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Investigating Supervisors' Experiences of Veterinary Intern Placements

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Abstract

Work-based learning (WBL) experiences are a valuable and increasingly essential component of many professional education programmes. These experiences are designed to be closely aligned to a student centred approach to teaching and learning and are seen to be well suited to supporting students in their transition towards 'being' the professional. It is expected that universities will continue if not increase their reliance on alternative and innovative educational practices of which WBL is a part. As such it is incumbent on universities to consider how WBL environments are managed and how teaching and learning activities are supported, monitored and sustained.

Supervisors of veterinary interns play a key role in teaching and guiding students in their transition from the theoretical world of university academia to the world of veterinary professional practice. The way in which supervisors conceive of their role and approach their supervision will likely impact the way that students approach their learning in a WBL environment. This in turn will likely influence the quality of student learning. The main aim of this study was to first identify and describe the variation in supervisors' experiences of supervision in a WBL environment and secondly identify those types of supervisor experiences that are more likely to encourage quality learning outcomes.

Phenomenography was the qualitative research method selected for this study as it describes the limited number of categorically different ways that a group of individuals experience a phenomenon. Quantitative analysis was subsequently conducted to examine the relationship between supervisors' conceptions and approaches to supervision.

This study validates the hypothesis that there is variation in supervisors' experiences in a veterinary WBL environment. Supervisors' conceptions of supervision varied; in what they intended students to learn and what they conceived supervision to be about. Variation was also found in the way that supervisors approach supervision; in what they did, the way they went about doing it and why they did it that way. The investigations reported in this thesis consisted of two stages. A broad, large scale

investigation of supervisors' experiences was prefaced by a preliminary phenomenographic analysis of surveys collected for a teaching evaluation activity.

In both the preliminary teaching evaluation activity ($n = 39$) and the subsequent broader investigation of supervisors' experiences ($n = 117$) four distinct hierarchical categories of description for supervisors' conceptions and their approach to supervision were described. Increasing in complexity a qualitative difference was identified between categories B and C for both conceptions and approaches. Quantitative analysis of this qualitative data revealed that in the teaching evaluation activity over half of the supervisors (59%) reported less complete, fragmented conceptions of learning outcomes and a slightly lower proportion (51%) reported using transmission / supervisor focused approaches. The subsequent larger scale study revealed a similar distribution with 55% of supervisors reporting a less complete, fragmented conception of what supervision is about and 51.5% reporting a transmission / supervisor focused approach. Further to this, in both stages of the research a strong relationship was found between supervisors' conceptions and their approach ($n = 39$, $p < 0.001$, $\chi^2 = 16.36$, $\Phi = 0.65$; $n = 117$, $p < 0.001$, $\chi^2 = 45.66$, $\Phi = 0.624$). In short those supervisors who conceive of supervision in a fragmented, multistructural and less complete way were more likely to adopt transmission, supervisor centred approaches to supervision. Those supervisors with cohesive, relational and more complete conceptions were more likely to use an engagement, student centred approach to supervision.

The effective and ongoing provision of WBL experiences needs to ensure that targeted and credible support is provided for the professionals that supervise students during these placements. Strategies employed by universities and faculties should be designed to expand conceptions of what supervision is about and encourage methods of delivery that are more likely to be aligned with a student centred approach to supervision.

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List of abbreviations

AAHA	American Animal Hospital Association
AAVMC	Association of American Veterinary Medical Colleges
AVBC	Australasian Veterinary Boards Council
AVMA	American Veterinary Medical Association
BVMS	Bachelor of Veterinary Medicine and Surgery
BVSc	Bachelor of Veterinary Science
COE	Council on Education
DVM	Doctor of Veterinary Medicine
EAEVE	European Association for Establishments of Veterinary Education
ECOVE	European Committee on Veterinary Education
EMS	Extramural Studies
EPSC	Education Policy and Specialisation Committee
FVE	Federation of Veterinarians of Europe
NAVMEC	North American Veterinary Medical Education Consortium
NCVEI	National Commission on Veterinary Economic Issues
OIE	World Organisation for Animal Health (<i>Office International des Epizooties</i>)
RCVS	Royal College of Veterinary Surgeons
SAVC	South African Veterinary Council
SCEQ	Student Course Experience Questionnaire

