would require a complex matching of individual records to create households.	Grossman study (cited in McMahon Pg 170)
8. Transfer of knowledge and capabilities via graduates to businesses and society generally.	Somewhat – 2014 GSLNZ Report provides information on NZ Graduates but no comparison with other groups	McMahon Pg 217–218. The OECD looked at 28 OECD countries between 1969 and 2005 and estimated that every 1% increase in the higher education attainment rate increased the sustainable per capital growth rate by around 0.046%.
9. More likely to be engaged in the workplace with correspondingly higher levels of productivity and lower levels of absenteeism and time wasting.	No – not available from any Statistics New Zealand data source. May appear in HR surveys done by industry.	Gallup (2015) pages 17–18 found that United States graduates were significantly (1.6 to 2 times) more likely to be engaged if they had a university experience that included elements such as (a) professors that cared about them as a person, (b) at least one professor that excited them about learning, (c) an internship or other form of experiential learning, (d) a project that took a semester or

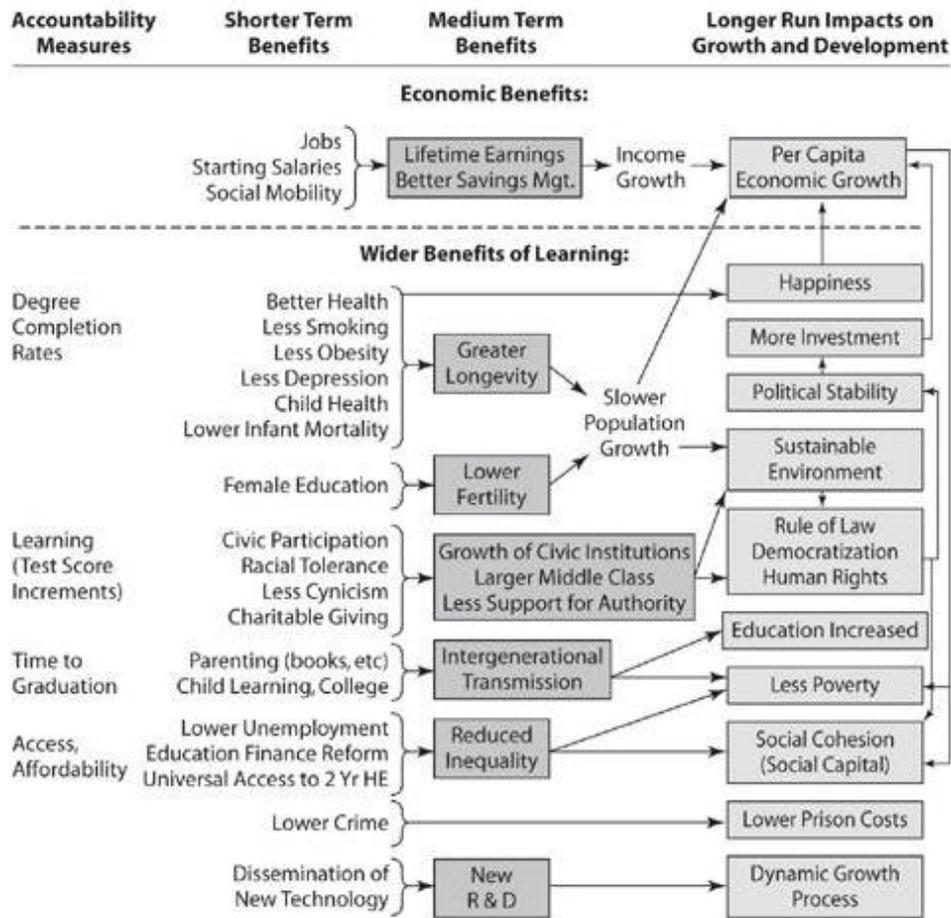
Non-Economic Benefit	Can we report on this now in NZ? Yes/Somewhat/No	Factoids/Statistics & useful source material
		more to complete, (e) active involvement in extracurricular activities.
10. Improved social mobility/higher levels of equity in society and a greater proportion of people fulfilling their potential.	Somewhat – 2014 GSLNZ Report provides information on NZ Graduates but no comparison with other groups	Preston & Sarbates (2005)
11. Good Parents – children that have higher aspirations and are more likely to have values that contribute to an open and tolerant society. Children that have better cognitive development, lower infant mortality and better child health.	Somewhat – could be possible to match individual records to create virtual households and report outcomes over time. Would be a complicated analysis.	McMahon (2009) pp 146-147 Ermish & Francesconi (2000) estimated that children of a month with a graduate degree, have a 25% greater chance of getting a degree themselves.
12. Families generally more of a planned size (less likely to have unplanned children).	No	McMahon (2009) Pg 149 & 171
13. Life-long-learning/adaption - less likely to be out of work because of changes in technology.	Somewhat – there is a longitudinal Census dataset that could help with up-skilling of qualifications but it would be problematic to attribute cause and effect.	McMahon Pg 156
14. Some of the benefits of higher education in a given locality spill over and benefit the income of those with a high school or primary school education.	No.	Empirical evidence to this effect can be found in Moretti (2004). His estimate is that a 1% increase in the supply of college graduates in a community raises the wages of high school graduates by 1.6% and those of high school dropouts by 1.9% (quoted in McMahon, Higher Learning, Greater Good, The Private and Social Benefits of Higher Education, 2009).
15. Greater life expectancy	Somewhat – may be available via the Census Mortality Study. This links Census results to mortality results. June Atkinson from Otago	McMahon (2009) Pg 136 – additional life expectancy is estimated at around 5 years.

