Interdisciplinary research is important because it provides the unconventional ‘big picture’ perspectives needed to deal with complex problems and issues that resist standard disciplinary resolutions. Yet the unorthodox nature of interdisciplinary research is problematic for graduate researchers. Seen from the perspective of a supervisor or examiner, who judge research on the basis of contribution to an established field, an interdisciplinary approach can look like ‘bad’ research. This paper analyses this problem, then presents and illustrates four tools that interdisciplinary graduate researchers can use to clarify, articulate and justify their interdisciplinary approach in order to avoid painful misunderstandings with their supervisors and examiners.
Research is typically like the parable of the blind men and the elephant (or, to be fair, the learned academics of specialised and discerning vision, and the elephant). Some researchers concentrate on the trunk, some on the tusks, others study the ears, the body, the legs or the tail. But what if you want to look at the big picture and research the whole elephant? Or what if you want to use the methods and insights of ear research to illuminate the tail, or investigate how the trunk and body interact? What if your supervisors are specialists of the legs, but you want to use the methods of tail research when studying the legs? And what if your examiners are specialists of the tusks when you want to synthesise tusk and trunk research? How do you communicate your approach so that your supervisors and examiners do not judge your work to be abnormal and deficient according to the normal research practice of their specialisms?

This paper presents theoretically informed and autobiographically illustrated advice for graduate researchers working across established research approaches. The aim is to enable them to position and articulate their research in a clear and compelling manner, and thus avoid painful misunderstandings with their supervisors and examiners. The paper is also useful for any graduate researchers working in an established discipline who find themselves unclear about their research approach, or ‘on a different page’ to their supervisors.

There is a wealth of recent literature on interdisciplinary education, thinking and research. There is also a great deal of literature on postgraduate research, and even on multidisciplinary postgraduate supervision. However, little theoretical attention has been given to interdisciplinary postgraduate research. This paper aims to fill this gap.

As befits a paper on interdisciplinarity in an interdisciplinary journal, I take an interdisciplinary approach. I synthesise complex philosophical analysis with the educational simplicity needed to understand and employ this complexity, in order to produce a practical and useful product—in this case, tools to support interdisciplinary graduate research.

I discuss the nature of interdisciplinary research and the challenge this poses for graduate researchers, and then argue that the best and perhaps only way to meet this challenge is for graduate researchers to clearly articulate their interdisciplinary position.

In particular, I argue that graduate researchers need to develop a meta-disciplinary awareness so they can understand and explain how their interdisciplinary research conforms to and diverges from established disciplinary approaches. I then present four tools that graduate researchers can use, both on their own and in discussion with their supervisors, to help them develop the needed meta-disciplinary understanding and produce an interdisciplinary positioning statement that would become a key part of their thesis. I illustrate how I used these tools to articulate the interdisciplinary approach I took in my own graduate research, and conclude with an illustration of the interdisciplinary statement from my doctoral dissertation.

THE CHANGING NATURE OF RESEARCH
Research typically occurs within an established discipline, sub-discipline, school of thought, specialism, field or area of study. But interdisciplinary research takes a different approach, and integrates the established disciplines, sub-disciplines and specialisms in unorthodox ways in order to produce something that was not possible from within the established perspectives. As Boix Mansilla and Duraising put it, interdisciplinary research integrates:

knowledge and modes of thinking in two or more disciplines or established areas of expertise to produce a cognitive advancement—such as explaining a phenomenon, solving a problem, or creating a product—in ways that would have been impossible or unlikely through single disciplinary means.

In other words, by taking an interdisciplinary approach to research, we are able to see a bigger picture than is possible from the viewpoint of any one discipline.

I will not try to pin down the disciplinary/interdisciplinary divide, nor define what counts as a ‘discipline’, nor indeed to examine the differences between disciplines, sub-disciplines, fields, specialisms and areas of study. For example, I will not address the question of whether education counts as a discipline, an interdisciplinary integration of sociology, psychology, history and other quantitative and qualitative research methods, or an area of study. Instead, I focus on the difference between established approaches to research and
approaches that integrate the established approaches in novel ways. The implication is that although some well-established areas of research might be called interdisciplinary (such as engineering, art history or biochemistry), my interest lies in the unorthodox kinds. So, when I refer to a ‘disciplinary approach’, I mean any established approach to research with fairly settled conversations, traditions, practices and research communities, and by ‘interdisciplinary approach’ I mean any approach that draws on, crosses and integrates at least two established approaches in ways that go beyond the settled practices.

