

Helping doctoral students understand PhD thesis examination expectations: A framework and a tool for supervision

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Abstract

The examination of a PhD thesis marks an important stage in the PhD student journey. Here, the student's research, thinking and writing are assessed by experts in their field. Yet, in the early stages of candidature, students often do not know what is expected of their thesis, nor what examiners will scrutinise and comment on. However, what examiners look for, expect and comment on has been the subject of recent research. This article synthesises the literature on examiner expectations into a framework and tool that can assist students to understand PhD thesis examination expectations. Suggestions of how this tool may be used as part of a broader supervision pedagogy are offered.

Keywords

PhD examination, PhD supervision, PhD supervision tool

The challenges and demands of the PhD journey

Undertaking PhD research is a demanding enterprise, and writing a doctoral thesis can present one of the most challenging aspects of the PhD journey overall (Lindsay, 2015). The reason for this is because the student PhD experience is uniquely felt and involves a complex mix of practical, intellectual and emotional struggles and transformations (Amran and Ibrahim, 2012; Deconinck, 2015; Trotter, 2003). Deconinck's (2015) essay is a 'survival guide' in the form of advice to would-be students. In it, he quips that students who struggle frequently do not understand what a PhD is and what it involves. Deconinck (2015) contends that students need to develop some psychological tricks to overcome the various obstacles that this new experience will present. Amran and Ibrahim (2012) consider that completing a PhD is a journey – a rite of passage – whereby the student moves through a series of transformations: some emotional, some intellectual and scholarly. Trotter (2003)

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recounts her PhD journey as involving numerous practical, emotional, ethical and institutional struggles and dilemmas. Therefore, the pathway to producing a PhD thesis of acceptable scope and quality involves a progressive and transformative movement not only towards meeting the requirements of thesis examination but also of entering an academic and scholarly community (Amran and Ibrahim, 2012; Stracke and Kumar, 2010).

In general terms, PhD programmes promise that students will acquire attributes such as originality, competence in research, critical use of knowledge, and ability to situate research and new knowledge in a broader field (Australian Qualifications Framework Council, 2013; The Group of Eight, 2013; The Quality Assurance Agency for Higher Education, 2008). However, these meanings are not self-evident and need to be understood and developed over time as part of the doctoral learning process. The supervisor plays a formative role in facilitating this understanding (Peelo, 2010). For this learning to occur, some work by the student and supervisor needs to be undertaken within a supportive and effective supervision pedagogy (Lindsay, 2015). Students and supervisors need a clear vision of what standard they are working towards and a strategy of how to attain it. This may take the form, for example, of a strong supervisory relationship that supports continuous writing, project management and feedback (Lindsay, 2015). It should include close alignment between student and supervisor expectations and views about the forms and functions of supervision (Pyhältö et al., 2015).

This article is focused specifically on the written thesis component of the PhD rather than vivas or coursework examination. The argument here is that PhD students need to know and understand the kinds of things that examiners look for and expect in a PhD thesis. The discussion that follows is primarily conceptual and based on a review of guidelines on PhD standards and the empirical literature on PhD thesis examiner expectations. This literature is synthesised into a framework of attributes of PhD examiner expectations, which could be incorporated into a supervision pedagogy for PhD students. The contribution to knowledge this article makes is an accessible tool for supervisors and students that can assist students to understand and conceptualise the goals and expectations of a PhD programme of study, particularly the thesis component.

Policy and curriculum contexts for standards of doctoral education

In recent times – among a burgeoning growth in world-wide doctoral enrolments (Nerad, 2011; The Group of Eight, 2013) – literature has emerged that investigates and advises students, supervisors, examiners and University administrators on how to improve the quality, experience and success rate of this complex area of higher degree study (Delamont et al., 2004; Lindsay, 2015; Murray, 2009; Phillips and Pugh, 2010; Pyhältö et al., 2015; Tinkler and Jackson, 2004). Yet, different countries have different requirement for doctoral study. For example, Australia only requires a thesis for examination, whereas other jurisdictions like the United Kingdom and United States include a viva or oral defence as part of the assessment process, and yet others require substantial coursework and subject examination components (The Group of Eight, 2013). Notwithstanding these different forms of assessment, a major objective and function of the PhD student's learning and development process is to progressively improve research skills and knowledge to an acceptable standard, the form of which typically includes, and culminates in, examination of a PhD thesis (The Group of Eight, 2013).

