

About this document

The Government has asked the Productivity Commission to carry out an inquiry into “new models of tertiary education”

The Commission has published an **issues paper** on its website to assist individuals and organisations to participate in the inquiry. The issues paper outlines the background to the inquiry, the Commission’s intended approach, and the matters about which the Commission is seeking comment and information. It also contains 78 specific questions to which responses are invited.

This document sets out **just the 78 questions from the issues paper**. Submitters are welcome to use this document as the basis of their submissions. Submissions are also welcome in many other forms, as outlined in the issues paper.

Making a submission via this document

All submissions should include the submitter’s name and contact details, and the details of any organisation represented. This information can be entered below.

Submitter information	
Name	Contact: Wei Yuen Loo and Hugh Wilson
Organisation represented (if any): Dept Civil Eng, Unitec New Zealand.	<i>Management and senior staff within the Civil Engineering Department have been consulted on the contents of this submission. While there are different points of view on various parts of its contents these differences are relatively minor, and all agree on most essential aspects. This submission is thus broadly representative of the views of management and senior staff within Unitec’s Department of Civil Engineering</i>
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Submissions may be lodged at www.productivity.govt.nz or emailed to info@productivity.govt.nz. Word or searchable PDF format is preferred. Submissions may also be posted. Please email an electronic copy as well, if possible.

The Commission will not accept submissions that, in its opinion, contain inappropriate or defamatory content.

What the Commission will do with submissions

The Commission seeks to have as much information as possible on the public record. Submissions will become publicly available documents on the Commission's website shortly after receipt unless accompanied by a request to delay release for a short period.

The Commission is subject to the Official Information Act 1982, and can accept material in confidence only under special circumstances. Please contact the Commission before submitting such material.

Key inquiry dates

Receipt of terms of reference:	3 November 2015
Due date for initial submissions:	4 May 2016
Release of draft report:	September 2016
Draft report submissions due:	November 2016
Final report to Government:	28 February 2017

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Questions

Below are the 78 questions contained in the issues paper. These questions are not intended to limit comment. The Commission welcomes information and comment on all issues that participants consider relevant to the inquiry's terms of reference.

Submitters should choose which (if any) questions are relevant to them, and leave or delete those they do not wish to answer. Many questions will not make sense without the accompanying discussion provided in the issues paper; submitters should refer to the issues paper to clarify the meaning of the question.

Question number	Question text	Where the question
Q1	What are the advantages and disadvantages of administering multiple types of post-compulsory education as a single system?	Page 3

Having all education systems administered as a single system would be a mistake as they all have different objectives and challenges. Our concern as an ITP is that a single system will become dominated by the universities and our focus will shift further from practical and vocational focus to the more academic focus of universities.

Q2	Do prospective students have good enough information to enable them to make informed choices about providers and courses? What additional information should be provided? Who should provide it?	Page 8
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In Civil Engineering, Unitec has observed that domestic students have maintained number their numbers, but not increased over the past three to four years. There are some colleges that provide several students each year and other large local colleges which never provide students to our courses. We think this is part due to some colleges not promoting engineering and others only promoting university education options to their students.

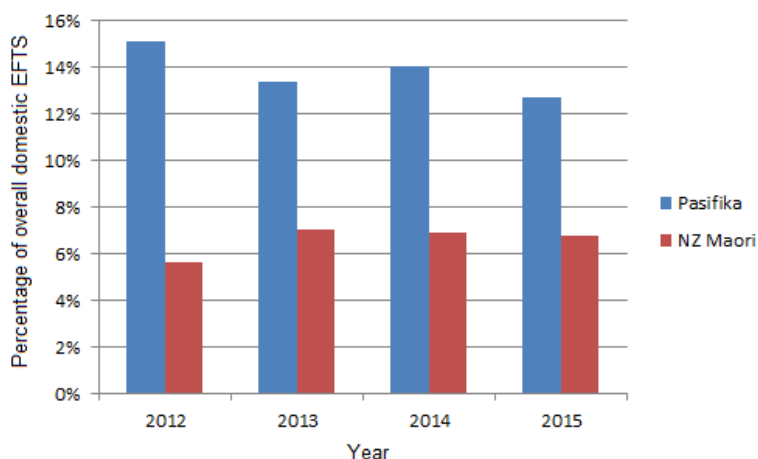
We are of the opinion that the main reason is that engineering does not really get promoted at Colleges either in the subject content or from the teachers and careers advisers. College courses have almost no content that allows students to learn what an engineer is and what they do. Topics such as how a city works, what infrastructure is and other overviews of the fields that Engineers work in could perhaps be embedded in science or social studies classes, and may help address this. It is noted that the E2E initiative will help but getting the idea of being an engineer into students' minds early is very important.