Non-Economic Benefit	Can we report on this now in NZ? Yes/Somewhat/No	Factoids/Statistics & useful source material
	University is the best person to contact about this.	
16. Better mental and physical health on average.	Yes – NZGSS collected health and mental health scores for the periods 2008, 2010, 2012 and 2014 NZGSS. It is also in the 2016 collection.	Grossman (1975) used the NBER-Thorndike longitudinal sample of 9,700 males, all of whom had graduated from high school, and controlled for their income and also for their health in high school (and their scores on mental tests). Grossman found that after they had reached middle age, additional years of college education had a positive and significant net effect on their health status. That is, he found that the favourable effect of years of education on health persists after high school and clearly the college years also help to produce better health. (Quoted in McMahon 2009, pg 137 and 142–143.
17. Longer quality of life (healthy longer in later years of life)	Somewhat – could do older age groups by highest qualification by health status from the NZGSS but it would be subject to sampling errors being acceptable. GSLNZ tracks graduate health, smoking rates, drinking rates and emotional wellbeing. These could be contrasted with NZGSS figures.	
18. Education and income attainment of the children of graduates.	Somewhat – it would be a tricky output to create but could possibly be done from the NZGSS. It would be subject to the sampling errors being acceptable.	
19. Better able to manage finances and be independent.	Somewhat – Statistics NZ has a material wellbeing (standard of living) module in NZGSS 2014 and for the collection going into the field in NZGSS 2016. It asks questions such as does income meet every day needs and whether you could buy items for sets amount of dollars. GSLNZ table on Economic Strain (p 124) shows Graduates from the study have high economic security.	Solomon (1975) showed graduates get a higher rate of return on their savings (less wasted on gambling and better long-term investment decisions). [Cited in McMahon pg 155]
20. Ability to form stable friendships/relationships	Yes – social networks was a NZGSS module in 2014 and social connectedness is a module in the 2016 NZGSS.	GSLNZ reported 90% of graduates met socially with friends at least monthly. Most were able to rely on friends, family or other acquaintances in times of trouble. 82% had helped other family members or friends with some personal situation over the past year.

Non-Economic Benefit	Can we report on this now in NZ? Yes/Somewhat/No	Factoids/Statistics & useful source material
21. Higher level of life satisfaction	Yes – NZGSS collected perceived life satisfaction for all the surveys. However, the scale changed for 2014 and it is not comparable to previous years.	Able to afford nicer houses in better locations (McMahon pg 155) and access better leisure and recreation options.
22. More likely to be interested in the environment and contribute to a sustainable society.	Somewhat – Statistics NZ tracks interest in the local community, but not commitment to environmental sustainability.	
23. Less likely to be incarcerated (although more likely to commit white-collar crime)	Unsure – our crime statistics might do this, but not clear at the time this paper was drafted if these can be linked to qualifications.	

Appendix 2 continued – McMahon tables and bibliography)

