

New Zealand Productivity Commission
PO Box 8036
The Terrace
Wellington 6143

3 May 2016

Re: Inquiry into New Models of Tertiary Education

To Whom It May Concern:

First, let me state that the views expressed are entirely my own. I am an international PhD student studying in the Arts at the University of Canterbury in Christchurch, New Zealand, whose prior experience comes from receiving a BA at a small liberal-arts university in the U.S. and an MA at a large public research university in the UK. I would like to offer my input on the current inquiry with research and anecdotally-based information in the hopes of assisting the effort to improve tertiary education in New Zealand.

Leadership to facilitate innovation in education should include a positive vision for the future, a supported culture of risk-taking, and the development of new and emerging pedagogies and approaches to learning that result in enhanced outcomes.
(Fraser 2007 cited by Redmond et al. 2015)

Effective Teaching

The *NMC Horizon Report: 2015 Higher Education Edition*, compiled by experts from around the world including New Zealand and Australia, describes “rewarding teachers for innovative and effective pedagogy as a wicked challenge – one that is impossible to define, let alone solve. Many institutions provide more incentives for research over exemplary teaching” (Johnson 2015, p. 1). In New Zealand, the Performance-Based Research Fund (PBRF) puts considerable pressure on tertiary teachers to publish in highly-ranked journals and prove their impact through citation counts and other quantifiable outputs. It is highly risky, therefore, to deviate from the norm and attempt innovations on the teaching side. The student-as-consumer model means that anything too new or challenging, or something that does not work out as expected, could lead to negative student evaluations that might endanger a teacher’s reputation or career. There is little incentive to change. The system rewards peer-reviewed journal articles, so teachers prioritize peer-reviewed journal articles. Although there is much talk of research-informed teaching, it is not clear to what extent a teacher’s highly specific research in their field of expertise actually impacts upon the material taught to students, especially at the undergraduate level.

It is not that there is a lack of research on effective pedagogy. The research on the effectiveness of active, student-centred models over lecture-based, one-way information transfer models has been available for years (see the University of Wisconsin Learning Support Services' "Teaching with Technology Online Workshop Series" for a good historical overview). The increasing use of digital technology and the internet may be what is finally revealing the need for change. Students are accustomed to shorter material (tweets, blogs, etc.) and constantly distracted by social media updates pinging their phones. If they have on-demand access to course lecture slides and materials, they may see little reason to invest in the class—attend lectures and tutorials, take notes, pay attention, interact with other students—outside of passing assessments. This surface-level engagement prevents productive insights about the material or encounters with other students and may then translate into fewer new ideas and less productivity after graduation.

But more importantly, some traditional models of education make increasingly less sense in a world where there is easy online access to vast swathes of free content, including premium educational material from MOOCs, variable-quality content from Wikipedia, and open-access articles from research databases like Academia.edu and ResearchGate. If students want to learn more about something, they are no longer reliant on teachers and libraries to point them to information. What students do still need, though, is guidance on how to make sense of and sort through all of that information to find what is valuable and useful. They also need activities to help them develop subject-based knowledge (hard skills) in concert with teamwork, communication, problem solving, and other transferable skills (soft skills).

Note: Emerging research on technologies like mobile phones with data analytics indicates that personalized learning may soon become commonplace and is worth further investigation for its capacity to positively shape tertiary education (see the forthcoming *Handbook of Research on Mobile Devices and Applications in Higher Education Settings* by Briz-Ponce et al. featuring a chapter from University of Canterbury PhD candidate Mazharuddin Syed Ahmed).

21st Century Skills

The one-way transmission mode and individualised assessments of traditional models of teaching are likely to be less conducive to fostering some these transferable skills than other forms of teaching. For instance, Hoidn and Kärkkäinen's (2014) report for the OECD, "Promoting Skills for Innovation in Higher Education: A Literature Review on the Effectiveness of Problem-based Learning and of Teaching Behaviours", points to promising evidence that links problem-based learning and effective teaching to skills needed for innovation. These so-called 21st century skills can be grouped into three sets:

- Technical skills including disciplinary know-what and know-how. Innovative or creative people often require specialist skills in their field – both in terms of knowledge and methods.