The importance of students preparing high school students in communication English, mathematics and the general sciences (particularly physics – anecdotally we have learned that some high schools do not even offer this subject) cannot be overemphasized and is something that the E2E and other initiatives are

well aware of this and seem to be addressing it. Doing these subjects opens up a much wider range of potential career options for exiting high school students, which include engineering.

The fact is many students will not make up their minds on what they want for tertiary studies until they finish their school studies. By that time they will often find options closed to them because they have not done the right mix of subjects at school. The unfortunate upshot of this is students having to pay for a year of 'foundation' studies (often taking on student loans) for something they could have received for free at school.

While Pasifika numbers (at least as a proportion of domestic students) are now reflective of their proportion of Auckland's population, we are struggling to attract Maori students, see below). Certainly this is one area that government needs to address and resource.



Q7

What are the implications of economies of scale in teaching (and the government funding of student numbers) for the delivery of tertiary education in different types of providers and for different types of courses and subjects?

Page 12

Many of the students at technical institutes do not have the academic background and skills of the typical university students. These types of students need to study in smaller classes to enable learning. Proper learning in our case requires a tutor having personal contact with a manageable number of students. In particular, this requires significant face to face contact time, and not simply online communications that seems to be the current trend.

The number of students that each tutor is responsible per semester ideally needs to decrease and certainly should not increase from current level. Smaller classes allow tutors to better gauge student learning and provide appropriate individualized feedback. In our experience, feedback is one of the most important contributors to student success.

Increasing class sizes may well produce more graduates at a lower cost but these graduates will be less capable than they would have been with proper resourcing.

Q10

What are the implications of the multiple activities of tertiary education for its delivery? What outputs are best produced together? What outputs are best produced separately?

Page 13

Teaching and assessment need to be bundled for engineering as each ITP serves a different area that has different needs. For example Auckland needs graduates who can design subdivisions but not necessarily state highways whereas the situation is reversed in other regions with less urban density and less growth.

At present the various ITPs try new approaches and content and we regularly meet to compare notes. We find this to be a very useful experience and means that, as a group we are able to improve our overall delivery as a group. We are continually having new tutors coming in from industry and they also help add to what is already being done.

The current arrangement where IPENZ sets out graduate requirements and checks that ITPs achieve these requirements works well.

Q11

What are the benefits and disadvantages, in terms of students' learning outcomes, of bundling together research and teaching at universities in New Zealand?

Page 14

The report understands that research is carried out at New Zealand Polytechnics, and provides the definition that “A tertiary education institution that offers a wide diversity of continuing education, including vocational training, and that conducts research, particularly applied and technological research.”

While we understand that universities have strict research requirements for all, if not most of their staff, this would not be appropriate for a technical institute. The NZQA allows for this expressly saying degree programmes should be ‘taught *mainly*’ (not exclusively) by staff engaged in research. Indeed even New Zealand’s top ranked University of Auckland engages industry and non-research staff for the teaching of engineering management and some structural courses, and this mixed model should be encouraged.

For a polytechnic, the proportion of research active staff would of course be expected to be significantly lower than that of the polytechs, and this is also because the research requirement applies to the nature of the qualification taught (bachelors degrees and upwards), and as the polytechs will be teaching qualifications over a much wider range of levels, **it is both natural and appropriate that the proportion of non-research active staff will be significantly higher than that of a university.**

We recognise the importance of research in polytechnics, particularly research that informs practice. The research carried out by staff at Unitec’s Department of Civil Engineering is of a highly practical nature. For example two of our staff’s research contributes, in distinct ways, to environmental and sustainability advice to the general public, another of our staff’s research is seeing direct implementation in the Christchurch rebuild, while another carries out research that contributes to structural seismic assessments, and yet another’s research on roading aggregates will be of potential benefit to our Pacific neighbours. This industry linked research informs teaching, particularly when it comes to the bachelors third year engineering development projects, and is even brought into the classroom (new techniques for modelling building performance in earthquakes is taught in a third year structural design course). Other staff research in the area of engineering education and also research into the activities students are involved in after graduation and entering the workforce.