McMahon (2009) Pg 139 – Figure 4.1



McMahon Pgs 161-162

TABLE 4.3 The Value of Private Non-Market Returns to Higher Education

<i>Private non-market benefits beyond income</i>	<i>Value/year following bachelor's</i>	<i>Income coefficient α^a</i>	<i>Education coefficient β^b</i>	<i>Sources (see reference list)</i>
Own health benefits	\$16,800	This is the mean of the eight studies listed below.		
Self-rated health (United States)		Higher education effects only		Grossman (1975)
Equation 5 (p. 176)	\$14,400	0.167***	0.019**	NBER-Thorndike
Equation 6 (p. 176)	\$14,967	0.146***	0.012**	Longitudinal Sample, 9,700 males
Equation 7 (p. 176)	\$18,778	0.147***	0.012**	
Self-rated health (United States)				Grossman (1972)
All whites (p. 71)	\$29,977	0.086*	0.018**	Income is divided into four variables so α' is too small
Insurance control (p. 68)	\$25,315	0.111**	0.028**	
Self-rated health (Germany)	\$6,853	0.059**	0.073**	Erbsland et al. (1995)
Self-rated health (United States)	\$19,578	Lee (1982) in 2007 prices		By Wolfe and Haveman (2003, p. 117)
Self-rated health (Sweden)	\$4,536	-0.019***	-2.46*	Bolin et al. (2002). Value low due to controls for 1980 and 1996 health
Low health, 1 = low, 0 = other				
Contributing Factors	\$0	Below overlap overall health		
Smoking cessation (OLS)	\$2,160	0.091***	0.178***	DeWalque (2004, p. 24)
Smoking cessation (IV)	\$2,808	0.086***	0.219	Cessation in or after college
Longevity/mortality	\$2,179	1.12 years of life expectancy added per year of college ^b		
Life expectancy	\$1,322	0.00021***	0.0483***	Appendix D, Mod ii, Sec only
Life expectancy	\$1,672	0.00026***	0.0504**	Appendix D, Mod. I, HE only
Life expectancy (LEXP)	\$3,541	Higher educ. effects only		By Grossman (1975)
Lower mortality rate	\$0			Deaton and Paxson (2001) ^b
Child health	\$4,340	Due to mother's education		
Child health, age 4-8 (Canada)	\$1,341	0.182**	0.135**	Currie and Stabile (2003, p. 1819)
Child health, age 4-8 (United States)	\$7,339	0.156**	0.322**	Case et al. (2002, p. 1313)
Vaccinations, weight better		Overlaps above		Haverman and Wolfe (2007)
Child education and cog. dev.	\$7,892	Mean of Child Education and Cognitive Development averages		
Child education mean	\$5,606	Due to mother's higher education		
Child's years of schooling	\$6,556	0.187**	0.218**	Ermisch and Francesconi (2000), United Kingdom
Child's years of schooling	\$4,657	\$835/yr due to grandfather's educ.		By Wolfe and Haveman (2001) from Blau (1999)
Child cognitive dev. mean	\$10,178	Quality, rather than quantity of education		
Cognitive development	\$1,323	Wolfe and Haveman (2001, p. 117)		Angrist and Levy (1996)
Cognitive development	\$5,143	Haveman and Wolfe (1984, p. 395)		Murnane (1981, p. 249)
Cognitive development	\$5,256	1.96	11.49**	Murnane (1981, p. 249)
Cog. dev., one-parent family	\$2,637	1.31	3.85**	Murnane (1981, p. 249)
Cognitive development (IQ)	\$22,660	Haveman and Wolfe (1984, p. 396)		Edwards and Grossman (1979)
Cognitive development (IQ)	\$16,637	Haveman and Wolfe (1984, p. 396)		Shakorko et al. (1980)
Cognitive development (IQ)	\$16,848	0.288**	0.986**	Shakorko et al. (1980, p. 18)
Cognitive dev: reading, math	\$18,856	0.271**	0.942**	Shakorko et al. (1980, p. 18)
Cog. dev. parents' valuation	\$2,250			Haveman and Wolfe (2007)
Contributing factors	\$0	These overlap Child Education and Cognitive Development		
Husband's health	\$1,917	0.146***	0.180***	Grossman (1975, Equation 6, p. 176)
Fertility and family size lower	\$1,551	75% allocated to secondary		Michael and Willis (1976)
Happiness or well-being		Many controls related to education ^c		
Contribution to happiness	negative ^b			Helliwell (2003, 2005)
Contribution to happiness	positive			Witter et al. (1984)

Determinants of happiness		Layard (2005)	
Choice of a spouse	positive	Relation to education controlling for income	
Lower divorce rate	positive	Relation to education controlling for income	
Lower unemployment	positive	Relation to education controlling for income	
Social capital, more trust	positive	Relation to education controlling for income	
Better government	positive	Relation to education controlling for income	
Consumption and saving	\$3,401	50% allocated to secondary	Average of four studies
Consumption efficiency	\$6,358	\$290/year in 1972 dollars	Michael (1975)
Consumption efficiency	\$1,350		Haveman and Wolfe (2007)
Higher return on assets	\$9,954	\$895/year in 1980 dollars	Lee (1982)
Higher saving rate	\$9,552	0.0793*** 0.0955***	Solomon (1975, p. 274) ^d
Job and location amenities			
Better working conditions	positive		Duncan (1976)
Amenities from location	positive		Chambers (1996)
Lifelong learning			Nelson and Phelps (1966)
Less obsolescence of HC			Rosen (1975)
Consumption benefits	positive		Pascarella and Terezini (2007)
Improved tastes	\$0	Overlaps final outcomes since these lead to private and social benefits	
Total value of private non-market benefits	\$38,080	Sums items in bold to avoid overlaps	
Average earnings increase	\$31,174	Mean of males and females ^e	
Benefits as a percent of earnings increase	122%	This becomes 78% when expressed as a percent of male earnings increments only.	

