Assessing Publication-Based Theses

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Abstract

Doctoral examiners are increasingly assessing theses that include publications by the candidate. Little research has investigated how examiners assess a thesis that includes such publications. Most past research has focused on how examiners assess traditional theses, looking at the criteria that they use, their expectations of the thesis, the types of comments they provide on the thesis, and how they judge the quality of the thesis. Since candidates are now including peer-reviewed publications in their thesis, a question emerges as to how examiners go about assessing this form of thesis. Thus the aim of this study is to determine how examiners assess a publication-based thesis (PBT). A case study approach with mixed methods was used in this study. Data were gathered from examiners at the University of Otago who had experience assessing PBTs over the past ten years. Data were procured through a survey, interviews and examiner reports. The survey data were analysed using a descriptive analysis, while free form comments and interview data were analysed using a general inductive approach. A linguistic analysis was used to identify the nature of commentaries on examiners’ reports.

Prior to the survey, a literature search was conducted to determine the types of PBTs. A PBT refers to a thesis that contains publications of the candidate, with three main types identified: thesis with publications appended, a hybrid thesis where some published work is included as chapters, and PhD by publication that comprises a series of publications.

Collectively the 62 survey respondents had assessed 600 theses over a ten year period, with an estimated 44% being PBTs. Examiners in this study assessed more hybrid theses than theses with publications appended, or PhD by publication. Further, PBTs were more frequently assessed in Health Science and Science than in Commerce and Humanities.

Most examiners faced some issues while assessing PBTs. One issue was the unclear contribution of the candidate in the thesis as the candidate did not necessarily provide any information about his/her contribution. Examiners were also concerned if the candidate was not the first author in the publications. Another issue was a lack of coherence in hybrid PBTs which were sometimes perceived as being fragmented.
Most examiners were positively influenced by high impact publications, but a small number of examiners were not influenced by any form of publications in the thesis. Most examiners in this study also extended their usual set of assessment criteria because they did not receive adequate information regarding the publications and the candidate’s role in these. Their extended criteria included: how much did the candidate contribute in thesis; whether the candidate was the first author in multi-authored publications; and what the other co-authors contributed in the publications.

Most examiners provided a similar amount of commentary on PBTs as they would for a traditional thesis, but their comments on PBTs were mainly minor comments instead of major comments. From the linguistic perspective, the minor comments were mainly focused on feedback than on summative assessment. In terms of feedback, the examiners provided more directive feedback than referential and expressive feedback.

Examiners indicated that doing a PBT gives the candidate a richer learning experience as well a brighter job opportunity in the tight job market. Some of the drawbacks of doing a PBT were the lengthy timeframe of getting a paper accepted on time, the difficulty of publishing in a reputable journal, and having to change writing style between a PBT and the thesis. Also, the limited number of words in a publication may not give the candidate the freedom to explain their research in detail and not hearing the candidate's voice in the thesis, especially when the thesis includes multi-authored publications.

A key outcome from this study is the presentation of guidelines for doctoral candidates, supervisors, examiners and doctoral administrators who are overseeing the examination process. Additionally, the findings revealed that in order to achieve alignment between the intended learning outcomes and the assessment regime, an oral examination should be part of the examination process.

**Keywords:** publication-based thesis, thesis examination, doctoral assessment, publishing
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Chapter 1

Introduction

1.1 Introduction

In this chapter, I introduce this study. First I present the origin of this study and my stance as a researcher. Then, I discuss the background context of this study by briefly describing the trend to publish during candidature and incorporate publications in the thesis, the assessment criteria used to assess the thesis, and past research on doctoral assessment. Following that, I present the aims and the research questions of this research, and the approach used to address the research questions. Lastly, I provide an overview of the thesis structure.

1.2 Origin of this study

My interest in doctoral assessment started from my personal experiences in Malaysia. I worked at a university where publishing during candidature is mandatory. All doctoral students are required to publish at least two ISI\textsuperscript{1} ranked papers before submitting their thesis for examination. The University provides support to doctoral candidates by conducting workshops on publishing, and during these workshops the key messages conveyed are the importance of publications and how examiners are impressed with publications that occur during candidature. A friend submitted her thesis for examination and included five ISI ranked publications, expecting that she would get through her examination without any difficulty. She was confident that her examiners would be impressed by her publication record. However, this was not the case as the examiners requested a resubmission. This incident surprised me and sparked my interest in doctoral assessment. How it is that examiners can request a resubmission when papers originating from the research have already been published, which is surely an action that indicates acceptance and quality assurance by the academic community? I wanted to learn more about the doctoral examination processes and the role of

\textsuperscript{1}ISI Journal Citation Reports list the top journals in sciences, social sciences, arts and humanities. They are compiled by Thomson Reuters.
publications in this process. My review of the literature showed that important questions remained unanswered. Hence, I was motivated to embark on a PhD to investigate how examiners assess a thesis that includes publications.

Soon after enrolling in my doctoral study programme, I attended a research methods class to gain a deeper understanding of possible ways to investigate my query. My lecturer shared his experiences as a researcher, and made a statement which changed my worldview as a researcher. With his gentle and affirmative voice, he said that, “I have always considered myself as a privileged man to get the opportunity to contribute something to society through research.” I had never viewed research as an opportunity to make a difference in society, but more of a necessity to secure a job in a university. From that day onwards, I realised that I could make a difference as a researcher by investigating new areas. I realised that I could contribute to the field and make a change to the practice of doctoral examination and university policy.

My prior experience as a linguist influenced my thinking. Linguistics opened my mind to viewing language and meaning from different perspectives. When I was an undergraduate student I was fascinated by how language influences society, culture, history and even politics. The structure of language, language acquisition, communication through language and the changes that evolved over time all fascinated me. Language brings meaning to every element in human social settings. It is this individual representation of the world that forms the very core for meaning that originates and evolves (Krauss, 2005) through interactive experiences with various internal and external contexts (Chen, 2001). My linguistic experiences inevitably influence how I have chosen to collect, analyse, and interpret data.

With a glimpse of me as researcher and the birth of this topic, the following section looks at the background context of this study.
1.3 Background context

The doctoral degree sits as the highest academic qualification in most countries (Powell & Green, 2007), and the highest academic degree that one can obtain. Known as Doctor of Philosophy (abbreviated as PhD, from the Latin *Philosophiae Doctor*), this degree has rhetorically been described as the “pinnacle of academic success” (Nquist, 2002, p.13). In the context of this academic degree, the term ‘philosophy’ does not refer solely to the field of philosophy, but it is used in a broader sense in accordance with its original Greek meaning, which is ‘love of wisdom’ (Aliotta, 2012). The term ‘doctorate’ can refer to a range of types of PhD including, for example, the traditional PhD (mainly supervised research, possibly with some coursework), PhD by publication, and professional PhDs. However, in this thesis I use the terms ‘PhD’ and ‘doctorate’ interchangeably. If I am referring to a particular type of PhD programme, a specific distinction will be made.

The PhD can be obtained in a number of different forms in different countries (Noble, 1994). For example, in the United States of America (USA), the traditional PhD programme involves taught courses and research guided by a range of academic advisors and supervisors. In the United Kingdom (UK), New Zealand and Australia, the traditional PhD is usually solely based on research with the candidate being guided under a supervisory committee through an apprenticeship (Park, 2007). The primary emphasis of the degree is to develop a scholar in the discipline (Park, 2007), however, in the recent years, the primary emphasis of the degree has been challenged by changes in doctoral education. Doctoral candidates are now expected to gain various skills that prepare them for different career opportunities besides academia (Taylor, 2006).

One of the changes that has influenced doctoral education is the trend to publish during candidature, which is the key focus of this study. Most doctoral candidates are increasingly publishing during their candidature and including publications in their thesis (Lee & Kamler, 2008). One of the possible explanations for this change is the expectation of funding bodies and government agencies requiring universities to show greater accountability and dissemination for research (Boud & Lee, 2009). In order for universities to achieve this expectation, academics are expected to have high levels of research productivity. For instance, in New Zealand research productivity of academics is measured through the Performance Based Research Fund (PBRF). Under PBRF each
academic is monitored based on their individual research performance in a six-yearly audit (Tertiary Education Commission, 2015), which assigns budget to universities based on their research productively, partly measured by the sum of the quality scores of the academics. However, with so many tasks being required from academics (such as research, teaching, and carrying out administrative work), one strategy to help their research productivity is to co-publish with their doctoral candidates (Tight, 2010). One effect of this practice is to encourage doctoral candidates to publish during candidature. As well as being beneficial for the supervisor, this practice is also beneficial for candidates as it can provide them with a competitive advantage when applying for jobs, especially in academia. Indeed, the motivation for supervisors to encourage candidates to publish may often be an innate desire to see their students succeed, rather than being driven by external forces regarding research performance.

In some universities, such as some public universities in Malaysia, it is compulsory for doctoral candidates to publish at least two to four articles in ISI ranked journals (Universiti of Putra Malaysia, 2013; Universiti Malaya, 2011). This mandatory policy encourages candidates to publish as well help the university to increase its research productivity. With these practices and expectations, doctoral candidates are not only showing their potential to produce publishable materials in their thesis, which is a common criterion for assessing doctoral theses; they are actually showing their publishing ability during their candidature (Lee & Kamler, 2008).

In addition, many doctoral candidates are choosing to present their publications as part of their thesis. This approach has led to what I term ‘publication-based theses’ or PBTs. A PBT can be in the form of a thesis with publications appended, a hybrid thesis where some published work is included as chapters or a PhD by publication that comprises a series of publications. The term PBTs in this thesis is used to refer to all the different types of PBTs (i.e., thesis with publications appended, hybrid thesis and PhD by publication); however, if I am referring to a particular type of PBT, a specific distinction will be made. Given the rise of PBTs, a question emerges as to how examiners assess such theses, when parts of the thesis have already been accepted by the scholarly community? Do examiners ‘rubber-stamp’ the thesis, or are they not influenced by the inclusion of publications?
When assessing a traditional thesis, examiners usually draw on a universal set of criteria to decide whether the thesis is acceptable. These criteria include: if the research shows originality and a critical engagement with the literature; if the candidate has used appropriate methods of data collection and analytical methods; whether the research is communicated well in writing; and whether the candidate demonstrates the potential to publish (Bourke, Holbrook & Lovat 2005; Johnston 1997; Mullins & Kiley 2002). However, for PBTs, can these same criteria be used to assess the thesis? It would seem odd, for example, for examiners to comment on the potential to publish when there are actual publications included in the thesis. These publications may also show aspects of originality, critical engagement with the literature and meet all the other criteria which are used to assess a traditional thesis.

Even though publications may meet the criteria used to assess a traditional thesis, there has been less than 10 research into how examiners actually assess a PBT. Research on doctoral assessment in the past has predominantly focused on traditional theses to identify the set of criteria that examiners use to assess the thesis (e.g., Johnston, 1997), how they judge the quality of the thesis (e.g., Bourke et al., 2005), and examiner expectations and the types of commentary provided (e.g., Ballard, 1996; Holbrook, Bourke, Lovat & Dally, 2004). Some studies have also identified candidates’ personal experiences of doing a thesis that included published articles (e.g., Penelope & Grant, 2012; Robins & Kanowski, 2008, Dowling, Gorman-Murray, Power & Luzia, 2012). These studies were from Australia and the universities offer PhD by publication. Similarly, past research, also in Australia, has explored writing for publications during candidature (e.g., Francis, Mills, Chapman & Birks, 2009; Kamler, 2008). Some research in UK universities that encouraged publication during candidature, investigated aspects of “doctorateness” through published work (e.g., Breimer & Mikhaidilis, 1993, Badley, 2009). Despite these investigations on various aspects of thesis examination, very little research has looked at how examiners assess theses that include publications.
1.4 Aim of the study

The aim of this study was to understand how examiners assess PBTs. As part of this investigation, it was important to ascertain first how common it was for examiners to assess PBTs. With candidates increasingly including publications in their thesis (Lee & Kamler, 2008), it was possible to assume that PBTs were becoming more common for examiners to assess. Additionally, if this form of thesis was becoming common, it was useful to gain insight as to whether all disciplines were influenced by this trend. As a result, in this study, an objective was to ascertain whether there are any disciplinary differences, particularly in the types of PBTs that examiners assess during the examination process.

This study also looked at how examiners’ approached assessing a PBT in terms of their reading style and the tasks that examiners do while assessing the thesis. However, to gain a better understanding of how examiners go about assessing PBTs, it was important to investigate whether examiners face any issues or difficulties assessing PBTs. Past research on doctoral assessment has not revealed particular issues that examiners face in assessing a thesis that includes publications. Thus, in this study, I investigated the issues that examiners faced while assessing PBTs, and provide suggestions regarding how to resolve these issues.

Since candidates are including publications in their thesis, a question emerges as to whether publications influence the judgement of examiners during the examination process. A previous study by Mullins and Kiley (2002) revealed that some examiners were positively influenced by publications, but Mullins and Kiley did not verify which types of publications had the most influence. Hence, in this study, an objective was to explore the types of publications that influenced examiners’ judgements.

Examiners tend to assess traditional theses by using a universal set of criteria described earlier. Indeed, many universities tend to adapt these criteria as the benchmark to decide if a candidate deserves to be awarded the degree. However, with PBTs, is it possible for examiners to use this typical set of criteria (i.e., those for traditional theses), since the expectations of PBTs may be different? Thus, another objective of this study is to investigate whether a different set of assessment criteria was needed for PBTs.
Since candidates are including publications that have been peer-reviewed and accepted by the scholarly community, it was useful to understand how examiners provide commentary on chapters that have been published. It was possible to assume that examiners may not provide any feedback on chapters that have been published since they have been peer-reviewed. Further, there has been little research looking at how examiners provided commentary on a thesis that incorporates publications. Hence, to understand this phenomenon, it was essential to look at the nature of commentary that examiners provide on reports for PBTs.

Lastly, this study sought to understand examiners’ overall opinions about doing PBTs in terms of their views about including publications in the thesis and possible issues that they experienced assessing PBTs.

1.5 Research questions

In line with the aims of this research, the following research questions guided this study:

1. How prevalent it is to assess PBTs, and are there any disciplinary differences?
2. What are the types of PBTs that examiners assess during the examination process?
3. How do examiners approach assessing a PBT?
4. What are the key issues that examiners face while assessing PBTs?
5. Do publications influence examiners’ judgement? And if they do, which type of publications influence their judgement?
6. Should PBTs have a different set of criteria from the ones used for traditional theses?
7. What is the nature of commentary provided on PBTs?
8. What are the overall opinions of examiners on PBTs?
1.6 Research approach

This study employed a case study approach using mixed methods to address the research questions. There were three main phases of data collection:

i. obtaining an overview of the prevalence and types of PBTs, and how examiners approach assessing them. The three categories of PBTs were developed from a literature search, and the survey was used to gauge the prevalence of PBTs, and any disciplinary differences in PBTs, as well as how examiners approach assessing PBTs;

ii. conducting interviews to gather an in-depth understanding of examiners’ experiences in assessing PBTs; and

iii. an examination of examiners’ reports was undertaken to explore the nature of commentary on PBTs.

Full details of the methodology and research methods are provided in Chapter 3.

1.7 Structure of the thesis

In Chapter 1, I present the origin and background context of this study, followed by the research aims, and approach used to conduct this study. Lastly, this chapter presents the structure of the thesis.

In Chapter 2, I set the scene for my research by providing some background context on the recent changes that have taken place in doctoral education, particularly in regards to doctoral assessment. Then, I discuss the criteria that examiners use to assess a thesis and consider whether these criteria have changed to cater for the current changes in doctoral education. In this chapter, I also explore past research on how examiners assess a thesis, and how they perceive publications in the thesis.

In Chapter 3, I present my methodological approach, and my research paradigm and design. Then, I discuss the methods of data collection and analyses utilised in this study.
Chapters 4 to 6 present the findings of this research, and in each chapter these findings are discussed. In Chapter 4, the types of PBTs that examiners have assessed and the disciplinary differences in the types of PBTs are presented. I also provide an insight into how examiners approach assessing PBTs, and the criteria that they use during the examination process. Examiners’ overall opinions about PBTs are also discussed.

In Chapter 5, I present factors that influenced examiners negatively in the assessment process. These factors included the issue of unclear contribution by the candidate, author order in multi-authored publications, and coherence in a PBT. I then report the one positive factor that influenced examiners in the assessment process, which was the inclusion of publications in high quality venues.

In Chapter 6, I explore the nature of commentary that examiners provided on PBTs, followed by discussion on whether examiners expected candidates to make changes to published chapters, and whether examiners provided more minor comments rather than major comments on PBTs. Additionally, I present a linguistic perspective on assessment and the types of feedback that examiners provided on PBT reports.

In Chapter 7, I present a synthesis of the findings that were presented in Chapters 4, 5 and 6. I outline practical implications relating to issues that examiners faced while assessing PBTs, how PBTs facilitate publishing, and the extended criteria that examiners used to assess PBTs. Then, I discuss the learning alignment for PBTs by drawing on Biggs’s framework of constructive alignment, which was first published in 1999 and has been the foundation of his subsequent textbook ‘Teaching for Quality Learning at University’, with several editions. I also present possible guidelines for doctoral candidates, supervisors, and examiners regarding PBTs. I conclude this chapter with a discussion of the limitations of this study.

Finally, in Chapter 8, I restate the research aims and the key findings of this study, followed by the major contributions of this study. I also present my personal experience of doing a PBT, the further implications of this research, and suggestions for future research.
1.8 Commentary of publications included in the thesis

In this thesis, I append a peer-reviewed article titled ‘Assessing the doctoral thesis when it includes published work’, published in Assessment & Evaluation in Higher Education in 2015. This publication presents the survey findings from this study, much of which appear in Chapters 4, 5 and 7. I was the main author of this publication and my supervisors were the co-authors. I collected and analysed the data of this study and took a lead role in writing the manuscript. The co-authors provided guidance on the research, and editorial input in the final drafts. The journal editor has given permission for the inclusion of this article in my thesis.

1.9 Summary

In this chapter, I discussed the origins and context for this study in terms of the changes that have occurred in doctoral education, particularly the trend to publish during candidature, and the absence of research in assessing thesis that includes publications. Following this, I presented the research aims and questions, and the approach used to address them. I then explained the structure of this thesis. In the following chapter, I provide a synthesis of the literature on doctoral assessment.
Chapter 2

Literature Review

2.1 Introduction

The aim of this chapter is to set the scene of my research by considering the changes that have taken place lately in doctoral education, particularly in regards to the assessment process. In the past 10 years, there has been an increasing trend for doctoral candidates to publish during their candidature, and for theses to include publications. While much research has explored how examiners assess traditional theses, there remains a paucity of research exploring how examiners approach assessing theses with publications. First, I provide some background context on the changing nature of doctoral education by looking at changes in recent years. Then, I discuss the criteria that examiners typically use to assess a traditional PhD thesis and consider whether these criteria have altered to cater for the changes that have taken place in doctoral education. Lastly, I discuss the assessment practices of examiners by exploring past research on how examiners assess a thesis, and how they perceive publications in the thesis.

2.2 Recent changes in the doctoral degree

The doctoral degree started in early medieval Europe as a license to teach in the university (Park, 2005). At that time, no original research contribution or written thesis was required - only continuous attendance at the university and possibly scholarship were the main outcomes for a PhD (Phillips & Pugh, 2010). In the 1800s in Germany, it was a requirement for doctoral candidates to show original contribution to the research field, and to produce a written thesis (Park, 2007). This form of doctoral degree eventually expanded to the USA from the 1860s, in the UK in 1917 and then to the rest of the world (Park, 2007). In addition, for a thesis to demonstrate originality, it is also an expectation that the thesis contains publishable materials. These are the key criteria that examiners use to decide if the candidate deserves to be awarded the degree during the examination process (Breimer & Mikhaïdliís, 1991).
Since the late 1970s, neoliberal policies in higher education have influenced doctoral education. One of the influences was the transformation of universities to become commercially competitive (Peters & Roberts, 2000) by producing more rapid and public dissemination of research results (Boud & Lee, 2009). With this influence, academic staff members are increasingly expected to show accountability in their academic work (Harland, Tidswell, Everett, Hale & Pickering, 2010). As discussed earlier, New Zealand academics are assessed by their PBRF.

This competitiveness drives academics to strive for high quality research outputs by publishing in international reputable journals to help achieve a high research score (Aitchison, Kamler & Lee, 2010). At the same time, academics are expected to perform well in teaching, and carry out an administrative load that the university requires (Tight, 2010). With so many tasks required from the university, many academics achieve their research outputs by publishing with their doctoral candidates as co-authors (Kyvik & Smeby, 1994). A flow on effect has been to encourage doctoral candidates to publish during their candidature and include publications in the thesis. However, a recent study from the UK found that it was only two percent norm to include publications in the theses and 83 percent rare or absent (UKCGE, 2015). Since candidates are including publications in their thesis, it is possible to predict that new concerns such as co-authorship and the degree of author contribution in multi-authored publications may arise during the examination process.

In some countries (e.g., Malaysia, Sweden and the other Scandinavian countries), universities have made it compulsory for doctoral candidates to publish at least two to four publications in reputable journals during candidature (Universiti Putra Malaysia, 2013; Breimer & Mikhaidilis, 1993). The justification for this practice is to facilitate candidates in building their scholarly identity through their publications (Kamler, 2008), and provide them with a competitive advantage when applying for academic positions (Frame & Allen, 2002). But this expectation to publish before submitting their thesis for examination may put pressure on candidates.

Given the apparent trend to include publications in a PhD thesis, it is possible to assume that examiners may be assessing more doctoral theses that include publications. The question that this new practice raises is: do examiners know how to assess a thesis
that includes publications? In other words, do they know what to look for in the thesis, and have the assessment criteria evolved to cater to this development?

In the early 1990s, some of the changes that took place in doctoral education raised some uncertainties about the nature and the purpose of the degree (Pole, 2000) as it was becoming very unclear (Blume, 1986). There was a concern that doctoral candidates were not adequately equipped for careers beyond academia, so it was suggested that transferable skills should be included in the doctoral programmes (Park, 2007). In the late 1990s through to the new millennium, it became more apparent that doctoral candidates were no longer only going into academic careers, but were seeking positions in a wide range of careers (Park, 2007). A criticism was that doctoral graduates were not obtaining the necessary skills to be able to contribute to these broader careers. For example, in the UK, the Roberts Review (2002) questioned whether universities were adapting to global changes by adequately preparing doctoral candidates for a range of careers, not just academic careers. However, the Roberts Review implied that graduates were well equipped for careers in academia, which is a questionable assumption. For example, to be well prepared for academia, doctoral graduates should have experience in teaching, research grant writing and publishing, amongst other skills. Many programmes may not have been providing such learning experiences.

Because of these concerns that the degree was no longer fit for its purpose, some initiatives took place to consider how best to educate doctoral candidates to meet these changes. For instance in the USA, four initiatives responded to these changes:

i. The ‘Preparing Future Faculty’, initiative was launched in 1993 to develop models of doctoral preparation for an academic career by including preparation for teaching and academic citizenship, as well as for research (DeNeef, 2002). The aim of this initiative was to give doctoral candidates the opportunity to observe and experience the different academic roles and responsibilities that academics carry out from different universities, such as preparing for class, revising or creating new course modules, writing textbooks, participating in departmental meetings, and providing advice regarding the courses to students (http://www.preparing-faculty.org/).
ii. The ‘Re-envisioning the PhD’ project aimed to re-examine the ‘doctorateness’ of the PhD since the purpose of the degree has been questioned, and to consider possible ways to enhance the PhD programmes for a variety of professional options (http://grad.uw.edu/envision/). This project was based on an informal discussion (via a major conference and a web site) with different kinds of stakeholders to establish an agenda for change. The main question that guided the discussion was: ‘How can we re-envision the PhD to meet the societal needs of the 21st Century?’ Based on a conference in April 2000, the contributors managed to share practices, and develop meaningful dialogue within and across sectors that could lead to potential changes and actions. However, the range of actions for PhD programmes was not explicitly given.

iii. The ‘Responsive PhD Initiative’ in 2000. This project involved collaboration across 20 leading research universities over five years, discussing how to design PhD programmes that are more responsive to the needs of the society and doctoral candidates. The project findings were to recommend that doctoral education should promote public scholarship that applies academic expertise to social challenges; to broaden and reinvigorate efforts to open the doctorate to new populations, particularly from underrepresented minority groups; to strengthen the authority and administrative capacity of graduate deans; to foster frequent dialogue about doctoral programmes, their alumni, and leaders outside the academy; and illuminate paths to alternative careers outside the research university (http://woodrow.org/news/publications/responsive-phd/).

iv. The ‘Carnegie Initiative on the Doctorate’, funded by the Carnegie Foundation for the Advancement of Teaching in 2005, focused on aligning the purposes and practices of doctoral education in six disciplines: Chemistry, Education, English, History, Mathematics and Neuroscience. The fundamental goal of this project was to prepare stewards of the disciplines by studying each discipline in depth and developing models of experimental doctoral programmes, analysing the success of the models and developing institutional and policy recommendations (Golde & Walker, 2006).

Although the initiatives described above were conducted in the USA, some of the key challenges that were discussed have influenced the nature of doctoral education across the world. For instance, the traditional PhD model may be considered a deficit as it has
narrowly been focused on developing disciplinary knowledge and communication skills (particularly written), instead of preparing candidates for roles within or beyond the academy after completing a doctorate (Nyquist, 2002). The traditional PhD model mainly focused on originality in the research, critical engagement with the literature, use of appropriate methods of data collection and analyses, effective written communication skills, and the potential to publish (Bourke et al. 2005; Johnston, 1997; Mullins & Kiley, 2002). Chubb (2000) explained that the traditional PhD model was a reflection of a less competitive apprentice model, while the current changes in doctoral education require graduates who can develop skills that fit in different career trajectories. Moreover, it has also been reported that the traditional PhD model produced doctoral graduates who were too specialised in the disciplines with limited skills to work outside the universities (Golde & Walker, 2006; Steinwall, 2006).

Even though some of the changes highlight the importance of developing graduates who are well equipped for different career opportunities, it is still the examiners who decide whether the candidate should to be awarded the degree based on what is required in the thesis. The examiners, by necessity given the current system, only focus on the product of the research - the written thesis (and in some cases a dialogue about the research in an oral examination) - rather than also considering evidence about the process of producing a thesis which demonstrates certain skills such as ethics, project management, teamwork and planning etcetera. Therefore, given the current changes and expectations for candidates to develop skills that may equip them for a range of careers, it does raise a question as to whether these skills are part of the assessment criteria used by examiners.

Some of these changes in doctoral education have also influenced the nature of PhD programmes. The traditional PhD model, which involves about three years work on a supervised research project, is no longer the only means to attain a doctoral qualification (Green, 2009). It is now being challenged by different types of PhD programmes (Lee, 2011; Park, 2007). Park (2007) identified five types of PhD programmes (Table 2.1). As well as the traditional PhD, he listed the new route PhD, the practice-based doctorate, the professional doctorate and the PhD by publication. In

\footnote{Note that this is the traditional model for PhD education in the UK and Australasia. In North America a traditional model would include one or two years of coursework before three or four years of supervised research.}
several of these programmes there were taught elements, with the incorporation of coursework and/or training in generic skills. However, this classification by Park failed to take into consideration the different nuances in terms of PhDs which include publications, instead providing just one category: PhD by publication.

Table 2.1  Summary of UK doctoral award types (adapted from Park, 2007, p.33).

<table>
<thead>
<tr>
<th>Award</th>
<th>Supervisory methods</th>
<th>Examination process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional PhD</td>
<td>Candidate designs and implements a research project under supervision.</td>
<td>Examination of a thesis and possibly an oral examination.</td>
</tr>
<tr>
<td>New route PhD</td>
<td>Candidate takes courses and conducts a research project under supervision.</td>
<td>Examination of taught modules (that the candidate must pass) and a thesis which is usually much shorter than a traditional PhD thesis.</td>
</tr>
<tr>
<td>Practice-based doctorate</td>
<td>Candidate conducts a research project on their practice under supervision.</td>
<td>Examination of a thesis which is usually much shorter than the traditional PhD thesis. The thesis includes both reflection and context, and one or more other forms, such as a novel (for creative writing), a portfolio of work (for art and design), or one or more performance pieces (for theatre studies or music).</td>
</tr>
<tr>
<td>Professional doctorate</td>
<td>Candidate takes courses that have specific ‘learning outcomes’ for the profession and conducts a research project under supervision.</td>
<td>Examination of taught modules (that the candidate must pass) and a thesis which is usually much shorter than a traditional PhD thesis.</td>
</tr>
<tr>
<td>PhD by publication</td>
<td>Candidate designs and implements a research project under supervision.</td>
<td>Examination of a series of peer-reviewed academic papers that have been published or accepted for publication, usually accompanied by an over-arching paper that presents the overall introduction and conclusions.</td>
</tr>
</tbody>
</table>

What seems obvious is that doctoral education has expanded from a research and writing focus into a multidimensional range of training which includes aspects such as teaching, communicative competence, time management, project management, planning and budgeting, ability to be constructive, strategic thinking (Golde & Walker, 2006; Taylor, 2006) and publishing during candidature (Lee & Kamler, 2008). Thus, it raises a question as to whether the curriculum design in doctoral education is aligned to the current changes.
Constructive alignment (Biggs, 1999) is a framework that is drawn from two main concepts: constructivism and curriculum alignment. This framework has had a profound effect on the design of undergraduate curricula, but has not been widely applied in doctoral education. The idea of constructivism was initiated by John Dewey (1859-1952), Jean Piaget (1896-1980) and Lev Vygotsky (1896-1934), and the core principles are grounded in how students construct their own learning. Jerome Bruner (1960), also one of the founding fathers of constructivist theory, highlighted that learning is an active process, where students construct new ideas or concepts based on their prior knowledge. The facets of this active learning process encompass the student’s selection and transformation of information, decision making, generating hypotheses, and making meaning from information and experiences (Bruner, 1960). In order to achieve this active learning process, the role of the teacher is to translate information in an appropriate format so that the students can attain the learning goals (Sawyer, 2006). The knowledge that students construct is not imparted from the teacher directly to the students, but rather it is created by the students themselves. The act of teaching is the catalyst for learning, because without appropriate teaching and learning methods, the learning outcomes cannot be achieved.