Though interdisciplinary research may seem to be a deviant exception, as Lyon and Brew show, it is now a common path for the modern academic. Additionally, interdisciplinary research is identified as an essential means of dealing with a variety of important and complex problems, phenomena and concepts that resist understanding or resolution when approached from single disciplines, including climate change, world poverty, public health, identity and human rights. The University of Melbourne’s Growing Esteem 2010 gives a clear statement of the growing importance of interdisciplinary research:

Traditionally research has been conducted by individual academics or teams of academics within the same discipline. Now, the nature of research is changing. Research is being driven more and more by pure and applied questions that require cross-disciplinary approaches. The University will need a strong and sustained focus on cross-disciplinary academic practice to meet these challenges.

Due to the importance of interdisciplinary research there has been a call for the development of interdisciplinary capacity, including an emphasis on graduate interdisciplinary research.

THE CHALLENGE OF INTERDISCIPLINARY GRADUATE RESEARCH

Despite a growing trend towards interdisciplinary research, interdisciplinary graduate research is especially problematic, as it breaks the normal ‘rules’ and expectations of graduate research. Graduate theses are expected to contribute to an existing conversation and research community in a particular field with particular boundaries and allegiances. This is usually fairly straightforward for disciplinary approaches, but not for interdisciplinary approaches that deliberately cross established boundaries. Because interdisciplinary research draws on and integrates at least two established traditions of research, it tends to be unprecedented and unorthodox. Like anything unorthodox, it does not fit the established standards and expectations and is likely to be misunderstood, and this can prove disastrous for the graduate researcher.

Supervisors and examiners expect graduate research to conform to an established field and research community – typically their own. Based on their disciplinary background, they will have their own beliefs about the qualities of good research, and these will inform their judgements as to whether research is convincing, critical, appropriate and deep, or whether it is superficial, inappropriate and unconvincing. But interdisciplinary research will conform to only some of these expectations, and may contradict others. Supervisors and examiners may not be aware that there are other ways of conducting graduate research, or they may not value other ways, and this may lead them to judge interdisciplinary research as poor research—as one interdisciplinary researcher says: ‘they think I have these abnormalities!’ The resulting conflicting expectations and assumptions create frustration for all concerned, and if not addressed lead to poor examination results.

I can illustrate this frustration from my own experience. In the early years of my doctorate in philosophy and education, I often felt that I could not make my supervisors understand what I was trying to do. It seemed that no matter what I said, I would repeatedly face what I saw as the same sort of irrelevant critique. I felt we were speaking different languages. I can only assume that my frustrations were mirrored in my supervisors, who must have thought me dim-witted or obstinate and thus unable or unwilling to do what was required for a successful thesis. This aggravation eased, however, as soon as I began to understand their assumptions and expectations, which were grounded in their disciplines of philosophy, education and philosophy of education. This understanding enabled me to articulate to what extent I was adopting the standard practice of each of these disciplines and to what extent I was doing something different. When this clash of assumptions was cleared up, though
there were still differences of opinion, the communication no longer had that maddening feeling of neither side understanding what the other was saying. Our relationship was thus much more productive.\textsuperscript{16}

Some conflict between disciplinary perspectives is inevitable in interdisciplinary research because assumptions need to be challenged and ‘quality research’ redefined. Yet this can and should be turned into a welcome puzzle to solve, not a disorienting quagmire that drags you down.