TABLE 5.4 The Direct Social Benefit Externalities of Education

<i>Social benefits, dependent variable</i>	<i>Value of social benefits of bachelor's</i>	<i>Reported coef.^a of education</i>	<i>Reported coef.^b of income</i>	<i>Control variables^c</i>	<i>Source</i>
Democratization and Political Institutions	1,830				
Democratization	994	0.018***	0.372*	InY, M	McMahon (2002)
Democratization	1,726	0.0101*	0.05***	Y	App. D, OECD HE
Democratization	2,771	0.0114***	0.05**	Y	App. D, OECD Sec.
Democratization	59,982	0.00917***	0.032	InY, P, S	Keller (2006b) ^e Besley and Case (2003) ^f
Human rights, civic institutions	2,865				
Human rights	2,865	0.006*	0.194**	Y, M, D	McMahon (2002)
Political stability	5,813				
Political stability	8,625	0.0793***	0.00025***	Y, M, D	McMahon (2002, p. 107)
Political stability	4,041	0.0423	4.7E-04***	Y, M, D	App. D, OECD HE
Political stability	3,001	0.0849**	4.1E-04***		App. D, OECD Sec. Ed.
Life expectancy	2,308				
Positive benefits	3,344	0.0504**	2.61E-04***	Y, P	App. D, OECD HE Coef.
Negative growth	590			I, T, PS, Y(70)	App. D, OECD LEXP Coef.
Positive benefits	2,452	0.0483***	2.11E-04***	Y, P	App. D, OECD Sec Coef.
Negative growth	537			InY, S, G, PS, t	Barro and Sala-i-Martin (1995, p. 425) ^g
Reduced inequality	3,110				
Greater opportunity	+	United States Only			Leslie and Brinkman (1988) ^h
Reduced inequality	-(OECD)	0.0015**		S, T	App. D, OECD HE ^e
Poverty reduction, Sec	3,110	-1.41***	-5.6*	Y, P, H	McMahon (2002, p. 115) Mod2
Lower crime	5,647				
Homicide	719	-15.9***	1447***	InY, U	McMahon (2002, p. 144)
All other crime	4,928	-974***	22612***	Y, GI, PV	McMahon (2002, p. 148)
Lower public costs	544				
Lower health costs	544				Muennig (2000, p. 28) ^d
Lower prison costs					Lochner and Moretti (2002) ^j
Higher tax receipts					A market social benefit
Environment: indirect	5,609	Effects from less pop. growth and poverty, more democracy			
Cleaner water	136	-3,202**	7.79***	Y, y, P, PV, D	McMahon (2002)
Less air pollution	1,482	-1.32**	-1E+00**	Y, S, D, p, PS	McMahon (2002, p. 137) HE ^e
Less deforestation	3,991	9.9E-05*	6.7E-07**	Y, P, H	McMahon (2002) ^f
Social capital					
Social capital	+	Education effects positive			Helliwell and Putnam (1999)
Happiness	+ (?)	Effect above \$20,000		Many	Helliwell (2005) neg. effect ^e
R&D dissemination	++				Non-mkt, apart from growth
Total social benefits	27,726				Direct effect externalities
Growth equation estimates, macro-data					
	In 2007 dollars	Education coefficient			Source
	28,672	7.20E-03***			Barro (1997)
	18,919	0.05*			Barro and Martin (1995, p. 426)
	13,274	0.005*			Olivia and Rivera-Batiz (2002)
	28,379	0.075***			Keller (2006b, p. 24), globally
	35,568	0.094**			Keller (2006b, p. 30), OECD HE
	9,843	0.047***			McMahon, App. D, OECD HE
	0				Benhabib and Spiegel (1994)
	0				Pritchett (2006)
Average all studies	16,832				

Appendix 2 – Bibliography

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Appendix 3 – Producing employable graduates – Universities NZ Fact Sheet

New Zealand's universities educate our future leaders and innovators, generate new ideas and knowledge, and earn export income. They are all committed to producing employable graduates, and contributing to New Zealand's economic growth and social well-being.

