

Doctoral Training in Australia

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Part I: Context

There is some good quality data on Australian Higher Education here:

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=2ahUKEwig_r7XqLPdAhUCbcAKHZqrAOEQFjACegQICBAC&url=https%3A%2F%2Fwww.universitiesaustralia.edu.au%2FArticleDocuments%2F169%2FData%2520snapshot%25202018%2520web.pdf.aspx&usq=AOvVaw2OW-0loLejuUOOpqDoHie4

On doctoral education, the specific data on HDR completions (HDR = Higher Degree by Research e.g. PhD, DEd, MPhil) are collected annually by the Australian Government and are available at <https://docs.education.gov.au/documents/2015-2016-research-income-and-hdr-completions-data>. However, these are single year data and is necessary to track down older files to get a full time series.

1. History

The most powerful driver for doctoral education in Australia was and is the need to train new academics and the perception by potential academics that they needed a research degree to be competitive. Melbourne awarded the first PhD in Australia in 1948. There had been many other thesis-based higher degrees prior to this but this was the first PhD awarded apparently.

Since then, the government grappled with various mechanisms for funding research training. The current completions-based approach was developed in 2001 and iterated in 2017. Under the scheme known as the Research Training Scheme, Universities were not paid on load, but rather completions. The completions did not need to be timely and the value of a completion was not fixed – it was a share of the total completions, weighted for high (STEM, X 2.3) and low (HASS X 1.0) 'cost', and Masters (1.0) and doctorates (2.0). Additional financial support was provided initially proportion to the University's share of the country's audited publications and highly competitive grants. This changed in 2017 to a new formula where the drivers were completions and total audited research income. The obvious issue with this scheme is that it rewards Universities after the student has left, f=often 2 years later. This means that strictly distributed, innovative research training initiatives were difficult to support from the funds obtained.

Geographically, the key stakeholders are the federal government, who funds the majority research training (say 75%), and the Universities (who subsidise the rest), and some industry players who can be directly or indirectly involved through a smaller scheme involving industry-led PhDs. This latter scheme is something the Government wishes to build. It is worth noting that Universities are constituted in a State, but are autonomous receiving most of the support from federal agencies. State governments generally provide some contract research but little else in the way of support.

Australian Universities are self accredited and there are rules that determine the minimal threshold for an institution calling itself a University. While self-accrediting, there is a formal federal audit program conducted by TEQSA and TEQSA audit to standards which are prescribed. The standards for research training were developed by the Australian DDoGS (now called ACGR) – the equivalent of the US CGS.

Do all institutions of higher education in your country award PhD/doctorate degrees? What types of doctoral degrees (professional doctorate, industrial doctorate) exist?

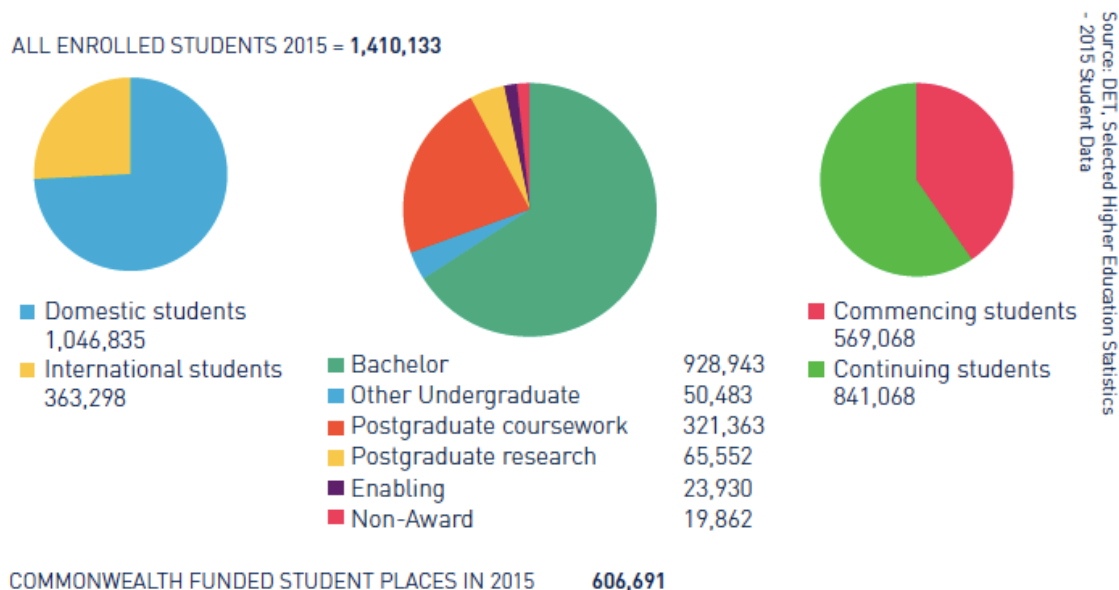
All 42 Australian Universities probably award PhDs. Some might also award professional doctorates like the DEd. There are fewer of the 'prof docs' than there once was – the PhD has more traction. The PhD can be awarded through and with publication in some institutions, there can be a role of industry but these doctorates are not are not treated differently.

