

REVIEW OF AUSTRALIA'S RESEARCH TRAINING SYSTEM

Response to the Consultation Questions

August 2015

**RESEARCH
AUSTRALIA**

AN ALLIANCE FOR DISCOVERIES IN HEALTH



About Research Australia

Research Australia is an alliance of 160 members and supporters advocating for health and medical research in Australia. Research Australia's activities are funded by its members, donors and supporters from leading research organisations, academic institutions, philanthropy, community special interest groups, peak industry bodies, biotechnology and pharmaceutical companies, small businesses and corporate Australia. It reflects the views of its diverse membership and represents the interests of the broader community.

Research Australia's mission is to make health and medical research a higher priority for the nation. We have four goals that support this mission:

- A society that is well informed and values the benefits of health and medical research.
- Greater investment in health and medical research from all sources.
- Ensure Australia captures the benefits of health and medical research.
- Promote Australia's global position in health and medical research.

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**RESPONSE TO THE CONSULTATION QUESTIONS, AUGUST
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INTRODUCTION

While Australia's research system is of a high standard, there is room for improvement. In particular, we can improve the extent to which Australia's research effort is directed to the questions and problems of greatest importance and how effectively our research is applied to provide solutions. While the extent to which reform of our research training system can advance this agenda is uncertain, there is no doubt it has a role to play.

The consultation paper identifies that we don't know enough about the knowledge and skills that employers want in HDR graduates or the views of HDR graduates about how their qualification could have better prepared them for their careers. While responses to the consultation paper may help address these questions, it is possible that targeted surveys of relevant employers and HDR graduates who completed their degrees a decade or more ago may be necessary to answer these questions.

This information would assist universities in the redesign of their qualifications. It would also assist prospective students to understand the range of careers for which a research training qualification is relevant and to use their career aspirations and current skills and experience to identify the specific knowledge and experience they need to develop in the course of their HDR studies. This information will guide them in choosing not only the appropriate qualification but the most useful subjects and components within that qualification.

Research training needs to be flexible. While it is not possible or desirable to provide every HDR student with all the knowledge, skills and experience that might be relevant throughout their career, it is possible to provide the core skills and knowledge augmented by the additional specialised training that is most relevant to the individual and their immediate career aspirations. Further training can be undertaken in the future as and when required as an individual's career changes.

We also need to encourage and support individuals who come to research with an existing career, particularly health practitioners who are seeking to combine their clinical practice with research to improve the delivery of healthcare.

Finally, research training needs to cater not only for career researchers but for the individuals who will facilitate, support, implement and communicate research. These are the individuals who need to understand research and its practice if they are to effectively communicate science to the broader community,

commercialise research discoveries, manage research programs, administer research funding programs, facilitate clinical trials, and develop and implement evidence based policy.

In this submission, Research Australia has sought to articulate an approach to research training which integrates training for a range of occupations and purposes, and to do so to the greatest degree possible within the existing qualifications framework.

Research Australia recognises that the remit of the current review is broader than health and medical research. While many aspects of Research Australia's submission will be relevant to other fields there are some characteristics of health and medical research which warrant specific attention.

THE CONTEXT

Australia has a long and proud tradition in training health and medical researchers in a range of disciplines. This has occurred in parallel with the training of the health workforce in an equally varied range of professions and specialisations. In parallel, but rarely together.

Australian health and medical research is world standard. Citations for NHMRC funded research are well above the world's average,¹ and much the same is true of Australia's scientific research generally.² However, when we compare ourselves with the world's best our performance is not outstanding and there are many areas where we need to do better.

Our healthcare system is also of a high standard, but like systems around the world it is under increasing pressure from rising demand and escalating costs. Earlier and better adoption of evidence based practice has the potential to improve the safety, quality, effectiveness and efficiency of our health system.