**ARTICULATING AN INTERDISCIPLINARY STANDPOINT**

To use Wordsworth, ‘the more you take an original interdisciplinary approach, the more you must create the taste by which this approach is to be relished.’\textsuperscript{17} So, interdisciplinary graduate researchers must explicitly articulate, explain, justify and defend their interdisciplinary approach so that their supervisors and examiners understand and develop a taste for their type of interdisciplinary research.\textsuperscript{18} To do this, they must engage in what Petersen calls ‘category boundary work,’\textsuperscript{19} in which they:

- Clarify their own understanding of their interdisciplinary approach;
- Develop a shared understanding of this approach with supervisors;
- Justify why they have taken this approach instead of a more orthodox unidisciplinary approach;
- Articulate, explain and communicate their interdisciplinary approach to examiners (and in other contexts where the audience is likely to misunderstand an interdisciplinary approach unless it is carefully positioned, such as ethics applications, candidature documents, conference papers and publications);
- Identify potential false assumptions or misunderstandings, and address these before they arise; and
- Explain and justify things that are unfamiliar to some of their audience, distinguish things that seem similar to the untrained eye, and differentiate their research from standard approaches.

I argue that graduate researchers should take responsibility for positioning their research in the confluence of disciplines. Only they can do this, because there are no ‘off the shelf’ approaches that can be taken to unorthodox, potentially unique interdisciplinary research.\textsuperscript{20} In effect, to be an interdisciplinary graduate researcher is to be a research leader or innovator who breaks new ground rather than following others’ paths.

Mitchell and Willetts argue that this kind of critical reflection is the most important criterion for high calibre interdisciplinary graduate research.\textsuperscript{21} Such research, because it challenges the norm and is often different in subtle ways to what is expected, needs a more explicit and justified methodology than that required from unidisciplinary research. Interdisciplinary graduate researchers must ensure that their position is clear, so that their supervisors and eventually their examiners understand where their assumptions do and do not apply, and how the research adheres to and differs from what they might expect given their own disciplinary background.

I offer four tools that can be used by interdisciplinary researchers to clarify their interdisciplinary position, to develop a shared understanding with their supervisors and to develop an explicit interdisciplinary statement to include in the preface or method of their theses. First I present two tools for developing a meta-disciplinary understanding, then one for choosing a type of interdisciplinary approach, and finally a tool for summarising the overall approach. Although these tools are offered to aid interdisciplinary research, they can also be illuminating for research in established fields, as they enable a clear and explicit statement of any research approach.

**META-DISCIPLINARY UNDERSTANDING**

To articulate and justify an interdisciplinary research approach, graduate researchers need to articulate the commonalities and differences between their approach and the standard disciplinary approaches. This requires a general meta-disciplinary understanding of how disciplines work, as well as a more specific understanding of the particular disciplines that they employ. They must understand ‘the strengths and limitations of each discipline as well as the possibilities of interaction between them.’\textsuperscript{22}

Developing a meta-disciplinary understanding can be difficult as our expertise in a discipline is often tacit. We tend to learn our disciplines through being immersed in their practice, for example
by doing history and physics rather than by analysing the nature of these disciplines. This means that, much like driving a car, we can have expertise without being able to explain what we do. To articulate their interdisciplinary position, graduate researchers have to be able to make explicit the tacit and assumed, so that they can demonstrate the ways in which their approach is like and unlike the standard disciplinary approaches.

Various categories have been proposed as tools for analysing, comparing and contrasting different disciplines. I draw on these classification systems to offer two tools that graduate researchers can use to discern the similarities and differences between different disciplinary approaches and to select and then explain which elements of the different disciplines they employ and which they reject. These tools also enable graduate researchers to identify and address possible sources of misunderstanding that might arise when their approach diverges from that of a standard discipline. The tools are not intended to isolate the essence of each discipline, but are more like magnifying glasses that make the finer details easier to see.

I outline the two tools—the 'matrix of disciplines' and the 'elements of the disciplines'—and illustrate their use in relation to my own interdisciplinary research involving philosophy and education.

**MATRIX OF DISCIPLINES**

One way of analysing disciplines is to locate them on the scales of hard-soft and pure-applied research (see Tool 1 with the location of some disciplines tentatively indicated).

The pure-applied scale indicates what the research is for: pure research is done for its own sake, while applied research is done for other purposes. Applied to my case: philosophy tends to be pure research, whereas education tends to be applied. Philosophers tend to pursue curiosity-driven research which has little scope for direct application, whereas educational researchers aim to improve learning, teaching, curriculum and policy.

