

# Collaborating with Postgraduates: The CRC Contribution to Research Training

Nigel Palmer  
Research Fellow  
Centre for the Study of Higher Education (CSHE)  
University of Melbourne  
palmern@unimelb.edu.au

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## Overview

### Collaborating with Postgraduates:

- Research postgraduate pathways & characteristics
- The CRC contribution to research training



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# Research postgraduate pathways

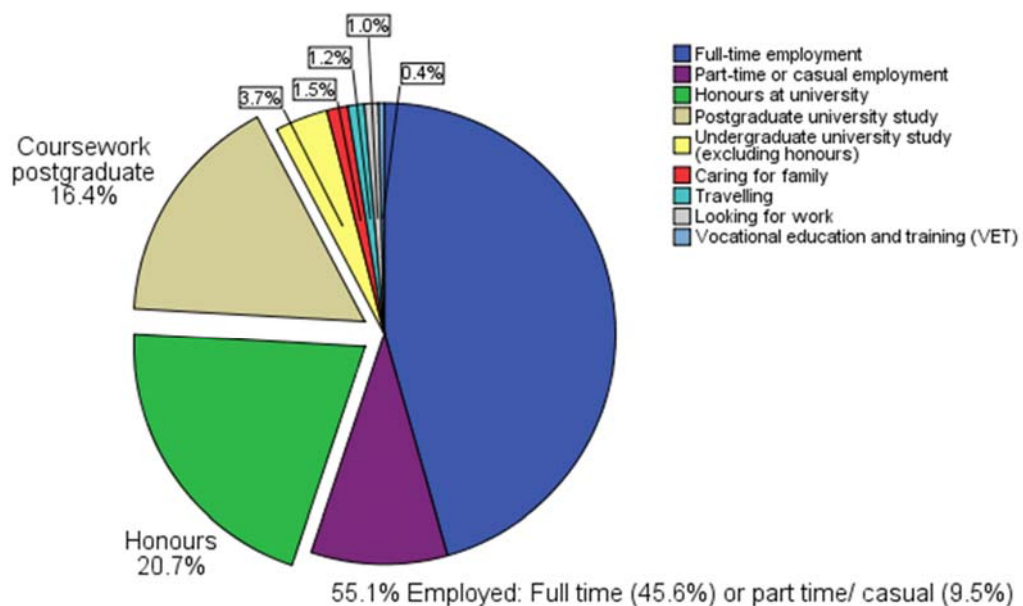


Where do they come from?



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## RHD Pathways – Prior Employment



**Q: What was your main activity in the year prior to commencing your research degree?**

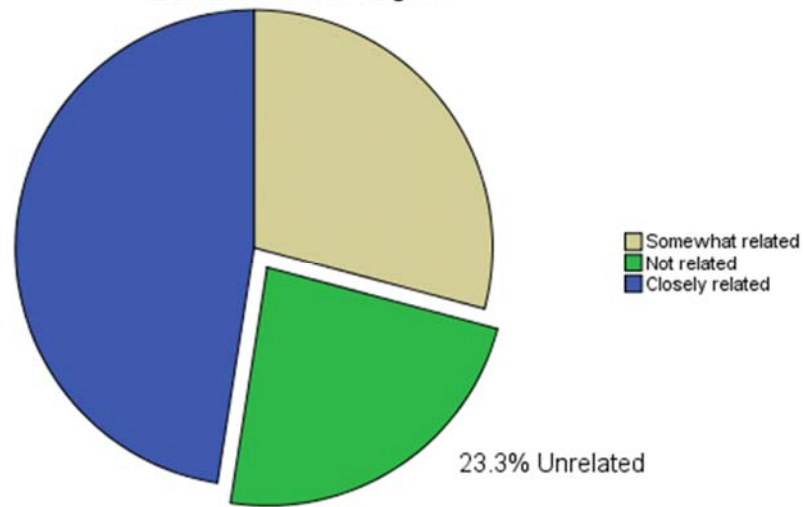
National Research Student Survey (unpublished data, Edwards, Bexley & Richardson, 2011)



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# RHD Pathways – Prior Employment

76.7% reported prior work either Closely or Somewhat Related to current research degree