Amidst the expansion in doctoral education generally, national guidelines that stipulate the standards and expectations of doctoral education are increasingly relevant for students and supervisors to grasp. For example, in the United Kingdom, the Quality Assurance Agency (QAA) is responsible for setting and monitoring higher education standards (QAA, 2017). The UK

Framework for Higher Education contains descriptors for doctoral degrees, and these have a particular emphasis on new knowledge, originality and substantial depth of understanding within a specific discipline or practice area (The Quality Assurance Agency for Higher Education, 2008). The underlying skills or attributes required to meet these aspirations emphasise the ability to make informed judgements, communication skills and an ability to work autonomously and independently ‘in complex and unpredictable situations’ (The Quality Assurance Agency for Higher Education, 2008: 24). In Australia, the Australian Qualifications Framework (AQF) contends that PhD graduates should have specialised knowledge in a field or topic and that the PhD student’s approach to knowledge should be systematic, critical and that they should demonstrate skills in designing, executing and reporting on research at an advanced level (Australian Qualifications Framework Council, 2013). Similarly, the detailed Australian ‘Group of 8’ report on the changing nature of the PhD includes an appendix on attributes of PhD graduates (The Group of Eight, 2013). These attributes include a focus on advanced disciplinary knowledge, research skills, technical skills and an ability to contribute to knowledge (The Group of Eight, 2013).

In summary, common among these policy and curriculum objectives are the expectations for PhD students to acquire skills in research, to show the ability to apply and generate knowledge critically and to demonstrate an ability to understand and contribute to one’s discipline through substantial original insights and contributions to knowledge, understanding and debate. Yet, as mentioned, PhD students must comprehend these expectations and objectives in ways that make disciplinary and institutional sense. Ultimately, students will be locating and developing their work in a context and tradition of research that has disciplinary conventions and expectations (Australian Qualifications Framework Council, 2013; The Quality Assurance Agency for Higher Education, 2008). Hence, the student needs to work out what these disciplinary conventions are and begin to systematically apply them to their work. Reading the disciplinary and professional literature – including recently published cognate PhDs – will assist in this task. Even so, despite a unifying discipline, there may be substantial differences in the form, scope and presentation of different PhDs, and disciplinary literatures are becoming increasingly interdisciplinary (Moran, 2010; Smeby, 2000). Therefore, using the disciplinary literature alone may only go part-way to helping establish clear guidance for the kinds of styles and markers of quality expected from a PhD thesis. Furthermore, interpreting from these published sources the underlying markers and indicators of PhD thesis quality is difficult. What else can students and supervisors turn to in order to assist students to develop a deep and nuanced understanding of the expectations of doctoral research and thesis presentation?

Examiner expectations of a PhD thesis: what does the literature say?

There is a body of empirical research that has looked at the question of what examiners favourably respond to and what they object to when examining PhD theses (Bourke and Holbrook, 2013; Holbrook et al., 2004, 2007, 2014, 2015; Kiley and Mullins, 2004; Mullins and Kiley, 2002). Other research has looked at supervisor feedback to students on the first draft of the thesis (Kumar and Stracke, 2007), and yet others report on the experiences of examiners and how to improve the examination process (Grabbe, 2003). This literature provides value to students and supervisors in working out expectations for examination. Research by Holbrook et al. (2014) into examiner comment of Australian science and education theses found that examiners provided formative comment in relation to presentation; methods and techniques; theory and conceptual framework; depth and scope of literature; levels, forms and understanding of the data; methods of analysis; argument and reasoning; sufficiency and completeness; and depth and sophistication of thinking. A further

study (Holbrook et al., 2015) specifically investigating examiner comment on the use of theory in PhD theses found that examiners favoured a PhD thesis that demonstrated engagement with theory. This engagement is demonstrated through the use of up-to-date sources and evidence of understanding pertinent theoretical criticisms. Examiners also expected students to demonstrate theoretical *grasp*, as evidenced by depth, breadth and critique. Grasp is also demonstrated through theoretical consistency and alignment between the use of theory, research design and research question. Furthermore, theoretical mastery is evidenced through a systematic discussion of theory and consistent use of ideas, concepts and associated terminology (Holbrook et al., 2015).