From this it can be seen that the nature of research in a Polytech meets the applied and technological definition and is not necessarily the same as that of a university. But we believe our research is highly

industry relevant and contributes to the success and reputation of the institute, and enhances teaching. Allowing staff the opportunity to engage in research is also an excellent way to encourage them to remain current and engaged with the profession as a whole.

In short, the current mixed model of research & teaching (57% of overall permanent staff), and teaching only staff (43%) in our civil engineering department serves our students and industry very well.

Q12

What value is attached to excellence in teaching compared to excellence in research when universities recruit or promote staff?

Page 14

Unitec's academic promotions policy emphasizes the primacy of teaching, and thus 'excellence' in teaching is the one compulsory. Those applying for promotions can also need to demonstrate 'excellence' in at least one other category, *which includes equal provision for either research or practice* (academic leadership is another category). We feel that is appropriate to a technical institute, that staff can obtain promotion through a practice pathway, and not just a research pathway. However, we do recommend that mandatory post graduate qualifications for promotion be removed, and this will open the way for excellent teaching staff without these qualifications to move upwards within the organization.

It is noted that research and practice are not mutually exclusive categories, and most of our research staff are performing research that informs practice. Furthermore given the workloads of most staff, most of our permanent teaching cohort will not have time to practice outside and teach at the same time (see responses to Q13, Q14, & Q17 below).

Q13

Do New Zealand TEIs cross-subsidise research with teaching income?

Page 14

In our department, research active tutors are given 200 to 300 hours allowance each year to carry their research. We are also given 5 weeks per year professional development leave however many of us do not have the time to take this leave due to the demands of being a full time tutor. One way to improve this situation is to reduce the number of students each tutor is responsible for over a semester.

Q14

What other evidence is there about what makes for effective teaching in a tertiary environment? Is it different for different types of learning or student? How can teaching effectiveness be best measured and improved?

Page 17

Effective teaching requires manageable class sizes and time for the tutor to work with each student. This enables the tutor to properly analyse the students work and provide good feedback and properly implement activities that encourage deep learning. This is of course difficult with a large class where assessment can sometimes resemble a factory process, and the tutor is not able to engage all students in the type of activities that encourage deep learning.

Q16

How do New Zealand tertiary providers use student evaluations? How does this influence provider behaviour?

Page 19

We get our students to fill in a standard questionnaire for each course in the last few weeks of that course. The questionnaire includes closed and open questions which allow us to collect standard data and also give students an opportunity to comment. The only effect on our teaching is to identify and address weaknesses in our courses. We think this system works.

We do not really see the problems identified in the report and especially disagree with the comment that tutors might compromise the quality of their courses in order to be popular. This is not our experience at all.

Q17

In what ways and to what extent do employers interact with tertiary providers in New Zealand? Are there practical ways to encourage employers to have greater or more productive involvement in the tertiary education system?

Page 21

While employers in the engineering industry are willing to engage and practitioners are keen to help we have found that the time demands of being a practicing engineer makes it very hard for them to teach part time on our courses. With the best will in the world a practitioner cannot avoid the unexpected everyday events such as rescheduling of activities (such as concrete pours) or periodic increases in workload, conflicting with the requirements of teaching classes.

There is also the issue of the high workload required to prepare for even established courses and the steep learning curve associated with learning how to teach placing much higher time requirements on new tutors than they may have anticipated.

It is our view that tutors need to be full time with industry people providing support where they can.

Q28

In what ways does a focus on educating international students complement or undermine the other goals of tertiary education providers?

Page 31

The proportion of international students in our programs has risen to over 40% of the total student cohort. In general international success rates are significantly higher than those of domestic students. However there are issues with English language competency, and research on this problem would be welcome, as well as perhaps resources to help improve on this matter. However, regardless of success rates, the impact of a large international body of students with English language difficulties on the domestic student learning experience needs to be looked into.

Q29

What factors best explain the discrepancy between growing levels of tertiary education attainment without a significant productivity dividend?

Page 34

We agree with the observation that increased class sizes results in students having less chance to develop higher level cognitive skills.

The continued funding of our courses requires a set percentage of students to pass the course and so there is pressure to drop standards in some courses in order to maintain the required pass rates. While we resist these pressures, they are real.