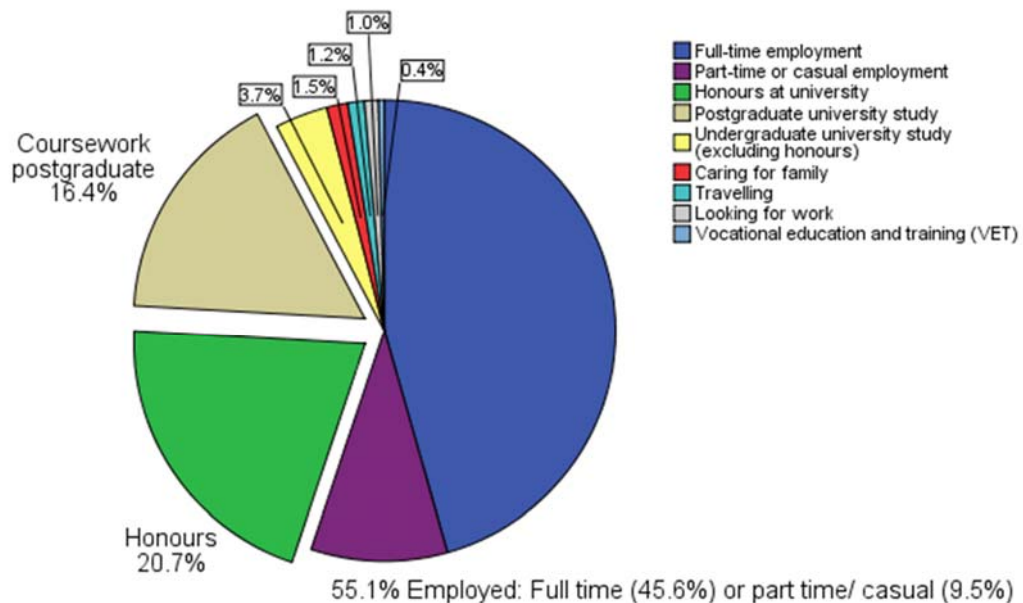


**Q: If you worked in the year prior to commencing your research degree, how much was this job related to your current research degree?**

National Research Student Survey (unpublished data, Edwards, Bexley & Richardson, 2011)



# RHD Pathways – Prior Study

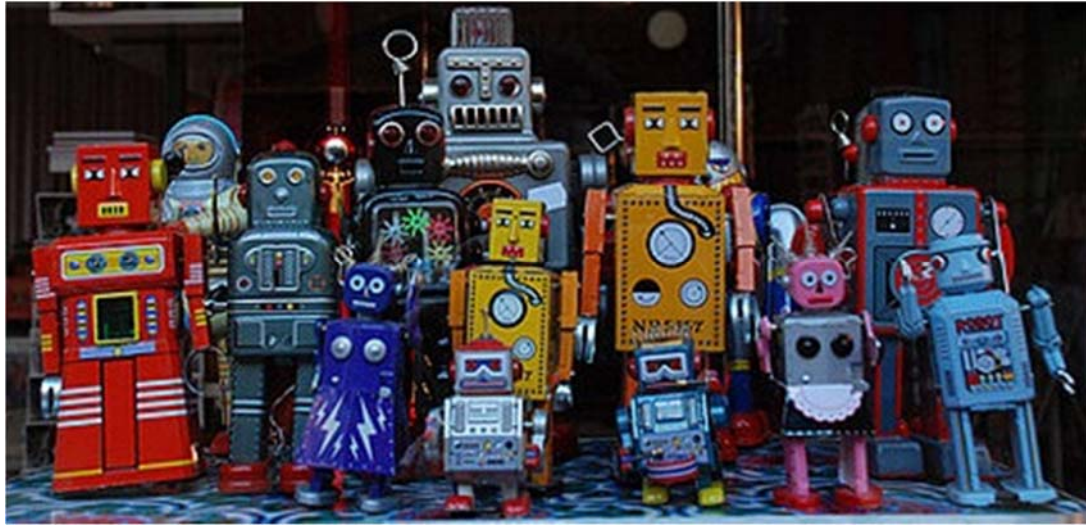


**Q: What was your main activity in the year prior to commencing your research degree?**

National Research Student Survey (unpublished data, Edwards, Bexley & Richardson, 2011)