Other research using semi-structured interviews with experienced examiners about their examination and expectations of PhD theses revealed numerous insights into the examination process generally, particularly that examiners favour theses that demonstrate clear connections between introductions, conclusions, points made and claims asserted (Mullins and Kiley, 2002). Holbrook et al. (2007) sampled 1310 PhD examiner reports from five Australian universities and explored the commentary on literature reviews specifically. The findings show that examiners expect broad coverage of literature, demonstrated understanding and critical appraisal of literature, connections between literature and findings, and, importantly, evidence of a disciplinary perspective achieved through systematic use of literature throughout the thesis. A good thesis will exhibit clarity in explaining the research project and the thinking that informs it, a substantial and up-to-date bibliography, worthwhile results and evidence of work and effort in the research (Mullins and Kiley, 2002). The thesis should also convey confidence that the student knows what they are doing and what they understand, as evidenced through coherence, the development of a compelling argument, originality and consistent use of theory and method (Mullins and Kiley, 2002).

Excellent PhD theses are said to demonstrate creativity, synthesis, evidence of published work by the student in a reputable journal and critical self-assessment by student (Mullins and Kiley, 2002). Bourke and Holbrook (2013) investigated examiner comment on PhD and Masters theses in order to compare differences and similarities between the examination of the two different awards. In their study, they developed 12 indicators of quality as follows: Analysis/Findings (effective interpretation), Approach/Methodology (appropriate), Analysis/Findings (appropriateness), Literature Review (accuracy), Approach/Methodology (effective application), Contribution (originality), Presentation (communicative competence); Contribution (substantive), Contribution (advance knowledge), Literature Review (use/application), Literature Review (coverage) and Presentation (correct expression) (Bourke and Holbrook, 2013).

The PhD examination process is an opportunity to give formative feedback to students; however, the examination process itself constitutes a mechanism for upholding standards through the use of options for resubmission and re-examination. A study by Holbrook et al. (2004) looked at examiner feedback on PhD theses that were resubmitted for examination, by comparing initial and re-examined comments. They found that examiners may enter into expert and gatekeeping roles, particularly in cases of re-examined theses, where they were examining according to standards that they see themselves as having a duty to uphold. Holbrook et al. (2004) found that examiners of re-examined thesis may be willing to overlook deficiencies in presentation, but held fast to standards concerning thesis content, overall systematic approach, analysis, use of literature and contribution of new knowledge (Holbrook et al., 2004).

Learning outcomes for doctoral education

The derivation of specific learning outcomes and criterion for PhD assessment turns on what counts as a PhD and what purpose it is said to fulfil. This is largely a matter of debate. Arguably, a PhD learning journey may encompass the full span of Bloom's taxonomy of learning to include

cognitive processes such as remembering, understanding, applying, analysis, evaluation and creation (Anderson and Krathwohl, 2001). Bloom's higher order cognitive processes such as evaluation (e.g. critique) and creation (e.g. the development of a hypothesis, methodology and new knowledge) are typically emphasised in PhD learning outcomes. The knowledge dimension in Bloom's taxonomy moves from factual, conceptual, procedural and metacognitive knowledge (Anderson and Krathwohl, 2001). Learning outcomes for PhD programmes particularly emphasise the grasp of existing factual and conceptual knowledge (such as theory), independence in the application of procedural knowledge (such as methodology) and demonstration of metacognitive knowledge (such as critical self-reflexivity). The actual form that these cognitive and knowledge dimensions take in a PhD programme would be subject to debate and variability. Mowbray and Halse (2010) state that the purpose of the contemporary PhD is plagued with 'epistemological ambiguities' (p. 653), particularly in the context of a recent push for graduates to have employability skills beyond the academy and into industry and government (Mowbray and Halse, 2010), and Kyvik (2014) notes that 'the variation between individual countries in the performance of assessment and defence of doctoral theses is fairly large' (p. 108).