Australia is looking for opportunities to expand and diversify its economy and develop sophisticated high value added industries. We have established manufacturing and innovation capabilities in pharmaceuticals, biotechnology, biomedical devices and diagnostics, with leading companies like CSL, ResMed and Cochlear, but our levels of innovation and commercialisation of research are below the OECD average. In this context there is an increasing expectation that our researchers will be innovative- that they will be effective participants in the process of innovation required to create new, commercially successful products. This is an objective of the Australian Government's *Boosting Commercial Returns from Research* strategy, and the current Review of Research Training has been identified as one of the initiatives occurring under this broader strategy.³

The challenge is to improve the way we train our researchers, to ensure their skills are relevant to the work they undertake in a variety of settings. At the same time we need to better equip the individuals who are best placed to adopt, translate and innovate the output of Australia's health and medical researchers.

There has been significant innovation in research training and higher education generally in the last decade, but this has not been uniform across Australian higher educators and more needs to be done. Research training is not the only thing that needs to change if we are to enhance our research capability, expand our existing health industries and improve our health system but it is essential to these objectives.

1. WHAT ARE THE RESEARCH SKILLS AND EXPERIENCES NEEDED TO BE AN EFFECTIVE RESEARCHER?

Fundamentally, researchers need the skills and knowledge to conduct research. Research is increasingly conducted by teams of researchers rather than individuals; there is a greater emphasis on collaboration and it has become more multidisciplinary, with reliance on experts (eg. biostatisticians) to perform particular elements of the research. A candidate's area of doctoral research is often one aspect or component of a larger research enterprise; in such an environment there is a greater likelihood that the individual undertaking research for a Doctorate can be awarded the degree without having had to independently undertake all aspects of the research.

¹ <http://www.nhmrc.gov.au/media/newsletters/ceo/2014/measuring-impact-research-not-just-simple-list-publications>

² <http://www.chiefscientist.gov.au/2013/02/benchmarking-australian-science-performance/>

³ Joint statement by the ministers for Education and Training, Industry and Science, and Health, 26 May 2015

In this environment there is a clear need for the provision of explicit training in aspects of research such as the development of hypotheses, research methods, research ethics and experimental design.

2. WHAT BROADER TRANSFERABLE QUALITIES DO HDR GRADUATES NEED TO DEVELOP TO SUCCEED IN A WIDE RANGE OF CAREER PATHWAYS? SHOULD THESE SKILLS BE ASSESSED, AND IF SO, HOW?

The development of highly specialised knowledge in a particular field needs to be coupled with the skills required to conduct independent research and the ability to share knowledge with others, working collaboratively across scientific disciplines and with non-scientists. The general skills needed include: the ability to articulate problems and break them down into their component parts; problem solving; communication; the capacity to work in teams; and the ability to organise yourself and others. It includes at least an understanding of the principles of project management and risk management.

Australia has a strong tradition of academic health and medical research, but low levels of employment of PhD qualified individuals in the private sector. Industry identifies PhD qualified researchers as lacking key work ready skills, including communication, project management, the ability to work in teams and awareness of the commercial environment.

There is an increasing emphasis on the commercial and non-commercial translation of research, and an expectation that researchers have the necessary skills and knowledge to participate in the translation of their research. These include better understanding of the economic, financial, legal and social contexts within which research is conducted and how new knowledge contributes to new innovations.

3. WHAT OTHER BROADER CAPABILITIES SHOULD HDR GRADUATES DEVELOP DURING THEIR RESEARCH TRAINING?

Research Australia has not provided a separate response to this question.

4. WHAT SKILLS AND CAPABILITIES DO EMPLOYERS IN AUSTRALIA NEED FROM HDR GRADUATES?

Research Australia is not in a position to answer this question comprehensively. As the discussion paper notes, HDR graduates are employed in a range of roles across the public, private and not for profit sectors, and beyond certain core competencies the specific requirements are role dependent. The skills and capabilities that a university requires of an academic researcher with teaching duties differ from those required of a team leader in a medical research institute. The requirements of a researcher engaged in the development of a medical device will differ from those of a clinical researcher in a hospital. The skills required of a science communicator, the research director of a local health network and a clinical trials coordinator are all different.