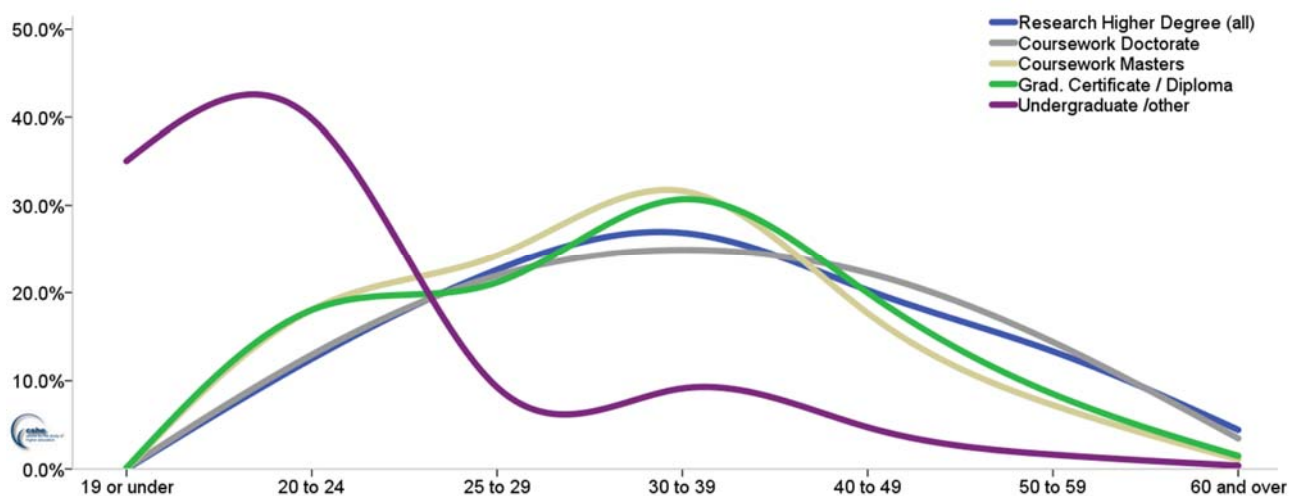
# Research postgraduate characteristics



## Patterns of participation

# Research postgraduate characteristics

## Domestic student age as a proportion of course level (2009)

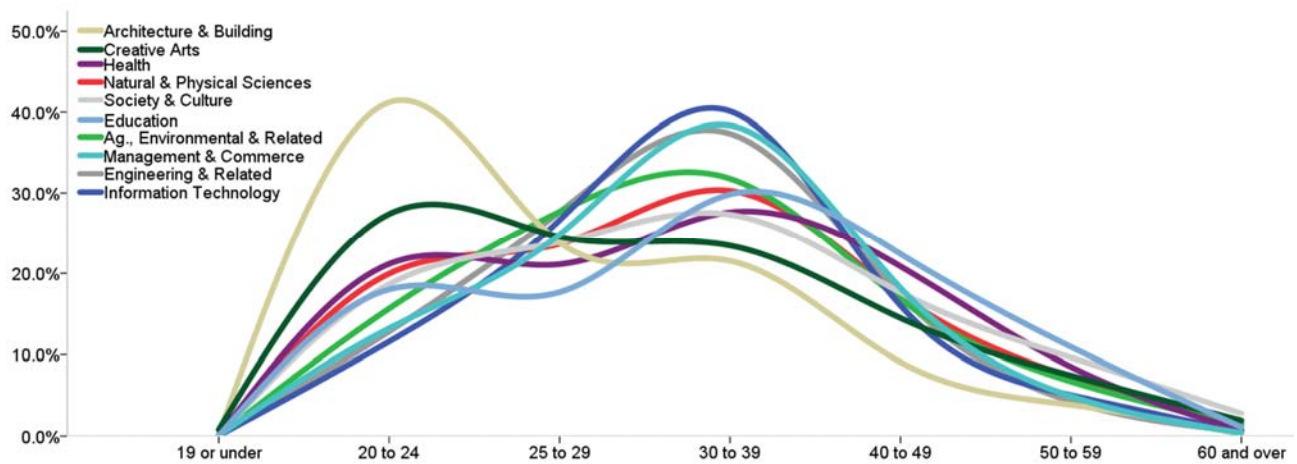


Source: Students 2009 (full year) Selected Higher Education Statistics (2010). [www.deewr.gov.au](http://www.deewr.gov.au)



# CWHD Characteristics

Domestic coursework postgraduates as a proportion of course level and field of study (2009)

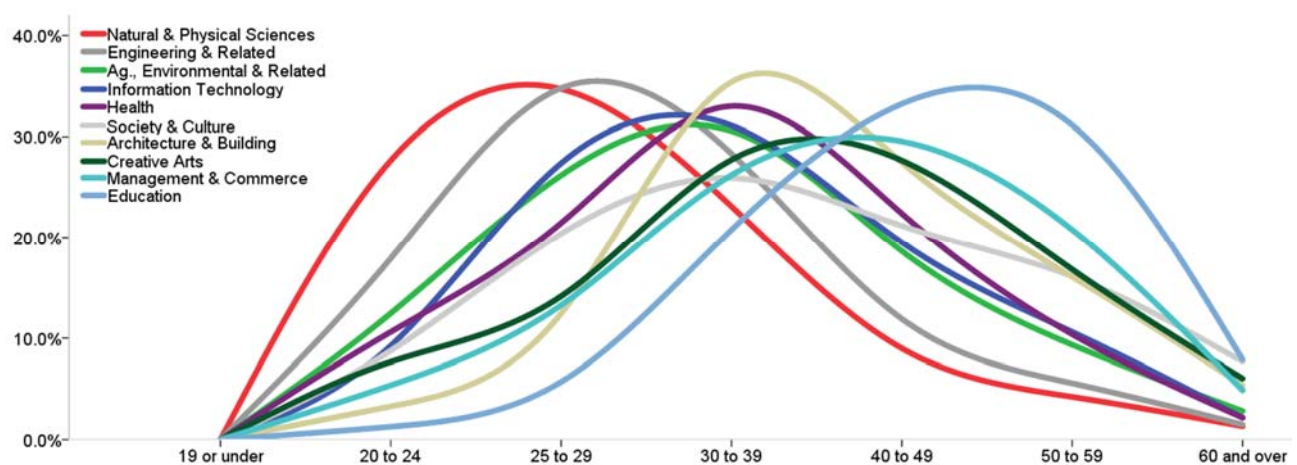


Source: Students 2009 (full year) Selected Higher Education Statistics (2010). [www.deewr.gov.au](http://www.deewr.gov.au).