Alignment refers to what the teacher does, to create a learning environment to support the achievement of intended learning outcomes (Biggs, 2014). In deciding if these outcomes are achieved, the assessment tasks are to be in alignment with the intended learning outcomes (Biggs, 2014). For instance, if the teacher is teaching about the effective use of small groups in a classroom, the teacher would get the students to participate in a small group activity, let the students run on their own and see how well it works. Then, the assessment is focused whether the students have learnt the intended learning outcomes (Biggs, 2003). The key principle of this framework is that all components - the learning outcomes, the teaching and learning methods and the assessment, should be in alignment, as shown in Figure 2.1.
In doctoral education, the main teaching and learning method is supervision, although, as discussed earlier, some PhD programmes provide a range of learning opportunities beyond supervision to assist candidates to develop a range of generic skills. However, the assessment regime for most PhD programmes has not changed and remains narrowly focussed on examining a written thesis, and in many cases, including an oral examination.

If seeking a doctoral curriculum that has constructive alignment, then it would be expected that the teaching and learning methods and the assessment regime would be better aligned with the intended learning outcomes.

As the focus of the current study was to look at doctoral assessment, I was keen to gain insights into one particular change - that is the trend to publish during candidature, particularly when a candidate includes these publications in the thesis (i.e., produces a publication-based thesis). Since candidates are publishing and may be including multi-authored publications in the thesis, it is possible to assume that examiners may face some challenges or uncertainties during the examination process. However, it is possible that examiners may find it easier to assess a PBT than a traditional thesis since parts of the thesis have already been accepted by the scholarly community, indicating that some of the examination criteria may have been met in this process. Given the lack of research in this area, this study aimed to look at how examiners approach assessing PBTs.
2.3 Assessment criteria in doctoral education

In order to understand how examiners approach assessing PBTs, it is essential to look at the criteria that examiners use to assess theses and whether there is a need for a new set of criteria to cater to the current developments in doctoral education.

Despite the trend to include publications in the traditional PhD thesis, the assessment regime seems to have remained fairly conservative that is mainly based on the written thesis as shown in Table 2.1. The traditional PhD thesis is the main (and sometimes the only) product that examiners assess to decide whether the candidate deserves to be awarded the degree. Completion of the thesis to an acceptable standard is thought to demonstrate the candidate’s capability to conduct an independent and scholarly piece of work (Isaac, Quinlan, & Walker, 1992). However, the form of assessment regime may vary between disciplines, universities and countries. For example, in some countries, alongside the written thesis the candidate’s performance in an oral examination or viva may be part of the assessment regime. In the UK, the final verdict of the doctoral assessment has mainly been based on the oral examination or viva with independent examiners (Tinkler & Jackson, 2004; Trafford, 2003). In the USA, the oral examination is conducted with a panel of examiners who include academics who have supervised the candidate (Johnston, 1997). In Australia, the oral examination is only compulsory in some universities and it is the norm to award the PhD based only on the assessment of a written thesis. In New Zealand as of 2014, all universities require an oral examination as part of the PhD assessment. At the University of Otago where this study was conducted, candidates enrolling in a PhD from 2014 on will have to partake in an oral examination as part of their examination process. This university was the last New Zealand university to adopt this policy.

Given the similarity of the traditional PhD model across countries, it is perhaps not surprising that examiners commonly use a typical set of criteria to assess the thesis during the examination process. These criteria include:

- originality of the research;
- critical engagement with the literature;
- the use of appropriate methods of data collection and analyses;
• effective communication skills - written and verbal (if being examined by an oral examination); and
• the potential to publish.

(e.g., Bourke et al., 2005; Johnston, 1997; Mullins & Kiley, 2002)

Experienced examiners may use their own criteria, and report confidence in decisions they make (Holbrook, Bourke, Lovat, & Dally, 2004; Mullins & Kiley, 2002; Winter, Griffiths, & Green, 2000). Some studies claim that the outcomes by which the thesis is evaluated are not well explicated and may be at times mysterious for students (Holbrook et al., 2004; Johnston, 1997). For example, one of the most important outcomes for PhD graduates is to make an ‘original’ or ‘significant contribution’ to knowledge (Tinkler & Jackson, 2004; Winter et al., 2000, Bourke & Holbrook, 2013). But ‘original and ‘significant contribution’ do not appear to be clearly or objectively defined for the doctoral candidates to act on (Lovitts, 2006).

Since there may be difficulty in interpreting the assessment criteria, in this section a comparison of five research intensive universities’ criteria are described: the University of Durham in the UK, the University of Helsinki in Finland, Queen’s University in Canada, the University of Western Australia, and the University of Otago, New Zealand. These universities were selected as four of them (Otago, Durham, Queens and UWA) are members of the ‘Matariki’ network, a group of seven research-intensive universities. Moreover, these universities had readily accessible information about PhD assessment criteria on their websites (unlike the other three members). Because the Scandinavian model of PhD by publication is well known, the University of Helsinki was included alongside the Matariki partners. Most of these universities allow ‘PhD by publication’ and encourage candidates to publish during their candidature. Conversely, the University of Otago does not allow ‘PhD by publication’, but does encourage candidates to publish during their candidature. For example, the 2012 PhD Handbook of University of Otago states:

When papers based on work completed as part of the PhD thesis are submitted, are in press, or in print, it may be possible to modify and include material from them as chapters in the thesis, providing that the
thesis as a whole presents a coherent and integrated account of the research (University of Otago, 2012).

The criteria used for assessing the PhDs in these universities are listed in Table 2.2.

Table 2.2 Typical criteria used for PhD assessment in five research-intensive universities across the world.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Durham University, UK</th>
<th>University of Helsinki, Finland</th>
<th>Queen’s University, Canada</th>
<th>University of Western Australia, Australia</th>
<th>University of Otago, NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Originality in the research</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Significant contribution to knowledge</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishable materials in the thesis</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>The research topic displays a scholarly approach</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Critical engagement with the literature</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Appropriate use of methods</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Critical analyses of the findings</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Research situated in a wider field of knowledge</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis meets internationally recognised standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Thesis shows a coherent structure</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Presentation of the thesis to an international standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

As shown in Table 2.2, only one learning criterion is common to all universities; that is, producing an original piece of research. However, at times, ‘original’ and ‘significant’ contributions are combined. Lovitts (2006) explains that original and significant contributions are two different aspects. She defines original contribution as “something that has not been done, found, known, proved, said or seen before” (p.170). Originality can either be originated from the research, or the candidate can borrow an existing contribution from another field and apply to his/her current field. The University of Durham (2014) expects:
The thesis to include original and significant contribution to knowledge, for example through the discovery of new knowledge, the connection of previously unrelated facts, the development of new theory, or a new analysis of older views (p.4).

The University of Durham seems to group original and significant contribution as a whole. At the University of Otago these terms are possibly also seen as a whole as they are used interchangeably. The supervisors’ handbook specifies that the thesis should make a ‘significant investigation’, but in the examiners’ guidelines, the criterion states that the thesis should make an ‘original contribution’ (University of Otago, 2014). Neither term is clearly defined.

Lovitts (2006) continues to argue that significant contribution relates to the “consequences” for the research (p.172), such as importance to the community, and influencing the field by changing the way people think. The University of Helsinki (2006) sees both ‘originality’ and ‘significant’ differently. They specify that ‘significant contribution’ is viewed by distinguishing it with “the status of the research and its results within the field of research” (para. 3), whereas ‘original contribution’ is demonstrated through the “originality in the planning and implementation of the work” (para. 4). Although the key criterion to a successful doctorate appears to be whether the thesis has made an original contribution to the body of knowledge, the definition of this criterion varies across the universities. Thus, it raises a question as to whether there should be a standard expectation for this criterion since it is the most important common criterion for a PhD thesis.

Some universities utilise other criteria (Table 2.2). One criteria is to ensure that the thesis produces publishable materials (e.g., Durham University, Queen’s University, and University of Otago), with some universities that adopt PhD by publication requiring candidates to include a number of publications in the thesis. For instance, the University of Helsinki expects candidates to provide a list of their publications and their contribution to each publication. In other words, candidates are expected to declare their contribution; however, at times, information about the author declaration can be unclear. In some disciplines it is common for candidates to include multi-authored publications in the thesis, especially in laboratory-based environments where supervisors and other research team members mentor candidates through the publishing
process. With candidates including publications in the thesis, it is important for universities to provide clear information regarding how candidates can declare their authorship in a multi-authored publication. It is possible to assume that if candidates do not provide information about their contribution in each of their publications, it may be of concern to examiners during the assessment process, possibly affecting their judgment.

Three of the universities (e.g., University of Otago; University of Helsinki and Queen’s University) have a criterion that a thesis should show coherence (Table 2.2). If publications are included in the thesis, the thesis is still expected to be coherent as a whole, rather than having a collection of loosely connected studies. This criterion is essential as most examiners would expect to see the thesis being coherent. But what is coherence in a PBT? It is likely that each article is coherent on its own, but what about the thesis as a whole? Is it possible to assume that the issue of coherence in PBTs is related to the layout of the thesis instead of the content? Although broad criteria for assessing PhD theses could be ascertained from the five universities, it was difficult to find further information regarding including publications in a thesis. It is possible that such policy or guidelines may be available only through an intranet.

From the observations across these five universities, the criteria did not vary much from the typical set of criteria even though some universities had more specific criteria (e.g., significant contribution knowledge, presentation, etc.). But what was more apparent is that examiners typically used the same set of criteria regardless of the type of theses being examined. Since there are different expectations in PBTs, that is, to include publications in the thesis, should a different set of criteria be provided for the examiners? Table 2.2 illustrates that, for these universities, there was a lack of information regarding the candidate’s contribution, even for a PBT, although perhaps these expectations are made available in internal institutional guidelines.

Also, there is some of confusion regarding the terms ‘guidelines’ and ‘criteria’. Some universities refer to the assessment criteria as guidelines to examiners. For instance, in a UK study by Tinkler and Jackson (2002), the term ‘guidelines’ is used for ‘criteria’. Their study showed that the guidelines that were offered to examiners during the assessment process varied, and some of these guidelines were also generally vague, almost as though the universities themselves were not clear about the criteria they were
applying. In contrast, Mullins and Kiley’s (2002) found that examiners referred to the assessment criteria as ‘criteria’. Their findings indicated that examiners took little notice of the university’s criteria and established their own criteria for assessment. In order to avoid the confusion of these terminologies, for this study, the term ‘criteria’ is used to refer to the assessment criteria that examiners use to assess a thesis, and the term ‘guidelines’ refers to additional information that is provided about the thesis. With PBTs, what needs to be deliberated is whether a new set of criteria should be considered for PBTs since this form of thesis has different expectations (e.g., candidate's contribution, coherence), and secondly whether a clear set of guidelines is needed for PBTs.

2.4 The assessment practice in doctoral examinations

In this section, I look at the assessment practice of examiners during the examination process. What examiners do in the examination process is important as they decide whether the candidate deserves to be awarded this degree. Since candidates are increasingly incorporating publications in the thesis, it would be possible to assume that some factors (such as the types of publications included in the thesis) may influence examiners during the assessment process. Further, these publications have already been accepted by the scholarly community, thus meeting some of the criteria used to assess PhDs (e.g., originality, significance, presentation to an international standard). Little is known about the assessment practice that examiners conduct when assessing PBTs. In order to gain a better understanding of their practices, it is first important to look at the trustworthiness of the peer review process, followed by how examiners assess a doctoral thesis with a particular focus on how they perceive publications in theses. It is also necessary to consider the types of assessment that examiners provide during the examination process.

2.4.1 Trustworthiness of the peer review process

Over the past 300 years, the peer review process has been central to determining the quality of information being disseminated to the scholarly body (Voight & Hoogenboom, 2012). This process is critically done through a panel of
reviewers/editors who provide suggestions on how to improve the manuscript as well to ensure that the manuscript meets the standard of the journal.

However, the issue of reliability and consistency of this process remains in question (Jefferson, Rudin, Brodney Folse, & Davidoff, 2007). Previous studies have shown that reviewers tend to frequently disagree and show bias during the process (Jackson, Srinivasan, Rea, Fletcher, & Kravitz, 2011; Loonen, Hage & Kon, 2005; Rothwell & Martyn, 2000; Howard and Wilkinson, 1998), as well vary in opinion about the quality of information that is expected in a publication (Schroter, Black, Evans, Carpenter, Godlee, & Smith, 2004; Callaham, 2002).

Even though, there are issues about this process, it still appears to be successful in determining suitability for publication. Editors/reviewers are expected to come to a conclusion to either accept or reject the manuscript for publication. Now, with candidates increasingly including publications in their theses, it does raise a question as to whether examiners actually trust the peer review process. Do they actually get influenced by publications in the thesis despite knowing these issues, or do they just come to terms that this is the nature of the game?

### 2.4.2 Approaches to examining doctoral theses

Previous research on the examination process for PhDs has been scant regarding how examiners assess a thesis with published materials. Most research on doctoral examination has focused on identifying criteria that examiners used to assess traditional theses (e.g., Holbrook et al., 2004; Johnston, 1997; Nightingale, 1984), examiners expectations, and types of comments (e.g., Ballard, 1996; Hansford & Maxwell, 1993; Holbrook et al., 2004; Johnston, 1997; Pitkethly & Prosser, 1995), and how examiners judge the quality of traditional theses (e.g., Bourke et al., 2005; Holbrook et al., 2004).

From these previous studies, it is evident that examiners have two predominant views about publications in the thesis. The first view is that they are positively influenced by publications that are included in theses. For example, Mullins and Kiley’s (2002) study reported that some experienced examiners were highly influenced by pre-publication and favoured publications that were accepted in reputable journals. These examiners reported that they were reassured that the work had been peer-reviewed: “[Having
publications] lightens the burden for the examiner as other reviewers have said that it is OK” (p. 381).

A contradictory view held by some examiners is that they are not influenced by any form of publications in theses. These examiners believed that their role as an examiner was “to examine that piece of work, not anything else that they might have done” (Mullins & Kiley, 2002, p. 381). A small number of these examiners were sceptical of the standard of journals or concerned that the publications could be the work of supervisors and not the candidate.

Clearly, past research shows that examiners have different views regarding whether they are influenced by publications in the thesis; however this past research did not look at the nuances regarding the nature of publications being included in the thesis. Thus, it would be insightful to gain an understanding of whether examiners who assess PBTs are influenced by publications in the thesis.

2.4.3 Types of assessment on doctoral theses

Examiners often consider themselves as ‘gatekeepers’ during the examination process, ensuring that the candidate meets the acceptable standards of scholarship (Dubetz, Turley & Erikson, 1997), and/or providing the candidate the opportunity for developmental experiences (Joyner, 2003). Examiners are expected to make a summative judgement, as well encourage developmental experiences through the provision of feedback (Kiley, 2009). In other words, one section of examiners’ reports usually contains summative assessment, where examiners make a judgement as to whether the thesis has met the standards established by the university’s criteria. This form of assessment is often referred to as a passive measure of performance because it does not have an “immediate impact on learning” (Sadler, 1989, p. 120). In summative assessment, a final grade is usually given – however, in a thesis, it is usually a pass with numerous degrees of acceptance criteria, which could range from the thesis being accepted as is, accepted with minor modifications, or accepted with major modifications. However, it is possible the thesis may fail, with major revisions and resubmission for a second examination required, or the suggestion of the award of a lesser degree or no degree.
The other section of examiner reports usually contains formative assessment, where examiners provide feedback to encourage the candidate to revise the thesis and/or provide feedback that would assist in reworking the material for publications (Kumar & Stracke, 2011). Some scholars, such as Stobart (2004), reason that assessment does not need to be exclusively summative or formative, as long good assessment promotes learning. Black and William (1998) argue that both summative and formative assessment should not be kept apart. However, with PBTs, it is possible to assume that examiners would provide more summative assessment than formative assessment as the previously published chapters in thesis have been through a peer review process during publication, presumably involving much formative assessment.

Feedback is a key component of formative assessment and, as Sadler (1989, p. 120) explains, “it is usually defined in terms of information about how successfully something has been or is being done”. He goes on to discuss the alternative view of feedback by Ramprasad (1983), that feedback can be defined in terms of its effect. In this view, feedback is “information about the gap between the actual level and the reference level of a system parameter which is used to alter the gap in some way” (Ramprasad, 1983, p.4). In other words, the feedback that examiners provide helps to close the gap by encouraging the candidate to meet the specific assessment criteria. Thus, feedback is an interactive process between a teacher (in this case a supervisor) and a learner (PhD candidate), while formative assessment is associated with the learner (PhD candidate) “who may use the feedback to enhance learning” (Merry, Price, Carless & Taras, 2013, p.33).

Often examiners tend to adopt a ‘supervisor’ role and attempt to guide the candidate as to how to improve the thesis to the required standard (Lovat, Holbrook, & Bourke, 2008). The thesis examination process is often viewed as non-terminal and work-in-progress (Bourke, Hattie, & Anderson, 2004). Doctoral candidates may be expected to revise their thesis, attending to the suggestions and comments that examiners provide. While an initial assessment has been made by the examiners, which could range from ‘accept, or accept with minor editorial corrections’ through to ‘revise and resubmit’ or ‘reject’, it is expected that this assessment will change once the thesis has been revised and achieved its specific goals. The opportunity to revise means that PhD candidates rarely fail (Kumar & Stracke, 2011). Even though examiners view the thesis as ‘work-in-progress’, it does raise a question: how do examiners provide feedback on chapters
that are published? Moreover, if examiners do provide feedback on chapters that have been published, how are candidates expected to attend to this feedback? Are they expected to revise these published chapters?

So the assessment practices that examiners use during the examination process can be viewed in two ways: as providing a judgement on the overall quality of the thesis and whether it is at doctoral standard; or as providing feedback that can be used to revise the thesis or for consideration in publishing from the thesis. However, little is known about how examiners provide assessment on sections of the thesis that have already been published, since they have already been pre-assessed and accepted by the academic community.

2.5 Summary

In this chapter, I set the scene for my current research. The changes that are taking place in doctoral education were outlined, particularly the evolution of PhD programmes to include publishing during candidature. The discussion showed that the changes that are taking place in doctoral education have failed to take into consideration the assessment criteria and guidelines relating to possible concerns regarding theses that include publications. Moreover, past research has showed that there is little understanding regarding how examiners approach assessing PBTs, and how they provide assessment on chapters that are published. Thus, this research aims to investigate how examiners go about assessing PBTs and whether there should be a different set of assessment criteria for this form of thesis. The following chapter, I describe and justify the methods that are used to investigate how examiners assess a PBT.
Chapter 3
Methodology

3.1 Introduction

In this chapter, I discuss the methodological approach and research design that I chose to investigate my research aim. First, I provide an overview of the research paradigm, research design and key methods I employed in this study. I provide a detailed justification of each method. I then describe how data were collected, and present an overview of the methods I used for data analysis. I also highlight ethical issues concerning the research process.

3.2 Research approach and design

I believe all researchers have different beliefs and ways of viewing and interacting within their phenomenon of interest. However, there are also rules and standards that guide a researcher and influence his/her choice of research paradigm. In this section, I explain my choice of research paradigm and how this influenced and guided my research approach and design.

3.2.1 Research paradigm and approach

A research paradigm is the “basic belief system or world view that guides the investigation” (Guba & Lincoln, 1994, p. 105). In any research it is important that the choice of paradigm matches the stance of the researcher, because the paradigm guides the researcher's actions and behaviours in conducting the research and “influences what will be discovered” (Savin-Baden & Major, 2013, p.54). The research paradigm that influenced my stance as a researcher is pragmatism. Pragmatism focuses mainly on the research outcomes rather than antecedent conditions (Creswell, 2007). It emphasises choosing the most appropriate methods, techniques, and procedures to meet the research outcomes. As I explained in Chapter 1, a friend’s experience motivated me to
gain a better understanding of what examiners do while examining PBTs, and to explore ways in which doctoral assessment might be enhanced.

Pragmatists believe that this world should be researched using methods that are most appropriate to the research questions. The research questions become the ‘central’ guide in helping the researcher to choose the most appropriate methods, techniques and procedures that will provide insights into the research problem without any loyalty to a specific research approach (Tashakkori & Teddlie, 1998). Cherryholmes (1992) indicated that pragmatism does not pick sides to any system of philosophy (e.g., positivism or constructivism) but believes that the truth in research is congruent to the methods and analysis. The pragmatic paradigm pays close attention to the research question and uses the most appropriate data collection techniques and strategies to understand the research problem (Creswell, 2007, citing Rossman & Wilson, 1985). For instance, the overall research aim of this study is to investigate how examiners assess PBTs, with research questions relating to the prevalence of PBTs that examiners assess, the types of PBTs they assess, how they approach assessing PBTs, key issues they face, whether publications influence judgement, whether a different set of criteria than for traditional theses is required, and the nature of commentary they provide on PBTs. In order to address these questions, I determined that a mixed method approach was appropriate.

A mixed methods approach underlines the philosophical framework of pragmatism (Johnson & Onwuegbuzie, 2004) and combines both quantitative and qualitative approaches (Creswell, 2003). A quantitative approach focuses on gathering numerical data and quantifies the relationship between different types of variables. A qualitative approach provides the researcher the opportunity not only to describe the happenings and behaviours, but also to explore why such phenomena occur (Marshall & Rossman, 1995). The qualitative approach focuses on gathering a rich description of a phenomenon through the researcher’s observation or participants’ own voices by way of their illumination of their experiences and interpretations.

The goal of mixing qualitative and quantitative approaches is to take advantage of the strength of each, and minimise the weakness of both, in the same phenomenon or study (Johnson & Onwuegbuzie, 2004; Patton, 2002). Advocates of a mixed methods approach point out that the strength of mixed methods is in the integration of qualitative
and quantitative methods which allows research questions to be considered and answered from different perspectives (Bryman, 2006).

My decision to employ a mixed methods approach was based on the position that both approaches would provide a better understanding of the research problem (Kalil, Way, Weisner, & Yoshikawa, 2008). The research questions described above meant that different methods were required in order to answer them. For example, the purpose of utilising a survey was to reach out to a bigger sample size of participants and to gain an initial understanding of the nature of doctoral assessment for PBTs. One of the specific questions that were asked in the survey was to investigate ‘how prevalent it is to assess PBTs?’ over the past 10 years. This question provided insights into the number of PBTs that the examiners had assessed over the past 10 years. On the other hand, the purpose of the qualitative data was to gain an in-depth understanding of how examiners assess PBTs. One of the specific questions that was asked in the interview was ‘what are the key issues that you faced while assessing PBTs?’ Even though this question was also asked in the survey, the interviews provided a more in-depth description of the issues that examiners faced during the examination process. The purpose of analysing the examiners’ reports was to explore the nature of commentary that examiners provided on PBT reports. These reports provided insights into the types of commentaries that the examiners use on PBT reports. Table 3.1 shows an overview of the specific research questions and the different methods used to address them. Combining both qualitative and quantitative approaches in this study offers the addition of completeness and meaning to the resultant data (Marshall & Rossman, 1995).

Although I understood that a mixed methods approach will strengthen and provide completeness to this study, I was aware that combining both approaches can also be problematic (Anderson & Poole, 1994). The researcher should be careful about integrating approaches and mixed methods should only be carried out if it leads to a greater understanding of the phenomenon (Bryman, 2006). It has been emphasised that the mixed methods approach demands the researcher to specify ‘the particular aims of each method and the nature of the data that is expected to result’ (Brannen, 1992, p.16). Coming from a pragmatic approach, I saw the rationale of how both of these approaches could help provide a greater understanding of the assessment of PBTs.
Table 3.1 The relation between the research questions and methods used for data collection.

<table>
<thead>
<tr>
<th>Overall research question: How do examiners assess PBTs?</th>
<th>Research Questions</th>
<th>Mixed Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• How prevalent it is to assess PBTs and are there any disciplinary differences?</td>
<td>Mixed Methods</td>
</tr>
<tr>
<td></td>
<td>• What are the types of PBTs that examiners assess during the examination process?</td>
<td>Mixed Methods</td>
</tr>
<tr>
<td></td>
<td>• What are the key issues that examiners face while assessing PBTs?</td>
<td>Mixed Methods</td>
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<tr>
<td></td>
<td>• Do publications influence examiners’ judgment?</td>
<td>Mixed Methods</td>
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<tr>
<td></td>
<td>• Do examiners provide feedback differently in PBTs compared to traditional theses?</td>
<td>Mixed Methods</td>
</tr>
<tr>
<td></td>
<td>• Do examiners use a different set of criteria for PBTs?</td>
<td>Mixed Methods</td>
</tr>
<tr>
<td></td>
<td>• What are the overall opinions of examiners on PBTs?</td>
<td>Mixed Methods</td>
</tr>
<tr>
<td></td>
<td>• How do examiners approach assessing a PBT?</td>
<td>Qualitative</td>
</tr>
<tr>
<td></td>
<td>• What are the key issues that examiners face while assessing PBTs?</td>
<td>Interview</td>
</tr>
<tr>
<td></td>
<td>• Which types of publications influence examiners’ judgment?</td>
<td>Qualitative</td>
</tr>
<tr>
<td></td>
<td>• Should PBTs have a different set of criteria from the ones used for traditional theses?</td>
<td>Qualitative</td>
</tr>
<tr>
<td></td>
<td>• What is the nature of commentary provided on PBTs?</td>
<td>Reports</td>
</tr>
<tr>
<td></td>
<td>• What are the overall opinions of examiners on PBTs?</td>
<td>Qualitative</td>
</tr>
</tbody>
</table>

3.2.2 Research design

I chose a case study design for this research. The first theoretical underpinning of a case study is that it involves focusing on a specific and bounded ‘case’ (Merriam, 1998; Yin, 2003). The researcher bounds the cases by determining the phenomenon and the context of the study. These boundaries of case could be an individual, programme, event, group, intervention or community. In this study the case study is bounded to a group of doctoral examiners at the University of Otago. By binding the context of this case, I was able to “gain an in-depth understanding of the situation and meaning of those involved [in the case]” (Merriam, 1998, p.19).
**Case study context**

The context of this case study is focused on doctoral examiners who have assessed PBTs in the past 10 years at the University of Otago. The University of Otago is a research-intensive university in New Zealand with about 22,000 students including about 1300 doctoral students (University of Otago, 2012). The University has about 1600 academic staff, including nearly 1200 doctoral supervisors. It is common for supervisors to act as examiners of doctoral theses from students enrolled at Otago, but also for theses submitted throughout New Zealand and, for many, from international sources. At the University of Otago there are guidelines for publishing during a student’s PhD candidature, but these guidelines are not widely known or implemented.

If part of the thesis includes published materials under joint authorship, the supervisors are requested to provide a statement within their supervisor’s report specifying how much the student has contributed in the papers. However, the examiners do not normally see the supervisor’s report during the examination process and, moreover, there is no requirement for any commentary about publications to be included in or with the thesis.

There is a local myth that publishing during PhD candidature is not allowed at the University of Otago. However, the guidelines do allow for published material to be included provided the thesis is still a coherent body of work. Nevertheless, despite the local context, many supervisors examine theses from other universities where publishing is encouraged and from some countries, for example, Scandinavian countries, the thesis can be entirely by papers (i.e., PhD by publication) (Breimer & Mikhailidis, 1991).

A second theoretical underpinning of case studies is that they focus on asking explanatory questions such as ‘how’ or ‘why’. These forms of questions deal with operational links that involve a period of time. However, as a pragmatist, the use of both exploratory and explanatory forms of questions helps to gather relevant data (as shown in Figure 3.1). Yin (2003) proposes that the mixed method approach can be used in a case study when it is appropriate to the research problem; however any integration of quantitative and qualitative methods is frequently encountered in terms of
‘triangulation’ (Patton, 2002) which I discuss in detail in section 3.5. In the following section, I provide justification for how the data were collected and analysed.