The hard-soft scale indicates the precision and certainty of the results. Hard research tends to involve definitive conclusions with a high degree of agreement, often relying heavily on empirical research or proof to determine conclusions. Soft research, on the other hand, involves more interpretation and less consensus, because the issues involved require interpretation and judgement, and the conclusions are underdetermined by the data. Both philosophy and education are difficult to categorise on this scale. Philosophy often attempts to employ logical proof, which seems to indicate that it is a branch of hard research (like mathematics), but it is also characterised by widespread disagreement and differing interpretations, which seems to indicate that it is a branch of soft research (like history). Education tends to focus on gathering hard empirical data, which suggests that it is a branch of hard research, but the empirical methods range from fairly soft interpretative methodologies to harder, quantitative methodologies.

Placing the disciplines I employ on the matrix enables me to better understand my own interdisciplinary practice and to anticipate possible misunderstandings of my approach. I can see that my supervisors and examiners with a philosophical bent may expect my research to be pure, whereas I am pursuing applied research in order to solve problems in educational practice. If I do not make this clear, they will likely think that my constant attention to the details of classroom practice indicates that I do not understand the pure, abstract theories normally employed by philosophers. I can also see that my examiners could expect my research to be anywhere on the scale from hard to soft research. As such I need to clarify to what extent I employ hard or soft methods. My educationally minded supervisors and examiners will understand that I am doing applied research, but will likely expect me to gather empirical data as the basis of my conclusions. I will need to make it clear that I am not employing empirical research methods, but rather that I employ philosophical methods of analysis.
THE ELEMENTS OF THE DISCIPLINES

A finer analysis of the different disciplines can also be obtained by isolating the elements that make up every discipline and then comparing the disciplines according to these elements (or categories). This meta-disciplinary analysis makes it easier to articulate an interdisciplinary approach by identifying in each discipline those elements that are to be incorporated in the research and those that are not. I list these elements in the Tool 2 and illustrate how I used these categories to understand the nature of the two main disciplines employed in my own interdisciplinary research. I focus on the aspects of the disciplines that were relevant to my research, rather than the whole discipline. This is necessarily only a summary, though I provide greater detail in my interdisciplinary statement at the end of this paper.

Tool 2: The elements of the disciplines

<table>
<thead>
<tr>
<th>Element of the discipline</th>
<th>Philosophy</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What problems, concerns and question are addressed? What insights are produced and what conclusions drawn?</td>
<td>Addresses problems where our conceptions do not make sense. The conclusions drawn tend to be arguments for different positions, or different ways of conceptualising the world.</td>
<td>Addresses practical and theoretical issues related to learning, teaching, educating and schooling. The products tend to be overarching theories, and techniques for improving practice.</td>
</tr>
<tr>
<td><strong>Method</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What methods, techniques, procedures and types of thinking are used to address the content? eg empirical, conceptual, interviews, theorising</td>
<td>Primarily uses argument and conceptual analysis</td>
<td>Primarily uses empirical methods (though these are social science empirical methods and not the sort of experimentation used in disciplines such as physics)</td>
</tr>
</tbody>
</table>

By comparing the elements of the disciplines employed, interdisciplinary researchers can select which to employ, which to integrate and which to reject. They can also consider which aspects of their interdisciplinary approach may be misunderstood or judged deficient from a unidisciplinary perspective, and thus determine what needs further clarification, explanation or justification.

This can be briefly illustrated through my own experience: I chose to tackle philosophical problems that arise in the practice of learning and teaching, which meant that the content I was investigating was both philosophical and educational. I knew that both philosophers and educators would be likely to misunderstand my
approach, and that I would need to carefully explain the ways in which my research was both philosophical and educational. For example the philosophers would expect me to produce complex, abstract positions, when my intention was to produce simpler advice and guidance that would be helpful to students and teachers. The educational researchers, on the other hand, would expect me to gather empirical data with which to justify my claims, when my intention was to take a philosophical approach to justification based on argumentation for and against different conceptualisations. My interdisciplinary statement (below) shows how I articulated my synthesis so that both philosophers and educators could understand to what extent I was taking an educational approach, to what extent I was taking a philosophical approach and to what extent I was integrating the two.

