House of Representatives

Standing Committee on Industry, Science and Innovation

Inquiry into Research Training and Research Workforce Issues in Australian Universities

ATN Response

The Australian Technology Network (ATN) welcomes the opportunity to respond to the House of Representatives Inquiry into Research Training and Research Workforce Issues in Australian Universities. The ATN makes the following comments in relation to the Terms of Reference. This submission will address some key issues surrounding the contribution that Australian universities make to Australian research training and the current challenges that the ATN as a network would like to emphasise, noting that individual ATN members may make their own more detailed submissions to the Inquiry.

Introduction

With almost 20 percent of Australia's student population attending one of the five universities of the ATN, we seek to ensure that the policy debate continues to argue the best interests of higher education in Australia. Maintaining the quality of our research must be at the forefront of any consideration to ensure the nation competes at the cutting edge of innovation. There is a seemingly direct relationship between the scale of research and development undertaken as a nation and the scale of innovation. Australia's research agenda must be supported by not only world-class national stock of research infrastructure but critically, a highly skilled research workforce if we are to increase our international competitiveness in key areas of research and innovation. A key issue for the future of Australia's innovation agenda is that of building our research workforce to meet the challenges of the future. Further, it is critical that research workforce planning be taken into account when considering our future innovation capacity.

While striving for innovation and investing significant funds into the innovation system is a worthy goal, there begins to be diminishing returns if the research workforce does not exist to drive that innovation. Our HDR system is one which should be positioned to meet *future national needs* and not be linked to historical measures of performance in discipline areas of diminishing relevance to that future. Research training is a critical element in this context. Australia must have a system which recognises that the future of the PhD in Australia requires greater alignment with the innovation agenda (industry placements, co-

supervision by external partners, extension of the CTS, etc). Innovation and better economic and social outcomes for Australia can only be achieved by building our national intellectual capacity.

Summary Recommendations:

- Target setting for numbers/proportion of higher degree research graduates
- The adoption of a national PhD Placement programme which will enhance employment of PhDs in business and lead to increased innovative capacity and R&D investment in Australian firms
- Inclusion of Generic Capabilities (GC) in research training, including 150 hours of GC development over each PhD student's period of candidacy and a revision of the Research Training Scheme guidelines to reflect this requirement.
- Provision of a 5% supplement to the Research Training Scheme funding dedicated to this additional support for PhD students.
- Retention of the Commercialisation Training Scheme for a further 3 years
- A rationalisation of government policy that addresses the disadvantage PhD Students currently operate under by removing the assessment of part-time APA Scholarships as assessable income for both PAYE and recipients of income support under the Social Securities Act.
- An increase in the postgraduate stipend from $19,616 to a minimum of $25,000 per year
- Extension of the duration of all Commonwealth-funded HDR scholarships by 6 months, including those funded through ARC, NHMRC and all other national funding agencies or programs and the Scholarship supplement increased in line with this extension.

Within the context of the Terms of Reference the ATN provides the following specific comments.

1. ***The contribution that Australian universities make to research in Australia, including:***

- *The contribution of research training programs to Australia's competitiveness in the areas of science, research and innovation;*
- *The effectiveness of current Commonwealth research training schemes; and*
- *The adequacy of current research training schemes to support Australia's anticipated future requirements for tertiary-qualified professionals in a wide range of disciplines.*

The university sector continues to play a significant role as a training ground for researchers. In 2006 there were 49,467 students enrolled in research higher degrees in Australia of which 15% were enrolled at ATN universities. Approximately 50% of ATN PhD students were enrolled in fields of study related to science and engineering. It is well established that the *number* of PhD students is an important factor in the innovation system and while the number of PhDs awarded in science and engineering across Australia doubled in the period 1988 to 2003, their proportion relative to PhD's awarded across all fields of study declined from 50% to 35% during the same period (DEST, 2005). There is a particular disparity between the large number of 'science' PhD's compared to other fields of education. This can be explained in part by the high levels of graduate employment gained in such professions as engineering and computer science.

Universities must work in conjunction with Government and industry to ensure that PhDs in *all* disciplines and professions receive more effective preparation to undertake the new roles that go with contemporary innovation systems, workplaces, and career paths - including those in academia. The PhD in its more traditional form is likely to be increasingly at odds with expectations that have emerged over the past decade, both among employers and research students themselves. The introduction of the Commercialisation Training Scheme in 2007 as part of *Backing Australia's Ability* recognised that skills most valued by potential employers of higher degree by research graduates were:

- Commercial Know-how
- Technical Commercial Skills and
- Organisational Behaviour Skills

The ATN has directly responded to this by introducing a Graduate Certificate in Research Commercialisation designed to broaden the PhD experience by including greater attention to generic capabilities (GC). These are the transferable skills that have a link to graduate research student employability and the ability to

meet workplace demands across the broad range of career paths taken up by PhD graduates. Delivered on-line through *e-Grad School Australia* to meet the needs of a geographically diverse student cohort, the program has exceeded expectations with the ATN program recently selected as the preferred model of developing GC for CRCA researchers. In this regard, the Commercialisation Training Scheme has been a valuable vehicle for broadening skills development training for HDR students and must be retained.

In summary, a number of key structural, policy and practice changes are essential if we are to provide a core of GC experiences common to all PhDs, whatever their research area, and that are accessible to all. The ATN would therefore urge this Inquiry to consider the following**:**

- Inclusion of GC in research training, including 150 hours of GC development over each PhD student's period of candidacy
- Revision of the Research Training Scheme guidelines to reflect this requirement.
- Provision of a 5% supplement to the Research Training Scheme funding dedicated to this additional support for PhD students.
- Retention of the Commercialisation Training Scheme for a further 3 years and reviewed in 2010.