3.3 Methods of data collection and analyses

This study which utilised a mixed methods approach, involved three main phases:

1. Obtaining an overview of the prevalence and types of PBTs, and how examiners approach assessing them
2. Gaining in-depth data on how examiners assess PBTs
3. Exploring from a linguistic perspective, how examiners provide commentary on PBTs

3.3.1 Phase 1: Overview of prevalence and types of PBTs, and approaches to examination of PBTs

Prior to developing the questions for the survey, it was important to develop a new taxonomy for PBTs since a variety of formats were available for a PhD. As discussed in Chapter 2 (see Table 2.1), Park (2007) listed five doctoral award types, including new route PhD, professional doctorate and practice-based doctorates, and two which were of more interest to my study. These were: (1) the traditional thesis, based largely on the supervised research project and examined on the basis of the written thesis; and (2) PhD by publication, based largely on the supervised research project, but examined on the basis of a series of peer-reviewed academic papers which have been published or accepted for publication, usually accompanied by an overarching paper that presents the overall introduction and conclusions. In Park’s classification only one category for PBT was identified: PhD by publication. However, as I explained in Chapter 2, it is apparent that PBTs can take different formats; hence I decided a more nuanced classification for PBTs was needed. I use the term ‘publication-based thesis’ to refer to any form of traditional PhD that has publications (e.g., refereed or non-refereed journal articles, book chapters or conference proceedings). My taxonomy recognises three types of theses, namely:
• PhD by publication\textsuperscript{3} - where the thesis consists entirely of published papers;
• Hybrid thesis\textsuperscript{4} - in which articles are inserted in lieu of some chapters; and
• Thesis with publications appended - in which aspects of the thesis have been published and are appended or bound into the thesis.

After identifying the different types of PBTs, the data collection aimed to get a sense of the prevalence of PBTs being examined by examiners at the University of Otago. The term \textit{prevalence} in this study refers to the number of PBTs that examiners have assessed. Also, this phase aimed to understand how examiners approach assessing a PBT. A survey was employed to gather information about the prevalence of PBTs, to ascertain the types of PBTs that were being assessed, and the examiners’ approaches to assessing these theses. Both open and closed ended questions were utilised in the survey.

\textbf{Survey design}

The three main aims of the survey were (i) to gather data on the prevalence of examining PBTs, (ii) to identify the types of PBTs, and (iii) to determine how examiners approach assessing PBTs. The questions were generated after reviewing the literature, with some questions being repetitions of general research questions used in past research, and others questions highlighting the importance of publications during candidature. An example of such past question is: what criteria do examiners use to assess a thesis (Mullins & Kiley, 2002)?

The specific questions concerned with the prevalence of PBTs and the types of PBTs were:

1. Determine the number of PBTs that were being examined
2. Determine the types of PBTs that were being examined
3. Identify if there were any disciplinary differences in the types of PBTs being assessed

\textsuperscript{3}It is possible to argue that that a PhD by publication does not constitute a thesis per se, but in this research I consider PhD by publication to be a type of doctoral thesis.

\textsuperscript{4}In a recent article the term ‘integrated’ thesis was used for this type of thesis that comprises some traditional chapters alongside publications (UKCGE, 2015)
The survey also included questions on how examiners approach assessing a PBT compared to a traditional thesis in order to:

1. Identify differences in the way examiners assess PBTs
2. Discover significant issues for examiners while assessing PBTs
3. Discover any key features, if any, that influence the examiner’s judgment regarding PBTs
4. Discover if examiners provided feedback differently for a publication-based thesis compared to a traditional thesis
5. Discern if examiners used a different set of criteria to assess PBTs compared to traditional theses

The first sets of questions arose from unanswered questions in the literature, while question 3 on key features influencing the examiners' judgement was extending the work of Mullins and Kiley (2002), and question 4 was adding to the research by Kumar and Stracke (2011). The issue of criteria (question 5) has been mentioned by many researchers including Johnston (1997), Mullins and Kiley (2002), and Nightingale (1984).

The survey also included requests for examiners to provide demographic data such as their discipline, gender, highest education qualification, and work experiences in higher education. The survey contained 22 questions, with a mixture of free form questions, and questions with options such as a dropdown checkbox or Likert scale. A copy of the full survey is in Appendix A. Finally, the examiners were asked if they were willing to volunteer for a follow-up interview to explore their answers in more depth and/or share copies of anonymised examiner’s reports.

**Piloting the survey**

Prior to administering the survey, a pilot test was conducted with 12 examiners from New Zealand, Australia, Canada and South Africa. The purpose of the pilot test with these examiners was to ensure that the survey questions showed clarity and also to avoid any ambiguous questions (Rea & Parker, 2005). The participants of the pilot study provided constructive feedback on some of the questions that they deemed
ambiguous, as well as reporting on their time taken to complete the survey. Following the feedback from the pilot test the survey was refined (see Appendix A).

**Participants and administration of the survey**

The survey was administered online via an email invitation (with a survey link) from the Graduate Research School, to 896 doctoral supervisors at the University of Otago (many of whom were also doctoral examiners). The email invitation made it clear that the online survey was only seeking examiners who had experience assessing PBTs. The online survey link was open for two weeks (from 8th June until 22nd June 2012). From the 896 invitations, 77 examiners responded to the survey, and only 62 examiners completed the survey. I suspect that far more examiners at Otago have had experience of examining PBTs so the sample is likely representative of a typical response rate (perhaps about 30%). The examiners were not only assessing local (Otago) theses, but also those from elsewhere in New Zealand and overseas.

**Analysis of survey data**

All completed surveys were entered into a Microsoft Excel spread sheet for analysis. Data for the close-ended questions were tabulated, frequencies and percentages were calculated, and graphs were produced. The differences between ‘definitely not’ and ‘very definitely not’ and also ‘definitely’ and ‘very definitely’ were collapsed together as ‘definitely’ and ‘definitely not’. Given the small sample size (62 respondents), only descriptive statistical analyses were performed. Responses to the open-ended questions were analysed using Thomas’s (2006) general inductive approach in order to elucidate the main themes. More details on this approach are provided below under “Analysis of interview data”.

**3.3.2 Phase 2: In-depth data on how examiners approach assessing PBTs**

The second phase of the data collection was for the purpose of gaining an in-depth understanding of examiners thought processes and the judgements that they make while assessing PBTs. To achieve this, a qualitative approach was employed since it allows the gathering of a more in-depth meaning to the processes and judgments that
examiners make when assessing PBTs. The responses from the survey helped to develop questions for the interviews. The specific interview questions presented below.

Interview design

A face-to-face semi-structured interview design was chosen to probe, specifically, how participants approached examining PBTs, and also allowed new ideas to be brought up during the interview session as a result of the discussion. The advantages of using a semi-structured interview are that it helps to provide much more detailed and richer information about the topic, as well the opportunity to ask spontaneous questions (Merriam, 1998). However, the approach can be time consuming and if spontaneous questions are asked to some and not others, this may generate misleading data. For this study the main questions the interview focused on were:

1. How do you approach assessing a thesis with published papers?
2. What do you look for in a chapter that has been published?
3. Which types of publications influence your decisions?
4. Does co-authorship influence your decision?
5. What criteria do you use to assess a thesis with published papers? Are these different from what you use to assess a traditional thesis?
6. How do you provide feedback on chapters that have been published?
7. Do you find it easier or harder to assess PBTs?
8. How do you determine the overall quality of PBTs?
9. In your opinion, what are the pros and cons of choosing to do a thesis with publication?

Note that in asking these questions, it was natural to extend the questions by saying ‘compared to a traditional thesis’, or by asking how it was different from assessing a traditional thesis.

Interview protocol

After providing some background information about my research and confirming consent for recording the interviews, I asked the main questions but with the flexibility to follow-up on tangents if any of these was deemed relevant. Each interview was
recorded with the agreement of the interviewee; each session lasted between 30 and 60 minutes.

**Piloting the interview**

A pilot interview was conducted with my primary supervisor which gave me the opportunity to ease my nervousness and check that the questions would elicit the rich response I sought. As a result of the pilot interview, some interview questions were restructured to ensure they were better focused on gathering information that was relevant to the research aims. The final sets of questions were those listed in section 3.3.2.

**Participants**

Examiners who volunteered to be interviewed were recruited via the online survey. Twenty-one examiners initially indicated that they were willing to participate in an interview. A confirmation email was sent to these respondents, with the information sheet and consent forms attached (see Appendix B). The purpose of this email was to give the opportunity to make an appointment for an interview session: only 15 of the 21 examiners took up this opportunity. In addition, three participants who had heard via colleagues about my research volunteered to be interviewed. In total, 18 examiners participated in the interviews (see Table 3.2). These examiners were defined as ‘experienced examiners’ as they had examined at least eight doctoral theses each over the past 10 years.
Table 3.2  Pseudonym and discipline

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dylan</td>
<td>Physiotherapy</td>
</tr>
<tr>
<td>Robin</td>
<td>Preventive Medicine</td>
</tr>
<tr>
<td>Cory*</td>
<td>Physics</td>
</tr>
<tr>
<td>Vincent</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Jerry*</td>
<td>Information Science**</td>
</tr>
<tr>
<td>Cameron*</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Bridget*</td>
<td>Preventive Medicine</td>
</tr>
<tr>
<td>Gary*</td>
<td>Zoology</td>
</tr>
<tr>
<td>Micah*</td>
<td>Geology</td>
</tr>
<tr>
<td>Mike*</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Fiona*</td>
<td>Geology</td>
</tr>
<tr>
<td>Mark*</td>
<td>Genetics</td>
</tr>
<tr>
<td>Tabitha*</td>
<td>Psychology</td>
</tr>
<tr>
<td>Leanne*</td>
<td>Physiotherapy</td>
</tr>
<tr>
<td>James*</td>
<td>Genetics</td>
</tr>
<tr>
<td>Stanley</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>Hannah</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Rose*</td>
<td>Microbiology</td>
</tr>
</tbody>
</table>

** At the University of Otago, Information Science sits in the Commerce Division, but in many universities it comes under Science.

* Examiners who provided examiners’ reports for linguistics analysis.

Analysis of interview data

Each interview was recorded, transcribed verbatim and then returned to the participants for confirmation. Following participant checking, I read through the entire transcripts to gain an overall impression. Then, I organised the responses to the research questions, looking for similarities and differences in the data. Out of 18 transcripts, only 16 of the transcripts were selected for further analysis based on richness of information. Two of the interviews were interrupted and consequently provided insufficient information about PBT assessment.

To analyse the qualitative data from the survey and the interviews a general inductive approach (Thomas, 2006) was used. A general inductive approach focuses on detailed readings of the qualitative data (the open-ended questions from the survey and the interview transcripts) to derive themes. The understanding of this inductive approach supports Strauss and Corbin’s (1998) description that “the research begins with an area of study and allows the theory to emerge from the data” (p.12). The process of inductive coding described by Thomas (2006) includes the following steps:
1. **Preparation of raw data:**
   For this analysis, raw data used were taken from the survey online free form comments and transcripts of the interviews.

2. **Close reading of the text:**
   After selecting the raw data, I read the free form comments and the transcripts in hard copy multiple times, in order to gain an in-depth understanding of the examiners’ approaches to assessing PBTs. I took notes on emerging themes, and highlighted particular words or phrases that were illustrative of themes. For example, one particular word that illustrated a possible theme for this study was ‘coherence’ in the thesis.

3. **Creation of themes:**
   After several readings, the themes for each data set were identified. At the initial stage of the process many general themes were derived from the data. After several readings some of those general themes became specific themes. For example, one of the general themes that became a specific theme in this study was ‘coherence’ in PBTs.

4. **Overlapping and uncoded text:**
   There were some segments of text that were coded more than once for different themes. For example, ‘less stressful to assess PBT’ was also coded as ‘easier to assess PBT’. Similarly some text was not coded into any theme(s) because it was not seen to be relevant. An example of text that was not coded was the ‘influence of student’s supervisor’ on the examination process.

5. **Continuing revision and refinement of theme system:**
   The final stage of the general inductive analysis process involved merging common themes. As an example, ‘different formats throughout the thesis’ and ‘inconsistency in the whole thesis’ were merged to ‘lack of coherence in PBT’. In this process, I also searched for contradictory points of view and new insights. For instance, the data showed that some examiners were influenced by publications in the thesis and some were not. In this stage of the analysis, I selected appropriate quotations that conveyed the meanings of the theme. For example, one examiner who was not influenced by publications stated that “publication was not an immunity platform”.
3.3.3 Phase 3: Commentary of PBTs

The third phase of my research utilised a linguistics analysis to gain insights into how examiners provide commentary on PBTs. A qualitative approach using document materials (i.e., examiners’ reports) was employed in this part of the study. It is very common in the field of linguistics to use document materials such as examiner reports and written drafts to analyse feedback (e.g., see studies by Kumar & Stracke, 2007 & Stracke & Kumar, 2011).

I chose to analyse examiners’ reports because they can be used to understand the nature of commentary that examiners provide on PBTs. Examiners at the doctoral level usually provide two types of assessment: summative and formative (Kumar & Stracke, 2011). As discussed in Chapter 2, summative assessment makes an overall judgement on whether the thesis has met the standard required in order to be awarded of the degree, whereas formative assessment focuses on providing feedback to assist the candidate to revise the thesis so as to meet the standards required and/or to provide suggestions for publishing or future research. Given the dual task of examiners, to provide summative assessment and feedback, I aimed to gain insights into the different types and functions of both feedback and summative assessment in PBT reports.

Data

The examiners’ reports were obtained from volunteer interviewees who felt comfortable sharing their examiners’ reports for PBTs. In total, I collected 12 reports - one each from 12 interviewees from Health Science and Science. The reports were anonymised by removing the name of the candidate, the title, the date of examination and any other data that could potentially identify the candidate. Alongside the reports, information from examiners on how they provide feedback on PBTs, gained from their responses to open-ended questions in the survey and interviews, were also used in this phase.
**Analysis of examiners’ reports**

Information the examiners shared on their feedback processes in the survey and interviews were analysed using Thomas’ (2006) general inductive approach, as discussed earlier in this chapter.

For the linguistic analysis, all examiners’ reports were analysed at the sentence level. The reports were available in electronic form and tabulated to enable coding of each sentence. The reports were numbered in sequence (e.g., examiner report 1 or ER1) and sentence (e.g., 24). The first stage of the analysis was to identify if examiners provided more summative assessment or feedback on PBTs. The guiding question that helped me distinguish the difference between summative assessment and feedback was: Did the examiner provide any guidance to improve the task or did they make an evaluative judgment on the task? If the sentence indicated that the examiners were providing some form of guidance, the sentence was coded as feedback (F). For instance, “I suggest that a modified version of Glossary should either be placed in an appendix, or removed altogether” (ER10/101). On the other hand, if the sentence showed that the examiner made an evaluative judgment, then it was coded as summative assessment (A). For example, “the abstract was clear and concise, and provided a good summation of the key points” (ER3/2). However, there were some places where the sentence indicated both summative assessment and feedback and it was coded as both (B). For instance:

“Sensible use was made of table and appendices [making an evaluative judgement i.e., assessment]: however there was some inconsistent or unnecessary use of capitalization, such as ethidium (p54) and phenol (p58), for example [providing feedback]” (ER1/9).

The second stage of the analysis was to identify the types of summative assessment that examiners provided during the examination process. The purpose of analysing for summative assessment was to find out whether examiners provided more positive or negative summative assessment. Sentences that were coded (A) were analysed. One example of positive summative assessment in a report was: “difficult concepts are explained clearly and difficult experiments have been diagrammed to make them easy to follow” (ER11/8). This sentence shows that the examiner complimented the candidate for being able to explain and lay out a clear presentation. Examiners also provided negative assessment. One example of negative assessment was: “I found the
structure of the thesis, with methods, key results and important figure buried in the addenda, quite unusual and this structure severely impeded the flow of the thesis” (ER4/2). This sentence indicates that the examiner was not pleased with the structure of the thesis.

The third stage of the analysis identified the types of feedback that examiners provided on PBT reports. The feedback was analysed at the sentence level based on the Kumar and Stracke (2007) model of feedback: referential, directive and expressive (Table 3.3). Even though this model was designed by analysing each sentence of final PhD drafts, and adapted from a linguistics theory on functions of speech (Holmes, 2001), it was thought the model could be applied to distinguish the different types of feedback that examiners used on PBT reports. Hence this model was employed as part of this study. The basic component of this theory explains that any form of interaction, whether it is spoken or written, includes a message (feedback), the hearer (candidate/supervisee) and the speaker (examiner/supervisor).

Referential refers to utterances that provide information, whereas directive refers to utterances that ask the hearer to do something, and expressive refers to utterances that express the speaker’s feelings. In the referential category there are three main subcategories: editorial, organisation and content. Editorial refers to lexicon issues; organisation focuses on the logical structure of the text; and, content is a consideration of whether the information that is provided in the paragraph or section is relevant. In the directive category there are also three main subcategories: suggestion, question and instruction. Suggestion is asking the candidate to consider something; question is probing the candidate to reflect and have a fresh look over something; and instruction is telling the candidate to do it. In expressive there are also three main subcategories: praise, criticism and opinion. Praise refers to positive comments; criticism refers to constructive (or negative) comments; and opinion is telling one’s point of view.

For the third stage of analysis sentences that were coded (F) were analysed and coded into different categories based on the feedback model. For instance, “the paper by Craw, Youngson & Koons (1999), and Craw, Youngson & Leckie (2006) deal with Southern Alps, and foreland basins in general, and should be taken out of the thesis” (ER9/11). The sentence indicated that the examiner was instructing the candidate to remove mention of the papers from the text of the thesis. This sentence falls under the
directive instruction category in the Kumar and Stracke (2007) model and here was coded as (ER9/11 - DI). There were some places where the sentence was double coded. For example, “minor errors in the introductions to each chapter (marked on the thesis), and elsewhere should be corrected” (ER9/34 - RE, DI). The examiner highlighted the editorial errors that she found in the introduction chapter and expected the candidate to take into consideration the changes she had highlighted and implement them in the other revised chapters in the thesis.

The sentences that were analysed in the reports were discussed with one of the designers of the model of feedback set out above. We had different opinions regarding how the codes were coded and we discussed ideas about the coding until we reached a consensus. I then discussed the analysis and interpretation process with my three supervisors and also the designer of the model.

Table 3.3 Summary of feedback categories (Kumar & Stracke, 2007, p.464).

<table>
<thead>
<tr>
<th>Categories</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Referential</strong></td>
<td></td>
</tr>
<tr>
<td>Editorial (RE)</td>
<td>Please get rid of spaces.</td>
</tr>
<tr>
<td>Organization (RO)</td>
<td>This does not belong in the literature review.</td>
</tr>
<tr>
<td>Content (RC)</td>
<td>Are you sure you can make such a claim?</td>
</tr>
<tr>
<td><strong>Directive</strong></td>
<td></td>
</tr>
<tr>
<td>Suggestion (DS)</td>
<td>Maybe this is not necessary.</td>
</tr>
<tr>
<td>Question (DQ)</td>
<td>Whose term is this?</td>
</tr>
<tr>
<td>Instruction (DI)</td>
<td>Please clarify.</td>
</tr>
<tr>
<td><strong>Expressive</strong></td>
<td></td>
</tr>
<tr>
<td>Praise (EP)</td>
<td>Good, nice example.</td>
</tr>
<tr>
<td>Criticism (EC)</td>
<td>This table . . . does not add to the text.</td>
</tr>
<tr>
<td>Opinion (EO)</td>
<td>I would be interested to explore what triggered this.</td>
</tr>
</tbody>
</table>

In the following section, I address how this study was set up to achieve triangulation during the data collection.
3.4 Triangulation

Triangulation involves the use of multiple data sources and multiple data collection methods in the investigation of a single question or phenomenon (Patton, 2002). In his classic framework Patton (2002, p.247, citing Denzin 1978) outlined four basic types of triangulation:

- data triangulation, using a variety of data sources in a study;
- investigator triangulation, involving the use of several investigators or researchers;
- theory triangulation, the use of multiple perspectives to interpret and analyse the data; and
- methodological triangulation, involving the use of multiple methods of collecting data.

The main form of triangulation utilised in this study was methodological triangulation involving the use of multiple methods of data collection (Patton, 2002). The use of triangulation helps the researcher to gain insights into the same phenomenon from different perspectives, leading to a fuller understanding of the phenomenon under investigation than would be available without the multiple methods of data collection. Hence, it is seem enriching in terms of interpreting data, to triangulate data from both qualitative methods of interviews and examiners’ reports with the quantitative results of the online survey.

Triangulation also provides information about whether the data collection procedure is consistent and accurate (Seliger & Shohamy, 1989). The piloting of the survey and interview protocol allowed me to determine whether any aspects of the questions needed to be modified. Seliger and Shohamny (1989) believed that such pre-testing allows for the revision and modification of the instrument on the basis of new information, thus improving the reliability of the procedure. Glesne and Peshkin (1992) suggested that a pilot study enables the researcher to learn about the research process and interview techniques, and also to get a general sense of the nature of the research setting.

This study made use of peer debriefing (Mertens, 2005) to help validate interpretation of the data. The first interview transcript was jointly analysed with my primary
supervisor. Throughout the analysis and interpretation process the interpretation of the data was discussed with my three supervisors. This approach helped to reach consensus and increase confidence in the findings at the stage of data analysis (Freeman 1998).

3.5 Ethical consideration

An ethics application for my study was approved by the University of Otago Human Ethics Committee. Participants were informed that by completing the survey they were giving informed consent and, examiners involved in either the interviews or the provision of examiner’s reports, completed an information sheet and consent form (see Appendix B). In this study participation was voluntary and participants had the right to withdraw at any time or request further information at any stage of the research.

The participants for the interviews were made aware that the interviews were semi-structured and that individual interviews would last up to an hour. The interviews were transcribed and returned to the participants for checking. Pseudonymous were used to protect the identity of the participants. Only my supervisors and I had access to the raw data and the names of the respondents.

Participants were also made aware that the examination reports they shared had to be anonymised. In terms of anonymising the reports, the participants had to remove any identifying information from the reports such as name, topic, date examined and any other aspects which could result in identification of the candidate.

The participants were advised that the results of the research would be published and made available in the library at the University of Otago.
3.6 Summary

This chapter has outlined the methodological approach and described the research procedure of this project in detail. A case study design with a mixed methods approach was adopted to address the research questions. An online survey was used to gather data on the prevalence of PBTs and how examiners approach assessing them, while the interviews were conducted to provide deeper insights into the processes and judgments of examiners during the assessment of PBTs. A linguistic analysis of the examiners’ reports identified the nature of commentary used in writing reports pertaining to PBTs. The methodological approach employed allowed triangulation of the data collection. Ethical approval was obtained for the study.

In the next chapter, I present and discuss the research findings. In the following chapter (Chapter 4), I provide the prevalence, the types of PBTs, the disciplinary differences in assessing PBTs, approaches to examining, and opinions of examiners assessing PBTs.
Chapter 4
Assessing publication-based theses: Prevalence, types, disciplinary differences, approaches and opinions of examiners

4.1 Introduction

In this chapter, I address four research questions, namely:

1. How prevalent is it to assess PBTs and are there any disciplinary differences?
2. What are the types of PBTs that examiners assessed?
3. How do examiners approach assessing a PBT and do they use a set of criteria that are different from those for traditional theses?
4. What are the overall opinions of examiners on PBTs?

The chapter is divided into three main sections, each of which presents the findings relating to the research questions. The data used to address these questions were from the survey (62 respondents) and interviews (16 interviewees). First, I present the prevalence and types of PBTs that examiners examined over the past ten years, followed by the disciplinary differences in the types of PBTs being assessed. Second, I provide insights into how examiners approached assessing a PBT in terms of the tasks done and the set of criteria used. Lastly, I present the examiners’ overall opinions about PBTs. Additionally, I discuss the possible drawbacks of writing PBTs, whether assessing PBTs is easier compared to traditional theses, and whether additional guidance is required to assess PBTs. I then compare these findings with past research and provide some critical insights.
4.2 Prevalence, types of PBTs, and disciplinary differences

In this section, I first present the prevalence of PBTs in regards to the number of theses that examiners have assessed over the past ten years. Then I present the types of PBTs that examiners have assessed and how these vary by discipline. The findings in this section emerged from the survey data, many of which are reported in Sharmini et al., (2015).

Sixty two examiners who completed the survey estimated that in all they had examined 336 traditional theses and 264 PBTs in the past ten years. In other words, 44% of their thesis examinations were on PBTs. Of the PBTs, 45% were hybrid theses, 41% were theses with publications appended, and 14% were PhD by publication. It should be recalled from Chapter 3 that a hybrid thesis refers to a thesis that has publications inserted in lieu of some chapters of a traditional thesis, while a thesis with publications appended refers to a traditional thesis that has publications appended or bound at the back of the thesis, and PhD by publication refers to a thesis that consists entirely of published papers bound together.

Figure 4.1 shows that over the last ten years, 130 PBTs were examined by examiners from Health Science, 108 were from Science, 17 were from Commerce, and nine were examined by examiners from Humanities. On average, Health Science examiners assessed 4.81 PBTs each over ten years, while Science examiners assessed 4.5 PBTs. For Commerce, the average number of PBTs per examiner in ten years was 3.4 and for Humanities it was 1.5. Even though Health Science examiners reported assessing more PBTs in total, Science examiners reported examining a higher proportion of PBTs compared to traditional theses (Figure 4.1). When comparing the types of PBTs across the broad disciplinary groupings, hybrid PBTs were most common in Health Science, Science and Commerce, followed by thesis with publications appended, and then PhD by publication. In Humanities, which had only a small sample of six examiners, the most common type of PBT examined was PhD by publication, followed by PhD with publications appended, and then hybrid PBTs.
Figure 4.1 Estimated number and type of PBTs examined with proportion of PBTs compared to traditional theses written above the bars. The sample consisted of 27 examiners from Health Science, 24 from Science, 6 from Humanities and 5 from Commerce (from Sharmini, Spronken-Smith, Golding & Harland, 2015, p. 93).

From the findings presented above, it is apparent that, for this sample, the hybrid thesis was the most common type of PBT examined by respondents who had examined PBTs in the past ten years across the disciplines.

4.3 Examiners’ approaches to PBTs

The survey and interview data indicated that examiners may have different reading styles, approaches and criteria as they assessed a PBT compared to a traditional thesis. Twelve examiners (from Health Science and Science5) revealed in their interviews that they read a PBT from cover to cover in a similar manner to reading a traditional thesis. These examiners indicated that they did not see the reasons for reading the thesis differently even though some publications are included in it. For instance, one examiner

5Recall that for ease of reporting the examiner interviewed from Information Science was classified as being in Science (rather than Commerce)
commented that any form of thesis “should tell a story and it should be read like a novel” (Jerry). Another examiner shared that “a thesis should be read from the beginning to the end. I don’t dip in and look around the thesis because that kind of spoils the fun” (Gary).

However, four examiners explained that they had their own style of reading a PBT - first they need to be convinced of the authorship before reading further. For instance, the first thing that Dylan said that he does when he reads a PBT is that he “looks at the declaration form and sees if the contribution was relatively balanced before reading the thesis narratively even though there were publications”. On the other hand, Cameron reads “the papers in the thesis first and only then read the thesis from the beginning to the end”. Micah enjoys reading the acknowledgement chapter first, before reading the whole thesis. He believes that by reading this section, he “immediately gets a good idea whether everything in the thesis is good”. Cory only reads “the introduction chapter and papers that have the student’s contribution”. He claims that a PBT does not bring out the student’s voice. Hence, he only looks for chapters and papers that showcase their voices.

The findings show that most examiners read a PBT thesis from the beginning to the end (or narratively) as they would a traditional thesis. Even though three examiners had their own distinctive reading style, they still read a thesis narratively. It was only Cory who approached reading PBTs differently.

Besides reading the thesis narratively, examiners jotted down notes in detail. All sixteen examiners made detailed notes and also asked several questions while a reading thesis. Often they went back and forth in the thesis to check if any of their unanswered questions had been clarified. Some of the questions they asked regarding publications were:

- What aspect of the paper is the student’s contribution?
- What did the other authors contribute?
- Is the student the first author?

For others, more generic questions were included:

- Has the student put a good foundation in place showing scholarship?
• Is the research properly explained and has the student done it the best way or could it have been done another way?
• Did the student do a thorough investigation of understanding the problem or topic?
• Is the methodology appropriate?
• Is the body of work linked together as a coherent piece of work?
• Does the student understand what he/she has done?

One examiner explained that when he assessed a thesis, he would:

…recalculate and check the student’s results to make sure that they make sense. If it doesn’t make sense, I will redo and see if I can emulate their results… I might just go and re-read the section to see if I understand what I did because it may be my misunderstanding (Stanley).

