

#NISA 5 - Innovation and Creativity: a workforce for the new economy – IRU submission

The House of Representatives Standing Committee on Education and Employment inquiry on the importance of innovation and creativity to the future workforce focuses on two main issues:

- the capacity of Australia’s education providers to offer the qualifications and skills needed to meet the needs of Australia’s new and emerging industries; and
- the relationships between tertiary education entrepreneurship programs and private incubators, and how to encourage closer partnerships between small and medium sized enterprises, the research sector and education providers.

Innovative Research Universities (IRU) is a network of 6 comprehensive universities committed to inclusive excellence in teaching and research in Australia. Our membership is Charles Darwin University, James Cook University, Griffith University, La Trobe University, Flinders University and Murdoch University.

The IRU submission addresses:

- the challenges for universities responding to predicted changes in the future workforce and the nature of higher education;
- barriers to universities responding effectively; and
- IRU collective and individual member initiatives of relevance to the inquiry.

Overall IRU members are active in renewing the degrees they offer and the ways in which students are supported to ensure that our graduates are well prepared for their futures.

Predicting and responding to future workforce needs

Recent analyses of the future workforce tend to concur that by 2025 or 2030 many current jobs will not exist or will be very different in nature. Some estimates are that up to half of jobs will be substantially affected. These predictions will have some aspects right but equally, based on past experience with similar assessments, will not have seen many of the changes to come and will overstate the significance of others.

The more positive analyses argue that new jobs will emerge, with an emphasis on knowledge worker roles and on worker creativity as the way to continue to have valuable employment for most Australians. This has been the response to previous changes in the way in which we learn and work.

The forces at work include the impact of digital technologies, continued mechanization of roles with significant levels of repetition, and further integration into world economies both of the immediate Asian region and across the globe.

For example the CSIRO report *Tomorrow’s Digitally Enabled Workforce: Megatrends and scenarios for jobs and employment in Australia over the next twenty years* (February 2016) argues that education will be one of the most critical factors shaping workforce outcomes in the future. According to the report, the educational sectors need to work in close collaboration with business and industrial organisations as well as governments to ensure educational programs are developed in accordance with future employees’ needs.

In considering the implications of 50% of jobs not being present in twenty years, it is valuable to reflect on expectations in 1990 of future workforce. This was before email or the internet was in

common use. In effect, almost every job in Australia now has altered in significant ways over the past two to three decades and some notable roles from the past have been lost.

This does not mean that we will sail easily into the 2020s, but it does show that continued changes can be integrated.

Higher education has been affected as much if not more than many other areas. Challenges that are often raised include:

- whether there should be greater planning of the courses students enrol in, counter to the successful demand driven funding system of recent years and the effective long term dominance of student choice of degree;
- the value to be placed on the bachelor degree as a substantive whole against arguments for modular accretion of knowledge and capabilities;
- the related debate about the importance of generalist knowledge and skills against specific professional and work useful skills; and
- how to position graduates for a global workforce.

1. Workforce management: planning or demand?

Since 2012, with a lead in from 2009, universities have been funded for each student they enrol. Applicants and universities determine the balance of courses which are studied and the distribution of graduates across degrees and professions. From time to time this is dismissed as letting 18 year olds determine the future of the country. The comment ignores that 66% of commencing undergraduate students are over 18. More importantly it presumes that estimates of future employment needs should determine which degrees students can enrol in rather than be useful information to guide applicants.

The logic is strong to support students pursue their individual interest, based on their assessments of what they want to learn and what is likely to support them in the future. The predictions for major changes in job roles combined with past evidence that predicting workforce needs beyond a short time horizon is usually more entertaining than accurate argues against a strong workforce planning approach to higher education course decisions.

The growth in university places through demand driven funding has been strong but not uniform. The greatest growth has come in science, technology and engineering courses and in the health professions (see Table One at end). Despite this, there are regular claims that demand driven funding is producing too many lawyers, accountants and arts graduates¹, based on assumption rather than a good look at the data.