Q35

What are the implications of new technologies that are predicted to make many currently valuable skills obsolete? Will this change the role of the tertiary education system? **Page 53**

We think there will always be a need for tertiary education institutions especially for younger or less academically able students who need the face to face contact and discipline of attending a campus. However we recognise that online education will become more prevalent and institutions will have to offer both traditional and online options for courses.

The idea of separating out content provision, tuition, assessment and support services may seem like a good idea in theory but there is a significant risk that this will just lead to generic content that is not (and cannot) be customised to the local industry requirements and make an already complicated system even more unwieldy.

Q36

What challenges and opportunities do demographic changes present for the tertiary education system? **Page 55**

Auckland is growing quickly but this is not reflected in the number of students enrolling in our engineering courses. In fact our domestic numbers have been declining but have been more than made up for with an increase in international students. It is hoped that the E2E initiative will direct more young people to engineering.

Q44

How has internationalisation affected New Zealand's tertiary education system? What are the ongoing challenges and opportunities from internationalisation of the tertiary education system? **Page 71**

Our BEngTech and NZDE programmes are internationally benchmarked qualifications (Sydney and Washington accords respectively). This is useful in terms of attracting international students that want an internationally recognized qualification, and for our domestic students who may wish to work overseas.

Q45

Is the "New Zealand" brand an important part of international competition for students, staff, and education products and services? What should providers and government do to manage or enhance this brand? **Page 71**

We find that one of the main attraction of our NZDE and BEngTech) qualifications is that they are internationally recognized.

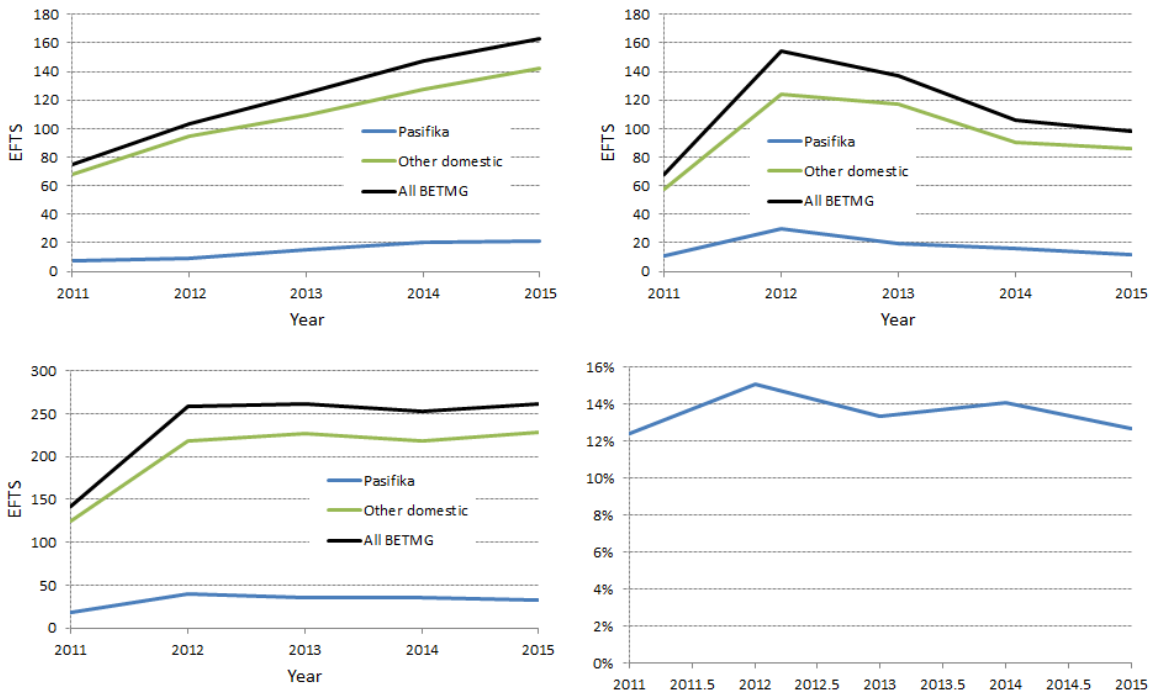
Q54

What measures have been successful in improving access, participation, achievement and outcomes for Pasifika? What measures have been less successful? Why?