The findings from the interviews show that all examiners took their role seriously and were willing to do additional tasks such as recalculate the candidate’s result, and re-read the thesis back and forth. The questions that all examiners asked seem to show that they have their own set of criteria for assessing a PBT.

One of the research questions addressed in this chapter is whether examiners use the same criteria for assessing PBTs as they would use for assessing traditional theses. From the survey, 71% of examiners indicated that a different set of criteria was not needed as the usual criteria given by the university fitted well with the assessment. For example, one examiner commented that these criteria “are internationally widely accepted criteria that are considered good practice in scientific research. They were used as the main yardstick by which my PhD and my post-doctoral training were judged” (HS/M/60). However, 29% of examiners stated that they used their own personal set of criteria. For instance, one examiner explained in the survey that when there are papers included in the thesis, they seek clarification on authorship and the quality of the publications:

I need to look for a different set of criteria. I look for evidence of the contribution the student has made where there are other co-authors. I
look at papers by the last author/supervisor to see if there are similarities in methodology or the wording of the introduction, for example, which might make the paper easier to write than a thesis chapter. I look also at the quality of the journal (impact factor) and the time between submission and acceptance (HS/F/32).

However, in contrast to some of the survey data, all 16 interviewees agreed that the criteria used for traditional theses were also relevant for PBTs. Typically, the criteria to assess a traditional thesis include:

- originality in the research;
- critical engagement with the literature;
- the use of appropriate methods of data collection and analyses;
- analytical ability;
- effective written communication skills;
- coherence in the thesis; and
- the potential to publish.

Although the examiners who were interviewed claimed to use the typical set of criteria, the set of questions that they asked themselves while assessing the thesis shows that examiners actually used their own personal set of criteria to assess PBTs. For instance, the criteria were to determine:

i. that the candidate had a major contribution in multi-authored publications;
ii. that the contribution of co-authors had minor roles in the publications; and
iii. whether the candidate is the first author in the publications.

In other words, the examiners did not only rely on the criteria provided by the university, but had an extended set when it came to PBTs. This extended set seemed to be more specific mainly focusing on the candidate’s contribution rather than the thesis. Whereas, the criteria that were provided by university mainly focused on the research thesis rather than on the student’s specific contribution in the thesis.

One examiner interviewed (Dylan) indicated that, even though he uses the same criteria for PBT as he uses for traditional theses, he relates the criteria differently when assessing a PBT. For instance, the key criterion for a PhD is to demonstrate originality
in the research, but Dylan is of the view that originality and significant contribution relate to the number of publications:

Original contribution [...] is a little about the quantity - is there enough in terms of sheer volume to the work that has been done, whereas, significant contribution to knowledge reflects what is noble, is the volume of work enough and does it reflect the three years’ worth of work and is it evident that the student understands the process? I correlate these elements with the number of papers in the thesis.

Similar to Dylan, Fiona expects to see a certain number of publications in a PBT. She commented that, “I expect for a thesis to be accepted for a PhD, it should have at least three major publications and possibly four or five depending on the topic”. However, Vincent feels that expecting a number of publications in a PBT would decrease the quality of the publications. For instance, he explained:

If you start driving a minimum number of papers, students are going to get them out because they need to meet the minimum publishable unit. They are going to get them out in low impact, low quality journals because they’ve got to get them published.

Like Dylan, Stanley also felt that the criteria for ‘publishable material in the thesis’ needed to be applied differently for PBTs. He explained that:

The criteria may not change completely but the instruction may change slightly. For instance, it is no longer sensible to ask if the thesis produces any publishable material when the thesis contains publications. But the instruction should ask if the publication is published in an appropriate journal.

The findings above show that the criteria for assessing theses were applied differently when the thesis included publications. Consider for example, Stanley’s view, that it does not seem practical to ask examiners to comment on whether the thesis produces publishable materials, but rather it should be focused on where the material is published. In addition, some examiners also related originality and significance of contribution to knowledge to a number of publications in the thesis.
What seems to be apparent from both the survey and interview data is that some examiners used the criteria to assess PBTs differently, and/or extended the usual set of criteria. This raises a question as to whether the criteria used to assess PBTs should be reconsidered since clearly examiners who participated in this study have different expectations and requirements for these types of theses.

4.4 Examiners’ overall opinions about PBTs

This section discusses the examiners’ overall opinions about PBTs in terms of whether PBTs should be encouraged, the drawbacks of doing PBTs, and whether examiners found it easier to assess PBTs in comparison to traditional theses. The data analysed in this section were from the survey and interviews.

4.4.1 PBTs should be encouraged

The results of the survey show that 77% of examiners thought that PBTs should ‘definitely’ or ‘very definitely’ be encouraged, with only 13% being neutral and 10% saying ‘definitely not’ or ‘very definitely not’ (Figure 4.2).

![Figure 4.2 Overall opinions on publications-based theses. Survey respondents (n = 62) were asked to rate their views using a five point scale. Note that the “very definitely” and “definitely” ratings were collapsed into one category, as were “definitely not” and “very definitely not” (Sharmini et al., 2015, p.94).](image)
From the comments made through the 16 interviews, it was evident that 15 examiners were in favour of candidates doing PBTs. The most common reason given was that candidates gained a richer learning experience. For instance, Stanley explained that “PBTs encourage growth as a researcher. Part of the process is we expect them to grow over time”. Similarly, James commented that part of being a researcher is to learn the trade, and this experience can only be achieved through PBTs:

The goal of doing a publication-based thesis is that we want our student to become a scientist and how do we get them to become scientists? We get them to do what scientists do. We write papers.

Another interviewee explained that “it is odd to do a research training degree and never publish. Part of research training is writing for publications and not leaving it until you’ve finished” (Dylan). Besides that, it was explained that part of that experience of developing as a researcher is the need to be “exposed to the peer review process and learn how to write a paper” (Bridget) and to experience “the process of interacting with editors and reviewers” (Matthew). This publishing experience also gives candidates the opportunity to check if their work is on track through the “benefit of the feedback of anonymous referees, which often will be useful guidance to them” (Tabitha), and the revision process helps to make sure that “the work is a well-written piece and succinct” (Jerry). Another examiner also indicated that doing a PBT helps candidates to “focus on the writing process” (Mark) and thus assists in the process of becoming a scholarly writer.

Another advantage of doing a PBT is that it offers the opportunity of a brighter future in a tight job market. One examiner commented that by doing a PBT, the candidate gets the opportunity to “build up their research profile… that may lead them to great career, a fantastic career” (Bridget). Similarly, Robin claimed that there are “real positives around career development when they get their publications out”.

Some of the drawbacks that interviewed examiners saw in doing a publication-based thesis were:

- the time to get publications accepted by the journals;
- trying to publish in a reputable journal;
• losing the ability to be consistent in the style, i.e., the use of language and references;
• losing a lot of richness or details of the research due to the word limit of articles;
• not hearing the voice of the candidate in the thesis (if it includes multi-authored publications).

These findings show that the examiners were, overall, in favour of candidates doing PBTs despite a few drawbacks in the process.

4.4.2 Easier to assess PBTs

Thirty out of 62 examiners in the survey, and seven out of 16 in the interviews, indicated that it was easier to examine theses with publications compared to a traditional thesis. The most common reason given was because sections of the thesis had already been peer reviewed, thus indicating that the research has met professional and international standards. For example, one examiner commented in an interview that:

I found it easier and less stressful to mark PBTs because I know the paper has already been read by at least two other independent people. I think it’s also safer for an examiner to assess PBTs because you’re not only relying on your own judgement; you’re also relying on the judgement of the other people who were involved in the reviewing the papers (Fiona).

Another interviewee shared his experiences, noting that his role as an examiner changes when he has to assess a publication-based thesis “…because I don’t look at [the thesis] more closely. You’re aware that someone has read the papers and commented on them scientifically and it has been published. I am just rubber stamping” (Robin). Some examiners preferred to assess this thesis format, with one examiner commenting in his survey response that he found it “…harder to read and examine conservative theses [than PBTs]” (HSci/M/47). Other examiners interviewed expressed that “each chapter
tells a story on its own” (James) and “the chapters were well written, succinct and had fewer mistakes” (Tabitha).

The findings presented above indicate that some examiners found it easier to assess PBTs because such theses have undergone a rigorous peer-review process, and because of the quality required by journals, the chapters based on publications were likely to be of a higher standard than traditional thesis chapters.

Thirty-two percent of the examiners responding to the survey were neutral about assessing PBTs. They said their assessment was not influenced by the presence of publications - they assessed the thesis as it was presented. For instance, one examiner commented “a thesis should be judged on quality regardless of whether any part of it has been published or not” (Hum/M/51). This viewpoint was also evident in the interviews. Three examiners were neutral about assessing the theses. One examiner said that “it wouldn’t make a difference between [PBTs] and [traditional theses], you know. To me, a thesis is a thesis” (Jerry).

Even though many examiners found it easier to assess PBTs, there were still some examiners who struggled to assess them. Nineteen percent of examiners indicated in their survey responses that they did not think it was easy to assess PBTs, while four interviewees indicated that they struggled to assess PBTs because they were not provided with any guidelines. For instance, one interviewee commented that she struggled to assess a PBT because she was not given any form of:

…guidelines on how to assess the thesis or what to expect from the thesis. The introduction and discussion chapters had limited information and did not provide enough justification and depth about the research. As an examiner, I wanted to see a much more in-depth discussion on the whole PhD and know how it fits together and ensure that the student had understood what they’d done, because the publications obviously included the supervisor’s name. I just couldn’t evaluate the student’s learning (Leanne).

One examiner interviewed felt disappointed and frustrated after assessing a PBT. It was his first time receiving a PBT and he was excited to assess it; but after going through it, he decided not to assess another PBT. He commented that “I struggled to mark it
because I didn’t know how much the student had contributed. I felt so foolish for advocating this kind of thesis” (Micah). Cameron explained that the problem with a hybrid PBT is that it does not provide:

… any narration explaining the context of the study, what has been tried and what didn’t [work]. It is important to show me how you develop the ideas. This information was lacking because the editors are not keen on this information being presented.

Some examiners also struggled to assess PBTs because of the different layout in which the thesis is presented. For example, one examiner said in the survey that it “[was harder] to cope with inconsistencies within the thesis due to the paper format” (Sci/M/36).

What seems to be evident from these findings is that about a fifth of examiners from the survey struggled to assess PBTs, and some wanted guidelines on how to assess a PBT. Others felt they could not see the candidate’s mastery in the research, and some did not like the format because the thesis showed a lack of depth and justification of the research.

4.4.3 Guidance for examining PBTs

From the survey responses it was apparent that most examiners (74%) were satisfied with the guidance provided for examining PBTs by the university, with only 26% wanting more. Examiners who were happy with the guidelines commented that “once you’ve marked a few theses you just get on with it” (Hum/M/40). It was apparent that over time examiners became used to assessing this form of thesis, especially with the possible inconsistency in the layout of the thesis, and the repetition of information in the chapters and publications. Examiners who wanted more guidance were mainly seeking guidance about how to supervise students who were keen to produce PBTs, but a few wanted more guidance on what to expect in a PBT. For instance, one interviewee commented that:

I did want guidelines. I wanted to know if this was an acceptable format, because I found the introduction and discussion [chapters] were too brief
to adequately mark and to see that she knew what she was doing, justifying what she was doing and I wanted guidelines to find out what those two chapters should look like (Leanne).

4.5 Discussion

In this section, I discuss and compare the findings presented in this chapter with past research. First, I highlight how this study developed a new taxonomy, followed by discussing the disciplinary prevalence of PBTs. Then, I offer an insight into the examiners’ approach when assessing PBTs. Finally, I discuss the examiners’ overall opinions about PBTs.

4.5.1 New taxonomy for PBTs

When embarking on this research and reviewing the literature, it became evident that a satisfactory classification for PBTs was not available. Park (2007) provided a classification of PhDs but did not take account of the different types of PhDs that include publications. As such, a new taxonomy for publication-based theses was developed: PhD by publication, hybrid thesis, and thesis with appended publication. It is important for supervisors, doctoral candidates, examiners and university bodies to be aware of these new types of PBTs as it seems to be becoming more common to include publications in the thesis in various ways. Additionally, it is important to realise that the different types of PBTs entail different formatting implications as attested by the examiners in this study. These implications are discussed further in Chapter 5.

4.5.2 Disciplinary differences in prevalence and types of PBTs

The findings of this study also indicated that there are disciplinary differences in the prevalence and types of PBTs. Examiners in this research assessed 264 PBTs out of 600 theses over the past 10 years, which means that nearly 44% of the theses were PBTs. A report from the UK Council for Graduate Education (2015) showed that out of 50 UK universities, only two per cent indicated that it was norm to include published papers in
the thesis, and 83% thought it was rare and absent. In this study, PBTs were more common in Health Science and Science than in Commerce and Humanities. A prior study by Mullins and Kiley (2002) noted that publication during candidature was not common in the Humanities, whereas Breimer (1988) and Kamler (2008) indicated that it would be uncommon to find unpublished work in theses in the Sciences. Kamler’s (2008) study discovered that doctoral candidates from Science and Education showed different practices when it comes to publications. Her study found that candidates from Sciences were publishing more during their candidature, especially in highly-rated journals, as they believed that their supervisors expected them to do that. However, candidates from Education were more reluctant to submit their work to international peer-viewed journals. These Education candidates also received less support from their supervisors to publish. This finding is consistent with Bourke et al. (2005) study that showed examiners who assessed Education theses did not indicate any existing publications in their examiner reports. This could possibly indicate that there were no publications included in the theses, or examiners just did not acknowledge existing publications in the theses. While thesis publication practices are relatively well-established in Health Science and Science, it is possible to assume that there may be an emerging trend to include publications in other disciplinary areas. For example, in Commerce and Humanities, doctoral candidates and supervisors may face some challenges to produce publications during candidature (Lee & Kamler, 2008). The role of supervisors in encouraging and supporting candidates to publish is explored in Chapter 7.

4.5.3 Examiners’ approaches to assessing PBTs

Another important finding is that most examiners approached assessing PBTs in the same way as they approached assessing traditional theses, except that they had additional questions to ask during the assessment process. Mullins and Kiley (2002) showed that some examiners who typically assessed traditional theses read them from cover to cover and took detailed notes. While assessing PBTs, examiners asked additional questions regarding the candidate’s contribution in multi-authored publications, the contribution of co-authors in the publications, and whether the candidate is the first author in the publications. One possible insight that can be made
about PBTs is that the examiners approached assessing the theses in the same way, but had different expectations for PBTs. These expectations were closely related to some of the issues that examiners faced while assessing the thesis. I discuss these issues in detail in Chapter 5.

Initially, most examiners in this study suggested that the typical PhD criteria do not need to be changed; however, from the data presented, it is obvious that an extended set of criteria were being used in relation to the candidate’s input in multi-authored publications, author order in co-authored publications, and the contribution of co-authors in the publications. Examiners not only extended the criteria, but they also viewed existing criteria (used for assessing traditional thesis) differently. As an example, they associated originality with a minimum number of publications. They also refuted the need to ask if the thesis has publishable materials when there were already publications in a PBT.

This raises a question as to whether examiners extended or applied the criteria differently because of the lack of clarity in the assessment criteria. Nightingale (1984) reviewed examiner’s reports and university regulations for thesis assessment, and her study discovered that the criteria used to assess theses were not well clarified. This notion was also evident in Sankaran, Swepson and Hill’s (2005) study indicating that examiners were uncertain of the examination criteria as the criteria were too brief and general. Simpkin’s (1987) study also revealed that examiners had their own interpretations of the assessment criteria. What seems to be more apparent from these past studies is that there is a need for explicit assessment criteria in the examination process. Based on the findings of this study, it appears that a new set of criteria may be needed for PBTs, and I discuss this further in Chapter 7.

4.5.4 Examiners’ overall opinions about PBTs

Examiners were generally in favour of encouraging PBTs. This likely reflects the growing trend for doctoral candidates to publish during candidature in order to have a competitive advantage in a tight job market, as well to boost research productivity for the university. In other words, exposure via publishing prepares them for an academic career. The findings observed in this study mirror those of previous studies which
found that candidates who incorporated publications in their thesis gained an enriching doctoral experience (e.g., Robins & Kanowski 2008; Dowling et al., 2012). For instance, Robins and Kanowski (2008) suggested that their early exposure to the publishing process encouraged them to engage in scholarly activities such as responding to journal editors and reviewers comments, presenting data, and explaining their methodology and results concisely. This “hands-on familiarity with publication process should form an essential part of postgraduate training” (Breimer & Mikhailidis, 1991, p.790). Besides the enriched learning experience, doing a PBT also encourages candidates to disseminate knowledge (Francis et al., 2009). Thus, publishing during candidature may help candidates to embrace a sense of accountability to disseminate knowledge, as well as foster attributes and skills that are essential in academia such as responding to constructive feedback, communicating effectively, perseverance, confidence and a sense of independence.

Even though examiners were in favour of PBTs, they were also concerned about the drawbacks of doing this type of thesis. Examiners were concerned mainly about the overall time frame for publications to be accepted in journals (especially in top-ranked journals). This finding was in accordance with Moodie & Hapgood (2012). To get an article published can involve a lengthy timeframe. For instance, candidates are expected to alter their writing style and to format their article and references to the journal’s requirements, which is often tedious (Robins & Kanowski 2008). Moreover, the waiting period from the reviewers’ and editors’ feedback, and sometimes significant amount of revision needed before acceptance involve a longer period of time (Watts, 2012; Davies & Rolfe, 2009). If the article is rejected, resubmitting to another journal may double the timeframe. Consequently, the process of writing an article takes a longer time than writing a traditional thesis chapter, as the candidate and co-authors spend a significant amount of time rewriting and revising the article before submitting it to the journal, as well as attending to any required revisions. This finding was evident in the studies by both Davies and Rolfe (2009) and also Robins and Kanowski (2008). However, what is unknown is whether doing a PBT leads to an increase in the time taken to submission of the thesis – this is certainly worthy of future research.

In addition, some examiners were concerned that PBTs may reduce the candidate’s voice in the thesis, as the previously published chapters were multi-authored. Further,
examiners indicated that the limited number of words in the publication diminishes the richness of the research. These findings provide new insight to the literature. One possible way to resolve these concerns is to provide guidelines for doctoral candidates and supervisors on how to provide additional information for chapters that are published.

Most examiners in this study found it easier to assess PBTs compared with traditional theses, despite not receiving any guidelines and not knowing what to expect. This finding may be explained by the fact that examiners felt reassured knowing that the scholarly community has already critiqued the research, and thus echoes findings in Mullins and Kiley’s (2002) study as well as Bourke et al.’s (2005) research. The findings reported in this chapter indicate that guidelines may be appreciated by some examiners regarding what to expect in a PBT. Moreover, such guidelines could also assist supervisors with supervision of candidates who undertake a PBT.

4.6 Summary

In this chapter, I looked at the prevalence, the types of PBTs that examiners assess, the disciplinary differences in the types of PBTs, the approach examiners use, the criteria they use, and their overall opinions about PBTs. Analysis revealed that examiners assessed 264 PBTs and most of these PBTs were hybrid theses. Assessing PBTs seems to be more common in Health Sciences and Sciences. In terms of their approach when examining a PBT, examiners usually read the thesis narratively. Some used their own set of criteria which added an extension to the usual set of assessment criteria. This particular finding has implications for universities to consider whether a different set of criteria for PBTs is needed. Lastly, it was evident that examiners were generally in favour of PBTs, but some wanted more guidelines regarding what to expect in a PBT. The next two chapters concern the factors that influence PBT assessment, and the nature of examiners’ feedback on published chapters. Following these chapters, I present a synthesis of the findings of this thesis in order to show the theoretical and practical implications of this study.
Chapter 5
Factors that influence PBT assessment

5.1 Overview

In this chapter, I discuss the factors that influence examiners during the assessment process of PBTs. The research questions that guided the analysis in this chapter were

1. What are the key issues that examiners face in assessing PBTs?
2. Which types of publication, if any, influence examiners’ judgements during the assessment process?

The findings presented in this chapter emerged from the responses to the survey, comments in the interviews, and the examiners’ written reports. First, I analyse factors that influenced examiners in the assessment process. These include the issue of unclear contribution by the candidate in multi-authored publications, author order, and coherence in a publication-based thesis. Next, I analyse how types of publications influence the assessment process. Lastly, I compare all factors with the results of past research.

5.2 Contributions of authors in multi-authored publications

Examiners expressed concern that they did not know the extent of author’s contribution in multi-authored publications that were included in the thesis. In this section, I present an analysis of the survey and interview data to explore this theme.

Analysis of the interview data revealed that 11 examiners expressed concern about the inclusion of multi-authored publications in a thesis. Their specific apprehension was not knowing how much the candidate had contributed to such publications since the candidate did not always provide information regarding the contribution they or their co-authors had made. One of the interviewed examiners stated that:

The thesis didn’t have any documentation indicating which aspect of that thesis was the work of the student. I was left with a body of work
which had multiple authorship. I couldn’t make a good scientific judgment about the thesis and I couldn’t distinguish the student’s contribution. I can’t judge the student because I can’t differentiate the work that the student has done from those works that have been done by other authors. It’s important for me to know this information before I can pass judgment on the student’s work. I just need to know which bits are appropriate. It’s quite dramatic and I’m struggling to see how I could possibly give a measure of the student’s performance without knowing which bit the student contributed (Matthew).

The issue of author contribution was also evident from the survey responses. Sixty-nine percent of the survey respondents believed that the lack of clarity regarding the contribution of the candidate in multi-authored publications was a problem. For instance one examiner commented “…when publications are multi-authored… it gets harder to distinguish the candidate’s work” (Sci/M/45). Evidently, examiners felt frustrated not knowing how to judge the candidate’s work in multi-authored publications.

Examiners also expected the candidate and co-authors to specify the tasks they had done in their publications. For instance, one interviewee explained that “it is a norm to work in a team for a publication but it is important to tell how much you have contributed and done in the publication” (James). Some of the descriptors that examiners in the interviews used to express this concern were to “be transparent”, “tell exactly”, “spelled out very carefully” and “provide explicit information” regarding each author in the paper. In other words, the analysis indicates that examiners did not want the authors in the publication to just state that they had contributed, but to declare exactly what they had done.

To avoid any confusion about the author’s contribution, some examiners suggested it is important for the candidate to provide a statement declaring the contribution of each authors in multi-authored publications. For instance, one examiner responding to the survey proposed a provision for “…a cover page detailing the student’s contribution…” (Sci/M/41), and listing their “…percentage contribution clearly” (Sci/M/29). Hence, the declaration form should not only state how much the author had contributed, but also specify exactly what each author had contributed.
Besides this, examiners suggested that incorporating an oral examination as part of the PhD examination process would help to resolve the issue of the author’s contribution, provide an opportunity for clarification of any unclear issues in the written thesis, and also confirm that the candidate has a sound knowledge of the research being presented. One of the respondents in the survey explained that he is a “big supporter of oral examinations in all situations but believe[s] they are absolutely essential if part of the thesis contains jointly authored publications” (Com/M/43). Similarly, Leanne in her interview commented that an oral examination for PBTs will not only give the examiners the “opportunity to ask all the questions that they have about the thesis” but also the opportunity to tell “if the student knows the work”.

Three examiners indicated in their interviews that an oral examination would not only help to resolve the issue of author’s contribution but also that it was important for candidates to defend the work they had done. For instance, James commented that:

I expect the student to get the degree but I want to help them get as much out of the degree [as they can] by asking them questions in the oral exam. I want to give them the opportunity to defend and tell what excited them about the thesis, as they’re the world expert in that area now.

In addition to James, Stanley thought that candidates deserve the opportunity to defend the research that “they have worked so hard for 3-4 years”. He continued by explaining that it was not only important for the candidates to defend their work, but to also give them that opportunity of “a proper closure to the PhD journey”.

What seems evident from this finding is that examiners are in favour of incorporating an oral examination as part of the examination process for a PBT. An oral examination gives the examiners the opportunity to see if the candidate has mastery over all the material in the thesis, especially with chapters that are multi-authored publications.
5.3 Author order in multi-authored publications

The second factor that influenced examiners during the assessment process was the issue of author-order in multi-authored publications. The data analysed in this section were from the interviews only.

Fifteen examiners raised concerns about author order, particularly if the candidate was not the first author in the publications. This apprehension was expressed quite vociferously. For instance, Stanley said that:

I would not mark a thesis if the student is not the first author [in the papers]. To me, the student has to sign off as the first author because the student has done all the work. I can’t think of any way that would be relevant to mark. I feel quite strongly about it.

He continued explaining that “… it’s a norm for supervisors to contribute more in the student’s work” in the thesis (including publications) because it is the supervisor’s responsibility to provide feedback and help the candidate to improve. Regardless of how much the supervisor has contributed, the candidate should still be the first author in his/her publications. Another examiner argued that as part of the learning process in the PhD it is common for supervisors to contribute to the candidate’s thesis:

Even though the student has signed the contribution form, I know the supervisors would have put a lot of effort correcting, advising and guiding the student. This is part of the learning process… (Leanne).

Thus, examiners indicated that even though the supervisors may have contributed to the thesis, the candidate should still be the first author in any publications that are included in the thesis. That is, examiners think that the main contributor to the thesis should be the candidate and not the supervisor, even though there may have been significant input by the supervisors.

Only one examiner had a different view about candidates being the first author in publications that are included in the thesis. He argued that if the candidate had done most of the work, then the candidate should be the first author in the publication; but, if “the student writes a terrible paper and the supervisor puts more work into it than the student, then the supervisor should be the first author” (Cory). He felt that if such an
incident happened, it would make the candidate work harder and learn the trade: “It is a little bit of a carrot for them to do a good job on writing a paper”. Having said that, Cory continued to defend his position of being against joint authorship believing that joint authorship deprives the candidates from making their own statement of their work in the thesis and “it’s terrible to have the supervisor’s voice and not the student’s voice”. Even though Cory appeared to be intolerant of joint authorship as part of the thesis, he seems to have a different view about joint authorship. First, he explained that if the supervisor has done most of the work in the publication, then the supervisor should be the first author, not the candidate, even though the publication is included in the thesis. Second, he claimed that joint authorship denies the candidate from showcasing his/her voice in the thesis, despite the fact that joint authorship is viewed as part of research development.

Three examiners indicated in their interview that they would be suspicious if the candidate was the sole author. One interviewee said “it would be unusual for a student to be a single author in a paper. You’d wonder what had happened to their relationship with their supervisors if they didn’t include their supervisors in it” (Cameron); another argued that it was uncommon for candidates to be the sole author during their PhD journey because “doing a PhD is a cooperative exercise [in Health Science and Science] and a joint work with the student and the supervisor” (Matthew). The PhD journey involves the supervisor teaching the candidate the trade of the business, similar to the apprentice model.

Besides being disturbed about sole authorship, examiners were also apprehensive about who should be the co-authors in the papers. One examiner commented that “it’s the norm to have student and supervisor names on the paper but I become more concerned if it’s somebody else involved. Then I really need to be sure of what they’ve done” (Fiona). By comparison, four examiners were simply “not bothered about co-authorship because it is very common in the Sciences to have co-authors in the paper” (Mark). Another interviewee, Gary, shared his experience that:

Sometimes other people, committee members or people in other departments get involved. In this case [the thesis], a statistician was involved [in the publications], but if you have lots of chapters like that, it starts to degrade the student’s input.
The findings indicate that it is common to have co-authored publications in Health Science and Science. Some examiners were uneasy with co-authors when they are not from the supervisory committee. Even in some disciplines where it is common to have experts such as statisticians as co-authors named in the publications, some examiners were still apprehensive about their inclusion as co-authors.

Some examiners in this study suggested that one possible way to resolve the issue of author order is to suggest candidates include only publications where they are the first author. Examiners also proposed that if the candidate is not the first author in a publication it is best for the candidate to either not include the publication in the thesis, or to rewrite it as a traditional chapter. The impression that examiners get if the candidate is the second or third author is “that the student has not contributed majorly in the paper” (Bridget). Another possible way to resolve the issue of second or third author publications is to append such publications in the thesis, instead of having them as chapters in the thesis.

5.4 Achieving coherence in hybrid PBTs

The issue of lack of coherence in hybrid PBTs was the third factor that influenced examiners. The analysis in this section is based on the survey responses, interviews and examiners’ reports.

Sixteen examiners noted in the survey that a thesis could become less coherent when publications were inserted as chapters (that is, the hybrid thesis). For instance, one examiner mentioned, “in a traditional thesis, the student explains the flow of logic, whereas in a publication-based thesis the student’s overview narrative has to be measured against your own views on whether this is a coherent body of work” (HSci/M/35). This finding was also evident in the examiner reports. The following excerpt expresses another examiner’s frustration with the thesis being incoherent:

The major criticism of the thesis has to do with its unconventional layout, which must be revised before the thesis can be accepted…it has effectively destroyed the overall coherence in the thesis, making the text appear disjointed and hard to follow. I was tempted to take the thesis out
of its binding, and place the chapters in running order, so that I could view the thesis content as a coherent document (ER10/30-32).