DIFFERENT TYPES OF INTERDISCIPLINARITY

A third tool for articulating an interdisciplinary position allows interdisciplinary researchers to judge what kind of interdisciplinarity they will employ and how they will integrate or link the different disciplines they draw from. Tool 3 roughly describes the range of interdisciplinary interactions according to the extent to which disciplines remain distinct or are modified. The earlier types keep the disciplines distinct, while the later ones increasingly integrate them, and in the case of transdisciplinary research change them as a result of this interaction.²⁶

Tool 3: Types of interdisciplinarity

1. Unidisciplinary: Only one discipline is employed. The insights and methods of other disciplines are effectively ignored. For example, a mathematical proof.
2. Multi-disciplinary: Multiple disciplines are employed to provide multiple ways of approaching a common problem or issue, but they are kept separate and the perspectives are not integrated. For example, presenting first a medical and then an artistic perspective on the body.
3. Cross-disciplinary: One discipline is used to ‘peer’ into another discipline (and sometimes to critique the other discipline) without using the methods of this discipline. For example, philosophy of art or history of medicine.
4. Disciplinary borrowing: The overall research is situated fully in one discipline, but advice, conclusions or insights are borrowed from other disciplines. For example, an engineer might employ mathematical techniques developed by research mathematicians, or a sociologist might borrow insights from psychology or art history.
5. Interdisciplinary (cooperative): Different disciplines are employed to complete different sub-tasks in an overall interdisciplinary research project. For example, sociology might be employed for the conceptual work, and then historical analysis employed to gather data from primary sources; or medicine might be employed to isolate a problem with current surgical practices, and then engineering might be employed to find a technological solution (in a large research project, disciplinary specialists would be responsible for the different disciplinary sub-tasks).
6. Interdisciplinary (integrative): Multiple disciplines are employed and integrated to complete the same research task. For example, a combined philosophical and psychological approach might be devised to study the conceptions of children; or insights from ecology, engineering, architecture and sociology might be synthesised to devise the best location and design for a new bridge; or the findings of various sciences might be combined to enable better understanding of climate change.
7. Transdisciplinary: In integrating different disciplines the established disciplines are modified and new ‘interdisciplines’ are created with hybrid or new methods and epistemologies.

SUMMARISING YOUR INTERDISCIPLINARY POSITION

The first three tools enable interdisciplinary researchers to articulate and justify their interdisciplinary position. The meta-disciplinary and interdisciplinary understanding that is developed can be summarised using a fourth tool for articulating interdisciplinary research. This summary can then be turned into an interdisciplinary positioning statement to be included in the final thesis. I present the tool, and then an illustration of the interdisciplinary statement from the preface of my doctoral dissertation.
Tool 4: Summarising an interdisciplinary position

Main topic: What topic, issue or content are you approaching in an interdisciplinary way?

Reason for interdisciplinary approach: Why is an interdisciplinary approach valuable or necessary for this topic?

Which disciplines will be employed? What does each discipline offer that is important to your approach? Which elements of each discipline will be employed? Which elements will not be employed?

Type of interdisciplinarity: What sort of interdisciplinarity will you employ? How will the different elements of the disciplines be integrated? (see possible types of interdisciplinarity in Tool 3 above)

Interdisciplinary outcome: What do you aim for in employing this interdisciplinary approach? What do you expect to produce? For example, a deeper understanding, balanced judgement, a solution or a tangible product.

Interdisciplinary statement: How and why is what you do similar to and how is it different from the established disciplines you employ?

EXAMPLE OF AN INTERDISCIPLINARY STATEMENT

The following is an illustration of a positioning statement for interdisciplinary graduate research taken from my own doctoral dissertation and based on my own meta- and inter-disciplinary understanding. It locates the research in an interdisciplinary space, describes which elements of the disciplines will be employed and how they will be employed, and identifies and clarifies potential misinterpretations.

This thesis is a work of philosophy and of education.

I would have liked to leave it at that, but this sentence is deeply ambiguous, and is likely to lead to misunderstandings without further discussion of the rich interactions between the two disciplines. This preface is an attempt to disambiguate my simple opening statement and describe the ways that I intertwine philosophy and education in my interdisciplinary, boundary-blurring practice.