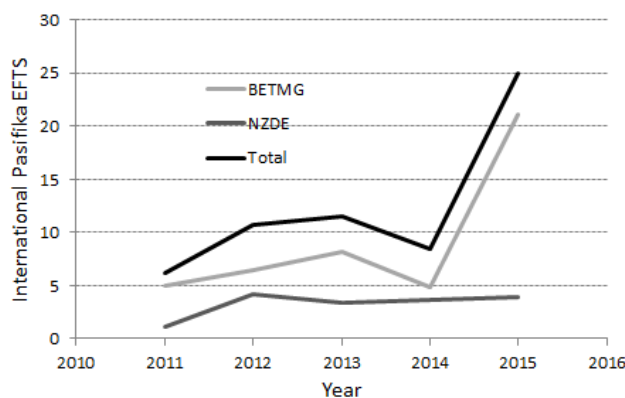
Page 79

We have appointed a Pasifika mentor about 4 years ago, and this has markedly improved success rates for Pasifika students. We now have industry Pasifika lecturers, and have recently appointed a full time Pasifika lecturer in the surveying area. Another Pasifika lecturer is expected to start with us in Semester 2 in the area of water engineering. This all helps to raise the profile of civil engineering among these students and will hopefully encourage continued improvement in success.

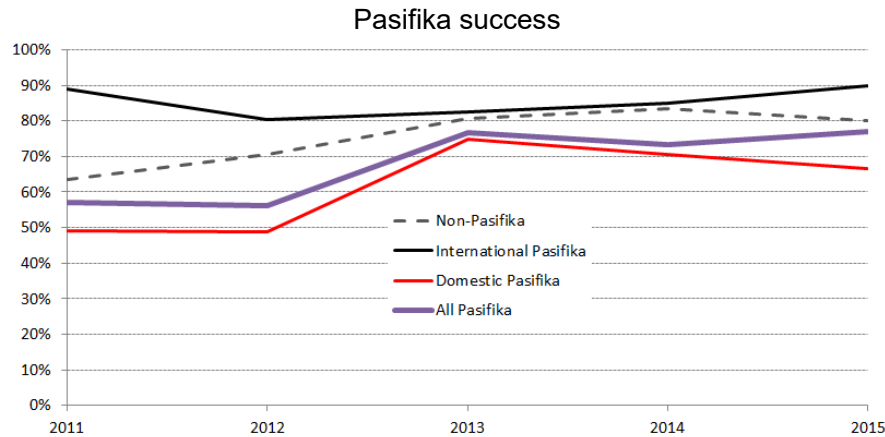
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Trend in international student Pasifika EFTS as follows:



Pacific success in 2015 was 77%, close to the non Pasifika rate of 80%. However there was a significant difference between international Pasifika success (90%) and domestic Pasifika success (67%). Pasifika success over the past five years is compared to non Pasifika in the figure below.



Clearly work has to be put in to recruit more domestic Pasifika students and improve their overall performance. This has included visiting schools during career expos or pre-arranged lunch presentations to present information on civil engineering has been well accepted. All teachers and parents were grateful to be informed. Tracking if students pursue engineering as an option when leaving high school due to the career presentations isn't being done therefore it is not possible to evaluate this as being successful or not.

Some of the schools visited over the last 3 years

- Kelston Boys High School – Career in civil engineering motivational talk to Year 12s and 13s.
- Aorere College – Science and Technology Presentation Awards.
- Sacred Heart College – Careers Evening
- St. Peters College – Maori and Pacific Careers Evening.
- Massey High School – Year 12s and 13s Physics Streams ‘Civil Engineering as a career option presentation’.
- Auckland Boys Grammar School – Careers Options Evening.
- Auckland Boys Grammar School – Maori and Pacific ‘Civil Engineering as a career option presentation’.
- Auckland Boys Grammar School – Career Pathway Managers. UNITEC tertiary options: Civil engineering programme, Trades and Architecture.
- St. Pauls College (Grey Lynn)
- Mangere College

In addition to school visits, leasing with other institutions to discuss student pathways has been positive.

- Many visits were carried out to discuss common issues with Dennis Matene (TUKANA/SPIES) at University of Auckland’s Engineering School.
- University of Auckland Careers Day – Engineering School.
- Auckland University of Technology (AUT) Careers Day – Engineering School

The only hurdle to overcome is resourcing. To maintain or improve success and retention requires resource and time. Mentoring and managing student success is a fulltime role but due to other demands within the department, this is only being done on a part-time basis.

If students are engaged on a ‘contractual’ basis similar to the University of Auckland SPIES and Tuākana engineering programme then a success rates can be dramatically improved.