An equally important consideration is the pre-existing skills and experience of the HDR graduate. The consultation paper reports that in 2011, the average age at commencement of a research doctorate was 33 and in 2012 over 18% of domestic research doctoral candidates were aged over 50. These individuals are not a 'blank slate' and while many will be looking to use their HDR qualification to change careers, others will use it to progress their existing career. An HDR candidate who has spent the last decade working for a

medical device manufacturer as part of a product development team may already have a good grounding in commercialisation activity. A health professional who wants to pursue a career as a clinical researcher may have an interest in the validation and assessment of changes in clinical protocols, or the development of new medical devices for use in surgery. A researcher who is going to pursue an academic career may need training for the tasks of teaching and supervising students. In all cases, the individual's current skills and experience and future career plans will play a critical role in determining the outcomes they are seeking from further study.

5. WHAT RESEARCH SKILLS AND CAPABILITIES ARE NEEDED TO ENSURE AUSTRALIA'S RESEARCH SYSTEM REMAINS INTERNATIONALLY COMPETITIVE?

Our research system needs more than researchers if it is to be effective. An increased focus on the 'knowledge economy', innovation and high value manufacturing can be expected to drive greater demand for research skills by the private sector, leading to higher levels of private sector employment of researchers and greater collaboration with public sector researchers.

Health care is delivered in an environment that is becoming ever more complex, technical and specialised, and new understandings of human health and disease are driving new technologies and techniques. There is an increasing need for the health care sector to both drive research and to implement the outcomes of research, with an increasing emphasis on the rapid translation of evidence based practice to improve the quality of care, increase the productivity of the health workforce and restrain costs. At the same time, increased specialisation in both research and healthcare is making it increasingly difficult for researchers and clinicians to find the common knowledge and language needed for the exchange of information and ideas.

These developments not only have implications for the training of researchers but for the individuals they work with in the private and public sectors. There is a need for 'research literate' individuals in a range of occupations who are able to support and facilitate the translation of research.

These individuals require a knowledge of, and familiarity with, research but not the full suite of knowledge, skills and abilities required to undertake independent research. They work in government departments, regulators and funding agencies; pharmaceutical and biotechnology companies; law offices and accounting firms; on hospital wards and in hospital administration; in general practice and the media. Many already have qualifications in their own occupations but would benefit from further structured study in research methods and skills.

For many of these individuals there is a place for research oriented qualifications that better suit their needs than a PhD. A Masters by research, or a Masters by coursework with an emphasis on research could be the most appropriate option.

Please refer to Research Australia's response to question 8 for a discussion of the implications for the current research training structure.

6. WHAT RESEARCH SKILLS AND CAPABILITIES ARE NEEDED FROM HDR GRADUATES TO ENSURE AUSTRALIA IS READY TO MEET CURRENT AND FUTURE SOCIAL, ECONOMIC AND ENVIRONMENTAL CHALLENGES?

Research Australia has not provided a separate response to this question.

7. WHAT FEATURES OF THE RESEARCH TRAINING SYSTEM SHOULD BE RETAINED TO ENSURE OUR GRADUATES ARE INTERNATIONALLY COMPETITIVE?

While Research Australia proposes some changes to existing research training this can largely be achieved within the existing framework of the Australian Qualifications System. The implications for different qualifications are outlined in the response to Question 8.

8. HOW SHOULD THE RESEARCH TRAINING SYSTEM BE STRUCTURED TO PRODUCE HIGH QUALITY RESEARCHERS WHO CAN CONTRIBUTE TO AUSTRALIA'S FUTURE PROSPERITY AND WELLBEING?

Research Australia submits that better preparation is required before individuals commence a research doctorate and that in the main this preparation can be best delivered by a Research Masters degree. There is also a case for ensuring that Bachelors degrees provide better 'scientific literacy' than is currently often the case.

Bachelors degree

Bachelors degrees have two distinct functions. The first is as a preparation for further study and specialisation. This is the role of the Bachelors degree in the career of a researcher, where it extends the knowledge acquired in secondary school in particular science subjects.