It is also the case that there are disciplinary differences that emphasise different aspects of the research study and how it is reported. For example, in science, examiners will emphasise data and data analysis, whereas in education and in qualitative studies, the emphasis is on argument (Holbrook et al., 2014). Furthermore, institutions that award PhDs will develop their own statements of learning outcomes for doctoral programmes and criterion for examination. For example, most if not all institutions offer PhD programmes in different discipline areas; however, the learning outcomes are typically generic insofar as they include the demonstration and application of high-level conceptual, technical and methodological research skills, as well as comprehensive contributions to the development and dissemination of knowledge. Broadly, examiners are usually required to focus their assessment on matters such as originality, criticality, independence and contribution to knowledge. However, as Tinkler and Jackson (2004) point out, institutional criteria used for thesis examination purposes vary, they may be ignored and many examiners receive little to no training on how to approach the examination process. This means that examiners rely on 'tacit knowledge about what a PhD in their discipline should be like' (p. 109). Consequently, disagreement between examiners is likely (Kemp and McGuigan, 2009).

A tool for helping PhD students understand thesis examination expectations

The purpose here was to create a tool that may assist students to conceptualise the expectations of examination. It is apparent from the above review of literature that amidst the debates about the forms and functions of the PhD, there are many similarities and common themes concerning what examiners expect and comment upon when examining PhD theses, such as clarity, coherence, contribution to knowledge and originality (Tinkler and Jackson, 2004). These are articulated in learning outcomes, and disciplinary and institutional requirements of the PhD. Organising the central themes in the literature on examiner expectations into an accessible framework can be a beginning way to help students understand, conceptualise and work towards examination expectations. As discussed below, this should be used in conjunction with supervision pedagogies and learning process, throughout the duration of the PhD journey. The tool can provide a way to help the supervisor and PhD student to locate common ground around what is expected from the PhD and what PhD research means and involves.

The framework that is presented in Table 1 is the result of a synthesis of the policy, curriculum and empirical work discussed earlier on PhD examiner expectations (specifically, Australian Qualifications Framework Council, 2013; Bourke and Holbrook, 2013; Holbrook et al., 2004,

Table 1. Attributes of PhD examiner expectations.

| Mastery/command | Argument | Coherence | Independence | Criticality | Depth/breadth | Clarity/accuracy |
|--|---|--|---|---|---|--|
| Extensive and exhaustive treatment of relevant literature (empirical, theoretical, methodological) | Connections between introductions, conclusions, points made, claims asserted | Systematic and complete discussion of theory | Original interpretations, adaptations, or applications of knowledge | Interrogation and critique of knowledge, ideas, theory, concepts, literature | Coverage of different literatures is comprehensive | Writing is clear and unambiguous |
| Understanding and engagement in pertinent criticisms, debates and alternate views in literature | Arguments and claims made supported with evidence, logic, warrants | Consistent use of ideas, concepts and terminology | Thinking and intellectual contribution evident | Interrogation and critique of own interpretations, analysis, findings and conclusions | Project scope is sufficient and evidence of 'background' or behind-the-scenes work and effort | Sources are accurately cited and reported |
| Grasp, interrogation and appropriate application of theory, concepts, methods | Reasoning and logic (links between parts and whole) | Coherent hypothesis or question grounded in literature and systematically explored | Confident and grounded assertions made about knowledge | Conclusions and claims made are explored beyond face value | Questions and ideas developed thoroughly | Aim, purpose, question clearly stated |
| Demonstrate detailed, comprehensive and accurate understanding of the field/subject/topic | Thesis contains a clearly stated overarching perspective, point, argument, which is compelling and defended | Consistency and clear alignment and links between question → literature → theory → design → data → conclusions | Rigour in own standards of work, intellectual discipline | Exceptions, alternatives, gaps and inconsistencies identified and discussed | Substantial and up-to-date bibliography | Data is accurately presented and interpreted (connected to theory, literature) |
| Creative and insightful view of topic (demonstrated in form, style, structure and presentation and 'crafting' of the work) | | Adoption and presentation of a clear disciplinary/theoretical perspective | Approach/topic is innovative, novel, creative and justified | Critical appraisal of literature, field, debates | Concepts/ideas well explained and elaborated in detail | Interpretations and descriptions of theory, concepts and debates accurate |