- Thinking and creativity skills such as curiosity, critical thinking, problem solving and making connections. For example, creativity is generally seen to be an important source of innovation, whereas innovating often consists of connecting seemingly unrelated ideas also from different disciplines. Innovation tends to also require open-mindedness and critical questioning well established ideas or practices.
- Social and behavioural skills such as interest, engagement, self-directed learning, self-confidence, organisation, communication, (cross-cultural) collaboration, teamwork and leadership. For example, entrepreneurial competences such as self-confidence are important for initiating and carrying through an innovative project, as is the ability to plan and manage projects. Innovation tends to also require communication skills, including the ability to persuade others, as well as the ability to work with others in a team and coordinate activities – nowadays, in an increasingly international context. (Hoidn and Kärkkäinen 2014, p. 7)

The report recognises that there is currently a disparity between institution rankings, which focus on research outputs, and students' desire to know whether or not institutions can teach them relevant skills that employers are looking for (p. 13). Several of the skills in the latter two categories do in fact align with what employers say are among the top ten skills they look for: communication skills, ability to work well in a team, planning and organisational skills, initiative and a can-do attitude, and problem-solving skills (Careers New Zealand 2015).

But one skill that employers want—confidence learning about and using computers and technology—is noticeably absent in the OECD report (Careers New Zealand 2015). There is an assumption that the Net generation or Millennials are 'digital natives' who have grown up surrounded by technology and the internet and require no further training in this area. However, their use of apps and smart phones does not mean they have anything other than a surface-level awareness about technology, nor do they necessarily know how to use it effectively for academic or employment scenarios (see Kennedy et al. 2006). Workers today increasingly need to complete activities online, from collaboration to project management to publishing. They need to understand the basics of data and databases, file formats, and limitations of software, in addition to how to protect their privacy and information. Mistakes in the digital world can be extremely costly, just as innovations can be quite profitable.

When teachers choose not to engage with technology—whether due to lack of support or resistance to change—they miss the opportunity to engage with what has become a large component of many students' daily lives. They also leave students lacking valuable digital literacy skills that they need to be successful, to power the innovations of the future. In their Educause-sponsored study of students and IT with over 75,000 students from 15 countries, Dahlstrom et al. (2014) found that students' "mobile devices are more often discouraged than

encouraged in the classroom”, including bans or discouragement of laptops (21%), tablets (29%), and smartphones (69%). If students see their laptop or smartphone as the equivalent of a notebook, what does it mean to them to have it banned from the classroom? Students seem to want more technological interaction, not less. They also want more from their Learning Management Systems, including “Better features for interaction and communication” and “More (or better) instructor participation” (Dahlstrom et al. 2014).

Teachers need to be supported to integrate technology into their pedagogy according to their own disciplines, through frameworks like TPACK (Technological Pedagogical and Content Knowledge) (see Mishra and Koehler 2006). Tertiary teachers can help students establish the kind of skills they need to navigate a digital world, both as consumers and as creators, for the likelihood is that their work will involve some level of professional interaction online. They need to have scaffolded learning experiences with technology to help them be flexible and confident enough to adapt as new technologies replace older ones. Digital literacy should therefore be an essential component of tertiary education in the 21st century. Indeed, the *NMC Horizon Report* identifies it as a solvable challenge and includes examples and resources from programs in the UK and U.S. (Johnson 2015).

The Arts

With so much emphasis on transferable skills like creativity and critical thinking being important for innovation and employers, one might assume that the Arts would be receiving robust levels of funding and support from tertiary institutions and, by implication, the New Zealand Government. Yet the Government appears to believe that Science and Engineering can achieve innovation without the Arts. The University of Canterbury’s ‘government bail-out’ after the earthquakes has meant that two large projects are going forward: the Regional Science and Innovation Centre and the Canterbury Engineering the Future project. Science and Engineering students will indeed benefit from these new spaces, while Arts students make do with fewer course offerings and deteriorating infrastructure (see Matthews 2013 for some of the challenges the Arts face). But because the university does not require (or encourage) students to pursue a broad-based education with courses from a variety of disciplines, these students may never set foot in a class outside of their discipline.

I was surprised to find that university undergraduate degrees in New Zealand are three-year degrees with no general education or liberal arts requirements. My undergraduate degree in the U.S. consisted of a mandatory first-year writing course, as well as at least one course in a variety of areas including fine arts, science, mathematics, history, communication, and literature. This well-rounded education gave me the chance to explore new topics and ideas I otherwise would never have encountered. It meant interacting with students from every discipline and being reminded that there are different ways of viewing the world.