Locating myself in the confluence of philosophy and education poses a profound challenge for me, not just about what field I am contributing to, but also about my academic identity. Is this thesis a work of philosophy of education, teaching philosophy, or something else? Am I writing as a philosopher, an educator, a philosophy educator, a philosopher of education or something else altogether? Am I writing for philosophers, for educators, for philosophers of education, for philosophy educators or for some combination these? While I have some affinity with some of these categories, none of them seem to fit comfortably with my work.

There are multiple ways in which the disciplines of philosophy and education could be combined, some of which are incompatible with my own standpoint. I do not take a multidisciplinary approach, in which I would first present a philosophical perspective and then an independent educational perspective on the same issue. Rather, I integrate the perspectives. I also do not take a cross-disciplinary approach, in which I would, as Davies and Devlin put it, ‘peer into’ education from a philosophy, using the tools of philosophy to analyse education, but without doing any education. Nor do I do the converse, and ‘peer into’ philosophy.
from education, using the tools of educational, curriculum or pedagogical research to analyse philosophy teaching without engaging in philosophical practice. Instead, I integrate the approach of an educator, an educational researcher and a philosopher into an interdisciplinary perspective, because this offers greater insight and enhancement of practice than philosophy or education alone could offer.

Although ‘philosophy of education’ is a plausible way to describe the interdisciplinary relationship between philosophy and education in this thesis, this is still a highly ambiguous description that needs clarification and elaboration.

It is sometimes claimed that philosophy of education is a branch of philosophy, and sometimes that it is a branch of educational research. Yet the philosophy of education in this thesis is as much philosophical as it is educational research. It is philosophical research because I use the methods of philosophy and deal with philosophical issues, and it is educational research because I apply these methods and resolve these issues to give greater insight into education and to enhance educational practice.

Philosophy of education could also be either detached or practical. A model of detached philosophy that I reject for the purposes of this thesis is the cross-disciplinary approach that uses philosophy to analyse and understand another without affecting it. For example, philosophy of art and philosophy of religion aim to observe but not to influence artistic and religious practices. On this approach, philosophy of education might be ‘...primarily a concerted attempt to elucidate and critically examine the conceptual relations, logical structures and justificatory patterns within current educational ideals.’ I do not take this ‘spectator’ or ‘commentator’ approach.

Instead, this thesis falls within the practical philosophy tradition that stems from Dewey. It shares similarities with branches of philosophy such as medical ethics, in which the aim is to have an impact on the practice being investigated. While the philosophy of education in this thesis is certainly concerned with illuminating education, it is equally concerned with influencing, enhancing and constituting current and future educational practices. Thus it might be termed ‘practical philosophy of education’. But this should not be mistaken for applied philosophy that merely applies pre-existing philosophical insights or theories to educational issues. The aim of this thesis is to do both practical philosophical and educational research.

Practical philosophy of education, as I see it, includes a philosophical approach to pedagogy, learning and teaching, in which philosophy constitutes the method of education. This relationship between philosophy and education is described well by Lipman’s term ‘Educational Philosophy’, meaning ‘philosophy functioning educationally’. So in this thesis, philosophy functions as a core educational method. By employing the intellectual tools and dispositions of philosophical thinking, conceptual understanding, critical analysis, dialogue and inquiry as part of the teaching and learning process, educational philosophy is the means...
to generate reflective learning and deep understanding, which enables students to make sense of themselves and of the world.

In summary, this thesis is intended to contribute to the domains of practical philosophy of education, philosophy with education, and educational philosophy. It is an interdisciplinary study (rather than cross-disciplinary or multidisciplinary) that integrates philosophical and educational research. Rather than providing a detached analysis, it uses philosophical methods to investigate and resolve philosophical issues that arise in educational practice, in order to make sense of learning and teaching and to understand and enhance educational practice.

CONCLUSION
Because interdisciplinary research deliberately crosses the boundaries of established traditions of research, it poses special challenges for graduate researchers. Such unconventional approaches are prone to be misunderstood by supervisors and examiners, with potentially distressing and detrimental results. Thus, the challenge is how to articulate interdisciplinary graduate research in such a way that ensures that supervisors and examiners do not say ‘I just can’t see a PhD in this work’, but rather say ‘I can see three!’