Table 1. (Continued)

| Mastery/command | Argument | Coherence | Independence | Criticality | Depth/breadth | Clarity/accuracy |
|---|----------|--|---|---|--|---|
| Seamless integration of knowledge throughout thesis | | Consistency in presentation and application of knowledge | Authoritative voice | Critical self-assessment of own work, thinking, bias, etcetera | Results and conclusions are worthwhile, new, important – worthy of publication | Methods are valid and accurately and clearly described |
| Evidence of published/presented work from the study | | | Explanations for problems encountered and how they were solved | Multiple levels of analysis of theory, method, data | Examination and presentation of data and methods/ techniques are thorough and complete | Writing contains no errors (edit, proof, organisation and presentation) |
| Specialised knowledge of subject/topic, but also strong grasp of how this topic relates to (cross) discipline/context, broader issues | | | Explanations and full justifications for decisions and choices made | Understanding and responsiveness to ethical matters, responsibilities | Other aspects of the study/thesis generally worthy of publication | Thesis is well organised and easy to follow/read |
| Evidence of mastery and command over research methods, search strategies, reporting and analysis | | | Demonstration of sound, professional, ethical judgement | Critical discussion of study scope and other limitations | | |

2007, 2014, 2015; Kemp and McGuigan, 2009; Kumar and Stracke, 2007; Mullins and Kiley, 2002; Stracke and Kumar, 2010; The Group of Eight, 2013; The Quality Assurance Agency for Higher Education, 2008). The synthesis is the result of a process of identifying recurring themes, concepts and ideas in the empirical literature that aligned well with the statements made from policy and curriculum documents discussed earlier. That is to say, statements on what examiners expect from a thesis as reported in empirical studies were identified as matches to statements about PhD objectives and purposes as articulated in the curriculum and policy literature. In total, seven main themes were derived from the findings of the above-mentioned literature, and these form the top row of the tool (see Table 1). These themes are briefly described here as follows:

- Mastery/command – comprehensive and exhaustive coverage and understanding of the subject;
- Argument – an overarching point, which is explained and defended;
- Coherence – consistency and clear links between parts and the whole;
- Independence – originality and ownership of the work;
- Criticality – evaluation of existing knowledge and self-evaluation of own work;
- Depth/breadth – thoroughness and completeness of work with sufficient detail;
- Clarity/accuracy – thesis is correctly written and sources accurately cited.

These seven themes represented a first cycle of analysis that was used to provide a framework for re-reading the literature. The literature underwent a second review and relevant examples or illustrations were identified that described these overarching themes in more detail. These were then plotted into the table under each heading in the form of attributes. It is interesting to note that the themes of coherency, argument and mastery of the subject seemed strong overall. These are attributes that can be demonstrated in the thesis as well as oral forms, such as a viva. Many of these attributes overlap and in some cases they point towards similar things but are conceptualised in different ways. This indicates the integration of skills and knowledge expectations across different aspects of the PhD process and outcome.