One interviewee had a distinctive description about incoherence. He explained that the problem with hybrid PBTs is:

It looks like white horses on a field that are running everywhere. The thesis is loosely connected and fails to provide a narration. Coherence is about telling a story and presenting a nice big picture. It has to have a flow (Jerry).

Examiners seem to have two main worries about coherence in a hybrid PBT. First, a narrative explanation about the research may not be provided in the thesis. Second, the layout of PBTs may make it difficult for examiners to read the thesis as a coherent piece of text. In other words, readability of the text can be difficult.

In contrast, eight interviewees commented that coherence across the whole thesis was not an issue to them as long as each individual chapter was coherent and had a consistent theme. For example, James explained that a PBT “doesn’t need to have a linear story… Each chapter can be a different aspect of the same thing but it has to have some underlying theme”. Similarly, Dylan thought that “there should be a common theme [in the thesis]. You can’t have one paper published in healthcare economics and another one on the challenges of working in a mixed environment”. This finding indicates that some examiners believed that each chapter itself should exhibit coherence and a common theme running throughout the thesis.

Five examiners did not associate coherence with the layout of the thesis. These examiners believed that the publication should be attached verbatim. One examiner explained in the interview that “coherence should be on the content of the thesis; not the layout” (Matthew). Another interviewee also commented that:

I understand why the candidate adapts the series of publication for inclusion as chapters in the thesis. Even though the layout may be affected in a certain way, it makes sense why. To me, the anatomy is different but the function is still the same (Dylan).
From this information, what seems to be evident is that some examiners have different perspectives about coherence in a hybrid PBT. The layout of the thesis did not affect these examiners while they were assessing the thesis. They believed that in a PBT, coherence should be focused more on the content rather than on the layout of the thesis.

Seven interviewees found the repetition of information that occurred throughout the thesis affected the coherence in the thesis. This finding was also apparent in the analysis of examiner reports. For instance, one examiner pointed out that “…pages 168-175 cover everything that has been covered before. The repetition is tedious and merely seems like the author is filling in space” (ER8/17-18). In contrast, one examiner from the survey indicated that “…if the thesis has some papers for chapters I may relax the need for coherence since there is inevitably some double-up on reporting” (Hum/F/12). Nevertheless, most examiners interviewed indicated that they were not bothered with the repetition as long as the universities permitted it.

When coherence is a criterion for assessment it may be problematic since examiners have different perspectives about coherence in a hybrid PBT. To overcome this problem, one examiner suggested in his survey response the inclusion of “introductions or bridging sections [between published articles] that weaves the publications together so the reading process is not too affected” (Sci/M/29). In his interview, another examiner proposed the inclusion of “a general discussion chapter that ties and highlights some of the results from the chapters by putting them in context” (Robin). Lastly, examiners found it useful “to [be informed] … earlier about the structure of the thesis [as a hybrid thesis] in the Introduction chapter” (Vincent).

5.5 Influence of type of publication in assessment

Examiners were influenced positively by candidates who had publications in high quality venues included in their theses. The data used for analysis in this section was from the survey, interviews and examiners’ reports.

Most examiners in this study were influenced positively by candidates who had publications in their theses in top ranked journals, high impact factor journals and international peer-reviewed journals. Figure 5.1 shows that 86% of survey respondents
rated top ranked journals and international peer-reviewed journals as ‘significantly’ or ‘very significantly’ influencing their judgement about PBTs. One examiner commented that “…top ranked journals require a lot of effort and the fact of getting that standard indicates the candidate has been in a thorough process that is very important” (Hum/F/12). Another examiner explained that “peer review is the most important thing. A publication in a high ranked journal is evidence of a significant contribution” (HS/M/6). In 11 out of 12 reports, examiners commented that they were impressed to discover publications from those journals. For example:

I was impressed by the significant depth and range of this body of work, which generated original and valuable findings - as witnessed by the papers already published in international peer-reviewed journals (ER1/2).

Publications in chapters and national peer reviewed journals also significantly influenced judgement in over 50% of the respondents. However, publications in local peer-reviewed journals and refereed conference proceedings were much less valued (only 22-28% rated them as having a significant influence), and those in non-peer reviewed journals and non-refereed conference proceedings were rated as significant by only three respondents.
Figure 5.1 Types of publications that influence examiners. Respondents were asked to rate their views using a five point scale. Note that the “very significant” and “significant” ratings were collapsed into one category, as were “insignificant” and “very insignificant”. PR is peer-reviewed (from Sharmini et al., 2015, p. 96).

Another important finding from the survey and interviews is that there were disciplinary differences in opinions as to what types of publications were highly valued. Computer science and information science academics viewed peer-reviewed top ranked conference proceedings as equivalent to top ranked journals. In contrast, examiners from many disciplines in Science and Health Science did not rate conference proceedings or book chapters as highly, suggesting a less rigorous review process for these compared to journal articles. One of the science examiners said “refereed conference proceedings are so soft that they are virtually worth zero” (Sci/M/5). Some examiners viewed conference proceedings as a means for the candidate to build their research profile, rather than to include those publications in the thesis. For instance, an interviewee commented that:

… it’s good to have a few conference proceedings. It’s a good place to put your initial views and things… but not as a representation of the PhD work [or not as part of the thesis]. It’s good to view [conference proceedings] as part of PhD in progress (Micah).
In addition, the extent they were influenced by the publications varied between the examiners. For instance, from the interviews, 11 examiners viewed publications as a ‘level of sure-ity’ (Robin) about what the candidate has done and a ‘level of expectation’ (Dylan) ensuring good piece of work. One interviewee explained that when a paper is included in a thesis, it gives him a good indication of two things: “One, how good the supervisor and the student thought that piece of work was, and two, how good other people thought it was” (James). However, three examiners were forthright with their approach: “I become a more relaxed marker because the papers have been reviewed” (Leanne) and “I am just rubber stamping because you can’t fail a thesis that has published papers” (Robin). An analysis of the examiner reports shows that examiners regarded publications as “original” (ER6/83), making “significant contribution” (ER8/5), meeting “international standard” (ER12/10) and demonstrating “breadth and quality” (ER5/32). Thus, the inclusion of publications helps to ensure that the thesis meets the criteria for assessment.

Two examiners interviewed were suspicious of publications that were published in an unknown journal or in a journal without an impact factor. Also, they were concerned about the “issues of substandard error in a thesis chapter that’s already been published” (James). Hence, this concern influences their approach as they “tend to give the paper a bit more scrutiny” (Dylan) during the assessment process. A possible reason for examiners to feel suspicious is because they do not trust the quality of some journals used as outlets for publications.

Despite the fact that most examiners were positively influenced by PBTs, five percent of the examiners from the survey made it clear that publication was not an “immunity platform”. That is, the inclusion of published work in a thesis was not a guarantee that the thesis would pass. These examiners said they did not trust the peer review system completely, suggesting that there are times when reputable journals publish low quality articles. For example, one examiner commented “…not all publications are rigorously reviewed, so an examiner of a thesis may be left quibbling over erroneous issues that have already been published” (Hum/M/60). This finding was also evident in the interviews. An examiner explained that “journals like Nature and Science have a very high impact factor, but most of the articles are like rubbish” (Cory).
Some examiners were also concerned that early publications might be the work of the supervisor and not the student, whereas the traditional thesis was a better reflection of the student’s own work and voice. For instance, one examiner said that “when you read papers that are written in the first year [of the candidature], you know, they are the supervisor’s work” (Cory).

However, six examiners from the interviews were not influenced by publications. For example, Gary said that “my role as an examiner is to assess the thesis with the university criteria and whether there are chapters published, I am not going to be influenced by it”. Vincent commented that “I should go through the thesis with a fine tooth comb, looking at inconsistencies and interpretations”. This finding was also seen in the survey data. One examiner commented that publications in the thesis were irrelevant to him because he should be “…the gate keeper … ensuring that the standard of the discipline is adhered to” (Hum/M/9). Hence, some examiners in this study believe that it is important for them to make their own judgement of the quality of the thesis irrespective of publications that are included.

5.6 Discussion

It seems to be increasingly common to see multi-authored publications in doctoral theses (Lee & Kamler, 2008). Many doctoral candidates are now publishing with their supervisors during their candidature as part of their research training. Additionally, with the influence of neoliberal policies in higher education, it is suspected that many academic staff achieve their research outputs in part by publishing with their own doctoral candidates (Kyvik & Smeby, 1994). However, the findings presented in this chapter have highlighted several issues regarding PBTs. In the next section I discuss the issues and compare them with past research. The first two issues, namely unclear contribution and author order are discussed, followed by the question of how to maintain coherence in a hybrid PBT, and the potential influence of publications on an examiner’s judgement.
5.6.1 The issues of unclear contribution and author order

The first issue that is evident is the struggle of examiners to determine the intellectual contribution of the candidate in multiple-authored publications. It should be recalled that examiners were concerned with unclear contribution because candidates often did not provide any explanation about their contribution in multi-authored publications. Also, examiners did not know exactly what part the candidates and the co-authors played in the publications. This finding seems to be new to the literature.

Examiners in this study expressed the view that candidates should spell out exactly what each author did in the publications. For instance, this could include a declaration as to who designed the study, collected and analysed the data, wrote, and rewrote the manuscript etc. In other words, examiners not only wanted the candidate simply to state their contribution, but to also provide detailed information as to what the candidate has actually done in the papers. This declaration form could be appended in the thesis, either providing a percentage of contribution or stating exactly what each author contributed in the paper. Some institutions seem to use the percentage approach in deciding the candidate’s contribution. For instance, the University of Melbourne (2013) and Monash University’s (2014) indicate that they guidelines expect candidates to contribute greater than 50% of the content in each publication. The guidelines used by the Faculty of the Built Environment at the University of New South Wales (2012) indicate that candidates are expected to contribute at least 75% to each publication. However, there are no institutional rubrics to guide or help candidates and co-authors to specify the percentages of the tasks that they do in the publications. Moreover, it may be very difficult to accurately determine the percentage contribution. To resolve this issue, two avenues can be considered. First, rather than using percentages, there could be a requirement for a statement regarding what the candidate and co-authors contributed. Guidelines could be provided for candidates to provide a written explanation in their thesis as to their contribution in any co-authored publications. Secondly, integrating an oral examination into the PhD examination process may help to identify the candidate’s contribution in cases of multi-authored publications, as well to convince the examiners that the candidate has mastery over the content of their thesis. The possible requirement for an oral examination is discussed further in Chapter 7.
What remains perplexing is that the issue of unclear contribution seems to become a concern with PBTs, but not for traditional theses. Candidates who write a traditional thesis are not expected to specify or justify their contribution in the thesis, even though the supervisors have likely contributed to the thesis. The journey of doing a PhD is often staged as an apprenticeship in which supervisors are expected to scaffold the candidate to becoming a scholar in the discipline by providing rigorous and rich scholarly experiences. Regardless of which type of thesis the candidate chooses to do, the supervisors play a vital role in the research. So, why is this issue of declaring contributions a concern only for PBTs and not for traditional theses?

Closely related to the issue of unclear author contribution, is the issue of author order. Examiners expressed their concern that doctoral candidates should be the first author on any multi-authored publications that were included in their thesis. Some institutions insist that the candidate should be the first author in these publications. For instance, the Faculty of the Built Environment at the University of New South Wales indicates in their guidelines that:

The thesis should contain a minimum of 3 substantial publications in which the student is the sole author or first author (and no more than 3 authors) in any publication, and in which the student’s contribution to the work for each publication is at least 75% (University of New South Wales, 2012).

However, PhD candidates are not always listed as first author on publications that arise from their doctoral research. Furthermore, often supervisors contribute substantially to the candidate’s research output. This raises some ethical issues about authorship (Fine & Kurdek, 1993; Benos, Fabres, Farmer, John, Gutierrez, Hennessy, Kosek, Lee, Olteanu, Russell, Shaikh & Wang, 2005). Morris (2011) noted that most doctoral candidates find it difficult to determine and negotiate authorship on their publications, especially if the grants are from their supervisors, or the candidate comes from a culturally hierarchical context where the student seldom questions the supervisor. As such, gift authorship (the inclusion of the supervisor’s name in a paper out of respect) is common (Morris 2008).

In some disciplines, such as Sciences and Health Sciences, team-based research and multi-authored publications are common. Several studies have indicated that it is a norm in disciplines such as Arts and Humanities to have sole authorship (e.g., Street,
Roger, Israel & Braunack-Mayer, 2010; Wutchy, Jones & Uzzi, 2007), even though the work may have been done with the help of the supervisor (Street, et al., 2010). However, in disciplines such as Engineering, it is also the norm to have multi-authors over sole authors in knowledge production (Wutchy et al., 2007). Most examiners in this study showed concern about sole authorship because it was not a common practice in their field. One way to overcome these issues of authorship and author order is to consider developing some guidelines on these issues for doctoral candidates, supervisors and examiners. This idea is explained in detail in Chapter 7.

5.6.2 The issue of coherence in hybrid PBTs

The third issue that examiners faced while assessing the theses is that of coherence in a hybrid form of a PBT. It should be recalled that a hybrid thesis has publications inserted in lieu of some chapters. Examiners felt that the thesis could lack coherence because of the inconsistency in the layout of the thesis. However, examiners in this study did not raise any concerns regarding the PhD by publication format of the thesis. Often, these theses included an introduction that explained the layout, and a conclusion chapter that helped to synthesise the key findings of all the papers that were included in the thesis. This synthesis enabled examiners to make sense of the format. Examiners also found assessing a ‘thesis with publications appended’ was more straightforward because it looked exactly the same as the traditional thesis; it simply had papers appended in it.

This issue of coherence in hybrid theses is potentially a problem especially given that coherence is often stated to be an important criterion for judging a thesis (e.g., Holbrook, Bourke, Lovat and Fairbain, 2008). Yet, there are different ways to display coherence. For example, Badley (2009) argues that coherence can be displayed when conclusions follow clearly from the data, when arguments are clearly expressed and organised, and when writing possesses a definite agenda and an explicit structure. In other words, ‘coherence’ is providing an argument that progresses throughout the thesis and summarises the candidates’ intellectual process of discovery and learning. However, examiners in this study were concerned because the themes and arguments were not always coherent due to the layout of the thesis. A way forward would be to
provide guidelines for candidates and supervisors on how to structure a hybrid PBT so that coherence could be achieved in the thesis. This recommendation was also evident in Francis et al.’s (2009) study that revealed that prescriptive guidelines for formatting and presentation are needed for PBTs. Also, given Badley’s (2009) wider definitions of coherence, it may be helpful to provide examiners with guidelines about the variety of ways in which coherence can be identified and recognised. Guidelines on how to achieve coherence in PBTs will be explained in detail in Chapter 7.

5.6.3 Potential influence of type of publication

Most examiners were positively influenced by the inclusion of publications, particularly publications that were highly valued in their discipline. This positive influence was also found in Mullins and Kiley’s (2002) research. However, some examiners in this study had issues with the peer review process and were not influenced by publications. This finding is also consistent with other research which has found that some examiners may not be influenced by any form of publications in the thesis (e.g., Mullins & Kiley, 2002; Bourke et al., 2005). Examiners who were not influenced by publications sometimes had a mistrust of the peer review process since some low quality research can be published. The issue of mistrust in the peer review process is highlighted by Peters and Ceci (1982), who took 13 articles published in reputable psychological journals and resubmitted them, in disguised forms (by creating fictitious names and institutions in the covering letters), to the same journals that had published the original articles. Only three journals spotted them to be resubmitted and rejected the articles, while nine articles were rejected for having serious methodological flaws; only one article was accepted for publication. Even though this study was conducted two decades ago, the issue of reliability and consistency remains questioned (Jefferson et al., 2007). These lack of consistency and reliability in the peer review process challenges the assumption that published work is of high quality (Rocco & Collins, 2012). One possible way to resolve this problem is to consider including publications that are from journals and/or conference proceedings that are recognised in the discipline. Breimer and Mikhailidis’ (1993) research reported that for thesis with publications, it is best to only include publications that are from international peer-reviewed journals. Yet, this study has shown that in disciplines such as Computer Science and Information Science,
publications in top-ranked conference proceedings are also valued. Thus, a set of guidelines suggesting publication avenues (i.e., international peer reviewed journals) could be made available. This is discussed in Chapter 7.

5.7 Summary

In this chapter, I outline the factors that influenced examiners while assessing PBTs. The study showed that examiners sometimes struggled to assess PBTs because they had difficulty determining the candidate’s contribution in multi-authored papers, were concerned about author order in any publications, and also the issue of coherence in a hybrid PBT. Even though examiners were influenced positively by publications from reputable journals, a small number of examiners were not influenced by any form of publications as they mistrusted the peer review process. Some examiners wanted to do their job by assessing the thesis as it was, rather than being influenced by publications. The findings have implications for the provision of advice to candidates, supervisors and examiners, and these are discussed in Chapter 7. In the following chapter, I discuss the nature of commentary on PBTs from a linguistics perspective.
Chapter 6
The nature of commentary on PBTs

6.1 Introduction

In this chapter I explore the nature of the commentary that examiners provided on theses that include publications. Examiners at the doctoral level usually provide summative and formative assessment. Summative assessment makes an overall judgement on whether the thesis has met the doctoral standard. The commentary for summative assessment usually does not include any elaborations as to what examiners want candidates to do. However, formative assessment incorporates feedback to assist the candidate to revise in order to meet the required doctoral standards and to improve any further publications developed from the thesis. This form of assessment provides learning opportunities for the candidate. Formative assessment is also referred to as feedback: the term ‘feedback’ is used as the operational definition for formative assessment in this chapter.

Since part of the thesis has already gone through a presumably rigorous peer-review process before publication, expected that, compared to traditional theses examiners of PBTs would be:

1. More likely to provide less commentary
2. More likely to require less changes to parts of the thesis, especially those that have been published
3. More likely to provide minor comments rather than discuss major substantive changes
4. More likely to provide summative assessment rather than feedback
5. More likely to provide referential feedback than directive and expressive feedback6.

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6referential feedback refers to feedback on editorial, organisational and content issues; directives refer to feedback that includes suggestions, questions and instructions; and expressive feedback refers to praise, criticism and opinions (Kumar & Stracke, 2007, p.464).
In order to ascertain whether these hypotheses are true, I analysed the survey and interview data as well as 12 written reports that were collected from Science and Health Science examiners. The reports were analysed from a linguistic perspective to gain a clear understanding of the types and functions of feedback that had been provided on PBTs.

In the next section I first present findings about the length of commentary for PBTs compared to traditional theses. This is followed by a section that discusses whether examiners expect candidates to make changes to published chapters, and also whether examiners provide more major or minor comments on PBTs. Additionally, this chapter provides a linguistics insight into assessment and types of feedback that examiners provide in their examiners’ reports. Lastly, a comparison of these findings with past research is undertaken.

6.2 Examiners give a similar amount of commentary on PBTs

In this section, I present a discussion of the survey and interview data. It should be recalled that 62 participants responded to the survey.

Forty-three examiners indicated that they provided the same amount of commentary on PBTs as compared to traditional theses. For example, one examiner commented that “the feedback [comments] should still be looking at the thesis as a whole; whether or not it is based on published/submitted papers or not” (Sci/M/27). Another examiner explained that the approach to providing commentary on the thesis should not change even though there are chapters that are published because “the criteria do not seem to vary according to the thesis format; and I use the [same] criteria provided to assess the theses I have to evaluate” (Com/F/7).

Nineteen examiners indicated that they provided less commentary on PBTs as compared to traditional theses. One examiner stated that “feedback [comments] for publication-based theses is more brief than that given for traditional theses and can focus more on future recommendations over corrections/amendments” (Sci/F/11). Another examiner explained that she gives fewer comments on a PBT because “the
thesis that has already been published in good peer-reviewed journals has already been well scrutinised” (Sci/M/24).

The interview data indicated that fifteen out of sixteen examiners specified that they do not differ in the amount of commentary they provide for PBTs compared to those made on traditional theses. Even though some of the chapters had been published in reputable journals and had been peer-reviewed by the scholarly community in the field, examiners felt that it was still their responsibility to assess the thesis and provide commentary. One examiner expressed the view that “I am doing my job and my responsibility as an examiner is to fully assess the thesis and see if the candidate has met the standard even though it has been published” (Jerry).

Most examiners did not differ in terms of providing comments on PBTs. However, some examiners indicated in their survey responses that they had difficulty providing commentary for PBTs. One of them explained that:

I found it a little difficult to give feedback [comments] on what I considered to be missing from the thesis when the candidate clearly felt that the goal was to get some papers published and then link them with some additional material (HS/F/37).

This comment aligns with findings from responses to the survey, and three other examiners in the interviews expressed having the same difficulty. These examiners said they found it hard to provide commentary. One, for example, said it was because “the papers were published and it is not possible to ask for corrections or to remove something” (Cory).

The survey findings indicate that two thirds of examiners believe they assess and provide commentary in a similar manner to the way they would for traditional theses. Only one third of examiners give less commentary on PBTs, and some indicated that they struggled to provide feedback.
6.3 Examiners expect changes on published chapters

The interview data revealed that 14 examiners expected candidates to make the suggested changes to the thesis even on chapters that had previously been published. One interviewee felt frustrated when the candidate did not attend to her comments. She said “I expect the student to respect me as an examiner for making the time to provide feedback. I felt frustrated when this student didn’t want to attend to the feedback [comments] because the paper has been published” (Bridget). Bridget expected the candidate to respect her as an examiner and the time that she devoted to assessing the thesis.

Another examiner, Gary, was of the opinion that it is important for candidates to attend to the commentary because examiners possibly would have detected some flaws in the publications that could have been missed by reviewers. He commented that “if a flaw on the paper is made, I expect the candidate to make changes in the thesis because I am asked to examine the thesis and if the reviewer has missed it, it’s their fault”. One examiner, Fiona, explained and justified this saying that “even though [the candidate] can’t make changes to the paper they can make some changes to the thesis”. Hence, she sees no excuse for the candidate failing to attend to her feedback. It is evident that these examiners believed that candidates should respect their role as examiners and recognise that it is their duty to assess the thesis even though there is high quality publications included in the thesis. James pointed out that:

You still always ask for the thesis to be made right. If you find flaws, you’re duty bound to ask questions and to suggest that [the thesis] is somehow made right even if chapters have been published.

Only two examiners felt that candidates were not compelled to attend to their comments, and explained that they felt this way because the chapters had already been reviewed and published. For example, one examiner stated that “I could comment on [published material in the thesis] but I couldn’t hold that against the student” (Micah).

The findings show that most examiners expected the candidates to attend to the comments that they provided, even when the chapters had been published. One possible way for the candidates to attend to the examiner’s commentary is to “include an erratum at the end of the publication with the details of the mistake” (Tabitha) or
request the candidate to “extract the information from the paper, make the changes and rewrite it as a chapter” (Stanley). Another suggestion, mentioned by one examiner, was that the candidate include “a general discussion chapter and address it there” (Bridget).

6.4 Examiners provide more minor comments on PBTs

In this section, I present an analysis of the interview data, and address my third hypothesis; namely that examiners are likely to provide more minor comments rather than major comments on a PBT. Major comments are comments that that require substantive changes in the thesis, while minor comments refer to small corrections.

All sixteen examiners indicated that they provided more minor comments than major comments on chapters that had been previously published. For instance, Fiona shared her experience that when she provided commentary on chapters that have been published, comments were “brief because of the fact that it’s been published. The comments that you could make are more general [minor] than specific [major]”. She continued by comparing her experience with examining a traditional thesis saying that the nature of the commentary for a traditional thesis would be “more lengthy and [have] more advice on what, how to improve the thesis, or criticism on what should have been done that wasn’t done, and provide helpful suggestions to how the thesis could be published”. Another examiner commented that for PBTs:

I normally give feedback [comments] on format and structure, whereas for traditional thesis I tend to focus on how well the general introduction is put together, setting the scene. If it’s not published then I am looking at the review to see that its systematic in focus and not narrative, and then looking at the discussion to see how the student takes all these studies together and comes up with a common clear, concise description of what they’ve done, what its strengths are, recognition of its weakness, and how the literature had changed (Dylan).

These accounts indicate that most examiners provide fewer major comments on a PBT thesis than a traditional one because the thesis consists of chapters that have already
been published and peer-reviewed. As such, examiners were more likely confident about the quality in the thesis, and only focused on providing minor comments.

From the interviews, it was noted that five of the examiners were less distracted by editorial issues (i.e., grammar, typography and spelling errors) when assessing PBTs compared to traditional theses because the chapters were published. With less distractions, the thesis was an easy read as the chapters were “short, succinct and well written” (Stanley). Fiona did not entirely agree; it was not necessarily an easy read but she commented that it was less time consuming:

> When you’re reading a chapter that hasn’t yet been published, you can offer it advice about improvements, but if the paper has already been published, it’s kind of the moment that it has passed and it’s already out there. So assessing PBTs would also be less time consuming.

These examples show that most examiners who assess PBTs provide more minor comments than major comments in the theses. Also, some examiners were less distracted with editorial issues. Further, chapters that were published tended to be well written and succinct, and this helps examiners to read the thesis more easily.

### 6.5 Types of assessment on PBTs

A linguistics analysis was conducted to understand the range of assessment types and feedback that examiners provide on PBT reports. I hypothesised that examiners who assessed PBTs were more likely to provide more summative assessment than feedback since the theses being examined consisted of or included publications in reputable journals, and consequently they had already been assessed as ‘good enough’ for publication. Another linguistic analysis was to ascertain the types of feedback that examiners provide on PBT reports. It was hypothesised that examiners were more likely to provide referential type feedback compared to directive and expressive feedback. It should be recalled that referential feedback refers to feedback on editorial, organisational and content issues, while directive feedback comprises suggestions, questions and instructions, and expressive feedback consist of praise, criticism and
opinions. It should be noted that there are no discrete categories, and comments can fit into more than one category.

### 6.5.1 Examiners give more feedback than summative assessment

The first part of the linguistics analysis looked at the range of commentary that the 12 examiners provided on PBT reports. Contrary to my fourth hypothesis, it was evident that more than half of the examiners provided more feedback than summative assessment in their reports (see Figure 6.1). It should be noted that summative assessment denotes an overall judgement on the thesis and does not provide any guidance on subsequent revision, whereas feedback provides information on how to improve the thesis by guiding the candidate what to do next. Most examiners in this study provided more feedback comments than summative comments. Only five examiners provided more summative assessment than feedback. It can be seen from Figure 6.1 (a) that ER10 provided nearly 70 feedback comments, in sharp contrast to ER3 who did not provide any feedback at all. For examiners who provided more summative assessment than feedback, the overall average ratio of feedback: summative assessment was 0.2, while for examiners who provided more feedback than summative assessment the overall average ratio was 3.12. For all examiners, the ratio of 1.9 indicates that examiners in this sample provided nearly twice as much feedback than summative assessment.
These findings indicate that there was a dominance of feedback over summative assessment in the examiners’ reports. A possible explanation of this outcome is that examiners felt it was their responsibility to provide feedback even on published chapters. This finding was evident in the comments provided through the interviews as discussed earlier. Some examples of feedback that examiners provided on published chapters in their reports were “P137, Fig. 4.12B and C. The fonts used on these graphs are too small to be easily legible” (ER5/39) and “the legend should be amended to
clarify these points, perhaps using an arrow to indicate and highlight the TSS” (ER5/18). The feedback from examiners provided some form of direction to help the candidate to revise.

Examiners also provided comments in their written reports that were both summative assessment and feedback. It should be recalled that the linguistic analysis was done at the sentence level and there were incidences where both summative assessment and feedback were evident in the sentence. Only a small percentage (3%) of examiners provided both summative assessment and feedback together at the sentence level. One example of this category is:

This work was well executed [summative assessment], although a minor criticism is that this section would have benefited from a better lead in: what other candidate genes existed, how many were there, and why focus specifically on DCC? [feedback] (ER4/11).

The first part of the quote above shows that the examiner complimented the candidates for conducted a well-planned research. Notably, however, the examiner then continues to provide comments (in question form) on factors that could possibly improve the research topic.

The types of summative assessment that examiners provided in their reports were both positive and negative. Positive summative assessment (94%) covered praises or compliments. For instance, “the introduction nicely set the scene of this work, and provided strong support for exploring this as a candidate in the Xxx patients under study” (ER6/27). Whereas, negative summative assessment (6%) was associated with issues that needed to be dealt with; however examiners did not provide any information or clues as to how to attend to these issues. For instance, “… I was a little disappointed there was little critical assessment of the field” (ER6/13). The negative summative assessments in these reports were not acknowledged as constructive feedback because the comments did not provide any sense of direction to the candidate on how to improve the thesis. It should be recalled that the purpose of feedback is to close a gap between actual and expected performance. The gap, identified by the examiner, can only be closed if the examiner is able to provide informative feedback. Expecting the candidate to take responsibility for figuring out how to improve may not work if the expectations of the examiners are not transparent.
6.5.2 Types of feedback that examiners provide on PBTs

The second part of the linguistic analysis was intended to unfold the types of feedback that examiners provide on PBT reports. Examiners provided 408 feedback comments in their written reports and these are classified here as: referential (R), directive (D) and expressive (E) based on the model (Table 6.1) proposed by Kumar & Stracke (2007). This feedback model (which was explained in detail in Chapter 3) was only utilised to analyse feedback comments.

