Rethinking the PhD at the University of Sydney
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The University’s Strategic Plan
The University’s strategic plan indicated strong support for better skills and knowledge development within the PhD.

The actual proposal was: “Extend the standard full-time duration of the PhD program to four years to provide the scope for broadening methodological and generic skills training, where appropriate.”

PhD Training at Sydney: Context and Past Reviews
We looked at many overseas models of PhD training, including the professional development in the UK’s Vitae program, which provides info on career options, entrepreneurship, teaching, mentorship, and research skills. The default model at Sydney has been individual supervision (with some optional coursework, mainly through auditing), with no systematic approach to its overall vision for research training.

The revision of the PhD has meant that our fundamental aim is to enable our students to produce the highest quality work possible and be properly trained for future careers as professional researchers, whether in the public or private sector. This means:

• We needed a clear articulation of the standard of research training we expect our students to receive.
• A whole of institutional approach with clearer and more efficient processes for coursework, greater opportunities for collaboration and the development of an improved HDR research student culture and providing more opportunities for the development of students’ skills and understanding that will help them secure employment as research professionals.

Without specifying the training mechanism for achieving the outcomes, the Go8 Universities have recently agreed that PhD students should possess the following outcomes in research-intensive universities:

• Disciplinary knowledge
• Research Skills
• Technical skills and knowledge
• Contribution to Knowledge
• Generic Skills

What Australian PhD Students Say they want
Supervision – accounted for the very best and worst of the experience; Mentoring; Resources and Transparency; Collegiality: Independent researcher; More opportunities to communicate and interact with the “outside world” on research topics; Skills development; Career Pathways

The University’s own internal SREQ and PREQ surveys echo these sentiments.

Students emphasise the need for better communications, information literacy, and computing skills, formal career building, organisational and project management skills.

What we did: Coursework Currently on Offer
The Sydney PhD Working Party undertook an audit of all coursework for PhD students on offer within the University. This audit revealed that such coursework is very patchy in coverage, that
some students have almost nothing available to them within their Faculties, and that internal funding disincentives make it difficult for some students to access desired units of study, short courses, etc. The audit revealed gaps in the following areas: (a) interdisciplinary perspectives, e.g. how the discipline draws on and contributes to wider disciplinary knowledge; (b) planning the thesis process; (c) research integrity; (d) teamwork, particularly in the area of managing the supervisory relationship; and (e) career preparation. The Working Party also attempted to map coursework (award, short courses, workshops) currently available to PhD students to graduate skills. Importantly, not all of this coursework is available to any student. Finally, the Working Party undertook an audit of units of study in which PhD students are formally enrolled. The units with the largest number of doctoral students (right column) and total HDR students (second from right column) are shown below.

**What we did: A mandatory Training Needs Analysis**

An important part any renewal of the PhD at Sydney is introducing a more rigorous and clearly structured ‘training needs analysis’ for each student. Although many Faculties and supervisors already do something like this, we lack a clear set of common principles and norms informing our approach to research training across the institution.

We started from a general claim about the attributes we hope to cultivate in our HDR students: We want to produce well-rounded, articulate and professional experts in their disciplines. This will entail that our students possess:

- the ability to communicate – both written and oral – at a level acceptable for technical presentations of research;
- the ability to communicate – both written and oral – technical material to a non-expert audience;
- to understand the issues of professional conduct as they relate to their field. This will include the basic issues of integrity, responsibility and the sharing of knowledge. It will also include aspects of professional conduct specific to each discipline – e.g. ethical use of surveys, animal experimentation, etc.
- PhD candidates will also be expected to have demonstrated a perspective that extends beyond their specific project such that they are able to engage with researchers in other fields and contribute to multidisciplinary projects.

From this it follows that a research training needs analysis would identify:

- those resources required to support the development of specific and essential disciplinary skills, knowledge and experience;
- those resources required to support the development of those more general skills, knowledge and experience regarded as essential to all candidates, outlined in 1-4 above;
- provide an indication of whether the training requirements identified in 1-4 are currently provided by the Dept/Faculty, are not currently been provided but could be with the resources already available to the department, or will require specific assistance from outside of the Dept/Faculty.

The training needs analysis is meant to provide a way of both making clear what the core attributes of the Sydney PhD are and how we will help students develop them, as well as ensure flexibility in order to accommodate diverse disciplinary needs and the skills students already bring with them.
What we did: Implementing the Training Needs Analysis

A Trial of the TNA framework in 2012 as a way of assessing where our most pressing training needs lie and developing strategies – both within and across Faculties – to address them.

1. All new PhD students in two large Faculties, Arts and Engineering, have undertaken a Training Needs Analysis (TNA) with their supervisor at a very early stage of candidature, and certainly within the first 6 months.
2. Further TNA is undertaken at every Annual Progress Report date.
3. The TNA represents a formal contract between the student and the university; that is, having identified what the needs are, the University is under an obligation to provide this, and the student would be obliged to undertake it.
4. The training needs identified would be sourced or created either within an existing Faculty or School suite of offerings, or elsewhere in the University, or online, with the University helping identify coursework that could be more efficiently delivered across different faculties or indeed across the university as a whole.
5. The University provides a mechanism to facilitate cross-Faculty enrolments, with appropriate recompense for Faculties providing the training.
6. High demand coursework units of study in statistical methods and analysis, and individual consultations, will be made available centrally through the provision of a University Statistical Consulting Unit.

The following will form the basis of the one slide to be shown.

A GENERIC SKILLS

1. Communication skills (e.g. writing and oral skills) for a technical and non-technical audience.

<table>
<thead>
<tr>
<th>Previous experience/training</th>
<th>List here any formal courses/ workshops/ seminars or past experience in presenting research findings (e.g. conference presentations, three minute thesis, media)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipated needs/training</td>
<td>List here the types of training and experiences that would be valuable, including courses, departmental presentations, and media training. If training not needed now, indicate “Not needed in 20xx”</td>
</tr>
<tr>
<td>How will the training be achieved?</td>
<td>List here the courses/ workshops/ seminars/ activities that the student will undertake. Identify gaps.</td>
</tr>
</tbody>
</table>

2. Professional conduct (includes time management, project management, team working, research integrity, ethical and legal issues)
3. Interdisciplinary perspectives
4. Employability skills (includes entrepreneurship, innovation, commercialisation, industry perspective, networking)

B DISCIPLINE SPECIFIC SKILLS

1. Research design (e.g. sampling, formulating questions, philosophical rationale, etc.
2. IT Skills (e.g. word processing, email, spreadsheets, information literacy, database, specialist software etc)
3. Data collection and analysis (including statistics, quantitative methods, qualitative methods