Supervision pedagogy: time, beliefs about knowledge and disciplinarity

PhD supervisors want a comprehensive answer to the question often posed by students: ‘what will examiners expect from my thesis?’ Table 1 outlines a synthesis of the literature on PhD thesis examination, but the practical application of this tool should be used reflexively and contextualised within the student PhD journey and their experience, through supervision. It should be pointed out, then, that this is a *tool* and not a substitute for good supervision. Rather, it is an aid to it. Simply highlighting or pointing out these various expectations of a PhD (such as criticality, or originality) will do little help PhD students conceptualise, interpret and develop these in their research work, and their thinking and writing. Instead, it is argued here that PhD supervision is the relationship and the space that should involve processes that help PhD students gain a clear picture of what they are aiming for with their thesis and the background work that informs it. Hence, it is the supervisor who can provide the means to assist PhD students to navigate those differences, and the tool in Table 1 can provide a starting point for a critical discussion and interpretation of the requirements of the PhD thesis in context. Supervision is key to providing the space for the reflexive academic development that PhD study demands, and it is the supervisor’s role to facilitate and support this journey. This requires an effective and a robust supervision pedagogy and feedback to the PhD student (Kumar and Stracke, 2007; Stracke and Kumar, 2010). As discussed below, using the tool in supervision should assist the PhD

researcher to conceptualise their learning as occurring in different time phases and through ongoing discussions about disciplinary and critical reflection on beliefs about knowledge.

Time

Doctoral learning occurs over a span of time (Phillips and Pugh, 2010). Araújo (2005) conceptualises PhD time as a *phase*, which is not strictly linear. Rather, PhD time can be ‘seen as circular’ (Araújo, 2005: 197). ‘Doing a PhD’ involves a series of continual time negotiations, which places students in something of a suspended holding pattern or liminal space as they cycle around and attempt to integrate in iterative fashion different time periods and their meanings. These include past experiences (e.g. prior learning, feelings and emotions), present situations (e.g. specific tasks they may be working on, current problems and challenges) and future expectations (e.g. where they are heading and what they are working towards, their hopes and aspirations). Because there are different phases of the PhD journey, the movements through these phases are ambiguous and uncertain (Araújo, 2005; Phillips and Pugh, 2010). Hence, acquisition of the technical aspects of the examination attributes in Table 1 are far from instrumental tasks that can be developed quickly, but must instead be rehearsed in cyclic fashion taking into account different time phases and how they relate together. Gender, age and field of study are variables that influence how time is conceptualised, and they influence how PhD researchers negotiate and use their time on their research (Araújo, 2005). Furthermore, different time phases may involve different feelings, ranging from enthusiasm to boredom and frustration (Phillips and Pugh, 2010). In short, supervisors should be prepared to invest their own time in supervision because ‘students flounder without structure, clear expectations, encouragement, accountability and guidance’ (McDonald, 2017: 158).

Beliefs about knowledge

Effective supervision depends on many factors, one of which is mutual understanding between student and supervisor of the expectations from supervision (Hair, 2006), but it also relies on a shared understanding of the goals and objectives of the research process and final outcome. One area of understanding that should be explored – within the context of discussions about examination and thesis expectations – concerns beliefs about knowledge: specifically, different epistemological views and how this influences the teaching and learning process of supervision (Päuler-Kuppinger and Jucks, 2017). King and Kitchener (2004) conceptualise epistemological beliefs into seven levels, from basic beliefs that knowledge is simple, absolute and objective, through to more complex beliefs that knowledge is context-dependent, and subject to evaluation and revision in light of better explanations or evidence. Hofer and Pintrich (1997) review a range of epistemological models and their relationship to learning, contending that there are at least four dimensions of knowledge where variations in beliefs may occur, including how certain knowledge is, its levels of simplicity versus complexity, sources of knowledge and criterion for justification.

This variation in epistemological beliefs is important to understand not only in light of the attributes in Table 1 (which itself may be subject to varying and often unstated epistemological assumptions) but also in relation to how it might be used in a supervision pedagogy. For example, a study by Päuler-Kuppinger and Jucks (2017) found that academics and students tend to hold different epistemological beliefs. Most notably, they observed that academics viewed knowledge as less certain than students. Prior knowledge and experience, while valuable and important, ‘may also distort further learning, and needs both validation and possible self-correction’ (Toynton, 2005: 115). A study by Kember et al. (2012) found that students who are schooled in rote learning fixed answers

to problems may have difficulty transitioning to a learning environment that expects them to function at higher levels of independence and adopt multiple perspectives, particularly in relation to complex ill-structured problems that are common in PhD research. Such differences in beliefs and expectations – which are also conditioned by discipline area (Päuler-Kuppinger and Jucks, 2017) – may account for different views about teaching and supervision. These differences concern where the responsibility for learning rests (student or supervisor) and the extent to which PhD researchers are expected to become independent learners and how responsible they should be for figuring out expectations and what is involved in a PhD. Hence, the supervision process should contextualise the attributes in Table 1 in light of phases in time, epistemological beliefs (including prior experiences beliefs about teaching and learning) and disciplinary conventions and perspectives.