2. Size and Demography of Doctorate Pool

This can be obtained but it is tricky to aggregate. The approximate numbers for Australia are 10,000 graduates from about 65,000 candidates (there is a good discussion of the number issue here - <http://theconversation.com/its-time-to-reduce-the-number-of-phd-students-or-rethink-how-doctoral-programs-work-68972>)

There is more data here - <https://grattan.edu.au/wp-content/uploads/2016/08/875-Mapping-Australian-Higher-Education-2016.pdf>

The figure below displays the relative numbers of students in Australia in 2015. The proportion of international graduate researchers is growing – the demand from domestic students has been flat for 10 years and the growth in PhD numbers is largely coming from international students.



Again the individual demographics are harder to get. The so-called Group of Eight (the large research-intensive 'ivy league' of Australian Universities) once held and graduated about 75% of all Australian PhD candidates (ie. 75% were in 8/c40 institutions). This number has reduced and may now be <60%. The gender demographics are very field-dependent. In the physical sciences and engineering, as elsewhere, the candidates are predominantly male. In the biological sciences and HASS it may be 50:50 with respect to numbers, or even favour female candidates. This data could be obtained but it will take time.

3. Time-to-degree and Completion of Degree

The typical Australian PhD is 4 year full-time degree, doubled for part-time candidates. Government support, which is effectively a fee remission scholarship, is provided for 4 years full time, after this, candidates are supposed to be placed in a fee place. This means that there are usually no fees for Australian candidates enrolled in PhDs (certain rules apply), but very few Australian or international students pay fees in Australia, especially in the more research-intensive universities where their research outputs are highly valued – the group of students that do pay fees tend to be sponsored students (Australian or other governments). The costs of research training met by the government have been estimated and generally the government covers about 75% of the costs – the rest are carried by Universities. It is also worth noting that the direct research costs of the students – reagents etc. tend to be met by the candidate's advisors.

Different universities handle the candidature arrangements in different ways. Some require that a thesis be submitted or the candidate 'withdraw' at 4 years (EFT). Students at Melbourne were taken from an enrolled place and placed into a different category ('lapsed in good standing') that allowed them to submit sometime after 4 years. The rules were tightened in 2017, and this category was removed.

Because of the different accounting methods for elapsed time, this data does not tend to be collected in Australia. The general consensus is that an Australian PhD takes between 4-4.5 year for completion – the dissertation submission is usually 3-4 months before completion. These data are for full-time students. Part-time students have a poorer time to completion and poorer completion rate.

Because research training is remunerated by the Australian government only following completion of the degree, the federal government asks each University how many completions have occurred each year, not the completion rate or time to completion.

Some of this was covered by an ACOLA report into Research Training – here <https://acola.org.au/wp/PDF/SAF13/SAF13%20RTS%20report.pdf> ACOLA are the learned academies in Australia.

The completion rate (percentage of commencing students who complete) is highly dependent on when you look, but is improving. As few as 50% of PhDs completed within 5 years, some 5 years ago – now the completion rate in <5 years at Melbourne is approaching 80%. This has been achieved through active candidature management

and better accountability at every level – Advisor, Department, Faculty. The levers are small, but there is a link between PhD fellowship allocation and completion performance at Melbourne.

4. Purpose and Goals of Doctoral Education

Again, this was covered by the ACOLA Review - <https://acola.org.au/wp/PDF/SAF13/SAF13%20RTS%20report.pdf>

The purpose has not changed.

At Melbourne, the majority of students entering the PhD (>70%) believe they will have a career in the academy. This is also true for the (smaller) completing cohort. While the data on 5 and 12 year exits is hard to gather, it is believed that fewer than 10% of PhD graduates ultimately win tenured academic positions at Australian Universities. Many more will get contract teaching roles, and contract research roles – tenured research-only roles have largely disappeared. Very few end up in industry as researchers though an increasing number of PhD graduates are 'poached' by the big accounting firms that do consulting and the quantitative (Maths, Physics..) PhD graduates generally have little problem gaining work in the financial sector. Most graduates probably take pragmatic decisions and gain employment outside of the academy in management and other roles where the specific technical skills gained during a PhD are probably not used, but where the generic skills of evidence-based decision making, problem solving and project management are important.

Part II: Structure of Doctoral Education

The structure of doctoral education sits within the Australian Qualifications Framework (AQF). The AQF is a rubric for all post secondary certificates, diplomas, degrees, Masters etc. in Australia. It carries information about the pathways in, and the types of learning required, including for Level 10 awards, Doctorals. Masters are Level 9 awards.