Table 6.1 Distribution of feedback in PBTs.

<table>
<thead>
<tr>
<th>Referential (n=145) raw scores and percentages</th>
<th>Directive (n=185) raw scores and percentages</th>
<th>Expressive (n=78) raw scores and percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Editorial (RE): 71 (49%)</td>
<td>Suggestion (DS): 33 (18%)</td>
<td>Praise (EP): 9 (12%)</td>
</tr>
<tr>
<td>Organisation (RO): 27 (19%)</td>
<td>Question (DQ): 66 (36%)</td>
<td>Criticism (EC): 40 (51%)</td>
</tr>
<tr>
<td>Content (RC): 47 (32%)</td>
<td>Instruction (DI): 86 (46%)</td>
<td>Opinion (EO): 29 (37%)</td>
</tr>
</tbody>
</table>

Contrary to my fifth hypothesis, the dominant category of feedback was ‘directives’. It should be noted that there are three types of directive; namely, suggestion (DS), question (DQ) and instruction (DI). The main category of directive feedback was instruction (46%). For example, one examiner wrote: “More detail on the psychometric properties of the outcome measures, especially those used later in the studies, and the quality of these studies was necessary” (ER12/18- DI). This form of feedback was provided as a means of directing the candidate to clarify ideas in order to strengthen the thesis. It was intended to encourage additional reading to add more information to sections or even help candidates to reflect on their ideas and provide justification for their argument.

The second most frequent type of directive feedback was questions (36%). Questions require the writers to reflect and take a fresh look at how to make relevant arguments and improve their sections/paragraphs. One example is “with a sample of 20, what percentage would you expect not to show these differences, in other words, at what power level have these calculations been performed at?” (ER8/46- DQ). This type of feedback could possibly support the self-regulated learning of the candidate given that the feedback requires candidates to focus on aspects that improve their learning.
Lastly, 18% of the directive feedback was comprised of suggestions. This form of feedback gives candidates the opportunity to consider ideas regarding the content and structure of the thesis. For example, “it is incorrect to use the term “ORF” (end of paragraph 1, p.79) for anything other than the protein encoding regions of an mRNA or cDNA molecule” is one such directive (ER6/62- DS).

The next most frequently used category of feedback was referential feedback, which was associated mainly with editorial issues (49%). Even though examiners indicated in the interviews that they were less distracted with editorial issues than other matters, the sample of examiners’ reports under consideration here seems to show otherwise. Some of the editorial concerns that examiners had in their reports were focused on the font size used in the chapters, typographical errors, references, misuse of abbreviations and technical terms, figure and table presentations, axis and legend titles, grammar and spaces. For example, “In Youngson & Craw AIMM Conferences undated (2002): 309-313: on p. 309, Waïkaia should read Waikaka” (ER9/36- RE). From the evidence presented in the reports, it is likely that some examiners were distracted with the editorial mistakes in a thesis; quite possibly because the typographical errors affected the readability of the thesis.

The second most frequent feedback type in the referential category was related to content (32%). For instance, “p. 166-169. It should be possible to recognise xxx spines-they are single crystals of calcite” (ER10/84- RC). In this instance, the examiner pointed out relevant information of the xxx to the candidate. This form of feedback gives candidates the opportunity to improve the content in their thesis.

Few examiners provided feedback on organisation, despite the fact that some examiners expressed dissatisfaction with the thesis structure (see chapter 5).

The last category of feedback is expressive feedback, in particular, criticism (51% of the expressive feedback). This form of feedback helps candidates reflect and take a fresh look at what is needed in the thesis. Often, this form of feedback may sound very negative, but it is given with a good intention:

The most disappointing aspect of this otherwise comprehensive work is
the low numbers of infants studied for chapter 3 and some of the points
in chapter 4 and 5, plus no clear rationale for why these numbers were
chosen at the outset (ER8/15- EC).

In the above examples, the examiner has identified a gap; a rational explanation was not
provided for the low number of participants. The candidate can close this gap by
providing a rationale for this choice of low numbers of participants in the study.

What seems evident in this section is that the directive and referential feedback played
an essential role in closing the gap between actual and desired performance in this
study.

6.6 Discussion

In this section, I explain the challenges of using this feedback model in this study. Next,
I discuss the findings in relation to my expectations regarding how examiners assess
PBTs. Then, I explain the roles that examiners played in terms of assessment and
providing developmental experiences through feedback. Lastly, I outline the types of
assessment that examiners provide on PBTs.

6.6.1 The feedback model

One of the biggest challenges that I had using the Kumar and Stracke (2007) model was
understanding the definition used for each of the categories. There were some
incidences where some of the coding categories had similar definitions. For instance,
suggestion was defined as “asking the supervisee [candidate] to provide more content
details…also make reference to the structured manner” (Kumar & Stracke, 2007,
p.466), while content feedback was explained as looking into the “content matters” of
research topic (Kumar & Stracke, 2007, p.464). Both these definitions seem to share the
similar meaning of requesting the candidate to provide relevant information regarding
the content of the thesis. Hence, some of the coding in the analysis fell into more than
one category.

Another challenge that I faced with this model was the overlap of codes between
summative assessment (A) and feedback (F). There were several incidences where the
comments could fit into both codes. For example, some of the comments that represented ‘criticism feedback’ could also refer to ‘negative summative assessment’. However, the feedback model was only used to analyse comments that were coded for ‘feedback’ (F) and not summative assessment. Comments that were coded for summative assessment were analysed to see whether examiners provided positive or negative summative assessment. Further detail on how these analyses were conducted was discussed in section 3.3.3 (on p.42). It is mindful to realise that some of the codes in summative assessment and feedback carry a similar meaning.

Due to some of these challenges, the analyses of the examiners reports were discussed with the designer of the feedback model. There were few differences in opinions and a consensus was reached.

6.6.2 Provision of commentary on PBTs

It is evident that the findings in this chapter contradict most of my expectations regarding how examiners would provide commentary on PBTs, compared to commentary on traditional theses.

• My first expectation was that examiners provide less commentary on PBTs than on traditional theses because chapters on PBTs have already been published. I assumed that because the chapter had been through a peer-review process, examiners would have less suggestions for improvement compared to commentary on a traditional thesis chapter. However, the findings from the survey and the interviews indicate that two thirds of the examiners did not vary their commentary from what they would have provided for a traditional thesis; rather they provided a similar amount of commentary.

• My second expectation was that examiners would be less likely to require the candidate to make changes to chapters that had been published. Contrary to what I assumed, most examiners expected the candidate to make the changes and to respect their role as examiners.

• Third, I expected that examiners would provide more minor comments than major comments since the thesis had already gone through a peer-reviewed
process. This was the only hypothesis that proved to be correct: examiners who assess PBTs provide more minor comments than major comments.

- The fourth and fifth expectations were drawn from a linguistic perspective. I assumed that examiners would provide more summative assessment than feedback, but the findings in this study showed otherwise. Examiners provided more feedback than summative assessment even when chapters had been published. Also, when examiners provided feedback, I assumed that it would be more referential feedback than directive and expressive feedback; however, the findings show that there was a dominance of directive feedback.

My analysis of the text from a linguistic perspective gave insights into the roles that examiners exhibit during the examination process. It seems that despite the fact that parts of a thesis have been published and quality assured by the peer review process, examiners value their role as examiners by devoting time to assessing the thesis in its entirety; they approached their examining in a manner similar to that for assessing a traditional thesis.

6.6.3 Roles that examiners play during the examination process

The findings in this study demonstrate the dual roles that examiners play during the examination process: they act as gatekeepers to the academic profession and as educators (Dubetz et al., 1997). As gatekeepers, examiners are in a position to ensure that the thesis meets the requirement of the degree; as educators, they are in a position to teach and help the candidate improve the thesis and further research and publications. The examiners’ teaching identities were manifested through the feedback (comments) they provided. Examiners did not compromise their role despite the inclusion of published research that had already been evaluated; they still provided detailed comments and suggestions, and questioned issues that were unclear in the theses. This finding that the role of examiners extends beyond gate keeping to educator resonates with that of Kiley (2009) and Kumar and Stracke (2011).

Despite the fact that some chapters in a thesis had already been published, examiners still provided constructive feedback on these chapters. This finding seems to
contradict Davies and Rolfe’s (2009) claim that it would be impossible to request changes or revision on papers that are published. Even though some chapters in a thesis had been published, most examiners provided feedback and expected the candidate to revise the thesis until it has met the expected standard (Kumar & Stracke, 2011). Further, most examiners in this study believed that it was important to provide feedback as they still considered the thesis as work-in-progress, a finding similar to Bourke et al. (2004). Some examiners operated as editors and noted down every error and inconsistency that they found in the published chapters and throughout the thesis. Others provided guidance to the candidate to ensure that the candidate was able to close the perceived gap between his/her actual and desired performance with clear and well-directed feedback. Given the effort made in this regard, examiners were frustrated when candidates failed to attend to their feedback and felt that their role as an examiner - educator was undermined. This idea is further discussed in Chapter 7.

6.6.4 Types of assessment on PBTs

Examiners provided different types of assessment on PBTs than they would have on traditional theses. Contrary to my assumption, it was discovered that, overall, examiners provided more feedback than summative assessment on PBTs. Kumar and Stracke’s (2011) study of six examiner reports from a linguistic perspective showed that examiners provided more summative assessment than feedback in the case of traditional theses. One might assume that in a traditional thesis examiners would provide more feedback (rather than summative assessment) to help the candidate improve the thesis and to assist with publishing. As the sample size was small in the Kumar and Stracke (2011) study, it was not appropriate to undertake a statistical comparison with my study. However, it seemed legitimate to expect examiners to provide more summative assessment (mainly positive) in a PBT since the thesis contains published materials that are often from reputable journals. Additionally, the thesis has already met at least one of the criteria (whether the thesis contains publishable materials) before its submission to the examiners, thus reducing the need for feedback.
There are two possible explanations as to why examiners in my study provided more feedback than summative assessment on PBTs. First, it may be that some examiners view the summative assessment role as already completed by means of the peer review process and therefore do not see any reason to focus much on the aspect of evaluating the thesis. Consequently, they provide more feedback. For instance, in the University of Otago’s criteria for assessing PhDs (see Appendix C) examiners are requested to provide ‘specific comments on those parts of the thesis that the examiners believe require correction or amendment’. In other words, when a criterion is met (e.g., does the thesis consist of publishable material?) there is the indication that the summative assessment process is complete; examiners, therefore, just focus on providing feedback on areas that need amendments, instead of providing summative assessment. However, there are some examiners who are simply not influenced by the thesis containing publications. They believe that they should assess the thesis as it is and so they provide feedback to improve the thesis, irrespective of whether parts have been published.

The types of summative assessment that examiners provided in this study also support Kumar and Stracke’s (2011) study. Their study showed that examiners provided both positive and negative summative assessment. Similarly, examiners in this study provided both positive and negative summative assessment, but more positive summative assessment was provided for PBTs than for traditional theses. A possible explanation for such a response is that most examiners in this study recommended the theses to be accepted with minor revision. Hence, examiners had less negative summative assessment to provide than for traditional theses, but more positive summative assessment to compliment the quality of the theses.

Regarding the types of feedback provided on the theses, directive feedback was the most common. The role of an educator was prevalent through this type of feedback. This feedback was provided with the intention of helping the candidate have a sense of direction on what to do during the revision process. Besides directive feedback, editorial feedback was also provided to improve the presentation and readability of the thesis. This finding was also evident in the studies of Mullins and Kiley (2002) and Johnston (1997) that looked at examiner reports of traditional theses. Thus, regardless of whether the thesis is PBT or traditional, examiners provide editorial feedback to ensure that the thesis is presented to a professional standard.
6.7 Summary

In this chapter, I outlined how examiners provide commentary on PBTs. Examiners tended to provide a similar amount of commentary for PBTs as they would for traditional theses. Examiners expected candidates to make changes on published chapters even though they provided more minor comments than major comments. Moreover, they felt frustrated when candidates failed to attend to their specific comments. The linguistic analysis showed that examiners provided more directive feedback than summative assessment. What seemed apparent is that there is a dual role that examiners play during the examination process: they act as assessors and educators. A major observation from the findings is that irrespective of whether a thesis is in the form of a traditional monograph or a PBT, examiners still provide feedback and expect the candidates to take up and act on the feedback that has been provided. The following chapter aims to synthesise the findings that were discussed in Chapters 4, 5 and 6, and provides guidelines on how to write, supervise and assess PBTs.
Chapter 7
Synthesis and Implications

7.1 Introduction

In this chapter, I synthesise the findings presented in Chapters 4, 5 and 6. I discuss practical implications relating to issues that examiners had while assessing PBTs, how PBTs facilitate publishing, and the extended criteria that examiners used to assess PBTs. The following section looks at the alignment of learning in PBTs by drawing on Biggs’s (1999) framework of constructive alignment. Following that, I present possible guidelines for stakeholders who intend to submit, supervise, and/or examine a PBT. Lastly, I conclude the chapter with a discussion of the limitations of this study.

7.2 Synthesis of findings

In Chapter 4, I showed that the 62 examiners from the survey assessed more hybrid PBTs than other types of PBTs. PBTs appeared to be more common in Health Sciences and Science than in Humanities and Commerce. In terms of approach to examining a PBT, most examiners read the thesis narratively. Some examiners used their own set of assessment criteria which extended beyond the usual set of criteria that were provided by the institutions. This finding raises the question as to whether universities need to consider a new and different set of criteria for PBTs than those traditionally used for assessing PhD theses. Lastly, most examiners were generally in favour of PBTs, but some wanted more guidelines on what to expect in a PBT.

In Chapter 5, I discussed factors that influenced examiners while they were assessing PBTs. The findings showed that some examiners struggled to assess PBTs because they had difficulties in determining the candidate’s contribution and author order in multi-authored papers, and they frequently had issues of coherence in hybrid PBTs. Coherence issues concerned understanding the way parts of the thesis were connected. Even though most examiners were influenced positively by students having successfully published articles in reputable journals, a small number of examiners...
believed they were not influenced by any form of publication: some mistrusted the peer review process of unknown journals and most saw it as their job to assess the thesis as it is. The key findings strongly suggest the need for a set of guidelines for candidates who are interested in doing a PBT, for supervisors who need to supervise a PBT, and for examiners on what to expect in a PBT. The possible scope and detail of such guidelines is discussed in section 7.5 (on p.124).

In Chapter 6, I analysed the nature of commentary that examiners provide in their report on PBTs. Most examiners indicated that they provide a similar amount of commentary for PBTs as they would for traditional theses. Most examiners also expect candidates to make changes to published chapters even though they provide more minor than major comments. Some examiners felt frustrated when candidates failed to attend to their specific comments. A linguistic analysis showed that most examiners provided more directive feedback than summative assessment. Examiners also demonstrated the dual role that they play during the examination process: as a gatekeeper and as an educator. The findings indicated that, irrespective of whether the thesis is in the form of a traditional monograph or a PBT, most examiners in this study still provided feedback and expected the candidates to attend to the feedback. This particular finding has implications for the convenors of examination panels so they can understand examiners’ expectations of candidates, and respond accordingly.

7.3 Implications for practice

In this section I discuss the implications of the key findings presented in Chapters 4, 5 and 6; namely, the issue of authorship and mastery over the thesis, the inclusion of commentary relating to publications included in the thesis, and publications in unknown or low ranked journals. Then, I highlight the concerns that examiners had with coherence in a hybrid thesis, with the different types of PBTs and their formats. I also discuss the importance of publishing during PhD candidature, how to nominate examiners who are willing to assess PBTs, and the extended criteria that examiners use to assess PBTs.
7.3.1 The issue of authorship and mastery over thesis

The number one concern that most examiners had with PBTs was the issue of authorship. This concern was expressed in terms of questions relating to the candidate’s contribution to the thesis and field of study, and identifying author order. Examiners did not always know the author order and how much the candidate had contributed in multi-authored publications, especially if the candidate was not the first author. The data in this study showed that some examiners struggled to assess chapters where the candidate was not listed as the first author. One possible way to resolve this issue is to consider two existing guidelines: APA and CORE. The first guideline is from the American Psychological Association (APA) code of conduct which specifies that

Except under exceptional circumstances, a student is listed as principal author on any multiple-authored article that is substantially based on student’s doctoral dissertation. Faculty advisors discuss publication credit with students as early as feasible and throughout the research and publication process as appropriate (APA, 2012, Publication Credit section, para. 3).

This guideline indicates that the practice in APA is that the students are given credit for their work when publishing, and that they would normally be the first author.

Besides the APA guidelines, the Computing Research and Education Association of Australia (CORE) guidelines stipulate that

Published work that is generated during the course of a postgraduate degree is often jointly attributed to both student and supervisor. It is usually the case that the student has undertaken the bulk of the task: capturing some idea in text, conducting experiments and creating the paper that describes the idea. However, it is often the case that the paper would not have existed without ongoing input from the supervisor, and that the conception and initial development of the idea is due to the supervisor. In these cases student and supervisor should both claim authorship. This practice of shared authorship does not diminish the student’s final work, and it helps to prevent the supervisor from limiting their responsibility to the student and to the quality of the research… A
supervisor who has only minimally met the requirements for authorship should consider choosing instead to be acknowledged… A supervisor [should not] assume that he/she is automatically an author of a student’s paper- authorship should always be explicitly discussed (CORE, 1999, Supervision section, para. 3 & 5).

The CORE guidelines clarify that supervisors should share authorship with the candidate in publications that are from the thesis, because without the supervisor’s mentorship, the candidate may not have been able to write and produce the thesis as well as the publications. However, if supervisors have played a minor role and have not contributed much to the publications, then the supervisors should not be the co-authors but rather, simply be acknowledged.

Both these sets of guidelines seem applicable for identifying authorship and the contribution of authors in PBTs. The guidelines specify that candidates should be the principal or first author for publications that originate from their thesis. This proposition was also strongly evident in the views of examiners in the study. All examiners suggested that candidates should be the first author for publications that are included in the thesis. In other words, candidates should only include first authored publications. In addition, all examiners suggested that publications listing the candidate as the second or third author should not be included as chapters, but could be appended to the thesis if relevant to the work. This is because being the second or third author in the publications may indicate the candidate had not contributed as much, or led the research.

The practice of author order and contribution is dependent on discipline, department and/or culture. Morris (2011, p. 197-198) provided a general list of how author order is assigned based on:

- the alphabet(i.e., names are listed in alphabetical order);
- decreasing order of contribution;
- decreasing order of academic seniority;
- order decided by the boss or supervisor;
- the supervisor or boss being the first author, followed by others in decreasing order of contribution;
• the person who did the work or writing first;
• the person who obtained the funding first; and
• a deal.

In Ecology and Environmental Science, it is a tradition that “the first author contributes most and also receives most of the credit, whereas the position of subsequent authors is usually decided by contribution, alphabetical order or reverse seniority” (Tscharntke et al., 2007, p. 13). However, in Biomedical Science, “the last author often gets as much credit as the first author, because he or she is assumed to be the driving force, both intellectually and financially, behind the research” (Tscharntke et al., 2007, p. 13). The recognition of first or last authors is also influenced by external organisations as they view “the last authorship as a sign of successful group leadership and makes this criterion in hiring, granting, and promotion” (Tscharntke, Hochberg, Rand, Resh, & Krauss, 2007, p. 13). However, this attribution can be mistakenly given to the last author when he or she has not contributed much, as this convention for listing authors is not uniform across disciplines. To avoid the misunderstandings about author order across disciplines, it is would be advisable to request candidates to include only main (in some cases known as first) authored publications in hybrid PBTs as chapters, and append second or third authored publications.

Examiners in this study were concerned about not knowing the exact roles that candidate and co-authors played in publications that were included in the PBT. They recognised that it is common for supervisors to provide intellectual input into the thesis and be included as co-authors. However, there are some incidents where gift authorship is practiced based on culture, superiority and seniority. Also, in some disciplines such as Health Science and Science it is common to have statisticians as co-authors in the publications. One way to resolve this issue is to request that the candidate and the co-authors state the roles that they play in the publications. For instance, they could provide information about what each author did and contributed in the publications. An example of such information can be seen in Section 7.3.2 (on p.109).

Besides the APA and CORE guidelines, there are other tools that can help candidates and examiners to determine authorship in publications. These are
1. the Multi-Criterion Decision Making (MCDM) approach (Beveridge & Morris 2007); and

2. The Vancouver Protocol (International Committee of Medical Journal Editors 2009).

The MCDM process (Table 7.1) involves the following steps:

1. The authors discussing and deciding the items that should be included in the manuscript. These items could be experiments that led to preparation of figures or tables, ideas that were developed behind the publications including research questions and manuscript writing (see column I in Table 7.1);

2. Then, each author will score how much they have contributed to each item as a percentage (column II). For instance, for Figure 1, Chris has contributed the most percentages (50%) then Les (20%) and Jo (30%) for this item. The preliminary work that led to the design of the experiments and ideas should be considered as part of the author’s contribution. Having said that, the types of contribution may vary across publication, but the co-authors are well placed to make that judgement.

3. After assigning the percentages to each item, the authors should attribute a category that represents the importance of each item to the manuscript (column III). For instance, category A may constitute a 15% weighting, category B 10% and category C 5%. This way, each item is given a weighting that represents its importance to the whole work (column IV).

4. Finally, each author’s relative contribution to each item is calculated (column V). In this example, the authorship will be assigned in the order of Les, Chris, Jo, Sam, Lee and Jess.
The MCDM approach helps clarify the issue of author order and contribution. However, it can be problematic specifying the percentages for the manuscript tasks for authors (i.e., collecting data, analysing the data, etc.) as there are no institutional rubrics to determine the percentages. Moreover, specifying percentages can be difficult and inaccurate in determining each of the author’s contributions. Instead of determining percentages for authors’ contributions, in general, it may be best to just state what each author has done in the publications (see Table 7.2 on p.110).

The second tool that can help determine the role of authors in publications is the Vancouver Protocol. This Protocol was developed by the International Committee of Medical Journal Editors (ICMJE, 2009), and provides guidelines on what contribution is necessary in order to be included as an author in a journal article:

1. authorship credit should be based on i) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; ii) drafting the article or revising it critically for important intellectual content; and iii) final approval of the version to be published. Authors should meet conditions i, ii, and iii;
2. acquisition of funding, collection of data, or general supervision of the research group alone does not constitute authorship;
3. all persons designated as authors should qualify for authorship and all those who qualify should be listed; and
4. each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

The Vancouver Protocol clarifies the role an author should play to claim authorship. In some hierarchical cultures (e.g., Malaysia and Taiwan), supervisors are often viewed as the omnipresent master or guru; the student is considered the compliant and devoted apprentice (Frow, 1988; Giblett, 1992). This practice, at times, can make a person feel less powerful (Hofstede, 1986). However, if hierarchical superiority is integrated in supervision (Manathunga, 2007), especially in joint authorship, the candidate may feel unable to request primary authorship since this would be considered impolite and disrespectful. Candidates may be fearful of damaging their relationship with their supervisor if they do not include the supervisor as co-author (Morris, 2011). Furthermore, in cases in which a doctoral candidate’s research is important to the supervisor’s own research (Johnston, 1999) and with “postgraduate students [commonly contributing] directly to the supervisor’s research output” (Johnston, 1999, p.24), it is likely that supervisors and doctoral candidates will have authorship disputes (Morris, 2008). It is important for supervisors and candidates to determine author position in a publication at the start of the research. Regardless of the different kinds of tools, guidelines or protocol used to determine author order and contribution, all researchers should take responsibility for ensuring their contribution to a research publication in an open and transparent manner.

Besides these existing guidelines and tools, it is important for universities to include an oral examination as part of the assessment for PBTs. Examiners who assessed PBTs in this study strongly believed that an oral examination for PBTs is important because it helps to:

i. resolve the issue of authors’ contribution especially for multi-authored publications in the thesis; and
ii. determine if the candidate has mastery over the research topic.

One main purpose of an oral examination is to communicate with the candidate to seek clarification on unclear issues in the thesis, as well as to give the candidates the
opportunity to explain their position. It is often viewed as “a dialogue between the student and the examiners, with questions being asked, responded to and discussed” (Cooksey & McDonald, 2011, p.579).

Denicolo (2003) elaborated that the purpose of an oral examination is

- to check the candidate’s ability to explain his/her work orally;
- to see if the candidate has sufficient breadth and depth of knowledge by being able to answer the questions on the theory and research;
- to determine whether the candidate has the ability to argue with academic rigour while standing up to critiques from the experts; and
- to authenticate authorship.

Furthermore, Denicolo (2003) and Tinkler and Jackson (2002) assert that an oral examination helps to determine authenticity. The issue of author authenticity can become a particular concern during the examination process if the candidate’s research is part of a research team. Team-based research is more common in the Sciences than in the Humanities (Delamont et al., 1997; 2004). In cases where the research is team-based, some universities would request examiners to pay close attention to the contribution that the candidate has made in the thesis and probe the candidate with questions to ensure that the contribution is worthy of a PhD (Tinkler & Jackson, 2004). For example, Tinkler and Jackson’s (2004, p.18, citing University of Brighton 2002) research showed that the University of Brighton’s guidelines asked examiners to determine whether the oral examination showed the candidate’s contribution: “In the case of a candidate whose research programme was part of a collaborative group project, did the oral examination demonstrate that the candidate’s own contribution was worthy of the award?” This issue of authenticity was also evident in this study; however examiners in this study referred to authenticity as ‘mastery over the research topic’. Even though the issue of authenticity is more common in team-based research, most examiners in this study were unsure of the candidate’s contribution in multi-authored publications. This concern occurred because the examiners were not well informed of the candidate’s contribution to the thesis since the candidate did not always state his/her contribution to the thesis. In other words, they were suspicious as to how much the candidate has contributed in thesis, and wondered whether the candidate had full grasp or mastery over the research topic. In order to resolve this issue, an oral
examination may help to assure the examiners whether the candidate has mastery over the research topic.

Besides providing the candidate and examiners the opportunity to clarify issues relating to the thesis, an oral examination also gives the examiners the opportunity to decide the nature and extent of the revision that is needed in the thesis. Additionally, the oral examination assists in the final decision making process by reducing “the risk of biased selection” in the decision making (Breimer & Mikhailidis, 1991, p.790) as the oral examination gives the candidates and examiners the opportunity to clarify uncertainties in the thesis.

Hence, an oral examination should be considered part of the assessment for PBTs, as it helps to resolve issues that examiners face during the thesis assessment process. This practice has implications for some universities that do not have an oral as part of the examination process.

7.3.2 Inclusion of commentary for publications in the thesis

Examiners in this study indicated that for PBTs it is important to have adequate commentary regarding publications, usually in the introduction chapter, for the purpose of informing readers of the nature of the thesis. As such, a commentary would provide information about the candidate’s contribution in multi-authored publications. One of the issues that examiners had with PBTs was not knowing that the thesis included published materials (e.g., the hybrid thesis and thesis with publications appended). Examiners prefer to be made aware at the beginning of the thesis of the materials included and their status, rather than trying to ascertain these themselves while assessing the thesis.

Another issue that some examiners had with hybrid PBTs and PhDs by publications was the repeated or duplicated information in the chapters. This issue can occur when a sequence of chapters is comprised of published papers, often covering similar literature. Examiners would rather be informed early in the thesis of the possible repeated information in the chapters, than to be agitated while assessing the thesis. To avoid this, examiners can be informed that the thesis consists of published materials and that there may be repetition.
It is also essential to provide information indicating the candidate’s contribution, the co-authors’ contributions, the numbers of publications included in the thesis, and the status of papers that have been submitted. This information could be presented in a tabular or paragraph format. A fictitious example in a tabular format is presented in Table 7.2.