Research shows that New Zealand graduates experience excellent outcomes. On average:

- graduates earn \$1.1m more over their working lives than non-graduates or pre-degree level students;
- graduates earn 1.65 times more than school-leavers;
- bachelor-level graduates have higher rates of employment and lower use of social welfare benefits;
- graduates achieve pay off their investment in a university education by age 34;
- graduates pay back tuition subsidies and another \$81,000 in income taxes to the government over their working life (before GST and company taxes).

Preparing graduates for the future

Universities provide students with core competencies and discipline-specific knowledge. These skills strategically position graduates so they have the best chance of gaining employment and having successful careers.

They also prepare graduates for their future, although many of tomorrow's roles don't yet exist today. Graduates therefore need to be future-fitted with additional skills, such as problem-solving, the ability to quickly master complex information, and adaptability to work effectively in different roles across any number of sectors, nationally and internationally.

To achieve this, universities work closely with industry, businesses, and communities – locally, nationally and globally to deliver programmes that meet students' and employers' current and longer-term needs.

Delivering quality academic programmes

Universities New Zealand has a statutory responsibility to ensure the quality of academic programmes and the integrity of the university system. It manages a robust national system for the approval and accreditation of all academic programmes.

In addition, each university is also audited every five years by an independent body, the Academic Quality Agency for New Zealand Universities, to ensure the quality of academic processes.

All university programmes have a graduate profile statement which describes the knowledge, skills and attributes graduates should gain from the programme. It is mandatory for universities to engage and consult with relevant stakeholders including employers, industry, professional bodies, communities and Māori, when developing or amending programmes.

Universities engage with and respond to industry and stakeholders in a range of ways including formal panels and committees, as well as through formal agreements with industry bodies.

Examples

- Massey University has agreements with the New Zealand Defence Force, Customs and the Police involving defence and security studies. It has forged relationships with regional and local policy makers to ensure it is aligned with their needs for knowledge transfer and the educational needs of regions.
- Auckland University of Technology has 39 Industry Advisory Committees, which were commended in its last academic audit for ensuring alignment of programmes with industry needs and ongoing relevance.
- Many university qualifications are accredited, for example Lincoln's new Bachelor of Land and Property Management degree has received RICS (Royal Institution of Chartered Surveyors) accreditation for international relevance and graduate employability.

Providing valuable work experiences

All New Zealand universities recognise the value of work experience and how it enhances the employability of students. All of the universities provide students with opportunities to learn more skills for the world of work through internships or work placements/practicums.

About 32% of all university graduates in 2013 completed a professional qualification. Courses such as engineering, medicine, dentistry, pharmacy, teaching, and clinical psychology all include a work placement as a requirement for professional accreditation.

Examples

- The University of Auckland has a practical work component for all professional degrees; in Engineering alone over 1,000 students are involved in practicums per year. The University has piloted cross faculty internships for PhD students, and a work experience programme for undergraduate Māori and Pacific students.
- Auckland University of Technology has developed a unique programme called AUT interNZ, designed to match students with NZ companies for internships. Initially launched in conjunction with Callaghan Innovation to cater to their R & D grant recipient companies, AUT interNZ has since broadened and now matches students from all disciplines with internships in all industries. So far over 300 students have registered to be eligible for roles since launch in July this year.
- At least 70 University of Waikato programmes offer work placement or a practicum component, which in one year exposed almost 2000 students to first-hand industry experience.
- Massey University uses a range of learning opportunities including: work integrated learning, service learning, simulations, laboratory experimentation, and scenarios. They use practicums (Bachelor of Sport and Exercise, Bachelor of Engineering); professional practice (Bachelor of Resource and Environmental Planning, Graduate Diploma in Teaching); clinical placement (Bachelors of Veterinary Science, Nursing, Speech Language Therapy respectively); field work (Bachelor of Science, Masters of Applied Social Work), and project-based group learning (Bachelors of Engineering, Food Technology and Veterinary Sciences).
- Victoria University's Bachelor of Arts Internship programme, sees students work voluntarily for up to 100 hours, and as part of a taught component, they share and discuss what they have learned in the workplace.
- In 2015 the University of Canterbury established a new Centre for Entrepreneurship to build and strengthen entrepreneurial and innovative capabilities and ultimate employability of its students. The Centre offers both for-credit and extra-curricular options for students and builds on existing entrepreneurship and innovation courses and works with the long standing student-driven club, Entre, for budding entrepreneurs.