The science and technological growth supports the aim of both the Government and Opposition for greater number of STEM graduates. However, in terms of workforce planning, there is a challenge from growing STEM numbers. The employment data, as analyzed by Andrew Norton of the Grattan Institute shows that many STEM graduates do not have immediate employment success, although over time, like most graduates, the earning benefit is clear².

¹ For example Jennifer Westacott, CEO of the Business Council of Australia to the Universities Australia conference (28 February 2013) and Osman Faruqi, former Greens Higher Education Advisor in The Australian 3 February 2016

² Figure 33 of *Mapping Australian Higher Education 2014-15*, Grattan Institute, updated in January 2015.

Hence workforce planning that drives enrolments rather than informs potential students runs up against differences in current needs to potential future ones.

Further, in the context of developing the knowledge based industries that thrive on innovation, it is the unexpected that causes the greater impact. Workforce planning tends to be limited by extrapolating from the current, with little capability to guess the future.

Estimates of future workforce needs should inform potential students but should not control students' choice of course.

2. The role of the bachelor degree

A recent synthesis of approaches to teaching for the Office of Learning and Teaching by Christine Ewan's highlights debate about whether the bachelor degree, with its requirement for three or more full time equivalent years of study, with limited options to leave part way with a credential, can survive. According to 2014 analysis from the Department of Education and Training around 25% of students do not complete their degree raising the question of how that time spent working towards a degree could be better reflected³.

Universities recognise where suitable learning undertaken elsewhere and in various environment while ensuring that the awarding of a degree meets expectations for a coherent body of learning. That includes about 35% of applicants having a partially completed degree and many others vocational qualifications⁴. There are however limited ways to recognise through a qualification the partial completion of a bachelor degree.

There are many more graduate courses, MOOCs, and much uncertified learning that extend the formal education system which add to the formal system not undermine it. To date growth in personal desire for education, and new ways to access information, whether the printing press or the internet, has led to higher levels of formal education rather than its replacement. From this perspective the bachelor degree appears set to remain the key higher education credential, with universities its main provider.

The bachelor degree should remain the central higher education credential, with universities its main provider.

3. General and specific degrees: developing work relevant capabilities

University degrees aspire to provide the learning outcomes relevant to the longer term, developing capabilities within the student. Nevertheless there are perceived differences between different degree areas, with some more strongly focused at acquisition of knowledge and general skills and others with a clear outcome of positioning the graduate for employment in a particular profession.

Looking ahead to the needs of new and emerging industries highlights the importance of students acquiring skills and knowledge for the longer term, since emerging areas will often not sit well with current courses, particularly those with a strong professional focus.

The broader question of student readiness for the world of work remains a constant concern, one that applies to current areas of employment and what may develop into the future.

To respond to this, all IRU members offer work integrated learning across all courses, with much emphasis on introducing this for the generalist arts and science courses where it had not been

³ Completion Rates of Domestic Bachelor Students – A Cohort Analysis, 2005-2013, <https://docs.education.gov.au/system/files/doc/other/cohortanalysis2005-2013.pdf>

⁴ Undergraduate Applications, Offers and Acceptances 2015, <https://docs.education.gov.au/node/38371>

common. Work integrated learning means work based activities that are integrated into the curriculum so students practice what they are learning and use the work experience to enhance their learning.

Drawing in business support widely for this remains a challenge. A stronger relationship would see many more businesses offer opportunities to students and see tasks which a student could usefully address to advantage of both student and business. The IRU has developed materials to support smaller businesses understand what work integrated learning can offer them, see <http://www.iru.edu.au/wp-content/uploads/2015/06/wil-2011.pdf>.

Work integrated learning usually take place through an employer. A newer issue is whether students can initiative development of their own enterprise, looking ahead to a working world where self-employment may become more common than in past periods, and employment in large organisations rarer. The focus on innovative companies emphasises small to medium enterprises that may become large if very successful. This is a useful strand that could be explored through the government's National Innovation and Science Agenda.

Universities have built into degrees the development of work relevant skills and experiences in balance with a focus on acquiring a broad body of knowledge.

4. Thinking beyond Australia to prepare for a global graduate

The terms of reference for this inquiry question whether Australia's education providers have the capacity to offer the qualifications and skills needed to meet the needs of 'Australia's' new and emerging industries. While the focus on Australia as a starting point is inescapable limiting the focus to Australia goes directly against the concept of an innovative and creative approach.