The second is a more vocational function, where the degree provides an individual with a qualification that enables them to be employed in a specific role. Nurse, physiotherapist, paramedic, and pharmacist are examples in the healthcare sphere. Lawyers and accountants are examples beyond health.

Unlike the vocationally oriented degrees, science degrees are often undertaken by students with only a vague understanding of the career opportunities available to them upon completion of the degree and further study. This has the potential to lead to poorly informed career choices being made upon the completion of the undergraduate degree.

Research Australia proposes that one of the objectives of a science degree should be to give students greater exposure to the range of career options that are available and the further qualifications which are required for each. This could be achieved through work placements, and through coursework that introduces different roles and examines the development and application of science in specific industries and sectors relevant to the area of study.

Research Australia proposes a further change to both Bachelors science degrees and vocationally oriented Bachelors health degrees. These degrees should offer training in scientific method, research methods, research ethics, and an understanding of different research methods. Again the coursework should be relevant to the area of study.

The objective is to provide the students with a greater degree of research literacy than is currently the case. Research Australia acknowledges that there are a number of Bachelors degrees in health and science that incorporate some or all of these elements, but proposes that they be adopted universally.

Medical training

The Bachelor of Medicine and Bachelor of Surgery (MBBS) in Australia is being progressively replaced by the Doctor of Medicine (MD), a Masters degree qualification. Research Australia proposes that, like other vocationally oriented health degrees, medical qualifications should include research specific training.

Bachelor Honours degree

Bachelor Honours degrees have also traditionally performed two functions. For researchers they have served as a bridge between a Bachelors degree and a higher research degree. For some health professions, the honours year has been necessary for admission to practice. In many fields however (for example psychology) this has been replaced with a Masters degree.

Research Australia proposes that the current role of the Bachelor Honours degree for researchers as a bridge between a Bachelors degree and a higher research degree could be better played by a Masters degree. The reasons for doing so and the advantages are discussed in the next section. Research Australia is not proposing that the Bachelor Honours Degree should be eliminated, just that in many cases the Masters degree by research is likely to provide a better preparation.

Masters degree

The Department of Industry, Innovation, Science, Research and Tertiary Education publishes statistics on the commencement and completion of different courses offered by higher education institutions. The following are statistics for completions in 2014 for different courses for selected broad fields of education.⁴

	Natural & Physical Sciences	Health	Engineering & related technologies
Doctorate by research	1807	1187	1267
Doctorate by coursework	Not published	55	<5
Masters by research	234	240	218
Masters by coursework	1747	8075	4138
Bachelor Honours	3331	1557	3019

While Doctorates are almost exclusively the domain of research, the opposite is true of Masters Degrees where coursework degrees far outweigh research degrees. The dominance of Masters Degrees by

⁴ 2014 Award Course completions (as at 31 May 2015) Table 6, Award Course completions for all students by level of course and broad field of education, 2014. <http://www.education.gov.au/selected-higher-education-statistics-2014-student-data>

coursework suggest there is an emphasis on acquiring vocational/occupational/professional skills, and that the Bachelors Honors degree is the usual path to a Doctorate by research rather than a Masters Degree by research.

Masters degrees by research are generally widely available. Of the 42 higher education institutions identified individually in the Department's statistics, 36 reported that they had students who completed a Masters degree by Research in 2014, compared to 25 in 2012.⁵ The comparatively small numbers of completions of Masters degrees by research appears to be more a question of low popularity with students rather than a lack of availability of the degree. Just six universities (Macquarie University, University of New South Wales, University of Sydney, Monash University, the University of Melbourne and the University of Queensland) accounted for 53% of all completions of a Masters degrees by research in 2014.⁶ Macquarie University was the first to move to a two-year research training as its core pathway to Higher Degree Research study.⁷

Masters degree by as the pathway to a PhD

Research Australia submits that better preparation is required before individuals commence a research doctorate and that in the main this preparation can be best delivered by a Masters degree by research. There is generally not sufficient time in an Honours year to provide the necessary preparation, and while it would be possible to include a greater level of coursework in a PhD, this has the potential to adversely affect the quality of research undertaken and completion times.