# Research postgraduate characteristics

Domestic RHD age as a proportion of broad field of study (2009)



Source: Students 2009 (full year) Selected Higher Education Statistics (2010). [www.deewr.gov.au](http://www.deewr.gov.au).



# Research postgraduate characteristics

## Proportion of domestic students enrolled part time by course type and broad field of education (2009)

	Bachelor (pass and GE)	Honours	Grad. Cert./Dip.	Coursework Masters	Research Higher Degree (all)	Overall
Management & Commerce	27.8%	16.1%	88.4%	77.9%	57.2%	42.8%
Ag., Environmental & Related Studies	29.7%	18.5%	87.1%	81.1%	39.6%	41.0%
Information Technology	29.5%	21.5%	85.5%	78.9%	43.7%	39.7%
Society & Culture	28.4%	28.4%	66.4%	75.9%	48.8%	39.3%
Education	19.8%	23.7%	60.7%	70.0%	75.4%	36.6%
Health	17.7%	17.7%	84.2%	67.7%	48.7%	29.7%
Engineering & Related Technologies	16.0%	3.2%	90.8%	84.2%	31.2%	26.4%
Architecture & Building	17.0%	7.7%	85.3%	41.7%	56.1%	25.9%
Natural & Physical Sciences	18.8%	11.3%	83.3%	73.7%	28.0%	23.7%
Creative Arts	16.4%	18.2%	63.9%	59.2%	44.6%	22.5%
Overall	22.6%	20.7%	74.2%	73.2%	45.5%	35.1%

Source: Students 2009 (full year) Selected Higher Education Statistics (2010). [www.deewr.gov.au](http://www.deewr.gov.au).



## Overview

### Collaborating with Postgraduates:

- Research postgraduate pathways & characteristics
- The CRC contribution to research training



## The CRC contribution to research training

CRCs are engaged in a range of education related activities. As a subset of these ....

### What is the CRC contribution to research training?

- Right now – it depends on who you ask
- Unis
- CRCs (and their industry partners)
- Students



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## The CRC contribution to research training

Aims of the Research Training Scheme (RTS):

- Quality, efficiency and effectiveness
- Responsiveness to student and labour market needs
- Development of distinctive research training profiles

On the face of it, these points seem to have a lot to do with what CRCs do, and arguably do well.



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## The CRC contribution to research training

### Others are asking these questions too:

- Stakeholders responding to the *Defining Quality* consultation paper as part of a review of the Research Training Scheme (RTS);
- *The Best Practice Framework for Research Training* being developed by The Council of Deans and Directors of Graduate Studies in Australia (DDoGS); and
- University groups engaging in their own benchmarking.
- These activities will inform development of TEQSA's standards for research and research training.



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## The CRC contribution to research training

### Why should CRCs care?

- Part of demonstrating the value of the program
- Helpful in promoting 'brand awareness' of CRC research training activities
- Helpful in recruitment
- Helpful in informing and supporting the research training activities of CRCs



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## Scoping study – some preliminary findings



## Scoping study

### Outcomes:

- Review **prior developments** in this area;
- Identify and review **available metrics** in which the value and distinctiveness of the CRC RHD environment may be reflected;
- Identify preliminary **dimensions and criteria** by which CRCs may be able to benchmark their RHD activities;
- Identify a set of **guiding questions** for future **development opportunities** in the research training activities of CRCs.

# Prior developments

Prior developments:

- Research
- Policy
- Practice



## Prior developments - research

Research on the CRC contribution to research training:

- A series of research initiatives were engaged through the 2000's into the **experiences and outcomes** of research higher degree students engaged with CRCs ([Manathunga, Pitt & Critchley, 2005](#); [Manathunga, Pitt & Critchley, 2009](#); [Pitt, Cox & Manathunga, 2010a, 2010b](#); [Morris, Pitt & Manathunga, 2011](#)), and into the role of industry links in research training more broadly ([Harman, 2002](#); [Harman, 2004](#); [Harman, 2008](#)).
- Findings from these research initiatives have **broadly affirmed the role of CRCs in supporting industry-engaged research higher degrees**, and the need for strategies to ensure that CRCs serve to **add value** to the research training experience for individual candidates.

# Prior developments - research

- Findings to date have provided important insight into some of the distinctive characteristics of CRC-engaged research higher degrees, **comparisons between CRC and non-CRC engaged research candidates** and a preliminary view of comparative outcomes.
- Noting results from studies available at the time, the O'Kane review noted the need for **further research** into the research training environment supported by CRCs.
- Opportunities exist to build on previous research in providing a clearer picture of **the defining characteristics of CRC-engaged research degrees**, and to more clearly identify **indicators** through which the **quality and success** of CRC-RHDs may be reflected and improved.



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# Prior developments - Policy

**CRC Education and Training Program Objectives and Selection Criteria 1991 – 2006**  
From *Collaborating to a Purpose* (2008, p.24).