<https://www.aqf.edu.au/>

The national auditor TEQSA conducts standardised and regular audits of Australian Universities. These audits address the claims made by Universities, the quality assurance processes for course design and delivery, and generally includes a specific discipline area or area of university business that is decided between the University and TEQSA. An example would be Research Training in the Faculty of Science.

TEQSA are here - <https://www.teqsa.gov.au/>

TEQSA audit to National Standards. The standards are for specific activities. The National Standards are found here: <https://www.teqsa.gov.au/higher-education-standards-framework-2015>

The national standards for Research Training are in Domain 4: <https://www.teqsa.gov.au/hesf-domain-4>

The Standards used the ACGR (Australian Council of Graduate Research, the collective of the Australian Graduate Deans, formerly the DDoGS) documents as the reference points – what this means is that when testing whether a University is delivering research training of sufficient quality, they compare what is being done within the University with what the ACGR documents state as the national guidelines. The ACGR has spent many months discussing the wording around its Good Practice Principles. They are found here: <https://www.ddogs.edu.au/good-practice-principles>

The typical structure of the Australian PhD is that the student works with an Advisor (Supervisor) over the period of candidature. The student may also be supported by an Advisory Panel, compulsory at Melbourne, chaired by someone independent (not the Advisor). The PhD will have some, a lot, or no coursework, depending on the discipline. At Melbourne, the Arts and Engineering PhDs have about 25-50% of Year 1 as coursework, Business and Economics have 2 years of coursework, and the rest (e.g. Medicine, Vet Science, etc.) have none.

The admission requirements are a 4 year or better undergraduate degree (e.g. 4 year degree or Masters), at a level that is equivalent to Honours H2A – a GPA of 3.0/4.0 or better. At better Universities, few candidates enter with the minimum requirement – competition for fellowships is very high and the students need much better grades to enter. There is no GPA, there is supposed to be a structured interview, but admission is generally done on grades and CV (e.g. publications).

There is not specific service unit for graduate research students – some candidature management support is provided centrally, as is the examination process, but generally candidates are managed at the local (School/Department) or Faculty level. Each Faculty has a graduate school, some have several – Medicine has 5, but these are generally not very engaged in providing specific support to doctoral and research masters candidates.

Training is increasingly provided at the local level by the local PghD Program at Melbourne. In the Program I coordinate, we have a workshop every month, in addition to the activities offered in other parts of the University. We have a person who administers the Program.
Main National Policies/Reforms Affecting Doctoral Education

Doctoral education policies are held by the institutions, as self-accrediting entities. These policies cover all aspects of research training – the entry, progress monitoring, examination etc. They will differ between institutions but generally agree with the ACGR Good Practice Guidelines, the standard for TEQSA audit (above).

What is the relative support for PhD candidates through various kind of support mechanisms

More than 90% of students entering PhDs will have fellowships provided by either – the Australian government (c.40%), the University (c.40%), supervisors (c.10%), industry (c.10%). The Australian government fellowships have eligibility rules (<10% are available to international students, a rapidly increasing cohort), so many international students are supported by University money. Fellowships are also created from research grants. On average, a student's fellowship is approximately 1/3 of the cost of a post-doctoral fellow so some grant holders convert post-doc salaries into PhD stipends.

A typical PhD fellowship will be for 3-3.5 years, and at a rate of A\$30,000 that is tax free. PhD candidates can earn an additional \$18,000 before they are taxed – this can happen through casual teaching arrangements though few students would receive more than \$5,000 through this mechanism. Outstanding students may receive a stipend 'top-up' from the Advisor.

Quality Assurance/control

This is covered above under AQF/TEQSA and National Standards.

There is relatively little career support for PhD candidates though some Programs are providing assistance.

Part III: Trends

1. International Collaboration:

There is considerable growth in Joint Degrees. In some cases we have large cohorts of Joint PhD candidates (e.g. 30), in others it is smaller numbers (5-10), or even individual arrangements. The University model is that the students are jointly enrolled and satisfy the entry and exit requirements of both institutions, and follow the candidature management practices of the "home" University. The University of Melbourne would have c.1-2% of its graduate researchers in joint PhD degrees (ie. 50-100 of 5000).

2. Equal Opportunities:

There are specific funding arrangements for Indigenous Australians. Giving them enhanced access to candidature and fellowships, in an attempt to boost participation. The faculties where diversity is seen as a problem (e.g. Engineering with female students), there are programs to boost participation.

3. Digital Transformation:

Digital transformation has not yet influenced the process of doctoral education and training though MOOCs etc might be provided in support of candidature. The often compulsory public presentation (called a Completion Seminar) of the findings from a PhD, or a viva voce where used, are conducted through traditional means.

4. Most Important Aspects for Your Country:

The nexus between ultimate employers and the training processes is arguably the most pressing problem, which then leads to an expansion of generic skills (and specific skills) training within the degree. We have a national internship program for PhD candidates, modelled on MITACS but it is proving difficult to implement. Australian employers are generally ignorant around the skills of PhD graduates and this extends to Government too.