Undertaking a Masters degree by research rather than the one year Honours course would provide the opportunity for additional training in research methods. It is proposed that the qualification would be a combination of research related coursework and research. The coursework component would include units in research governance, research ethics, experimental design, grant writing, and other practical/vocational skills a researcher needs depending on their existing skills and experience and their career aspirations. For example, subjects specifically geared towards the commercialisation of research, such as intellectual property law and financial management, could be provided for students with an interest in this area. Relevant work placements could also be provided in commercial and non-commercial settings.

The second year would involve undertaking a research project. Despite the coursework content, it appears that under the current Australian Qualifications Framework, the subject matter of the coursework would constitute 'research training' and the qualification would be a 'Masters by Research'. (Please refer to Appendix 1 for an examination of the AQF as it relates to Masters degrees.)

For individuals seeking to undertake a research doctorate upon completion of the Masters degree, the Masters degree can provide a formal, structured grounding in elements of research such as research ethics and research design. This can help ensure that the individuals have an understanding of some of the elements of research practice that may not be incorporated in their doctoral research. It can also provide the opportunity to undertake activities directly related to the research doctorate, such as development of the research question and the research design, as part of the Masters degree. It could also help to improve the 'work readiness' of PhD graduates without loading the PhD with additional requirements that could diminish the focus on the research.

⁵ Ibid, Table 8; 2012 completions, Table 8

⁶ Ibid

⁷ http://hdr.mq.edu.au/information_about/research_training_degrees

Articulation

While the AQF provides a reduced volume of study where the student has undertaken an Honors degree in the same discipline, the AQF does not currently appear to provide any formal scope for a similar reduction in the volume of a Doctorate by research where it is preceded by a Masters degree by research in the same discipline. The articulation process could provide an avenue for this where the subject matter is appropriate, for example where the Masters degree has been used to help refine the research question and develop the research design to be used in subsequent doctoral research. A reduction in the time required to complete a PhD following a Masters degree could help to offset the disadvantage of the additional year of study required to complete a Masters degree and a PhD compared to a Bachelor Honours degree and a PhD.

The Masters degree by research has the potential to improve doctorate completion rates through better preparation.

Alternative qualification to a PhD

For individuals who have an interest in research but do not wish to pursue a career as a researcher, a Masters degree by research provides an opportunity for structured but flexible study that provides a solid grounding in the principles of research and can better suit their career aspirations than undertaking a PhD or a Professional Masters degree.

A Masters degree by research can be useful for a range of careers including science communication, research administration, science policy, science regulation, and commercial product development. It can also be a useful qualification for health care providers and other professionals who are participating in research but are not required to undertake research as a sole/principal researcher.

The area of clinical trials provides some examples of specific qualifications that have been developed by universities for health practitioners seeking to develop their skills in the practice, design and development of clinical trials. The University of Sydney offers a Masters of Clinical Trials Research and Masters of Clinical Trials Practice.⁸ (Both of these are categorised as Masters by Coursework but could potentially be equally well categorised as Masters by Research under the AQF.)

Doctorate by research

A Doctorate degree is a qualification- evidence of attainment of a particular level of education and learning. It is also evidence of a new and unique contribution to the body of knowledge. The attainment of the learning is inferred from the successful completion of the thesis- evidence of 'learning by doing'.

As noted elsewhere in this submission, the reliance on a thesis as evidence of 'learning by doing' is central to a growing concern that some individuals successfully complete a PhD but nonetheless do not possess the full suite of skills and knowledge required to be an effective researcher.

As was articulated in the response to Question 1, research is increasingly conducted by teams of researchers rather than individuals; there is a greater emphasis on collaboration; and it has become more multidisciplinary, with reliance on experts (eg. biostatisticians) to perform particular elements of the research. The area of doctoral research is often one aspect or component of a larger research enterprise; in such an environment there is a greater likelihood that an individual undertaking research for a Doctorate can be awarded the degree without having had to independently undertake all aspects of the research.