Historically, a liberal arts degree has been the foundation for many great innovators—Ernest Rutherford studied Latin, English, and French in addition to Mathematics and Physics for his BA from Canterbury College (Campbell 2001). One of the top universities in the world, Massachusetts Institute of Technology (MIT), requires all students to take eight Humanities, Arts, and Social Sciences courses to graduate:

The Humanities, Arts, and Social Sciences (HASS) Requirement is an indispensable part of every student's undergraduate education that provides students with a broad understanding of human society, its traditions, and its institutions. The Requirement deepens students' knowledge in a variety of cultural and disciplinary areas and encourages the development of sensibilities and skills vital to an effective and satisfying life as an individual, a professional, and a member of society.

Tertiary institutions in New Zealand could explore the benefits of adding a required Arts and/or Science course to their programs to encourage the innovation that can come when students break out of the dominant mode of thinking of their discipline. They should also strongly consider adding a required writing/communication course, as there is a gap between NCEA standards and university-level expectations. Good communication skills are key to virtually any innovation becoming successful and marketable as well. With technology increasingly making jobs obsolete, a well-rounded education that includes digital literacy will help students be more adaptable and flexible to changing market conditions.

Although the University of Canterbury is on the right track with its Centre for Entrepreneurship, which helps students from a variety of disciplines meet and work on their business ideas, it is leaving Arts students behind by promoting the centre largely to students in Commerce and Engineering. The assumption is that Arts students are not entrepreneurial-minded and not worth investing in. Despite abundant evidence that Arts degrees lead to good employment, the dominant message that the media perpetuates is that an Arts degree is less valuable. (For alternative views including how the Arts actually help people connect with others, see Tracy Carlson's (2016) "Humanities and business go hand in hand" or Jack Linshi's (2015) "10 CEOs who prove your liberal arts degree isn't worthless".)

Internationalization

Speaking from my perspective as an international postgraduate student, the New Zealand brand is definitely a draw (and also the domestic tuition rates). The reality does not always meet expectations though, some of it due to Christchurch-specific issues like lack of facilities and some of it due to New Zealand-wide issues like heating or healthcare. There also seems to be a wide variety in the level of departmental and institutional support for international postgraduate students. With its relatively small size, New Zealand could take the opportunity to capitalize on

its high international student population by offering something different here, perhaps better facilitating interdisciplinary collaborations and skill-shares.

For example, the University of Canterbury recently hosted Professor William Starbuck who, in addition to his other responsibilities, ran an eight-week seminar on academic life for doctoral students from across the university. Although he was from a discipline (Business/Management) seemingly unrelated to mine, I decided to attend anyway. I not only learned a great deal, I met postgraduate students whom I never would have encountered otherwise from a variety of disciplines including Education, Management, Science, and Social Science. We were also privileged to hear from several award-winning tertiary teachers from campus on what makes for outstanding teaching, improving our likelihood of success when we become teachers. One of them praised the concept outlined in Ronald Barnett's *Being a University* about a kind of ecological university that sees itself as a series of relationships (presumably healthy relationships require good communication to thrive—see barriers to innovation below). The makeup of the group was largely international students, which I have found is often the case at similar kinds of networking and continuing education events. At least from my experience, international students tend to be more willing to partake of these types of opportunities, and this could be an asset to future innovation.

As Professor Starbuck explained in his recently published article, creating nests where students feel supported and encouraged to brainstorm ideas in safe environment is a factor in driving innovation (see Schwab & Starbuck 2016). Indeed, our group has decided to continue meeting post-seminar and share expertise on topics each of us is experienced in, ranging from online education to instructional design. There are all kinds of exciting ideas that may arise from this group; however, they will largely be lost to the international students' home countries when they return. New Zealand will have to consider ways of retaining this kind of innovative energy if it wishes to see it realized on its own shores. (Since international students' visas do not allow them to start a business, for example, they will have to wait until they return home to launch it.)

In his overview of universities, Professor Starbuck mentioned the example of Finland, which has transformed itself into a knowledge-based economy fairly rapidly, partly through an emphasis on education and creativity. New Zealand could look to examples like Finland to emulate, but also draw on its diverse international student population for more than just income.

Barriers to Innovation

From my perspective, one of the main barriers to innovation is lack of communication. It is harder for new ideas to take root when everyone keeps to themselves or their disciplines, and this keeps the range of communication limited, in spite of the internet. There seems to be little encouragement to go outside of disciplinary walls. This is the kind of behavior encouraged by

PBRF, though, and systems where competition for students and funding is a fact of life. The campus here is particularly problematic, lacking a student building or communal places for interactions and connections to take place (or limited available spaces being beyond the budgets of most students). Most students I know recognize the infrequent student email bulletins for the marketing pieces they are and ignore them, and upcoming events are usually only advertised within their discipline (like Professor Ertmer's education seminar referenced below). An insular culture with a limited range of communication means few opportunities for serendipitous encounters that lead to new ways of thinking and potential innovations.