- **Lincoln University has a practical work component built into 60% of their programmes.**
- **The University of Otago offers a pre-employment training programme for students applying for internships. It negotiates paid intern positions with about 60-100 businesses every year, some lasting up to 15 months.**

Building strong relationships with sector and stakeholders

A key role of universities is to drive innovation and growth. University staff work closely with a wide range of sectors and stakeholders, including industry, business, and professional bodies to ensure programmes are aligned and to transfer knowledge. These relationships benefit students, universities and employers and sectors alike.

Many university staff are appointed to expert advisory groups, government and private sector boards, and work with iwi and/or hapū. Many others undertake industry research, develop and deliver professional development courses for stakeholders, or work with corporates to secure sponsorship.

These linkages often lead to the development of new programmes and work-integrated learning opportunities. They include co-operative education papers, clinical practice, teaching practicums and industry and post-graduate research projects.

Examples

- **Lincoln University together with three Crown Research Institutes and DairyNZ (the industry body for New Zealand's dairy industry), have formed a hub aimed at exposing students and staff to leading employers and commercial practices. The Hub will work very closely with industry, in the future increasingly exposing students and staff to leading employers and commercial practices.**
- **Lincoln has also partnered with ANZCO and China's Yili Industrial Group Research and Development, who are co-located on campus and work alongside postgraduate students and staff.**
- **At Massey University, research-led science programmes provide students with the fundamental knowledge and develop problem solving skills relevant to modern markets. Papers like the Bachelor of Science's Nanoscience Research Project offer students the opportunity to provide solutions to industry projects. Graduate students are encouraged to be both innovative and develop their own ideas and potential new businesses, and to work on projects funded by the industry and supported by research providers.**
- **The University of Waikato Co-operative Education Unit through active relationships with employers has created 300+ work placements each year for students in specific Science, Computer Science and Engineering undergraduate degrees. This comprehensive programme includes a compulsory pre-placement paper which covers CV, interview preparation and professional behaviour.**
- **The University of Auckland has an employability strategy document which focuses on building relationships to support students to become 'work ready' for better employment outcomes.**
- **Auckland University of Technology's Bachelor of Business offers a co-operative education paper where students complete a nine-week placement in industry, an academic programme of study, and produce an applied research project that demonstrates learnings from both their study and work experience. 120 AUT students participated in the 'Match Ready employability workshop' this year, which offered students first-hand insights from employers on the subject of 'soft skills' such as interview technique and CV writing. 100% of surveyed attendees felt 'more confident to gain employment' as a result of the event.**

Tailored career support for students

All universities offer programmes of support to help students increase their employability skills and realise their career opportunities.

Specialist career services teams deliver individual and group skills, advice, workshops, websites like NZUniCareerHub, publications and careers expos, as well as customised workshops for specific disciplines.

Universities also encourage students to get involved in extra-curricular and volunteer activities alongside their studies to develop teamwork and leadership skills, so they can offer employers a richer skill set.

Examples

- The University of Otago's Volunteer Centre connects community organisations with students who wish to develop their employment skills. Otago also offers the "Passport to Employability" programme which works with employers to help students gain critical pre-employment skills. Otago's "International Get Job Ready" Coordinator, facilitates workshops designed to assist international students to transition successfully into the New Zealand work force.
- The University of Canterbury's new co-curricular record (CCR) initiative, recognises student development outside of the classroom, and provides an official record of students voluntary and work activities at UC, while also facilitating reflection on learning and development through these activities. Online Career Development Modules have also been developed which are being increasingly integrated into academic programmes. These assist students as part of their studies to develop career management competencies.
- Massey University provides numerous learning opportunities and activities collectively known as "Leadership through Service". These provide valuable complementary opportunities to enhance students' professional and personal development. Activities include: student liaison representatives, the Massey University student leadership programme, residential assistants and peer-assisted learning coordinators, even volunteers and open lab projects.
- Victoria University of Wellington offers the "Victoria Plus" Programme to all students at any level to develop leadership, social responsibility and employability skills. Similarly, Victoria's "Alumni as Mentors" programme, sees alumni share post-study professional experiences with current university students in a one-to-one mentoring relationship to help graduates prepare for the world of work.
- The University of Auckland offers "Passport to Business", a 10-week career development programme to help students create individualised career plans. Industry professionals are actively involved in the programme. High-performing students also secure an interview simulation with industry representatives.
- Auckland University of Technology's "Shadow a Leader" initiative sees Business and Law students follow a business leader for a day to understand what it takes to succeed in the leader's field of endeavour. The AUT interNZ international programme pairs AUT students with US based companies (including New York, San Francisco) to complete three month off-shore internships. AUT interNZ offers tailored support for candidates including customised 'how to interview via Skype' sessions.
- The University of Canterbury offers Online Career Development Modules which are being increasingly integrated into academic programmes. These assist students as part of their studies to develop career management competencies.
- All Lincoln bachelor degree students take LINC101 – a course designed to put their specific discipline learning into a broader context, giving them the ability to understand the world around their own

specialist area, and contribute more to their chosen career path as a result. They also all take LINC102, a mandatory Research and Analytical Skills course, valuable regardless of the industry they end up in.