**Table 7.2** Summary of candidate’s commentary on publications included in their thesis. Jonas is the candidate and Smith and Bosker are co-supervisors.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Paper title</th>
<th>Authors</th>
<th>Contribution of candidate</th>
<th>Journal</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>A systematic review of the changes in doctoral education</td>
<td>Jonas &amp; Smith</td>
<td>Candidate collated, reviewed and analysed the literature, and wrote the review. The co-author provided guidance on appropriate literature and had editorial input into the final drafts.</td>
<td>Education Review</td>
<td>2013: 25, 32-42.</td>
</tr>
<tr>
<td>3</td>
<td>Assessing the doctoral thesis when it includes published work</td>
<td>Jonas, Smith, &amp;Bosker</td>
<td>Candidate designed the survey, collected and analysed the data. The candidate took lead role on writing the manuscript. The co-authors provided guidance on the research and had editorial input into the final drafts.</td>
<td>Assessment &amp; Evaluation in Higher Education</td>
<td>2014: ahead-of-print, 1-14</td>
</tr>
<tr>
<td>4</td>
<td>Voices from the gatekeepers: assessing the thesis or the candidate?</td>
<td>Jonas, Smith, &amp;Bosker</td>
<td>Candidate conducted the interviews, analysed the data and wrote the manuscript. The co-authors assisted with the discourse analysis and provided editorial input into the final drafts.</td>
<td>Narrative Inquiry</td>
<td>2014: submitted and being revised</td>
</tr>
<tr>
<td>5</td>
<td>The nature of feedback on PBT examiners’ reports</td>
<td>Jonas &amp; Smith</td>
<td>Candidate collected the examiners’ reports, analysed the data and wrote the manuscript. The co-author provided guidance on the research and had editorial input into the final drafts.</td>
<td>Teaching in Higher Education</td>
<td>2014: submitted and under review</td>
</tr>
</tbody>
</table>
The example in Table 7.2 provides the reader with information on the author order in joint publications and their individual contributions. This table helps to resolve the concerns that examiners have over candidate’s contribution and author order. Thus, examiners are able to understand how each author has contributed to the publications, and the role of the candidate in that publication. If candidates were to follow the guidelines of some universities (e.g., Monash University and University of Melbourne) that expect the candidate and co-authors to state their contribution in percentages (e.g., candidate contributed 40% and the supervisors contributed 60% to the paper), it does raise the question; how would examiners actually know what each author has contributed to the publication? Moreover, some institutions (such as Monash University and University of Melbourne) require candidates to show a minimum percentage of their contribution (50%) in the publication in order to be eligible for the PhD. The evidence in this study showed that examiners were concerned about not knowing exactly what the candidate and the co-authors did in the publication. In other words, stating a percentage fails to show exactly what each author has done in the publication. Thus, it is suggested that providing this level of commentary (either in a table or paragraph format) at the beginning of the thesis would provide examiners with a context for examining a PBT, and help to satisfy any concerns they may have over a candidate’s contribution and author order.

It is perplexing to observe inequity between how examiners treat the issue of the candidate’s contribution in a PBT versus how they treat it in a traditional thesis, knowing that supervisors may have contributed to the thesis. The difference between a PBT and a traditional thesis is that in a PBT the intellectual collaboration of the supervisor and candidate is seen clearly through the inclusion of co-authored publications and the claim for authorship (Breimer & Mikhailidis, 1993). However, in the case of a traditional thesis, such information would not be clear. Previous research on assessment of traditional theses (e.g., Mullins & Kiley, 2002; Bourke et al., 2005) has shown that examiners did not raise any issues about candidates’ contributions despite knowing that the supervisors would have provided guidance on most aspects of the thesis.

Since the doctoral degree is often viewed as an apprenticeship process, it does make sense for supervisors to contribute intellectually to the candidate’s thesis while training the candidate to become a “steward in the discipline” (Golde & Walker, 2006, p.5).
means that the supervisors would play the role of a trainer to encourage and guide the candidate to generate knowledge creatively, to challenge the candidate’s ideas critically, and help the candidate to transform these in writing (Golde & Walker, 2006).

One way to resolve this issue of inequity across all types of theses (e.g., traditional thesis, PBTs) is to have an openness in specifying the contribution that has been made in the thesis. In other words, candidate and supervisors provide commentary of their contribution in the thesis either through a tabular format (such as in Table 7.2) or in a paragraph format. Further, the notion of specifying contribution has become culturally acceptable in academia, especially among academic staff/supervisors. For instance, some journals are now requesting authors to specify their contribution in their publications. Also, in New Zealand, Performance Based Research Funding (PBRF) reports request authors to specify their contribution in multi-authored publications. Hence, an open policy in specifying/declaring candidate and supervisors’ contribution in the thesis can be considered for all types of PhD theses and not only for PBTs.

7.3.3 The issue of unknown or low quality journals

Another concern that some examiners had about PBTs relates to the issue of including publications in the thesis that are published in unknown or low impact journals. The pressure and expectation to publish has become a norm in doctoral education (Lee & Kamler, 2008). In some universities, for example in Malaysia and Taiwan, it is a university policy that the candidate should have published at least two articles (minimum of one accepted and one under review) before the doctoral thesis can be submitted for examination (Wisker, 2012). With this sort of requirement, candidates tend to send manuscripts to journals that will accept their work quickly. Candidates may not be fully aware of the value and scholarly esteem of a rigorous peer review process, which may be lacking in rapid online publications, as quality assurance comes from knowing there have been improvements through careful revision.

Additionally, some rapid publications are also often not recognised by the discipline due to, among other reasons, poor quality assurance processes. It should be noted that to publish in a reputable journal is often time consuming and rejection rates are higher. Publications that appear in journals that are not valued highly in the discipline may lead
to the question of its suitability as a quality assured publication, and thus raises a question as to whether it has met the publication criteria required to meet the conditions of doctoral examinations.

A possible way to resolve this issue is to encourage candidates to only include publications in the thesis that are from recognised venues in the field (e.g., journals or referred conference proceedings). Though this suggestion may be seen as a solution, we need to be conscious of the fact that even reputable journals may compromise on quality assurance due to the complexities, and at times, the bias of the peer review process. Moreover, it is arguable that many excellent articles are published in low quality journals (as discussed in section 5.6.3 on p.81).

### 7.3.4 Coherence in a hybrid thesis

Some examiners were concerned with the lack of coherence in PBTs, especially in a hybrid thesis. In this regard, their various concerns included the layout of the thesis, the fact that the thesis did not tie together as a whole, the absence of a theme across the thesis, and repetition of information in the chapters. In order to achieve coherence in a hybrid thesis, the candidate may have to modify the structure of the thesis.

The first concern that examiners had about a hybrid thesis was the layout of the thesis. It should be recalled that in a hybrid thesis, published articles are inserted as chapters. Some chapters may be verbatim published articles, while other chapters may be traditional monograph chapters. Thus, the different layouts and font sizes in the thesis may result in a lack of coherence. Also, some examiners became agitated if references were duplicated in each published chapter. One possible way to resolve this issue is to not include verbatim articles but to modify the layout of such chapters, so that there is consistency in style. This also means that the list of references in the paper is no longer required, as one reference list at the end of the thesis would suffice. Francis et al. (2009) suggested that specific guidelines on margin width, font style and size are essential in order to achieve coherence in the thesis.

The second issue noticed by examiners regarding coherence of a hybrid thesis was that the thesis was not tied together as a whole. There was often a lack of signposting or signalling between chapters and sections. This issue resulted in a lack of smooth flow in
the thesis. Consequently, some examiners felt agitated because this issue disrupted the flow of the argument when they read the thesis narratively. In order to ensure that a ‘golden thread’ ties a hybrid thesis together, it is important for candidates to include signposting or signalling between chapters and sections, and rewrite the introductions and summaries of the chapters so there is an explicit link between past and forthcoming chapters. This recommendation supports Burdess (2007) who views the importance of using signposts to achieve clarity in the thesis.

On this same note, some examiners indicated that they also felt that a hybrid thesis failed to be coherent as a whole because of the lack of depth in chapters that had been published. The journal word counts limited detailed information in papers that were included as chapters. To counter the lack of depth in published papers, it is best that candidates either include a synthesis or a general discussion chapter, so that they can include further detail that may need to be removed in order to meet journal requirements. In other words, the commentary in the discussion chapter can link the thesis together (Francis et al., 2009, p.102).

The third concern that examiners had with the hybrid PBT was that of not having a consistent theme across the thesis. Some examiners in the study indicated that there were incidences where candidates included publications in the thesis that did not originate from the thesis. As an example, if the research topic was about ‘assessing the PhD by publication’, examiners would expect publications that focused on the assessment of a PhD by publication. In other words, examiners do not encourage candidates to include publications that are not linked to the research topic.

The fourth issue that affected coherence in a hybrid thesis was the repetition of information in the chapters. Even though the suggestion is made here that the candidate informs examiners earlier in the Introduction chapter regarding the repetition; it is also possible for a candidate to rewrite the chapters to reduce repetition, so that the thesis is threaded together in terms of content.
The role of facilitating publishing

The findings in Chapter 4 showed that candidates from Health Sciences and Sciences tend to publish more during their candidature than candidates from Humanities and Commerce. With doctoral education metamorphosing to include publications and publishing track records being a norm to ensure success in gaining an academic related job, it is becoming essential for some candidates to publish during their candidature. It was also evident in this study that some examiners perceived that candidates gained a richer and deeper learning experience if they published during their candidature - a finding which is in accord with the results of Robins and Kanowski’s (2007) study.

However, not every candidate is able to cope with the changes and pressures of publishing during their candidature (UKCEG, 2015). Some candidates feel that the process of writing a paper during candidature can be complicated and the time involved is also unpredictable. Additionally, the review process can be demanding and difficult for some candidates. For instance, to write a thesis chapter, the revision process may often be between three to six drafts; for a paper, however, it may require considerably more drafts (personal experience). Due to the tight word restrictions required in journals, often the candidate’s voice may not be heard, especially in multi-authored publications. Moreover, sometimes the nature of the research topic can hinder candidates from publishing during their candidature. For instance, a longitudinal research topic may not give the candidate the opportunity to publish during their candidature, but perhaps after his/her examination.

Despite the drawbacks, there are possible ways to encourage doctoral candidates to publish during their candidature. For instance, one of the possible ways is to encourage candidates to either do a thesis with publications appended or write a traditional thesis in a hybrid format. The thesis with publications appended gives the candidate the opportunity to append articles in the thesis without changing the format of the thesis. For a traditional thesis in a publication format, the chapters in the thesis can be written in publication format even if they are not published at the time of submission. Hence, when the candidate is ready to publish an article, the candidate is able to extract a chapter from the thesis. This approach facilitates the candidate’s production of publishable materials. Moreover, the thesis with publications appended, the traditional
thesis with publication format, and some types of PBTs give candidates the experience of writing both academic articles and a thesis at the same time.

### 7.3.6 A new set of criteria for PBTs

This study showed that some examiners extended their set of criteria and applied the criteria differently when it comes to PBTs. The following were the extended criteria that the examiners from the interviews “developed” during the thesis examination:

i. Does the candidate show major contribution in the multi-authored publications?

ii. Do the co-authors take a secondary role in the publications?

iii. Does the candidate show first authorship in the publications?

Some examiners extended these criteria because they did not know how to assess the candidate’s contribution during the examination process. The PBTs that they assessed did not always include any declaration form or commentary indicating the role of the candidate and the co-authors. There were also some incidences where the candidate was not the first author in chapters that were included in the thesis. Thus, examiners had to extend or use their own set of criteria while assessing PBTs. Mullins and Kiley’s (2002) research revealed that experienced examiners used their own set of criteria during the assessment process, which seems to concur with the findings in this study.

What seems more apparent is that the examiners who extended their criteria did so because of the lack of guidance that they received from the universities. They did not receive any guidelines or information concerning the candidate and co-authors’ contribution and/or the order of authors in a publication. Francis et al. (2009) reported that these issues of contribution and authorship can be complex, especially if it is from the candidate’s thesis, and Morse (2009) suggested that proper university policies are needed to resolve these issues. If clear sets of guidelines are provided to supervisors and doctoral candidates on issues and expectations that examiners have in a PBT, then examiners would not have extended their own set of criteria. Thus, the provision of guidelines for supervisors and doctoral candidates on how to produce a PBT would help to overcome issues in PBTs.
Besides extending the set of criteria, some examiners also applied the criteria differently for PBTs. For example, some examiners judged originality in PBT’s by considering a number of publications in the thesis. This criterion was evident in Clarke and Lunt’s (2014) research on how examiners associate originality with publications; however, this criterion may not fit well in some disciplines. In some disciplines such as those in Commerce and Humanities, it may not be an expectation nor a common practice to publish during candidature, unlike disciplines in Health Science and Science. Hence, to consider having a blanket criterion across the other disciplines may not be appropriate.

Some examiners also extended their views on the typical criterion that requested them to comment on whether there were publishable materials in the thesis - this criterion does not fit well with PBTs. Some examiners suggest that the criterion should be requesting examiners to consider whether the ‘publication is published in an appropriate journal’. However, this criterion may not be adequate for all disciplines. What should be the key focus of this criterion is that the thesis is of a publishable quality (Clarke & Lunt, 2014), because “work that meets international standards of published research and makes a novel contribution to the subject is likely to be publishable in an appropriate journal” (p.7). Thus, regardless of whether the chapters were published or publishable, the thesis should contain work of publishable quality.

To address the question of whether a new set of criteria is needed for PBTs, it seems more reasonable from this discussion to maintain the traditional assessment criteria and provide clearer sets of guidelines. Even though Shankar et al. (2005) implied that specific assessment criteria are essential for examiners during the examination process, when criteria become too specific, they may cause a misfit for some disciplines, even for the different types of PhD programmes. For instance, the criterion to associate originality with a minimum number of publications may not be suitable for some humanities disciplines. Sankaran et al. (2005) also pointed out that doctoral candidates, universities and examiners do not always know the criteria that examiners use, as the guidelines that universities provide are often broad and open to interpretation. Thus, with clearer sets of guidelines on what to expect in the thesis, especially for PBTs, the issue of examiners misinterpreting the assessment criteria could be resolved. These guidelines will be further discussed in section 7.5 (on p.125).
7.4 Alignment for learning in doctoral education

Before writing a more detailed set of guidelines for the examination of PBTs, it is necessary to revisit the idea of constructive alignment that was discussed in section 2.2. In the next few sections, each component of this framework is discussed by taking into consideration the changes and the learning goals that are expected in PBTs.

7.4.1 Intended learning outcomes of PBTs

In order to achieve good practice in curriculum design, it is important to identify the intended learning outcomes that are expected in a programme. Biggs and Tang (2011) advocate that it is important to use an ‘outcome-based approach’ to curriculum design. What this approach entails is that the teacher is expected to first state and communicate the intended learning outcomes to the students so that the students understand what is expected from them. Then, the teacher selects the appropriate teaching and learning methods, and an assessment regime, that are aligned to the intended learning outcomes so that candidates have the best chance of achieving the intended learning goals.

Applying this approach to PBTs, the first step is to determine the intended learning outcomes, but it is useful to first revisit the intended learning outcomes of the traditional PhD. The typical intended learning outcomes of traditional PhDs assessed via a thesis, include:

i. the ability to conduct original research;
ii. the ability to critically engage in the literature;
iii. the ability to use appropriate methods of data collection and analyses;
iv. the ability to produce a coherent piece of work;
v. the ability to demonstrate effective written communication skills; and
vi. the ability to produce publishable materials.
The intended learning outcomes above are also applicable in PBTs, but there are more learning outcomes that are typically expected in PBTs:

- the ability to take lead authorship in publications*;
- the ability to write for different audiences;
- the ability to synthesise traditional writing with journal writing to produce a coherent thesis;
- the ability to attend with reviewers’ comments;
- the ability to show mastery over the research topic*; and
- the ability to demonstrate effective oral communication skills*.

Note that the last two outcomes are also relevant to traditional PhD theses, and tend to occur when an oral examination is a normal part of the examination process. What is apparent in the intended learning outcomes for traditional PhDs is that the outcomes are mainly focused on the written thesis, whereas for PBTs, the intended learning outcomes are attentive to both the written thesis and the candidate’s ability. Some of these outcomes (indicated with a * ) were expectations that some examiners had while assessing PBTs, whereas the other outcomes were skills that candidates needed in order to produce a PBT.

As the intended learning outcomes in PBTs have extended, it is important now to ascertain whether the supervisory methods are aligned to the intended learning outcomes. As Biggs and Tang (2010) indicated, the main way that the candidate can achieve the intended learning outcomes is if the teacher, or in this case the supervisors, use supervisory methods aimed at fostering these learning outcomes. In the following section, I discuss supervisory methods in PBTs.

### 7.4.2 Supervisory methods in PBTs

In any PhD programme, supervisors play a pivotal role in the candidature’s journey as they take on the responsibility to nurture the candidate to become a scholar in the field. Supervisors teach, mentor and guide the candidate by passing on their knowledge and experience (Netsinghe & Southcott, 2015). Often, this form of learning in doctoral education is viewed as an apprenticeship. Apprenticeship learning is seen as an active
learning environment - meaning the students (doctoral candidates) “do the real work” while the teachers (supervisors) “act as a broker between the student and a learning environment that supports the appropriate learning experience” (Biggs, 2003, p. 27).

As an example, in PBT supervision, one of the tasks that supervisors do is to mentor candidates to write an article. At the initial stage of this mentorship, supervisors provide the candidate the support that they need to write the article, in terms of guiding the candidates on how to select the appropriate journal for the article, structuring an argument, drafting the article based on the journal’s requirements, going through the revision process with the candidates, and guiding them on how to submit the article online. Over time, candidates will develop these skills and the supervisors will eventually reduce the amount of support or scaffolding (Bruner, 1960) that the candidates need. This example shows that the supervisor facilitated and prompted the candidate in his/her own learning environment, and provided the support that the candidate needed in order to achieve the learning goals (Sawyer, 2006). Through this mentorship, candidates also learn how to write for different audiences, learn to synthesise traditional writing with journal writing to achieve coherence, show mastery over the research topic, and work constructively with reviewers’ comments. This scaffolding is a key component of constructive alignment in doctoral education.

In addition, supervisors encourage candidates to share and disseminate their research ideas in conferences as well in departmental seminars. In some universities, such as Imperial College (2013, para. 3) and the University of Copenhagen (n.d., para. 2), it is compulsory for doctoral candidates to present their research progress to the department on an annual basis. PhD candidates in my own department are encouraged to present their research in annual postgraduate symposia and also in research seminars and research forums. These opportunities give doctoral candidates the opportunity to develop their confidence in presenting their research topic orally, and learning how to present.

As part of their research training, supervisors expose doctoral candidates to skills that are essential as an academic, such as writing for publication, attending to reviewers’ comments, having a grasp over a research topic, and presenting confidently in front of academics. Moreover, in some universities it is common for the institution to provide research skill development programmes that include writing for publication and the
publication process. These skills seem to align with the intended learning outcomes in PBTs. Thus, it is possible to elucidate that the supervisory methods for PBTs are aligned to the intended learning outcomes. However, to achieve a well taught course, the assessment regime also has to be aligned. In the next section, I explore whether the examination process is aligned to the supervisory methods, and the intended learning outcomes of PBTs.

7.4.3 The assessment regime of PBTs

In a well-designed course, the assessment regime indicates whether the student has met the intended learning outcomes. Given that the intended learning outcomes in a PBT have expanded, a question is raised as to whether the examination process has changed to meet the outcomes. It should be pointed out that, in PhD programmes, the examination process is normally based on the written thesis and possibly an oral examination. Examiners normally use the typical assessment criteria to assess the thesis; however for PBTs, the assessment criteria have extended (as discussed in section 7.3.6 on p.116):

- Does the candidate show major contribution to the multi-authored publications?
- Do the co-authors take a secondary role in the publications?
- Does the candidate show first authorship in the publications?

Additionally, examiners in this study suggested that an oral examination should be part of PBT assessment. Through an oral examination, examiners are able to determine whether the candidate has mastery over the research topic as well the ability to communicate orally about the research topic. Both of these expectations show that the intended outcomes for mastery over the research topic and effective oral communication can be evaluated through an oral examination.

From the extended criteria, one of the intended learning outcomes is to ascertain if the candidate has the ability to take lead authorship in the publications. Examiners in this study were mainly uncertain about authorship because candidates usually did not provide any explanation about their contribution in multi-authored publications and were not the lead author in some of the publications that were included in thesis. Thus,
examiners extended their criteria regarding authorship so that they could be assured of authorship issues.

The intended learning outcomes regarding candidates showing the ability to write for different audiences, synthesise traditional writing with journal writing to produce a coherent thesis, and attend to reviewers comments can be seen through the publications that are included in the thesis. These outcomes are perhaps implicit in the assessment criteria when examiners are asked to comment if the thesis consists of any publishable materials, and can be evidenced in PBTs when publications are included. In section 7.3.6, I argued that this criterion should not only focus on looking at the candidate’s ability to produce a published or a publishable chapter, but also on the ability to produce a thesis that is of publishable quality. With this understanding then, these outcomes (candidate having the ability to write for different audiences, synthesise traditional writing with journal writing, and attend to reviewer’s comments) are evident in the examination process.

Despite the fact that the intended learning outcomes and the supervisory methods have extended, the examination process for PBTs has remained the same. Yet it is apparent that PBTs are still constructively aligned. For instance, Table 7.3 provides examples of how the intended learning outcomes, the supervisory methods and the examination process are aligned in PBTs. Table 7.3 shows that the intended learning outcomes numbered 1-7 are typically used in traditional theses but with PBTs, these have been extended to the outcomes numbered 8-11.
Table 7.3 Aligning intended learning outcomes, supervisory methods and examination process for PBTs.

<table>
<thead>
<tr>
<th>No.</th>
<th>Intended learning outcomes</th>
<th>Supervisory methods</th>
<th>Examination process</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Candidate demonstrates originality in the research</td>
<td>Scoping the research topic</td>
<td>Originality in the research, evident in the thesis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supervision and mentoring of research</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Candidate demonstrates critical engagement in the literature</td>
<td>Developing literature, searching and evaluative skills</td>
<td>Critical and analytical judgment of the literature, evident in the thesis and oral examination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Critiquing skills</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Candidate uses appropriate methods of data collections and analyses</td>
<td>Exposure to different research paradigms and designs- i.e., fieldwork, interviews, etc.</td>
<td>Use of appropriate methods and awareness of advantages and disadvantages of different approaches and methods, evident in the written thesis and oral examination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Analysis skills- i.e., analysis software</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Candidate demonstrates coherent investigation into the research topic</td>
<td>Recognising different formats for coherence</td>
<td>Coherent investigation, evident in the thesis and publications</td>
</tr>
<tr>
<td>5.</td>
<td>Candidate communicates effectively through writing</td>
<td>Writing skills for thesis and publications</td>
<td>Effective communication in the thesis and publications</td>
</tr>
<tr>
<td>6.</td>
<td>Candidate demonstrates mastery over the research topic</td>
<td>Read widely and deeply on the topic area</td>
<td>Evident in written thesis and oral examination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Understanding the relevance and value of the contribution to the discipline</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Candidate demonstrates effective oral communication</td>
<td>Oral presentations- i.e., seminars, conferences, etc.</td>
<td>Oral examination</td>
</tr>
<tr>
<td>8.</td>
<td>Candidate takes lead authorship in publications</td>
<td>Mentoring to publish</td>
<td>Assessing candidate’s contribution in multi-authored publications through written thesis and oral examination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use of commentary or declaration form</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Candidate writes for different academic audience</td>
<td>Writing skills for different academic audiences</td>
<td>Effective communication in the thesis and publications</td>
</tr>
<tr>
<td>10.</td>
<td>Candidate synthesises traditional writing with journal writing</td>
<td>Writing skills for different genre - thesis and publications</td>
<td>Effective communication in the thesis and publications</td>
</tr>
<tr>
<td>11.</td>
<td>Candidate attends to reviewers’ comments</td>
<td>Work constructively with reviewers’ comments</td>
<td>Publications evident in the thesis</td>
</tr>
</tbody>
</table>
The intended learning outcomes for PBTs not only require candidates to demonstrate originality, but also to take on lead authorship in publications, to write for different audiences, to synthesise traditional writing with journal writing, to attend to reviewers’ comments, to show mastery over the research topic and demonstrate oral communication skills. Even though intended outcomes 6 and 7 (show mastery and oral communication) may not be new in doctoral assessment, some examiners believed that it is important to incorporate an oral examination in PBTs to prove that the candidate has achieved these outcomes in the examination process. However, if an oral examination is not included in the examination process, then it is possible to indicate that the PBT may be misaligned, as examiners will not be able to assess some of the criteria.

Further, as supervisors mentor candidates to publish, it is important for the supervisors to ensure that the candidate takes lead authorship in publications that arise from the thesis. It is also important for the candidate to be transparent regarding the contribution made to the publications—such as to include commentary on authors’ contribution in the thesis (as discussed in section 7.3.2 on p.109). Also, with the PBTs, supervisors expose the candidate to write for different academic audiences, teach them to synthesise traditional writing with journal writing so that the thesis can achieve coherence, and work constructively with the reviewers’ comments. Through this apprenticeship experience, supervisors believe in passing on their skills and experiences of the field to the candidate. As noted above the university may also provide support for developing publishing skills through workshops and courses.

Despite the fact that examiners have extended their assessment criteria, it is possible to say that the typical assessment criteria are a good fit for PBTs. It should be recalled that examiners only extended their criteria when the thesis did not have relevant information about the candidate and co-author’s contribution in any publications included in the thesis. If the candidate had provided relevant information of his/her contribution, as well as the co-authors’ contribution, examiners would not have extended their assessment criteria.

If examiners, doctoral candidates, and supervisors are provided with a clear set of guidelines, then PBTs will not be misaligned, as examiners would not have extended their assessment criteria. However, if an oral examination is not part of the examination
process, it is possible to indicate that PBTs may be misaligned as examiners will not be able to assess some of the criteria required for PBTs. In other words, PBTs may be misaligned without an oral examination and a clear set of guidelines. In order to achieve a well aligned curriculum in PBTs, an oral examination should be incorporated in universities that do not practice an oral, and a clear set of guidelines on PBTs should be provide to doctoral candidates, supervisors and examiners.

7.5 Guidelines for PBTs

Having understood the importance of having an aligned curriculum design for PhD programmes that promote publishing, it is essential to provide clear sets of guidelines for doctoral candidates who intend to submit a PBT, supervisors who may supervise candidates who do a PBT, and examiners who may assess PBTs. In order to ensure that the PBT examination process goes well, it is also important to provide guidelines for doctoral administrators who may be overseeing the examination process. In this section, I present these guidelines, focusing on each of these stakeholders, and provide some suggestions on how these guidelines can be implemented in the university environment.

7.5.1 Guidelines for doctoral candidates

Doctoral candidates who intend to undertake and submit a PBT should:

a) be aware of the different types of PBTs and how they are formatted;
b) be aware of the ethical issues regarding authorship, the useful tools and guidelines that may assist with authorship issues, to only include first authored publications as chapters in the thesis (other co-authored publications could be appended in the thesis);
c) be aware that an oral examination will likely be included as part of PBT assessment to assure examiners that the candidate has sufficient mastery over the research topic, especially if there are concerns over the candidate’s intellectual contribution in multi-authored publications;
d) inform readers at the beginning of the thesis about the inclusion of publications and possible repetition of information;
e) include commentary regarding publications in the introduction chapter that explains which parts of the thesis have been published, what each author has contributed to the publications, where they have been published, the status of the publications (e.g., under review, accepted, etc.) and declare author order;

f) only include publications that are from recognised venues in the field (e.g., journals or referred conference proceedings) as examiners become very suspicious with publications in unknown or low quality venues;

g) reformat the publications in the hybrid thesis by not including verbatim articles as chapters, but rather modifying their layout to achieve a consistent format and only include one reference list in the thesis; and

h) rewrite the introductory and summary sections of published chapters to provide links between chapters, provide a synthesis or general discussion chapter, and ensure that the thesis has a consistent argument.

7.5.2 Guidelines for supervisors

Supervisors who intend to supervise doctoral candidates who are interested in doing a PBT should provide appropriate advice. In addition to recognising the points, a-h above, they should:

a) facilitate candidates to write a traditional thesis in a publication format because chapters in this format can easily be submitted for publication both during candidature and after submission; and

b) suggest examiners who are more comfortable assessing PBTs.

7.5.3 Guidelines for examiners

Examiners who assess PBTs should:

a) be aware of the different types of PBTs;

b) be aware that the candidate should be the first or main author on publications that are inserted as chapters;

c) be provided with a summary of the candidate’s role in publications in the thesis;
d) be aware of the inclusion of publications and possible repeated information in
the thesis; and

e) be aware that an oral examination should be incorporated as part of the
assessment (especially for universities that do not normally include an oral
examination) - to ascertain if the candidate has mastery over the research topic
and to seek clarification if necessary.

7.5.4 Guidelines for doctoral administrators

Graduate administrators, including doctoral administrators and PhD convenors of
examination (also known as chairs in some universities), should be aware of PBTs
when convening and administering the examination process. They should:

a) be aware of the different types of PBTs and what is allowed in their university;
b) provide guidelines to both internal and external examiners about PBTs;
c) be aware of guidelines that doctoral candidates and supervisors have about
PBTs;
d) be aware that an oral examination should be incorporated as part of the
examination process; and

e) be aware that examiners expect candidates to make changes even on published
work.

Besides having these guidelines, it is important that they are implemented in the
university environment. Some possible ways to implement these guidelines are:

- to inform academic staff and doctoral candidates about the format and
guidelines for PBTs on the university website and in relevant handbooks;
- to educate academic staff and doctoral candidates about the policies regarding
PBTs through seminars and professional development workshops; and
- provide wider consultation to academic developers and graduate research
schools about this new practice.