	1991	1992	1996	2000-2002	'04-
Objectives	To stimulate education and training, particularly in graduate programs, through the active involvement of researchers from outside the higher education system in educational activities, and graduate students in major research programs.			To enhance the value to Australia of graduate researchers.	(No specific reference)
Criteria		The existence of challenging educational programs which benefit from the overall size and orientation of the Centre, and address identified market needs.	The development of leading innovative education and training activities that meet industry sector needs and enhance the employment prospects of graduates.	The proposed CRC has a well developed graduate education and training program oriented to research user and industry needs. The education and training program will demonstrably enhance the employment prospects and the value of the graduates of the program in the industry and user environment.	
	The extent to which researchers from throughout the Centre are involved in education programs, particularly postgraduate programs.				



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# Prior developments - Policy

- Revisions in 2000 refocussed CRC program objectives and criteria on the value of graduates to industry. Specific reference to research education in program objectives and criteria was dropped altogether from 2004, leaving only the requirement that CRCs **engage at least one university as a research partner in order to meet their research training requirements** ([DIISR, 2010](#)).
- Despite an apparent change in emphasis, reviews of the program have continued to emphasise the importance of the CRC program's research education role in developing Australia's innovation capacity, and in facilitating end user engagement in and uptake of the benefits of applied research. The O'Kane review for example **clearly identified PhD graduates as an important means through which the benefits of research collaboration may be conveyed**, and proposed a greater emphasis on end-user focussed education (especially at PhD level) through partnerships with universities, PFRAs and end-user groups ([Recommendation 2, O'Kane, 2008, pp.xv-xvi](#)).
- While the selection process for CRCs currently includes accounting for the quality of the educational program by peer review, those criteria do not provide for how that quality might be judged. The O'Kane review **recommended the development of common metrics for evaluation and comparison across all CRCs, and that these also include metrics on research education**. The implication here is that minimum levels of acceptable performance in research training might also feature among **threshold requirements** for CRC program funding ([recommendation 7.4, O'Kane, 2008, p.xx](#)).



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# Prior developments - Practice

- Every CRC applicant is required to secure a commitment from at least one Australian university to guarantee supervisory arrangements for research students associated with the Centre (for which funding is provided from the CRC). The O'Kane review noted that from the university perspective there was **considerable prestige in being associated with a successful CRC bid, and that CRCs were considered a good source of additional funding for supervision, and for PhD scholarships** ([O'Kane, 2008, p.35](#)).
- As a condition of this partnership, The university must guarantee to provide supervision for PhD students associated with the Centre, and be **"continually vigilant in ensuring the research training experience for students is comprehensive and in line with industry and educational needs"** ([O'Kane, 2008, p.xvii](#)).
- **The extent to which CRCs supplement the "core" research training for CRC engaged RHDs provided by universities remains unclear.** It may well be that it is the students themselves that determine this balance, seeking out the resources and support that best suit them and the nature of their research. Rather than seek to establish the exact nature of the arrangements one way or the other, it perhaps makes sense to **review the nature and characteristics of CRC education programs, and the way these 'map' with research higher degree programs supported by universities**. A more comprehensive evidence base in this area will assist in demonstrating strengths in the CRC research training environment, as well as identify opportunities for future improvement.



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# Metrics

- Available metrics
- Opportunities for future development



# Metrics

Information sources:

## **The Management Data Questionnaire (MDQ)**

- The MDQ forms part of the annual reporting requirements for CRCs.
- It is currently the principal means for collecting information on the activities of CRCs program-wide.





# Metrics

## The Management Data Questionnaire (MDQ)

The MDQ includes survey items relevant to a range of education-related activities.

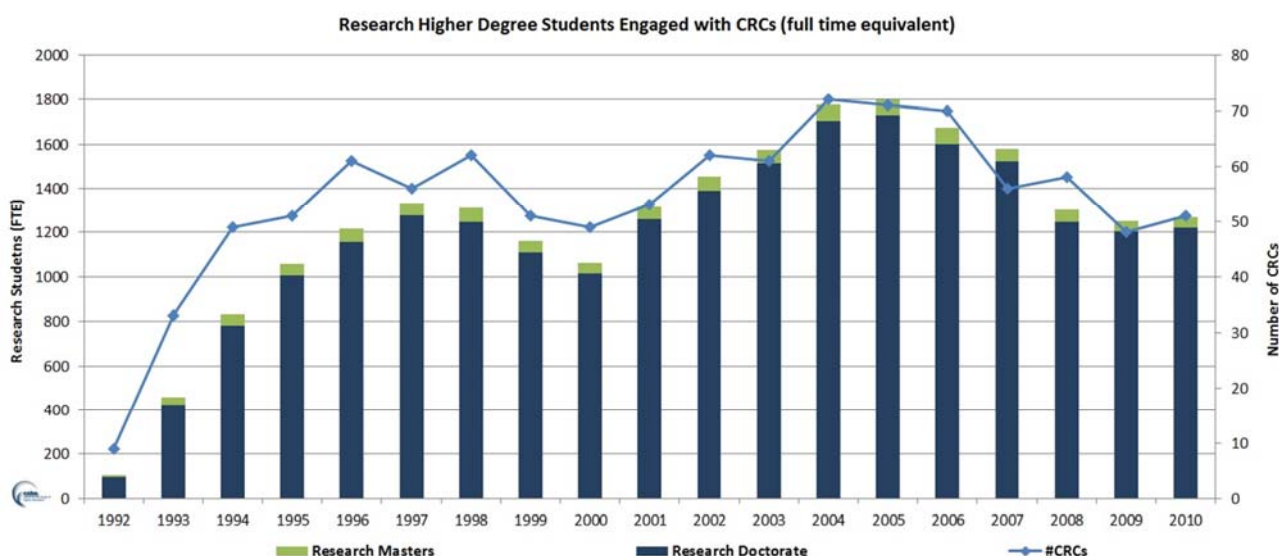
Current items relevant to **CRC research training activities** include:

- The equivalent full-time student **load** (EFTSL) of students
- The number (headcount) of **commencing** students
- The number (headcount) of course **completions**



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## Metrics – preliminary findings

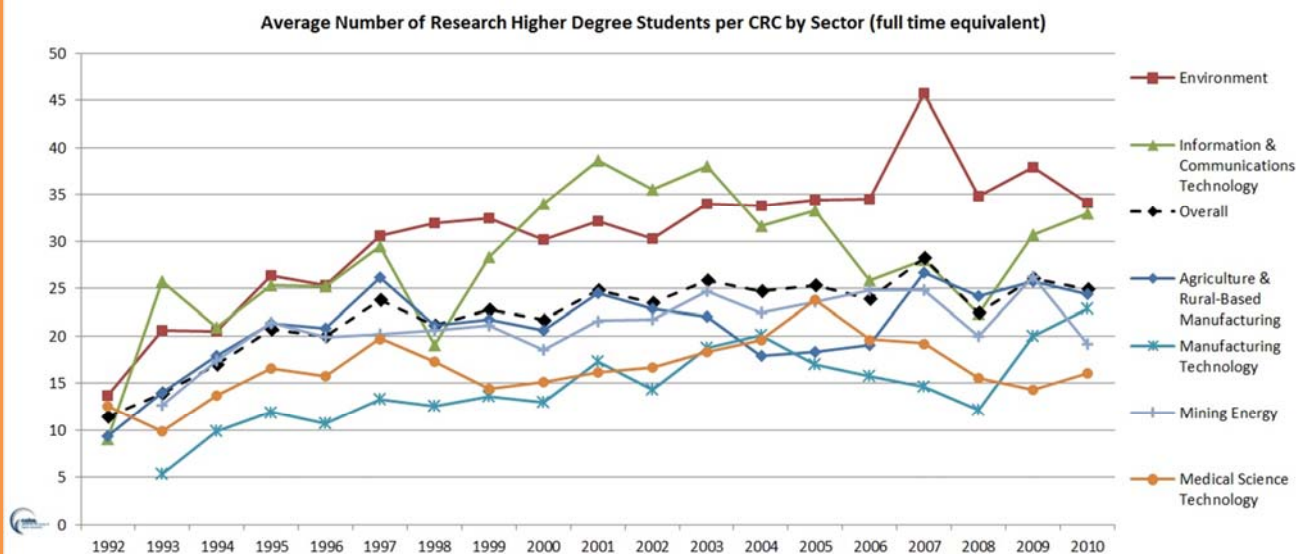


Source: Unpublished data from the CRC Program Management Data Questionnaire (MDQ), Department of Industry, Innovation, Science, Research and Tertiary Education. A CRC Student is defined as any student who works on CRC research activities and is identified as part of the CRC. Fulltime equivalent student data are shown for the reporting period ending the year indicated.



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# Metrics – preliminary findings



## Metrics

- Available metrics
- Opportunities for future development



# Metrics

## Opportunities for future development

Three broad opportunities for improving metrics reflecting the CRC contribution to research training include:

- Program-wide data on attrition and completion rates
- Program-wide data on completion times
- Better information on graduate outcomes?



# Metrics

## Deriving attrition and completion rates

‘Crude’ attrition is currently derived as:

- The proportion of students who commence a course in year (x) who neither complete nor return in year (x + 1) (DEEWR, 2011).

To calculate this you typically need to know the following:

- Commencements
- Completions, and
- The number of continuing (or non-commencing) students.



# Metrics

## Deriving attrition and completion rates

BUT

As noted earlier the MDQ only includes survey items for:

- The number (headcount) of **commencing** students
- The number (headcount) of course **completions**
- The equivalent full-time student **load** (EFTSL) of students

For the purposes of deriving attrition and completion rates therefore calculations using current MDQ data would be confounded by variations in enrolment status.



# Metrics

## Deriving attrition and completion rates

There is hope!



# Metrics

## Deriving attrition and completion rates

Deriving attrition and completion rates for research students is tricky at the best of times.

Data on 'crude' attrition for research students is confounded by a range of factors including:

- Much higher variability in enrolment status (including intermission)
- Longer time frame frames to degree completion
- Higher incidence of institutional transfers

Therefore even if the MDQ surveyed for 'heads' as well as 'load', we would still be left with a less than perfect measure.