⁸ <http://sydney.edu.au/courses/master-of-clinical-trials-research>

There is also a greater expectation that PhD graduates will be 'work ready'; that they will possess a range of skills- communication, planning, grant writing, project management, which they may not have had an opportunity to develop as part of their PhD research, and which were not expected in the past.

These are reasons to provide further formal instruction in elements of research, i.e. research training. While some of the research training can be incorporated into the Doctorate qualification, Research Australia proposes that the bulk of it is better delivered by an intermediate degree, such as a Masters Degree, in the manner proposed above.

Research Australia does not propose any significantly change to the current Doctorate by research qualification; providing better preparation for a doctorate in the form of Masters Degree by research will address many of the criticisms currently levied at doctoral research programs.

Other postgraduate qualifications

In addition to a Masters degree there is the scope for a range of specific postgraduate qualifications for researchers and non-researchers to enhance their skills and abilities. This includes training in specific subjects such as the conduct of clinical trials, statistical methods, project management, research administration in public health, intellectual property law and commercial product development processes. These qualifications could be used to provide specific knowledge and skills in areas that are important to the individual. These can be undertaken before or in conjunction with a Masters Degree or a PhD or at a later stage, when an individual has identified a need for further specific skills and knowledge in a particular area.

This approach to training overcomes the need to learn everything at once, allowing further specific training to be provided where and when required. This flexibility matches well with the nature of modern work, where an individual is likely to have several different 'careers' during a lifetime. It enables the individual to build on their existing qualifications to acquire specific knowledge and skills as and when needed.

Existing courses

The NHMRC Clinical Trials Centre based at the University of Sydney has initiated the Biostatistics Collaboration of Australia (BCA) which is a national collaboration of universities offering graduate certificates, graduate diplomas and masters degrees in biostatistics. Participating universities include Monash, Melbourne, Adelaide, Sydney, Newcastle, Macquarie, and Queensland.⁹

The University of Melbourne has introduced a Graduate Certificate in Advanced Learning and Leadership, which is available to PhD candidates and early career researchers. It is designed to augment the skills and knowledge acquired through a PhD with a focus on leadership.¹⁰ The Melbourne Teaching Certificate for Graduate Researchers (MTC GR) is a professional development course for graduate researchers who are new to teaching within the university. It is a foundation course focusing on the fundamental principles of effective teaching for learning in higher education.¹¹

⁹ <http://www.ctc.usyd.edu.au/education/postgraduate-courses.aspx>

¹⁰ http://www.cshe.unimelb.edu.au/prof_dev/grad_researchers/gcall/

¹¹ http://www.cshe.unimelb.edu.au/prof_dev/uni_teachers/mtc/mtc_grad_res.html

9. HOW CAN ENTRY AND EXIT PATHWAYS TO AND FROM RESEARCH TRAINING BE BETTER STRUCTURED?

Entry pathways to research training could be significantly improved by providing more information to prospective research training students about:

- the range of careers for which research training qualifications are relevant;
- employers' expectations of the knowledge and skills required in particular roles; and
- how specific research training qualifications can be tailored to provide the knowledge and skills required for particular roles in addition to the 'core' research training.

Coupled with more tailored research training qualifications, the provision of this information would assist prospective students to make more informed choices about the research training they undertake and to align their research training with their current skills and experience and their future career aspirations.

10. HOW CAN BARRIERS TO PARTICIPATION IN HDR PROGRAMS BE OVERCOME SO THAT MORE CANDIDATES FROM NON-TRADITIONAL BACKGROUNDS, INCLUDING INDIGENOUS STUDENTS, UNDERTAKE RESEARCH TRAINING?

Research Australia has not provided a separate response to this question.

CONCLUSION

Research Australia is pleased to have had the opportunity to contribute to this review of research training. There is no doubt that improvements to how we prepare and train Australia's research workforce have the potential to deliver real economic and social benefits. Research Australia has sought to articulate an approach to research training which will deliver these benefits through better preparation for research training; more scope for tailored training that meets the needs of the individual; and opportunities for research training for those who work alongside researchers.

If you require any further information, please contact Greg Mullins, Head of Policy, on 03 9662 9420 or at greg.mullins@researchaustralia.org.