2. The challenges Australian universities face in training, recruiting and retaining high quality research graduates and staff, including, but not limited to:

- *Adequacy of training and support (including income support) available to research graduates in Australia;*
- *Factors for graduates that determine pursuit of a career in research;*
- *Opportunities for career advancement for research graduates and staff;*
- *Factors determining pursuit of research opportunities overseas;*
- *Australia's ability to compete internationally for high quality researchers; and*
- *Whether Australia's academic workforce is ageing, and the impact this may have on Australia's research capacity.*

Providing better support for today's postgraduate students is an essential element if they are to contribute to all sectors of the economy. Postgraduate students are not only active participants in today's research,

but they also constitute the next generation of researchers necessary to build Australia's research and innovation capacity both inside and outside the higher education system.

The ATN believes that the current financial support is not adequate to attract and retain the number of post graduate students that will be required to deliver the nation's innovation agenda, and recommends that the Government **increase the postgraduate stipend from $19,616 to a minimum of $25,000 per year.** Further, we recommend **a** rationalisation of government policy that addresses the disadvantage PhD students currently operate under by **removing the assessment of part-time APA Scholarships as assessable income for both PAYE and recipients of income support under the Social Securities Act**.

Industry also has a major role to play in fuelling our education, research and innovation agenda. We support the view that Australia can improve its economic performance and secure its future prosperity by skilling a more creative workforce and facilitating more innovation in the Australian economy.

In 2007 the number of PhD/Doctorate enrolments across the ATN was 5,546. The majority of these (almost half) were in the field of Engineering, Science and Computing. A significant proportion was also in the area of Humanities, Education and Social Sciences. To that end the ATN is proposing **an industry-supported PhD Placement programme** to ensure that, by working in partnership with industry, we can enhance Australian research capability in areas of national priority and enhance the 'connectivity' between industry and university research via research students.

The potential impact on PhD students' completion times also needs to be addressed at Government level, leading to

- Extension of the duration of all Commonwealth-funded HDR scholarships by 6 months, including those funded through ARC, NHMRC and all other national funding agencies or programs
- Scholarship supplement increased in line with this extension.

In addition, the ATN believes there needs to be a closer alignment of funding to match the real costs of PhD study – a simple high cost/low cost binary doesn't relate to actual costs. For example, humanities and social science students are funded as low cost candidates, yet undertaking a research degree in creative arts can incur significant out of pocket expenses for equipment, etc. This inequitable funding model

presents a barrier to encouraging diversity amongst students considering a research degree while acknowledging that a diverse workforce is required within and beyond universities.

Urgent action is required to renew the nation's academic workforce. Over the next decade it is expected that 40% of the academic workforce will retire. With the average time of 7-10 years required to support researchers through their PhD studies this means that effectively a whole generation of potential academics has been "lost". Compounding the crisis is the high rate of employment of bachelor degree graduates with 85% obtaining fulltime employment (many in their final year of study) and a further 10% engaged in part-time employment[1]. This represents the strongest graduate employment rate since 1990. Additionally, this strong employment factor has been supported by an increase of 5.4% in the median commencing graduate salary of $43,000 (up from $40,800) for those aged under 25, in the period 2006-2007. Traditionally, post graduate research degrees are favoured by those intending to pursue a career in research and in the context of this report, an academic career within a tertiary institution. Yet, in 2006[2] of those graduates with a PhD or masters by research degree only 38% were cited as employed in academic or research institutions. More significantly is the downward trend from 2005 where 42.6% of graduates were employed in higher education. Thus, the competition for PhD graduates, coupled with the ageing workforce is a significant barrier in the capacity for universities to adequately produce the highly skilled research workforce in the numbers required to compete in a knowledge intensive global economy.

While the recently announced relaxation of the APA(I) rules to allow scholarships for quality international students is welcomed, there is a need to dramatically increase the number of International Postgraduate Research scholarships to meet the demand by high calibre prospective international students. This results in international candidates seeking opportunities elsewhere, to Australia's detriment. Given the shortfall in Australia's per capita PhD numbers compared to other advanced economies, the ATN supports the notion of a single pool of funding for HDR student scholarships open to both domestic and international students -that is conducive to attracting the best talent globally to Australian universities. A relaxation of visa rules is also required if we are to be seen as an attractive migration destination for highly skilled researchers and other highly educated individuals from overseas. Current requirements of the points-system -especially to do with which areas are

[1] GCA GradStats December 2007
[2] GCA Postgraduate Destinations Survey 2006

priority areas can be cumbersome resulting in Australia being seen as unattractive and prohibitive to prospective immigrants. Given Australia's considerable investment in the training of international students, it is desirable to develop a visa system that encourages graduates to stay and work in Australia, or return in the future.

Managing the impact of a talent flow to Australia from high population source countries in the developing world, particularly South East Asia, requires consideration. A genuine Australian commitment to research and higher education capacity building in such countries is vital for long-term relationships. A Government-sponsored research volunteers abroad scheme for Early Career Researchers would have dual benefits.

Conclusion

Building workforce capacity to support innovation remains a challenge for the entire population, across all sectors, and no less within the tertiary sector. Universities core business is creating the human capacity to meet the workforce requirements of a prospering national economy as well as providing solutions to global problems. As a significant contributor to addressing Australia's long term productivity challenge, the ATN believes innovation in Australia can be improved by educating research students in commercialisation skills, providing incentives for industry to accept student placements that can make a real difference to their enterprise and finally, ensuring the nation has the appropriate policy framework to support career researchers – both within academia and beyond.

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