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# Metrics

## Deriving attrition and completion rates

One alternative may be to trial a 'unique student identifier' model for tracking degree completions.

This would be akin to using something comparable to the *Commonwealth Higher Education Student Support Number* or '**CHESSN**', recently described as the 'the data equivalent of the Holy Grail' for student enrolment metrics.

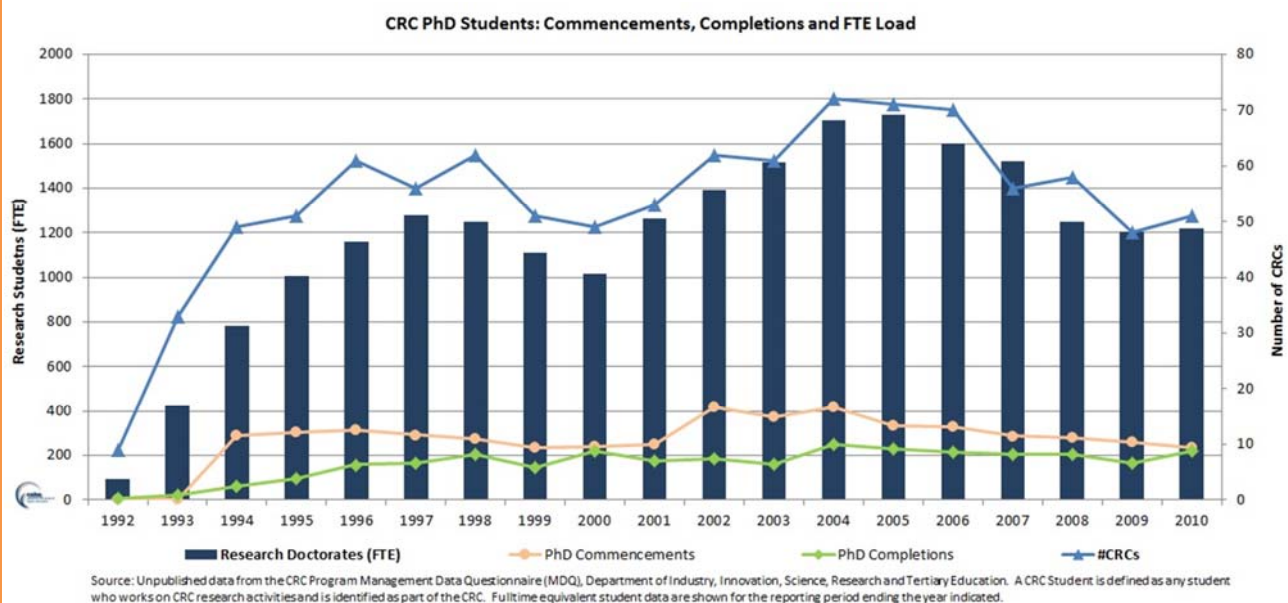
This kind of approach is entirely possible in the case of CRCs, **preliminary modelling** for which will be included in the final report of the Scoping Study.



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# Metrics – preliminary findings



## Metrics

### What about completion times?

‘Crude’ calculations for research degree time to completion are also problematic, particularly when relying on completion rates derived from calendar year participation data.

As with completion rates, these data are also confounded by the higher rates of part time enrolment and variations in candidature typical of research students.

This kind of variability is not the problem – research shows a tendency for part-time research candidates to make more efficient use of candidature time (Bourke et al. 2005).

The key to reporting accurate completion times for CRC engaged research students lies in recording and reporting elapsed candidature time. This is potentially more complicated, and the benefits of recording this in parallel with units would need to be weighed against the costs.



# Metrics

- Available metrics
- Opportunities for future development



## Dimensions and criteria in CRC RT

**How can the CRC contribution to research training be demonstrated?**

This could be through demonstrating:

- Value in what they offer
- Distinctiveness in what they do
- Evidence of quality outcomes over time

# Dimensions and criteria in CRC RT

## Dimensions and aspects of a quality research training environment

Some domains have emerged to broadly describe aspects of this environment that are *salient* for both students and supervisors and potentially *useful* in supporting successful outcomes (Palmer, 2012).

These may be summarised as follows:

Dimension	Aspect
Infrastructure and resources for research	Infrastructure, equipment, facilities and resources provided to support research, appropriate to enabling successful and timely completion.
Supervision and examination	Quality in supervision, and of the examination process.
Collegiality and intellectual climate	An open, collegial and productive learning environment, with support for doing and learning about research.
Skills and professional development	Opportunities for personal and professional development, including the development of skills and professional capabilities.
Administrative, student support and QA policies, programs and strategies	Administrative and student support services and programs. Policies, programs and strategies to promote and assure quality and to manage risk.