Australia's universities, building on their exceptional strength to draw international students, increasingly consider which skills would be useful for global graduates who will not just switch between industries but who are also likely to work in different countries throughout their working life.

The Government's New Colombo Plan builds on the growth in Australian students taking short periods in other countries as part of their course, with a subset taking a semester or more this way. With 10-20% of students in many universities having some overseas experience they are gaining a global perspective that should assist them be ready for future challenges and opportunities.

Australia's universities are training global graduates, able to work in many industries and across different countries.

What are the current barriers and how can they be overcome?

5. The Australian Qualifications Framework (AQF) and mid level qualifications

The Australian Qualifications Framework (AQF) was introduced in the 1990s to give greater certainty that qualifications of the same name reflected similar learning outcomes and to control the array of qualification titles to reduce confusion. This applied most clearly to Vocational Education and Training but had relevance for higher education where additional institutions were gaining approval for qualifications and where there has been a proliferation of post graduate qualifications.

The risk of the AQF is that it stifles the redevelopment of qualifications for the future. The bachelor degree has a pedigree of many centuries, but it has developed considerably and has done so over past decades. To keep developing in response to new industries, new jobs, different expectations universities need to be supported. An overly prescriptive application of AQF can hinder this: if

today's good practice was yesterday's radical idea, it is not clear whether today's radical ideas have room to be tested.

One of the less explicable rigidities of the AQF in its current form is that while structured to cover level of learning and volume (the difficulty of the learning and the amount or period of it) most levels contain a single qualification with a set volume. This hampers universities seeking to use 'diplomas' with bachelor level learning as a pathway into a bachelor degree, as a standalone specific qualification alongside a bachelor degree (for example a languages diploma with a business degree) or as an exit qualification to recognise successful completion of the early part of a bachelor degree.

The Australian Qualifications Framework (AQF) should be more able to respond to and recognise the development of new qualification options.

6. Better interface between bachelor and sub-bachelor programs

IRU members have consistently highlighted the lack of interface between higher education and sub-bachelor programs. Slight adjustments in this area have the potential to significantly increase the capacity of Australia's education providers to adjust and to adapt to changing industry and student needs.

IRU has consistently argued that demand driven funding should remain at the forefront of Australia's higher education funding system. The long-term benefits of the demand driven system in ensuring the future capability of the workforce outweigh the modest, additional annual expenditure from growth in places. The missing gap is to link demand driven funding for bachelor places with similar arrangements for sub-bachelor programs.

Access to funding for all students of sub-bachelor degrees would let universities offer a greater range of qualifications with different volumes of learning where universities and students (particularly mature age students) tailor their own packages to match their skill gaps.

7. Better interface between the higher education and VET sectors

IRU members have experienced several instances where sub-optimal interface between the higher education and VET sector and lack of flexibility, limit their capability to link skills and knowledge gained across the two sectors.

A better higher education and VET interface would benefit individuals accessing both systems.

8. Recognition by professional bodies of degrees as suitable for practice

Universities Australia and Professions Australia have released a joint statement to guide the interaction of the professions with the teaching of the degrees that provide the basis for practice in a profession⁵.

The statement is an important step to avoiding the negative aspects of professional bodies attempting to define what is required for practice. Such efforts need to walk the path that ensures client confidence in practitioners, allows practice to develop, potentially creating new specialties, and ensures graduates gain the breadth of knowledge and skills to flourish across a career of some decades.

The development of degrees targeting specific professions should be future focused, allowing professional delivery to improve and respond to future needs.

⁵ <https://www.universitiesaustralia.edu.au/uni-participation-quality/Quality/Principles-for-Professional-Accreditation/Principles-for-Professional-Accreditation#.VwHZcNV97RY>

How are IRU universities dealing with these challenges?

9. Individually

IRU universities regularly revamp their program structures to ensure relevance to future requirements. For instance Murdoch University introduced a major overhaul of its degree structure from 2014, to reset the balance of specific degree learning and the development of broader research and problem resolution capabilities. Universities are also looking into new degrees beyond the traditional degrees that are offered with JCU offering 'Internet of things' as a major of engineering at its Cairns campus.