Another barrier that has already been well-documented is sexism and discrimination that prevent women from contributing their energy and ideas. Jane Margolis and Allan Fisher (2002) discuss some of these issues in *Unlocking the Clubhouse: Women in Computing*, which is about overcoming obstacles to girls entering the field of computer science. Their project at Carnegie Mellon resulted in significant increases in the number of women entering computer science, and many of their recommendations are worth exploring for other areas where women are underrepresented. New Zealand should increase support to new initiatives as well as current ones like those detailed on the National Advisory Council on the Employment of Women's "Women in Innovation" webpage. But innovation is not limited to the STEM disciplines, as several key figures in the technology industry have demonstrated through their indebtedness to Arts subjects. Steve Jobs' calligraphy class inspired his design of typography in the Mac computer which then influenced the Windows computer (Naughton 2011); Mark Zuckerberg majored in psychology in addition to computer science and was interested in "how those two things combined" (Grossman 2010). Will the new Regional Science and Innovation Centre be inviting to those of us in the Arts and encourage crosspollination of ideas and communication between a multitude of disciplines? One can hope.

Encouraging Innovation

I consider myself an example of how innovation can take place in a seemingly unlikely scenario, in this case in the pursuit of a PhD in an Arts subject. All it took was a combination of my happening to hear about the Teaching Week on campus and taking the initiative to attend some of the sessions (even though they are supposed to be for staff—I believe they should also be marketed toward postgraduate students interested in becoming teachers). This exposure to new methods and ideas from a variety of fields spurred me to reconsider how I was planning to teach and then encourage other postgraduates to do the same, with each of us thinking about how to implement changes within our respective disciplines. At first I was inspired to research pedagogy out of curiosity, but then I considered it a responsibility: if there were more effective ways to reach students, I should be aware of them and do my best to reform my practices. I believe I have now convinced at least a handful of others to incorporate new elements like digital literacy into their future classrooms, where previously we were all on track to replicate the same methods

with little innovation in pedagogy and little interaction with technology. I also plan on sharing these ideas with the seminar group mentioned above to continue raising awareness. Although I might have eventually encountered some of this content on my own, the university environment with its diverse populace and range of visiting speakers has acted as an enormously beneficial incubator for myself and others. Bringing people together to inspire them to learn and achieve remains one of the strengths of tertiary education, which is more than the sum of its parts.

I continue to be amazed at how much high-quality research on pedagogy is out there and yet remains untapped by tertiary teachers. Just recently I attended a seminar by Professor Peggy A. Ertmer (visiting here from Purdue University) on “Increasing Teachers’ Capacity for Innovative Learning Pedagogies”, and I wished there were more tertiary teachers in attendance beyond those specifically in the discipline of Education. She discussed the differences between facilitated and non-facilitated discussions in online classroom environments, which was beneficial for those of us who are or will be teaching online (Ertmer and Koehler 2015). When interesting and research-backed insights and innovation remain confined within one discipline, the types of connections and crossover applications that those of us in the rest of tertiary education disciplines could benefit from will not happen. I will continue to bring my notes and ideas back to my fellow postgraduate students, but this is an inefficient way to spark the changes necessary in tertiary education for an increasingly digital and changing 21st century environment.

Final Thoughts

As the Commission investigates ways to increase productivity through new models of tertiary education, it should keep in mind that there are purposes of higher education that go beyond quantifiable outputs and skills for the labor market. Innovation does not have to come at the expense of fostering a love of learning and creativity in students across all disciplines, from the Arts to the Sciences. Some of the best innovations may come when students are encouraged to engage with and reflect on their history, their culture, and their community in the hopes of leaving their own positive impact on New Zealand.