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# Dimensions and criteria in CRC RT

Appendix I: On Quality and Standards in Research Training - Potential Dimensions, Aspects, Characteristics and Measures

			Key: T - threshold P - performance	I - input/process O - output/outcome	C - criterion referenced S - scaled/comparative L - longitudinal	*regardless of status as a potential standard, performance measure or threshold requirement.	
Dimension	Aspect	Characteristic	Activity type*	Indicator Type*	Criterion type*	Measure	Criterion
Infrastructure and resources for research	Infrastructure, equipment, facilities and resources provided to support research, appropriate to enabling successful and timely completion.						
	Each institution should have a readily-accessible policy on resources for research doctoral candidates (DDoS).	Adoption of minimum resource standards policy	T	I	C	Audit	Policy is in place
		Accessibility of minimum resource standards policy	P	I	C	Audit	Policy is accessible
		Enforceability of minimum resource standards policy	P	I	C	Audit	Policy is enforceable
		Implementation of minimum resource standards policy	P	I	C	Audit	Policy is appropriately implemented with good compliance
	Secure desk and study space (DQ).	Secure desk and study space specified in minimum resource standards policy	T	I	C	Audit	Secure desk and study space specified in minimum resource standards policy
		Reported accessibility of a suitable working space	P	O	S	Infrastructure Subscale PREQ03	Comparative
	Physical resources and access to research facilities including research infrastructure, laboratory or other facilities required across a range of disciplines (DQ).	Access to necessary facilities and equipment specified in minimum resources policy	T	I	C	Audit	Access to necessary facilities and equipment specified in minimum resources policy
		Reported access to necessary equipment	P	O	S	Infrastructure Subscale PREQ12	Comparative
		Access to computing facilities specified in minimum resource standards policy	T	I	C	Audit	Access to computing facilities is specified in minimum resource standards policy
		Access to necessary specialist software specified in	T	I	C	Audit	Access to necessary specialist

From: Palmer, N. (2011). On Quality and Standards in Research Training. Melbourne, Australia: Centre for the Study of Higher Education (CSHE). Available at [www.cshe.unimelb.edu.au/people/palmer/Quality\\_and\\_Standards\\_in\\_Research\\_Training.pdf](http://www.cshe.unimelb.edu.au/people/palmer/Quality_and_Standards_in_Research_Training.pdf).

See also:

Palmer, N. (2010). Minimum Resources for Postgraduate Study 2010. Melbourne, Australia: Council of Australian Postgraduate Associations. Available at [www.capa.edu.au](http://www.capa.edu.au).



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## Dimensions and criteria in CRC RT

Dimension	Aspect	Characteristic	Activity type*	Indicator Type*	Criterion type*	Measure	Criterion
Administrative, student support and QA		clear understanding of the requirements of thesis examination	P	O	S	Clear Goals Subscale PREQ19	Comparative
	Access to independent support & advice (DQ).	Postgraduate association able to offer independent advocacy and advice on a professional and confidential basis	T	I	C	Audit	Postgraduate association is able to offer independent advocacy and advice on a professional and confidential basis
	Appeal and dispute resolution processes.	Mechanisms to collect, review and respond to feedback	T	I	C	Audit	Mechanisms to collect, review and respond to feedback are in place
	Transparent policies and procedures.	Transparent admission criteria, procedures and processes	T	I	C	Audit	Admission criteria, procedures and processes are transparent and available to current and prospective students
		Transparent intellectual property policies and procedures	T	I	C	Audit	Transparent intellectual property policies and procedures are in place
	Transparent monitoring of the progress of each candidate via a structured process with significant milestones, and regular monitoring/reporting of progress throughout candidature, including prior to submission for examination (DDoGS).	Clearly defined mechanisms for monitoring and supporting student progress	T	I	C	Audit	Clearly defined mechanisms for monitoring and supporting student progress are in place
		Guidance to supervisors and students on monitoring progress and providing appropriate records	T	I	C	Audit	Guidance is made available to supervisors and students on monitoring progress and providing appropriate records
	Other outputs and outcomes	Overall satisfaction with the quality of the research higher degree experience	P	O	S	Overall satisfaction PREQ28	Comparative
		Completion rate	P	O	S	HEIMS	Comparative
		Attrition rate	P	O	S	HEIMS	Comparative
		Graduate contribution to knowledge through research outputs, including (but not limited to) theses, publications, exhibitions, grants and patents	P	O	S	ERA?	Comparative

From: Palmer, N. (2011). On Quality and Standards in Research Training. Melbourne, Australia: Centre for the Study of Higher Education (CSHE). Available at [www.cshe.unimelb.edu.au/people/palmer/Quality\\_and\\_Standards\\_in\\_Research\\_Training.pdf](http://www.cshe.unimelb.edu.au/people/palmer/Quality_and_Standards_in_Research_Training.pdf).



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## Dimensions and criteria in CRC RT

### How can the CRC contribution to research training be demonstrated?

This could be through demonstrating:

- Value in what they offer
- Distinctiveness in what they do
- Evidence of quality outcomes over time
- This need not duplicate all of the research training activities supported by university partners.
- The scoping study could provide the basis for more comprehensive benchmarking within CRCs.



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Nigel Palmer  
Research Fellow  
Centre for the Study of Higher Education (CSHE)  
University of Melbourne  
[palmern@unimelb.edu.au](mailto:palmern@unimelb.edu.au)

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