Graduate researchers can begin to overcome this challenge if they use the tools described in this paper, develop a meta- and inter-disciplinary understanding, prudently anticipate possible misunderstandings of their approach, and then carefully articulate their interdisciplinary position.

ENDNOTES
1 This paper draws from and is indebted to four main sources: first, the experiences of interdisciplinary teaching and research of academics at the University of Melbourne, shared with me in 2009 while I was providing support for interdisciplinary subjects and staff at the Centre for the Study of Higher Education; second, a research project that I completed in 2009—‘A travel guide to the disciplines for interdisciplinary teaching and learning’—which involved members of different disciplines reflecting on the nature of their disciplines; third, the recently completed guide to interdisciplinary learning and teaching; Clinton Golding, Integrating the Disciplines: Successful Interdisciplinary Subjects, CSHE, Melbourne, 2009; and finally, my PhD, submitted in 2010: ‘I’ve Got a Better Idea!’ Philosophical Progress and Philosophy for Children.
7 For more on this approach and how it differs from both standard philosophy and education see the interdisciplinary statement at the end of this paper, and Clinton Golding, ‘Making sense’, Educational Philosophy and Theory, vol.41, no.7, 2009, 814–7.
9 For more on the definition of a discipline, see Martin Davies and Marcia Devlin, Interdisciplinary Higher Education, Centre for the Study of Higher Education, Melbourne, 2007; Martin Davies and Marcia Devlin, ‘Interdisciplinary higher education’, in Martin Davies, Marcia Devlin and Malcolm Tight (eds), Interdisciplinary Higher Education, New York, Elsevier Press, 2010; and Repko.
For example, Geoffrey Squires describes different disciplines in terms of three dimensions: 1) Object: what they are about; 2) Stance: their procedures and methods for dealing with that object; and 3) Mode: to what extent the discipline reflexively analyses its own nature (‘Interdisciplinarity in higher education in the United Kingdom’, European Journal of Education, vol. 27, no. 3, 1992, 202). Davies and Devlin use the categories of what is known, what is valued and what is capable of investigation. Repko uses the categories of phenomena, assumptions, methods, epistemology, theories and concepts. Becher and Trowler’s categories are: distinctive methods, content, epistemology, ways of thinking and the legitimate and important questions (Tony Becher, Academic Tribes and Territories, The Society for Research into Higher Education and Open University Press, Milton Keynes, 1989; Tony Becher and Paul Trowler, Academic Tribes and Territories: Intellectual Enquiry and the Cultures of Disciplines, The Society for Research into Higher Education and Open University Press, Buckingham, 2001). Although Becher and Trowler also stress the social aspect of disciplines, I do not. The epistemic and methodological dimensions are more relevant to articulating research and writing a thesis.

To help make the tacit explicit, a graduate researcher might also audit subjects in the different disciplines, read textbooks and methodological papers and books, go to conferences or find a mentor or collaborator from the relevant disciplines.

Becher and Trowler. The two dimensions used to form the matrix were originally developed by Anthony Biglan, ‘The characteristics of subject matter in different scientific areas’, Journal of Applied Psychology, vol. 57, no. 3, 1973, 195–203.

See Davies and Devlin (2007 and 2010), for discussions of variations in terminology, and a different way of carving up the territory.

Svetlana Nikitina (Three Strategies for Interdisciplinary Teaching, Project Zero, Harvard Graduate School of Education, Cambridge, MA, 2002) calls this an ‘integrative structure’, which is the intended result of the interdisciplinary research. The literature discusses numerous possible interdisciplinary outcomes: an interdisciplinary interpretation or explanation, conceptualisation, theory or meta-theory, resolution or solution, deeper understanding or illumination, model, metaphor, product, policy, narrative, taxonomy, rule or application. See also Miller and Boix Mansilla, and Boix Mansilla and Durasing.

Davies and Devlin, Interdisciplinary Higher Education, 1.


These were two responses to the same interdisciplinary thesis reported by Mitchell and Willetts, 1.