Evaluating what works

Universities actively monitor and evaluate current student, graduate and employer views to ensure the continuing relevance of programmes. This is done formally through programme review cycles; and through other mechanisms to gather feedback. Several universities are carrying out studies to identify what graduate qualities employers most value.

Universities New Zealand has commissioned the Graduate Longitudinal Study of nearly 9000 graduates from 2011 to track graduates and understand the ongoing impact of a tertiary education. A report on their progress after two years in the workforce will be available in late 2015.

Examples

- The University of Canterbury undertakes a Graduate Destinations Survey every two years to capture the views of graduates 6-9 months after graduation. Graduates are encouraged to report on many aspects of their current employment and its relationship to their previous study, as well as to identify useful skills and experiences gained during their time at Canterbury. The Graduate Destinations data informs career education, curriculum development and programme review.
- Victoria University is carrying out an employability review. Key focus areas include: work-integrated learning; increasing the range of extracurricular programmes; embedding employability in the curriculum; university commitment through an employability steering group; enhancing the role of career support services; and strengthening external partnerships.
- Massey University has an employability framework in place. The University collects and analyses feedback from students on its activities to support employability and it also administers a Graduate Destination Survey every year to all graduates who had degrees conferred in the previous academic year.
- University of Otago graduates complete the Graduate Opinion Survey about 18-24 months after graduation. Graduates are asked to report skills they have used in employment since they graduated and this information is used to make programmes more relevant. Otago is also surveying around 500 employers and information from this study will inform the development of courses and programmes to meet employer requirements, and to further prepare graduates for professional careers.
- Auckland University of Technology undertakes an annual Graduate Survey which provides insights into the destinations of its graduates and their experiences of transition into the workforce approximately six months after completing their qualification. AUT has also recently undertaken interviews with large scale employers in Auckland. Students at the bottom end of the graduate destination survey will be offered targeted employability coaching to lift their employability scores year on year.
- The University of Waikato's Curriculum Enhancement Project is reviewing current academic programmes and how they provide future career opportunities. The project aims to increase work placement and work-integrated learning into a broader range of areas of the curriculum. One such initiative builds specific work-readiness skills into doctoral programmes.
- The University of Auckland is completing an audit of all practicums, internships and work experience. It will be used to inform future employability strategies, programmes, processes and systems.

Appendix 4 - Academic Quality and Relevance as core parts of the business model

As previously stated, the quality and relevance of courses, qualifications and curriculum are key to universities attracting and retaining students in a volume-driven system.

The New Zealand university quality system is unique internationally and almost single-handedly accounts for why all eight New Zealand universities are highly ranked and why there are such strong employment outcomes for graduates.

Under the Education Act (1989) Quality Assurance in the university sector has been delegated to Universities NZ. To carry out the functions of programme approval and accreditation, and institutional academic audit, Universities NZ established, respectively, the Committee on University Academic Programmes (CUAP) and the Academic Quality Agency for New Zealand Universities (AQA). New Zealand's unique approach to quality assurance is based on an inter-institutional system, under the auspices of Universities NZ, comprising all eight New Zealand universities.

Quality assurance activities in the New Zealand university sector are underpinned by 10 principles:

1. Developed by the university
2. Evidence-based
3. Enhancement-led
4. Founded on self-review
5. Assured by peer review
6. Collective and collegial
7. Individually binding
8. Internationally endorsed
9. Independently operated
10. Publicly accountable

The unique inter-institutional approach to university quality assurance at a national level is grounded in a shared history of the New Zealand universities. Originally operating as colleges of the University of New Zealand, the universities continued to collaborate on the approval of academic programmes after the disestablishment of the University of New Zealand, through the statutory responsibilities of the Curriculum Committee under the University Grant Committee (UGC). This inter-institutional approach to quality assurance continued under the New Zealand Vice-Chancellors' Committee and the new branding as Universities NZ – Te Pōkai Tara after the disestablishment of the UGC

The quality assurance environment is described below.