Appendix 1- Differentiating Masters Degrees

The AQF identifies three different types of Masters Degree which can broadly be differentiated by the roles and applications for which they are designed:

- Research (researcher- contribute to knowledge);
- Coursework (academic and/or professional practice- contribute to scholarship or professional practice); and
- Extended (professional practice- contribute to professional practice).

The Masters by Coursework degrees tend to be very specialised, and fall into two groups. The first provides additional training for established occupations either as an entry level to practice or to prepare an individual for advanced practice. These cover a range of diverse fields, including accounting, engineering, law, nursing and psychology. The second group seeks to provide specific skills and approaches that can be used in a range of occupations, for example business administration.

The AQF makes it clear that a 'Masters Degree (Research) is a pathway to a Doctoral Degree'.

Research Knowledge and research skills

While all three provide 'knowledge of research principles and methods applicable to a field of work or learning', this knowledge is at the 'advanced' level for a Masters (Research).

All three Masters degrees provide the 'cognitive, technical and creative skills to generate and evaluate complex ideas and concepts at an abstract level' but the Masters (Research) also provides 'the cognitive and technical skills to design, use and evaluate research and research methods'.

Course Content:

The Masters Degree (Research) is designed so that graduates will have undertaken supervised study and research of which two thirds will be devoted to research, research training and independent study.

The Masters Degree (Coursework) is designed so that graduates will have undertaken a program of structured learning with some independent research, and project work or practice-related learning. If this qualification is to prepare graduates for a profession a significant component of structured learning will be developed in collaboration with a relevant professional, statutory or regulatory body.

The Masters Degree (Extended) is designed so that graduates will have undertaken a program of structured learning with some independent research and a significant proportion of practice-related learning. As this qualification is designed to prepare graduates to engage in a profession, the practice-related learning must be developed in collaboration with a relevant professional, statutory or regulatory body.¹²

Some further information about the specific content of Masters Degrees is provided in 'Research: an explanation' which provides guidance in relation to the use and interpretation of the AQF:

Research must be evident in all forms of the Masters Degree. The Masters Degree (Research) is a pathway to a Doctoral Degree so its design must prepare graduates for the research expected of a Doctoral Degree. Because a minimum of two-thirds of the volume of learning for the Masters Degree (Research) is for research, research training and independent study, the volume of learning for the qualification needs to be sufficient to take this into account and

¹² AQF version 2, page 61

may need to be greater depending upon the pathway into the qualification. The outcome of the research component of the qualification is the execution of a substantial piece of research.

Research in either a Masters Degree (Coursework) or Masters (Extended) needs to be demonstrated by the execution of a substantial piece of research which may take the form of a project, capstone experience or piece of scholarship. The research is likely to be more applied or professionally-oriented than for a Masters Degree (Research). The programs of learning for these forms of the Masters Degree are intended to have a greater focus on structured learning, including research training, than the Masters Degree (Research). The proportion of research, the amount of research training and the size of the research output is likely to vary depending on the purpose of the qualification and the pathway into higher level qualifications.¹³

This AQF document also defines some relevant terms:¹⁴

Coursework is a method of teaching and learning that leads to the acquisition of skills and knowledge that does not include a major research component (page 93)

Research comprises systematic experimental and theoretical work, application and/or development that results in an increase in the dimensions of knowledge (page 100)

'Research Training' is not defined in the AQF. In particular, the AQF does not address the question of research training undertaken as coursework, which has the potential to blur the boundaries between a Masters Degree (Research) and a Masters Degree (coursework). The following response was provided by email by the AQF Council secretariat:

'The boundaries between coursework and research training need to be identified by the course developer and justified in relation to the overall course outcomes. Research training itself could be coursework.

It's an interesting question but the decision does need to be made by the course developer and the institution that is accrediting the qualification. The AQF is not prescriptive about what units of study comprise the overall qualification.'

¹³ Research: an Explanation', (document designed to accompany the AQF)

¹⁴ AQF version 2, Glossary of Terms, pp.93, 100

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