Regards,

K. Kennedy

References

- Barnett, Ronald. (2011). *Being a University*. New York: Routledge.
- Briz-Ponce, Laura, Juan Antonio Juanes-Méndez, and Francisco José García-Peñalvo, eds. (forthcoming 2016). *Handbook of Research on Mobile Devices and Applications in Higher Education Settings*. <http://www.igi-global.com/book/handbook-research-mobile-devices-applications/143640>
- Campbell, John. (2001). "Rutherford – A Brief Biography". <http://www.rutherford.org.nz/biography.htm>
- Careers New Zealand. (2015). "Skills employers are looking for". <http://www.careers.govt.nz/plan-your-career/not-sure-what-to-do/skills-employers-are-looking-for/>
- Carlson, Tracy. (2016). "Humanities and business go hand in hand". *The Boston Globe*. <https://www.bostonglobe.com/opinion/2016/04/24/humanities-and-business-hand-hand/9nG9n04SSF1Ko0MRJguxK/story.html>
- Dahlstrom, Eden, D. Christopher Brooks, and Jacqueline Bichsel. (2014). *ECAR Study of Undergraduate Students and Information Technology, 2014*. Educause Center for Analysis and Research (ECAR). Key findings and Infographic. <https://library.educause.edu/resources/2014/10/2014-student-and-faculty-technology-research-studies>
- Ertmer, Peggy A., and Adrie A. Koehler. (2015). "Facilitated versus non-facilitated online case discussions: comparing differences in problem space coverage". *Journal of Computing in Higher Education* 27 (2): 69-93. https://www.researchgate.net/publication/277887789_Facilitated_versus_non-facilitated_online_case_discussions_comparing_differences_in_problem_space_coverage
- Grossman, Lev. (2010). "Person of the Year 2010: Mark Zuckerberg". *Time*. http://content.time.com/time/specials/packages/article/0,28804,2036683_2037183_2037185,00.html
- Hoidn, S. and K. Kärkkäinen. (2014). "Promoting Skills for Innovation in Higher Education: A Literature Review on the Effectiveness of Problem-based Learning and of Teaching Behaviours". OECD Education Working Papers, No. 100. OECD Publishing. <http://dx.doi.org/10.1787/5k3tsj671226-en>
- Johnson, L., Adams Becker, S., Estrada, V., and Freeman, A. (2015). *NMC Horizon Report: 2015 Higher Education Edition*. Austin, Texas: The New Media Consortium. <http://cdn.nmc.org/media/2015-nmc-horizon-report-HE-EN.pdf>
- Kennedy, Gregor, Kerri-Lee Krause, Terry Judd, Anna Churchward, and Kathleen Gray. (2006). "First Year Students' Experiences with Technology: Are they really Digital Natives?" *Australasian Journal of Educational Technology* 24 (1): 108-122. <http://ajet.org.au/index.php/AJET/article/view/1233>

- Linshi, Jack. (2015). "10 CEOs who prove your liberal arts degree isn't worthless". *Time*.
<http://time.com/3964415/ceo-degree-liberal-arts/>
- Margolis, Jane, and Allan Fisher. (2002). *Unlocking the Clubhouse: Women in Computing*.
Cambridge, MA: The MIT Press.
- Massachusetts Institute of Technology. (n.d.) "The HASS Requirement".
<http://web.mit.edu/hassreq/>
- Matthews, Philip. (2013). "Will sweeping changes improve university?" *The Press*.
<http://www.stuff.co.nz/the-press/news/9460750/Will-sweeping-changes-improve-university>
- Mishra, Punya, and Matthew J. Koehler. (2006). "Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge". *Teachers College Record* 108 (6): 1017-1054. http://punya.educ.msu.edu/publications/journal_articles/mishra-koehler-tcr2006.pdf
- National Advisory Council on the Employment of Women (NACEW). (n.d.). "Women in Innovation". <http://womenatwork.org.nz/work-programme/women-in-the-innovation-sector/>
- Naughton, John. (2011). "Steve Jobs: Stanford commencement address, June 2005". *The Guardian*. <https://www.theguardian.com/technology/2011/oct/09/steve-jobs-stanford-commencement-address>
- Redmond, Petrea, Jennifer Lock, and Patrick Alan Danaher. (2015). "Interrogating Contemporary Research in Educational Innovation". *Educational Innovations and Contemporary Technologies: Enhancing Teaching and Learning*. Eds. Petrea Redmond, Jennifer Lock, and Patrick Alan Danaher. New York: Palgrave Macmillan. 1-16.
- Schwab, Andreas, and William H. Starbuck. (2016). "Collegial 'nests' can foster critical thinking, innovative ideas, and scientific progress". *Strategic Organization* 14 (2): 167-177. <http://soq.sagepub.com/content/14/2/167>
- University of Wisconsin Learning Support Services. (2012-2013). *Teaching with Technology Online Workshop Series: Active Learning: Week 1*.
<http://teachingwithtech.lss.wisc.edu/m4w1.htm>