1. Collaboration across Quality Assurance Bodies

Although New Zealand's quality assurance processes operate across three quality assurance bodies (NZQA for the non-university sector and AQA and CUAP for the university sector) there is consistency and collaboration. These can be summarised as follows:

Overarching Rules, qualification definitions and principles

NZQA and Universities NZ adhere to the same overarching Rules governing Quality Assurance, including the NZQF Programme Approval and Accreditation Rules 2013 and the NZQF Offshore Programmes Delivery Rules 2012. NZQA and Universities NZ apply the same definitions for qualifications and credits, and have agreed policies on other quality assurance matters; for example, agreed principles for transfer of credit and, most recently, agreed Principles for the Application of s292E of the Education Act 1989 to universities regarding academic cheating services.

In addition, NZQA is required under the legislation to consult with the university Councils and Universities NZ on the application of Rules (s.253) and when establishing standards for entrance to universities (s.247).

Joint Consultative Group

NZQA, AQA and Universities NZ have established a Joint Consultative Group, which meets four times each year. The Group's Terms of Reference specify its purpose as providing a forum for regular discussion and consultation between CUAP, AQA and NZQA with respect to matters of mutual interest and shared responsibility.

Cross-sector consultation (through Advisory and Working Groups)

In addition, the QABs are represented and involved on a range of Advisory and Working Groups on matters of mutual interest or as required in the legislation.

New Zealand Qualifications Framework (NZQF)

All NZ qualifications approved by NZQA and CUAP are listed on the NZQF. CUAP has had input into NZQA publications about the NZQF and into the Authority's international framework referencing activities.

International representation

NZQA, AQA and Universities NZ represent the New Zealand quality assurance system to international higher-education delegations. All three bodies are full members of the International Network for Quality Assurance Agencies in Higher Education.

2. Committee on University Academic Programmes (CUAP)

Universities NZ has delegated its Programme Approval and Accreditation approval authority to CUAP. CUAP's membership is made up of a representative from each university (usually at Deputy Vice-Chancellor Academic level), a Chair (a Vice-Chancellor), a Deputy Chair and a student representative. CUAP and its activities are funded by the universities.

a. Internal processes for development

New qualifications or significant changes to existing qualifications must go through internal development and approval processes before being approved by a university's Council for submission to CUAP. While part of the internal institutional focus is on a programme's feasibility and requires a business case acceptable to a university's Council, CUAP's primary concern is the academic integrity of a programme or qualification.

b. Peer review

The CUAP approval process is based on peer review. All submissions to CUAP (which encompass new qualifications and programmes and substantial modifications to qualifications and programmes) are subject to inter-institutional university review at a disciplinary level. Through the CUAP online system, proposals are made available for review by disciplinary experts in each of the universities. Where there disciplinary expertise is lacking within New Zealand, it is a CUAP requirement that an international reviewer with disciplinary expertise provides feedback on the proposal.

Universities peer reviewing another university's proposal cannot oppose it on the grounds that a programme is already being offered elsewhere; they can only challenge it on academic criteria such as:

- Is there any chance that it will cause confusion for students or employers – for example, a one-year taught master's with a similar name to a two-year research-based master's qualification?
- Is the graduate profile (the expected skills and capabilities of a graduate) appropriate for the qualification? Has it had suitable input from relevant employers and sign-off by industry bodies? Where appropriate, has it had input from community and Iwi, whānau, hapū, and hāpori Māori?
- Is the proposed curriculum likely to produce graduates who conform to the graduate profile?

CUAP's moderation process (the Graduating Year Review) is also subject to scrutiny by the other universities once a programme has produced its first cohort of graduates. Internally, universities must prepare a report that includes consultation and input from industry, employers, graduates and other stakeholders, and demonstrate that the programme is meeting its original objectives and an acceptable standard of delivery. These reports are

reviewed by members of CUAP and decisions are made as to whether the programme has approval to continue.

3. Academic Quality Agency for New Zealand universities (AQA)

The AQA supports universities in achieving standards of excellence in research and teaching through regular institutional audit and promoting quality enhancement practices across the sector. It was established in 1993 and the first audits were conducted in 1995.

4. Internal quality assurance processes

In addition to CUAP's programme approval and accreditation processes and AQA's institutional audits, universities are subject to other forms of ongoing and regular internal and external review. These include:

- internal programme approval and review processes
- departmental reviews
- student course and programme evaluations
- the use of external examiners
- regular review and comparison of course and programme data (such as grades, pass rates, and completion rates)
- student surveys
- staff performance reviews
- professional diploma and degree accreditation reviews
- engagement with professional, employer, statutory and regulatory bodies
- Engagement with research funding bodies.

5. Independent Audits of CUAP and AQA

Both CUAP and AQA are subject to regular independent reviews by panels of national and international experts. CUAP was audited in 1996, 1999 and 2011. A further audit is planned for 2017. AQA was audited in 1998, 2001, 2009 and 2015.