To improve the linkage between higher education and vocational education and training Flinders University has developed, in partnership with TAFE South Australia (SA), an innovative partnership degree model in the Bachelor of Creative Arts suite with other programmes expected to follow soon. This model embeds TAFE SA training package awards within a Flinders Bachelor level course with students taught concurrently at both institutions. This means that domestic students are able to graduate with both the Advanced Diploma and the Bachelor qualifications. Such a combination of practical skills and academic knowledge achieved through the completion of both a VET and higher education qualification should also expand the range of graduate employment opportunities.

10. Collectively

a. IRU Vice-Chancellors' Fellow

IRU universities have a distinctive commitment to broadening participation in higher education, providing a life-long education base for our graduates. As mentioned earlier, there are various predictions of how future work is changing. Though the analyses might be different, the one constant is the certainty that there will be changes.

To address the challenge of adapting to future requirements, IRU universities have created an IRU Vice-Chancellors' Fellow to lead IRU Universities to creatively address student and graduate success in the context of radical changes to the nature of future work. The IRU Vice-Chancellors' Fellow will focus on:

- identifying existing good practice across the six universities and elsewhere,
- challenging thinking among IRU members about future options for learning and teaching and the implications of these for student and graduate success,
- planning the sharing and scaling-up of that best practice among members as a starting point for further innovation, and
- leading implementation and scaling up of those areas of practice across member universities.

b. IRU partnership with the Malaysian Research University Network (MRUN) in Teaching and Learning Projects

In 2014 IRU signed a Memorandum of Understanding (MOU) with the Malaysian Research University Network (MRUN) outlining plans for collaboration in Teaching & Learning and in Research. The Teaching & Learning Strand of this collaboration has led to four joint Australian-Malaysian projects focusing on Effective Teaching, Digital Readiness, Learning Analytics and Learning Space Design. In this case, beyond the focus on different approaches for teaching & learning, there is the additional advantage of being exposed to how other countries are addressing this challenge.

c. Promoting Professional Learning for Academic Teaching Practice

If Australian universities are to deliver the qualifications and skills of the future workforce, it is not just the curriculums or the degree structures that must be flexible. The universities' workforce, particularly its academic workforce must be ready to respond effectively to new opportunities and demands. La Trobe University is currently leading an Office for Learning and Teaching project involving all IRU members focusing on how a range of formal and informal learning activities in different institutions can be recognised as contributing to a mutually-recognisable Graduate Certificate of Higher Education qualification.

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Table One:

Actual Student Load (EFTSL) for All Domestic Bachelor Students by Broad Discipline Group, 2009 to 2014

Discipline Group	2009	2010	2011	2012	2013	2014	Change 2009 to 2014	% Change 2009 to 2014
Health	64,649	71,041	75,485	80,436	84,583	88,631	23,982	37%
Creative Arts	42,589	45,685	47,224	49,884	54,040	56,996	14,407	34%
Natural and Physical Sciences	63,029	67,987	70,773	75,837	80,936	83,513	20,484	32%
Engineering and Related Technologies	26,983	28,741	30,118	32,044	33,571	34,681	7,698	29%
Agriculture, Environmental and Related Studies	5,909	6,518	6,621	7,049	7,290	7,499	1,590	27%
Information Technology	14,838	14,974	15,350	16,086	16,945	18,188	3,350	23%
Education	39,911	41,445	42,238	44,767	47,135	48,603	8,692	22%
Society and Culture (excluding law)	103,806	108,091	111,213	115,361	118,993	120,111	16,305	16%
Law	26,265	26,893	26,948	27,381	28,446	29,997	3,732	14%
Management and Commerce	59,524	60,369	60,531	62,005	64,152	65,286	5,762	10%
Architecture and Building	11,151	11,258	11,624	11,361	11,251	11,621	470	4%
TOTAL EFTSL	458,833	483,277	498,405	522,493	547,910	565,933	107,100	23%

Source, Department of Education and Training, Higher Education Statistics, Students 2009 to 2014 publications