Practical application

Finally, in recognition of the way that time and epistemological beliefs shape the learning process, there are at least two ways that the tool in Table 1 can be utilised in a practical sense through supervision. The first is within a peer setting and the second within a continuous writing and critical thinking approach to supervision. First, peer approaches to supervision can assist students to gain their bearings on expectations through regular interactions with other PhD students in their school or discipline area (Stracke, 2010). Table 1 can work as a tool for students to discuss with other students the requirements of their research, what writing a thesis is demanding from them, how they are approaching such demands and the kinds of practical steps they are taking to increase their scholarship and research expertise overall. Similarly, facilitating students' access into a broader research and professional community can also help students to self-evaluate the standards of their work and practice, as they can situate what they are doing in relation to their academic peers. Connecting with other researchers in their discipline and field of specialisation is again a way to gain support and connectedness with a scholarly community (Pyhältö et al., 2009). It is here that Table 1 can serve as a road map into exploring disciplinary conventions, styles, emphases and expectations. For example, McCarthy et al. (2010) report on a peer-to-peer supervision exercise they call 'PhD Away Days', which are annual 1-day seminars where PhD students share their work, discuss progress, explore challenges and support one another. The tool in Table 1 would provide a framework to support students to present their work and discuss challenges in a way that is grounded in the expectations of a PhD research and thesis. In such an exercise, supervisors can use Table 1 to formulate a series of prompts or critical questions to promote critical discussion and debate in a peer-to-peer seminar format.

Second, it is known that writing and critical thinking are central activities to PhD research overall, and Table 1 provides a framework to describe these skills and capabilities, but steps are needed to develop these through practice and feedback. For example, some research has shown that taking an instructional design approach and embedding writing into teaching can improve not only content understanding but also disciplinary writing conventions (Hunter and Tse, 2013; Wingate et al., 2011). A study by Lindsay (2015) identified factors that are indicated in successful thesis completion, which include continuous writing and critical thinking where the supervisor encourages 'the student to question and analyse their work' (p. 195). In other words, the supervisor can use the tool in Table 1 as a prompt to focus the student's critical self-reflection and evaluation of their work. For example, by producing writing such as a chapter, the student and supervisor can reflect on and critique the ways that piece of writing addresses or captures select and relevant attributes as depicted in Table 1. This may increase the student's awareness and comprehension of relevant expectations. That is, to critically examine aspects of Table 1 for relevancy and applicability to institutional examination criteria and learning outcomes. For example, in the beginning of the

student's candidature, when the supervisor asks the student to look at the institutional examination criteria, the student could be asked to connect these with the Table 1 attributes. This would form part of a feedback approach to supervision, but also pave the way into further conversations about the requirements of PhD research and writing. Such conversations would also support students and supervisors to develop learning plans and identify further research training opportunities.

The framework presented in this article will assist PhD researchers and supervisors in understanding the kinds of things that examiners look for and expect in a PhD thesis. In practice, it should be used as a way to conduct supervision conversations around expectations and to develop a broad conceptualisation of the end-point of a PhD thesis. The framework can also assist in planning a programme of learning and development for the student as part of their PhD journey and as a form of critical self-assessment – not just in terms of preparing and finalising the thesis for examination but also in regard to the underlying skills and attributes that need to be developed as part of the student learning journey. It is important to develop this depth of understanding of examination expectations early in the student's candidature because the sorts of attributes, capabilities and abilities stipulated in Table 1 take *time* to develop. The table provides an outline of a vision of where the student is heading with their thesis and serves as an effective basis for feedback and support. Supervision should provide a pedagogical context to enable students to develop these throughout the course of their candidature. Finally, further evaluative research on this tool in practice would be welcome.

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