In the following section, I consider some limitations of this study.
7.6 Limitations of this study

In this section, I discuss some limitations in this study. In the first phase, a survey was conducted. The survey was released online to 896 supervisors but only 62 supervisors took part. It should be recalled that the study sought only wanted examiners who had experience assessing PBTs. The sample size was small and was only focused on supervisors/examiners who had examined PBTs. The sample size perhaps had an over-representation of respondents from Health Science and Science and an under-representation of respondents from Humanities. However, this could be because PBTs are more common in Health Science and Science than in Humanities and Commerce. The survey was also limited to exploring examiners’ approaches to PBTs in general, rather than how examiners approached assessing different types of PBTs.

In the second phase, I interviewed 18 examiners from Health Science and Science, most of whom volunteered in the survey to participate in this part of the study. However, ideally, I would have liked to include examiners from Commerce and Humanities in order to understand how examiners from different disciplines assess PBTs. Additionally, this research focused only on experienced examiners (i.e., examiners who had examined at least eight theses), since only experienced examiners volunteered for interviews. Perhaps a comparison between experienced examiners and novice examiners may provide a different perspective about PBT assessment.

In the last phase, examiner reports were collected from the interviewees who agreed to share examiners’ reports that they had written. Twelve PBT reports were collected from examiners from Health Science and Science. A comparative study between traditional thesis reports and PBT reports would provide more in-depth understanding of any possible differences in assessing these theses. Also a comparative study between Sciences and Humanities may provide a different perspective about the nature of commentary in the reports.
7.7 Summary

In this chapter, I synthesised the key findings across the three results chapters. The findings highlight the importance of having clear sets of guidelines for doctoral candidates, supervisors, examiners and graduate administrators regarding PBTs. Further, I raised a question of whether a new set of criteria is needed for PBTs as examiners not only assess a thesis, but also a candidate’s ability as a researcher. I explained how the intended learning outcomes for PBTs have changed, and so too have the supervisory methods, but although the examination process has remained the same, PBTs are in alignment if examiners are provided with adequate commentary regarding authorship of publications and if an oral examination is conducted as part of the examination process. Lastly, I presented the limitations evident in the study. The following chapter concludes this research by revisiting the research aims and key findings, and presents some of my reflections along with further implications of the research and some suggestions for further research.
Chapter 8
Conclusions

8.1 Introduction

The main aim of this study was to ascertain how examiners assessed theses that include publications. In this chapter, I revisit the research aims and briefly provide the key findings. I then discuss the major contributions of this thesis. My personal experience in attempting to do a PBT is also incorporated to highlight some of the difficulties associated with using this format for a thesis. Lastly, I discuss further implications of this research and provide suggestions for future research.

8.2 Summary of key findings

In this section, I present the key findings of this study that were procured from the survey, interviews and examiners’ reports. I summarise the key findings in response to the research objectives that stemmed from the main aim of investigating how examiners assess a PhD thesis that includes publications. It should be recalled that the sample size for the survey was only 62 respondents, and heavily dominated by Health Science and Science examiners. Also, the sample of the examiners interviewed, and the reports analysed, were all from Health Science and Science. The nature of this sample should be kept in mind when considering the key findings.

8.2.1 Prevalence, types of PBTs, and disciplinary differences

The survey findings showed that out of 600 theses examined by 62 respondents over a 10 year period, 264 theses were PBTs. This means that nearly 44% of theses that examiners assessed were PBTs. Out of the 264 PBTs, the hybrid thesis (which had articles inserted in lieu of some chapters) was the most common type of PBT that examiners assessed. When comparing the trend of theses being examined to the broad disciplinary groups across the university, Health Science and Science examiners assessed more PBTs in the past ten years, with 130 and 108 theses respectively. In
contrast, Commerce examiners assessed 17 PBTs, while Humanities only examined nine PBTs.

8.2.2 Examiners’ approaches in assessing PBTs

Examiners in this study usually approached assessing PBTs in the same way they would traditional theses. Most of them read the thesis from cover to cover even when the thesis was structured differently (e.g., the hybrid thesis). They also jotted down detailed notes and questions while reading the thesis.

8.2.3 Key issues while assessing PBTs

The key issues that most examiners faced while assessing PBTs were not knowing how much the candidate had contributed in multi-authored publications, if the candidate was not the first author on publications that were included in the thesis, and the lack of coherence in hybrid PBTs. Guidelines on how to resolve these issues of author contribution and order, as well coherence were provided in section 7.5 (on p.125).

8.2.4 Influenced by reputable publications

The findings showed that most examiners were highly positively influenced by the inclusion of publications in the thesis from top-ranked international peer-reviewed journals. Examiners placed less value on local peer-reviewed journals and refereed conference proceedings. However, in the Computer Science and Information Science, publications in refereed conference proceedings were considered equivalent to top-ranked journals. Examiners who were influenced by publications in reputable venues recognised that it is difficult to publish in these venues, and getting to that high standard shows that the writing has gone through a rigorous peer-review process. On the contrary, some examiners indicated that they were not influenced by any forms of publications in a thesis, and assessed the thesis as it is, that is not being swayed by the inclusion nor standing of publications.
8.2.5 Assessment criteria for PBTs

Most examiners indicated that there is no need for a different set of criteria to assess PBTs; however when they assessed a PBT, they tended to extend the usual set of criteria. For instance, in addition to the usual criteria, they wanted to know:

- Does the candidate show major contribution in the multi-authored publications?
- Do the co-authors take a secondary role in the publications?
- Does the candidate show first authorship in the publications?

However, if candidates provided commentary on publications that were included in the thesis (e.g., Table 7.2), where they stated their contribution in a more transparent manner, examiners assessed the thesis using the usual criteria. Moreover, it was apparent that examiners not only assessed the thesis, but also the candidate. That is, as well as wanting to be assured the written thesis is of doctoral quality, the examiners wanted to know that the candidate was at doctoral level as well. Thus, when multi-authored publications were included in the thesis, examiners indicated that it was important to have an oral examination for PBTs to assess if the candidate had mastery over the research topic.

8.2.6 The nature of commentary on PBTs

Most examiners believed that they provided a similar amount of commentary on PBTs as they would for traditional theses. Examiners expected candidates to attend to their commentary even for chapters that were published. The type of commentary that examiners provided for PBTs was more often minor (editorial) than major (requiring substantial revision) comments. A linguistic analysis revealed that examiners provided more directive feedback (requiring the candidate to revise the minor comments) than summative assessment on PBTs.

8.2.7 Overall opinions on PBTs

Examiners were also asked whether PBTs should be encouraged, the drawbacks of doing them, whether they found it easier to assess PBTs compared to a traditional thesis, and whether universities should provide guidance on how to assess PBTs.
Examiners were positively in favour of candidates doing PBTs, because of the rich experience that the candidate gains as a learner and researcher, and the increased opportunity of securing a career in a tight job market. Some of the drawbacks of doing a PBT that examiners observed were the issue of having the article accepted on time, publishing in a reputable journal, the different genres’ of writing style, loss of rich information due to word limit of the article and not hearing the candidate’s voice in the thesis, especially when it includes multi-authored publications. Most examiners also found it easier to assess PBTs because parts of the thesis have already been peer-reviewed. In terms of guidance, some examiners wanted more guidance on what to expect and how to assess a PBT. Additionally, examiners wanted more guidance on how to supervise candidates who are keen to undertake a PBT.

8.3 Major contributions of this study

With many doctoral candidates publishing during their candidature, it is becoming more common for examiners to assess a thesis that includes publications. While there has been some research on examiner’s approaches to assessing traditional theses, there is a paucity of research on how examiners approach assessing PBTs.

The first contribution of this research is a taxonomy for classifying the types of PBTs. Three types were identified: thesis with publications appended, hybrid thesis and PhD by publication. Park (2007) provided a classification of the different types of PhD programmes, but his classification did not consider the different nuances of theses that include publications as he only focused on PhD by publication. Hence, in this study, this taxonomy identifies different types of theses that include publications and each type of PBT requires different formatting and expectations in the thesis.

The second contribution of this study is reporting data for the prevalence of PBTs in terms of the number of PBTs that examiners have assessed, the different types of PBTs, and the disciplinary differences in the types of PBTs that examiners have assessed. While I found reference to the practice of publishing during candidature to be increasing (e.g., Lee & Kamler, 2008), and for some disciplinary differences (e.g., Kamler, 2008), I could not find any estimates of the percentages of PBTs being
assessed, nor how this might vary by disciplinary grouping. Although a small sample, my study provides the first numerical estimates of the prevalence of PBTs.

The third contribution of this study is the provision of an in-depth understanding of the way examiners approach assessing PBTs. The approach that examiners used to assess PBTs was similar to the approach that was reported for traditional theses (e.g., Mullins & Kiley, 2002), that is, they read the thesis narratively, jotted down notes, and asked questions while assessing the thesis. However, some of the questions that examiners asked while assessing PBTs showed that examiners extended their set of criteria during the examination process. This finding provides new insights into the doctoral assessment.

Fourth, this research highlighted the issues that examiners faced while assessing PBTs. When no explanatory commentary for the publications was provided, examiners struggled to identify the candidate’s contribution and order of authorship in multi-authored publications. One possible way to resolve these issues is to state, in the introduction chapter, the role and contribution that the candidate and co-authors played in the publications, the name of the journals and which parts of the thesis have been published. This information helps examiners to see the candidate’s contribution clearly. Also, examiners were frustrated by the incoherence that could occur in hybrid PBTs. In order to achieve coherence, it is important to have a consistent style throughout the thesis and signposting sections between chapters and sections. These findings offer new understandings into doctoral assessment pertaining to theses that include publications.

Fifth, this research utilised a linguistic analysis to provide new information on how examiners provide commentary on PBTs especially in the types of feedback and assessment. Past research has only focused on how examiners provide commentary on traditional theses.

Sixth, and very importantly in practical terms, has been the development of a set of guidelines for doctoral candidates who intend to do/submit a PBT, supervisors who intend to supervise candidates who are doing PBTs, examiners who assess PBTs and graduate administrators who oversee the examination process.

Finally, applying Biggs’ (1999) framework of constructive alignment showed that despite an expansion in the intended learning outcomes and teaching learning methods,
PBTs can still be well aligned as the traditional assessment regime can ensure all outcomes are met if an oral examination is included to demonstrate mastery over the research and oral communication skills.

8.4 My self-reflection on PBTs

In this section, I would like to reflect on my learning experiences in attempting to do a PBT and the lessons that I have learnt. As my research focused on how examiners assess PBTs, I was keen to “walk the talk” by producing a hybrid PBT. However, I realised that there were factors that I needed to consider before doing a PBT. Some of the factors that I neglected to take into consideration at the early stage of my candidature were the expectations of writing in a different style, the rigour involved and the requirement for multiple revisions.

Since I collected data in three different phases, I decided that I would write papers for each of those phases. I started my first manuscript by writing about my survey findings, but I didn’t expect that the conceptualisation, drafting and revision would be such an arduous process. I revised my manuscript with my supervisors numerous times before sending it off to a journal. The reviewers’ feedback necessitated more revisions to meet the requirements for publication. It took me nearly a year to get my first article published in a reputable international peer reviewed journal. This learning experience made me realise that it is not an easy task to publish during candidature, especially in the Humanities. Indeed, this was evidenced by the data - it should be recalled that only nine out of 264 PBTs in this study were from the Humanities. Perhaps the process of publishing in humanities’ journals may take a slightly longer time than in science journals and/or it may not be normal practice in some humanities disciplines to publish journal articles since the whole thesis may be published as a monograph. Because of the time factor, I had to change my plans and consider doing a PBT with publications appended.

The second learning experience that I gathered from this attempt was that the expectations and demands in writing for a journal article are different compared to a thesis, which was also evident in Guerin’s (2014) research. This learning experience is viewed from two different aspects: tight word restrictions and the revision process. One
of the main requirements for a journal article in most Higher Education journals is to write within a limit of between 5,000-7,000 words. My experience of adhering to this requirement at the early stage of my writing was difficult. I struggled to express my ideas succinctly and briefly. In this thesis, I struggled less as I had the freedom to express and argue my ideas generously with a larger word limit. I also realised that my revision process for writing an academic article and a thesis chapter varied considerably. I had more revision done on my manuscript than on my thesis chapters, as I realised both these genres are pitched differently in terms of content and audience. This experience has exposed me to the different nuances required in writing for an article and a thesis, which I am able to share with others so that they can learn from it.

Despite the challenges in attempting to do a hybrid PBT, I have gained valuable experiences. I have learnt to view research as an opportunity to make a difference in the society. I had an interviewee who was diagnosed with cancer, but I did not know that she was sick during our interview session. When I found out that she just finished her chemotherapy session and rushed for our interview, I felt so bad. I wished she had informed me earlier about her treatment so that I could have postponed the interview, but her explanation was, “I don’t know when I will have the time again, but somebody needs to look into this change and come up with proper guidelines for students, supervisors and examiners”. She felt it was her responsibility to share her experience so that a positive outcome can be achieved through this research. At that moment, I realised how significant our roles as researchers are, and how important it is to have that sense of accountability to society and to contribute to the body of knowledge. Sadly, she passed away that year, but she definitely left an impact on me. Also, through this experience, I met participants who were in high positions and yet very humble. Coming from a hierarchical culture, it was a culture shock to find people of high academic standing treating a student with so much respect and providing support and encouragement. My experience with these participants has made me realise that the higher one may go, the lower your feet have to be on the ground. I would certainly like to emulate this value of humility when I start my career.

Getting my first article published gave me the opportunity to engage myself with the scholarly community. Scholars in the field knew me by name when I was at conferences to present my research. It felt nice to be recognised and accepted by peers in my research field. Based on this visibility, I was invited to give seminars at several
Australian universities and I was offered a postdoctoral position to lead a study on publishing during candidature in South African universities. Unfortunately, I had to decline this offer due to personal reasons. However, what was more important for me through this recognition was that this journey has changed me to be humble and that publications are the universal currency of an academic and it is these publications that open windows of change.

8.5 Further research implications, and suggestions for further research

This study has generated a number of implications that should be of interest to university policy-makers, graduate research schools, doctoral candidates, supervisors and examiners. Several of these implications are discussed to show how the insights from this study might impact PhD programmes in doctoral education.

First, this research identifies the need to specify the different types of PBTs since they require different styles of formatting. It is important to know the appropriate format needed for the different PBTs as this study showed that the hybrid format caused some difficulties for examiners while assessing the thesis and some practical steps can be taken to prevent concerns. Thus, it is crucial for doctoral candidates, supervisors and examiners to be aware of the different formats required in PBTs and how to maintain coherence.

Second, this research also identifies broad disciplinary differences in doing PBTs. It is more common for Health Science and Science candidates to publish during their study as well to include publications in the thesis, but, should this expectation and practice be extended to candidates in Commerce and Humanities disciplines? The expectation to include publications or to do PBTs should be discussed and considered between the supervisors and doctoral candidates depending on the career path that the candidate plans to take. For instance, if the candidate intends to get into academia, then the expectation to have publications may need to be considered during the candidature.

Third, this research shows that examiners in this study extended their set of criteria because they did not receive information concerning the candidate’s contribution in the
publications, and the order of authorship in multi-authored publications. To resolve these issues, this study suggests that candidates should provide commentary on publications that are included in the thesis, and only include first authored publications in the body of the thesis. Also, examiners were concerned about a possible lack of coherence in hybrid PBT, thus suggesting that the candidate reformat the thesis to achieve coherence – such as to have signposting between chapters and sections, consistent style throughout the thesis (e.g. font style and size, and margin width) and rewrite chapters to reduce repetition of information. Additionally, the need for a new set of criteria for PBT may not be required, but an oral examination should be incorporated in the assessment process as it is important to assess the candidate’s mastery over the research topic, especially when there are multi-authored publications included in the thesis and/or an expectation of effective oral communication skills.

Fourth, this research provides sets of guidelines that are needed for: doctoral candidates who intend to submit/do PBTs; supervisors who may supervise candidates who are doing PBTs; and examiners who may assess PBTs. If university policy-makers are considering adopting PBTs as part of the PhD programme, then is vital to consider having these sets of guidelines implemented.

Fifth, the lens of constructive alignment was used to investigate curriculum design for PBTs. Using this lens, it seems apparent that a PBT is still well aligned. Even with an expansion in the intended learning outcomes (e.g., the ability to publish, the ability to attend to reviewers comments etc.) and the teaching and learning method via supervision and mentoring of the publication process, the assessment regime has still remained the same, focusing on the thesis and possibly an oral examination. Despite this, the curriculum can be well aligned unless an oral examination is not included in the examination process. By not having an oral examination, it is possible for PBTs to be misaligned as examiners would not be able to assess some of the criteria required for PBTs (e.g., mastery over the research topic and effective oral communication skills). Further, without a clear set of guidelines, PBTs could also be misaligned as examiners would have extended their assessment criteria. In other words, to achieve a well aligned curriculum for PBTs, an oral examination should be incorporated in universities that do not practice an oral, and a clear set of guidelines should be provided to doctoral candidates, supervisors and examiners.
8.6 Further research

This research has raised a number of questions, worthy of future research. The findings indicate strong disciplinary differences in the acceptance and promotion of PBTs. However, the sample size was small, so further research with a larger sample could determine if the views presented by examiners in this study represent those of a wider group of examiners. In particular, further perspectives are required from academics in Humanities and Commerce, since the sample size was small from these disciplines. Are there particular barriers to encouraging PBTs in these disciplines? Might there be differences between doctoral candidates’ and academics’ views about publishing during candidature?

Secondly, it would be helpful to investigate the challenges in supervising candidates who are doing PBT in different disciplines. Since it is more common in Health Science and Science to encourage candidates to publish, it would be insightful to investigate how supervisors mentor candidates to publish during their candidature. Also, it is worthwhile to see how supervisors from Humanities and Commerce supervise candidates who are keen to do a PBT. In Humanities it is common to produce a book from a doctoral thesis, rather than a series of papers, so this would mean a change in the publishing culture. Also, it is recognised that some Humanities and Social Science journals have very long times to publication, which could be a barrier for candidates wishing to do a PBT. A longitudinal study looking at the different stages of candidature may provide an in-depth understanding of this practice. Further research could look at the challenges that students experience in doing a PBT and their learning experiences.

Thirdly, it was beyond the scope of this study to gain insights into PBTs from the perspective of doctoral candidates (aside from my own experience). Yet, a systematic study into experiences of doctoral candidates undertaking PBTs may provide valuable information. Furthermore, looking at these experiences from a range of disciplines could be invaluable in informing supervisory practice, as well as institutional support for the policy and practice of PBTs.

Fourthly, a set of guidelines has been generated from this study. Future research could look at implementing these guidelines and determine if these guidelines are useful for doctoral candidates, supervisors, examiners and doctoral administrators.
Lastly, looking at doctoral education from the perspective of constructive alignment raises some questions as to whether the learning outcomes for doctoral candidates are aligned with some of the changes that are taking place with doctoral education (which were discussed in Chapter 2). For instance, doctoral graduates are expected to have a wider set of skills so that they can fit into a range of jobs beyond academia, but the question is, do they have the skills? Also, it would be helpful to explore whether there is a weakness in the curriculum in terms of including learning opportunities for the development and the assessment of this wider set of skills. Further research could look at these questions closely to ascertain whether doctoral education is well aligned with the changes.

8.7 Concluding remarks

As this chapter indicates the end of my research and my doctoral journey, I would like to conclude my thesis by relating it back to my friend’s story in Chapter 1. It should be recalled that her PhD needed revisions despite including five publications in good journals. Her experience sparked my interest in investigating how examiners assess a thesis that includes publications. If I could turn back time and could advise my friend, I would tell her that having publications in the thesis is not an ‘immunity platform’, as I have discovered that some examiners may not be influenced by publications. Further, I believe that whether examiners are influenced or not by publications, it is just important to publish because it is our responsibility to disseminate what has been investigated to society and the body of knowledge. We need to cultivate a sense of accountability to the field of research, society, and knowledge.
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Appendix A

Approaches to examining publication-based PhDs

Page 1

This research is part of a doctoral study exploring how examiner's approach assessing publication-based doctoral theses. Please note that if you fill out this questionnaire, you are consenting to the collection of data and its publication. Your anonymity in completing this survey is guaranteed. We are seeking volunteers for a follow-up interview of about an hour, to discuss your approach to examining publication-based theses in more depth. Please fill in the box near the end of the survey if you are willing to participate. If you are selected for an interview, you will be sent further information and a consent form.

Some information about you
1. What is your discipline area?
2. What is your gender?
   - Male
   - Female
3. Where did you gain your highest educational qualification? Please give both institution and country.
4. Which countries have you worked in higher education institutions?

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Supervision and examination experience
5. In the past ten years, how many traditional doctoral theses (i.e., without inclusion of any publications) have you examined?
6. In the past ten years, how many doctoral theses with publications appended in the thesis have you examined?
7. In the past ten years, how many doctoral theses using a combined approach of more traditional chapters and some chapters that are published papers have you examined?
8. In the past ten years, how many doctoral theses by publications alone (i.e., a thesis with journal articles alone) have you examined?
9. How many doctoral students have you supervised to completion in the last 10 years? Please include students for whom you are either a primary supervisor or a co-supervisor.
10. How many doctoral students have you supervised who are writing or have written up their thesis in a publication-based style (i.e., traditional thesis with publication appended, thesis using combined approach and thesis by publications alone)? Please include students for whom you are either a primary supervisor or a co-supervisor - again, in the last 10 years.

Page 3

Criteria used to judge the quality of a thesis


12. Where do the criteria you use to judge a publication-based thesis come from? Please check those that apply.
   o From the institution of the candidate
   o Own criteria
   o Other, please specify

13. Do you look for different key features in a publication-based thesis compared to a traditional thesis? Please explain.

14. Which types of candidate's publications would influence your judgement of publication-based theses? Please check all that apply and indicate how significant they are in your judgement (Very Significant, Significant, Neutral, Insignificant, Very Insignificant and Not Relevant)
   o Chapters in edited volumes
   o Top ranked journals in my field
   o International peer-reviewed journals
   o National peer-reviewed journals
   o Local peer-reviewed journals
   o Non peer-reviewed journals
   o Refereed conference proceedings
   o Non-refereed conference proceedings

15. Please elaborate on your answers above in question 14

16. Does co-authorship of candidate's publication influence your decision when judging a publication-based thesis? If so, in what ways?

Page 4

Providing feedback on the publication-based thesis

17. Is the nature of the feedback you give different from that provided on traditional theses? If so, in what ways?
Overall opinion on publication-based theses

18. Please rate the following: (Very Definitely, Definitely, Neutral, Definitely Not and Very Definitely Not)
   - Publication-based theses should be encouraged
   - I find it easier to examine publication-based theses
   - I need more guidance on how to examine publication-based thesis

19. Please elaborate on your answers above in question 18.

20. Are there any other comments you would like to provide regarding examining publication-based theses?

Follow-up interview and/or sharing of your examining reports

21. If you are willing to participate in a follow-up interview to explore your approach to examining publication-based theses in more depth, please give your contact details below. Please note your anonymity in reporting these survey data are guaranteed. Your personal details are being collected only to enable us to contact you for the interview.

22. Alternatively, if you are willing to share anonymised reports you have given on publication-based theses, please give your contact details below. Please note your anonymity in reporting these survey data are guaranteed. Your personal details are being collected to enable us to contact you for the reports. Moreover, the Human Ethics Committee at Otago has approved the collection of such anonymised reports providing that the candidate's name, topic and date of report are removed alongside any other information that could lead to identification of the candidate.
Appendix B

Information sheet and Consent forms

[Reference Number: 12/132]

Approaches to examining paper-based doctoral theses

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate we thank you. If you decide not to take part there will be no disadvantage to you and we thank you for considering our request.

What is the Aim of the Project?

The aim of this project is to understand how examiners assess doctoral theses that have publications included. Previous research on the examination process has made very little mention about how examiners are influenced by published work in a thesis. It is increasingly becoming popular for doctoral students to include published work in their thesis. Given that these papers may have been reviewed by scholars in the field and accepted for publication, it raises a question regarding how examiners make a judgement on such paper-based theses that have in a way been accepted by the scholarly community.

What Type of Participants are being sought?

We are seeking about 20 University of Otago examiners of paper-based doctoral theses. Ideally we are seeking examiners with a range of experience and different disciplinary backgrounds.

What will Participants be Asked to Do?

Should you agree to take part in this project, you will be asked to participate in an interview. The interview will be up to an hour long and will probe:
• Your supervision and examination experiences of doctoral candidates, particularly those using a paper-based thesis format

• Your approach to examining paper-based doctoral theses

• The criteria you use to make a judgement of the quality of paper-based theses

• The type of feedback you provide on paper-based theses

We will also ask you to share some examples of examination reports you have written, once they have been anonymised. This is because we wish to explore how language is used to convey the quality of a thesis, and whether there are any differences in reports for traditional versus paper-based theses. In terms of anonymising reports, we want you to remove any identifying information from the reports such as name, topic, date examined and any other aspects which could result in identification of the candidate.

Please be aware that you may decide not to take part in the project without any disadvantage to yourself of any kind.

What Data or Information will be Collected and What Use will be Made of it?

The interviews will be digitally recorded, transcribed verbatim and returned to you for checking. These data will be analysed qualitatively using both NVivo and a general inductive approach. In reporting of these data pseudonyms will be used to protect the identity of the participants.

The second source of the data will be your anonymised examination reports. Access to these reports has been approved by the University of Otago Human Ethics Committee. The examiners’ reports will be analysis to identify the use of language in examining paper-based theses.

Note you may request to see what personal data is being stored for you at any time.

The data collected will be securely stored in such a way that only those mentioned below will be able to gain access to it. Data obtained as a result of the research will be retained for at least 5 years in secure storage. Any personal information held on the participants such as personal details, education background and experiences may be destroyed at the completion of the research even though the data derived from the research will, in most cases, be kept for much longer or possibly indefinitely.

The results of the project may be published and will be available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve your anonymity.
This project involves an open-questioning technique. The general line of questioning includes participants’ biography, information about the examination process and experiences. The precise nature of the questions which will be asked have not been determined in advance, but will depend on the way in which the interview develops.

Consequently, although the University of Otago Human Ethics Committee is aware of the general areas to be explored in the interview, the Committee has not been able to review the precise questions to be used.

In the event that the line of questioning does develop in such a way that you feel hesitant or uncomfortable you are reminded of your right to decline to answer any particular question(s) and also that you may withdraw from the project at any stage without any disadvantage to yourself of any kind.

**Can Participants Change their Mind and Withdraw from the Project?**
You may withdraw from participation in the project at any time and without any disadvantage to yourself of any kind.

**What if Participants have any Questions?**
If you have any questions about our project, either now or in the future, please feel free to contact either:-

Sharon Sharmini and/or Associate Professor Rachel Spronken-Smith

Higher Education Development Centre

University Telephone No: 034798415

Email Address: sharonsharmini83@yahoo.com

Higher Education Development Centre

University Telephone No: 034798929

Email Address: rachel.spronken-smith@otago.ac.nz
Approaches to Examining Paper-based Doctoral Theses

Consent form for participants

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:-

1. My participation in the project is entirely voluntary;

2. I am free to withdraw from the project at any time without any disadvantage;

3. Personal identifying information e.g., digital recordings etc. will be destroyed at the conclusion of the project but any raw data on which the results of the project depend will be retained in secure storage for at least five years;

4. This project involves an open-questioning technique. The general line of questioning includes participants’ biography, information about the examination process and experiences. The precise nature of the questions which will be asked have not been determined in advance, but will depend on the way in which the interview develops and that in the event that the line of questioning develops in such a way that I feel hesitant or uncomfortable I may decline to answer any particular question(s) and/or may withdraw from the project without any disadvantage of any kind.

5. I am free to withdraw from the project should I anticipate any form of any discomfort or risks

6. No remuneration or compensation issues, or any external funding, or commercial use of the data

7. The results of the project may be published and will be available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve my anonymity should I choose to remain anonymous.
I agree to take part in this project.

Name: ____________________________________________________________

(Signature of participant)
(Date)

This study has been approved by the University of Otago Human Ethics Committee. If you have any concerns about the ethical conduct of the research you may contact the Committee through the Human Ethics Committee Administrator (ph 03 479 8256). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.
Appendix C

University of Otago Thesis Examination Criteria

1. Does the thesis comprise a coherent investigation of the chosen topic?
2. Does the thesis deal with a topic of sufficient range and depth to meet the requirements of the degree?
3. Does the thesis make an original contribution to knowledge in its field and contain material suitable for publication in an appropriate academic journal?
4. Does the thesis meet internationally recognised standards for the conduct and presentation of research in the field?
5. Does the thesis demonstrate both a thorough knowledge of the literature relevant to its subject and general field and the candidate’s ability to exercise critical and analytical judgement of that literature?
6. Does the thesis display mastery of appropriate methodology and/or theoretical material?

(University of Otago, 2014, p.58)