SILVER	Supporting Independent Learning in Veterinary Extramural Rotations
UK	United Kingdom
USA	United States of America
VSAAC	Veterinary Schools Accreditation Advisory Committee
VSIP	Veterinary Student Internship Programme
WBL	Work-based learning
WVA	World Veterinary Association

Certificate of originality

This is to certify that:

- 1) This thesis comprises only my original work towards the degree of Master of Veterinary Science
- 2) Due acknowledgement has been made in the main text of this thesis to all other material used
- 3) No part of this thesis has been submitted for the award of another degree
- 4) This thesis meets the requirements of the Human Research Ethics Committee of The University of Sydney for the conduct of research

Signature: _____

Name: _____

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Background to this thesis

In 1989 I graduated from The University of Sydney with a Bachelor of Veterinary Science and at that time envisioned a long career dedicated to the health and welfare of animals. I was fortunate to commence my first position as a veterinarian in a mixed animal practice in Alice Springs. An intriguing mix of varying cases, a wonderfully supportive practice ethos, and the reality of taking a leadership role in managing the care of animals formed the foundation of my professional career during the five years spent in this position.

From 1995 to this present day I have juggled family life with locum and then regular part-time clinical practice in a small animal veterinary clinic in Sydney. Maintaining an involvement in clinical practice has not only ensured currency, but has honed my problem solving abilities and has upheld my commitment to animal health and welfare.

Engaging in some post-graduate studies in the late 1990s I became interested in educational pedagogy. I was involved in educational experiences that differed to those previously experienced and it was stimulating and profound. My interest was piqued and so it was to be that I undertook and completed a Graduate Diploma in Education (Science). Understanding and engaging in teaching experiences proved to be somewhat of a revelation. Since 2008 I have been privileged to be able to combine my professional interests in education and animal care in my role as a TAFE vocational education teacher in the area of Animal Care.

A commitment to educational excellence encouraged me to revisit my initial undergraduate experiences. It compelled me to consider ways in which I could contribute to both the veterinary community, and in some way to enhancing the educational experiences of veterinary students today. That commitment has led me to the research discussed in this thesis which I hope will serve to kindle an interest and passion for educational excellence in those that read it.

Introduction to this thesis

The overarching purpose of veterinary education is to encourage best practice in meeting the health and welfare needs of animals. Clinical training of a veterinary student is particularly complex. It is time consuming, costly and fraught with potential risks for students, supervisors of veterinary students, animals, and their owners. Universities are challenged to support the development of a veterinary graduate who is well prepared to transition into professional life. This is a graduate who not only has extensive knowledge and skill, but is one who can also think critically and behave professionally. Final year veterinary internship programmes are an essential component towards achieving this goal.

Final year internship programmes extend the learning experience beyond the walls of a traditional university environment. These programmes typically involve learning experiences across a range of specific focus disciplines in a WBL environment. Many of these WBL experiences are undertaken within university teaching hospitals but internship programmes also involve educational partnership between universities and dedicated members of the profession external to the university faculties. That is, students are normally involved in work-based placements within university teaching hospitals and clinics as well as completing extramural placements in areas that include small animal, rural mixed and equine practice, government agencies that focus on production animals, and elective placements across a range of areas that may include wildlife or specialist referral practice.

Supervisors of veterinary interns are a varied group. Many are employed within university teaching hospitals and clinics and may or may not have additional academic duties in the faculty. A large number of intern supervisors are also external to the university. Dedicated to the educational development of veterinary students these supervisors are found across a broad range of contexts. Specialist veterinarians in referral practice, government veterinarians employed by the Department of Primary Industries or Local Land Services in NSW, rural mixed practice veterinarians and private small animal clinicians are all part of the group of dedicated veterinary professionals that contribute to the educational development of veterinary students today.

There is a need for defined standards of learning outcomes to be achieved in a workplace learning environment and research in a range of healthcare education contexts suggests that there are preferable ways to supervise. These ways may be influenced by supervisors' conceptions of supervision. Some supervisor conceptions might enable students to achieve a particular standard of learning outcome and others might not. This is a compelling argument but it is not yet known what variation exists in the conceptions and approaches of supervisors of veterinary interns. Recent research has investigated the variation in conceptions and approaches of university academics and educators in WBL environments across a range of disciplines. Little, however, has been done to explore the unique experiences of veterinary placement supervisors.

The scope of review provided in Chapters 1 and 2 is to describe the background, structure and delivery of veterinary internship programmes from an educational perspective. In Chapter 1, the context of WBL in veterinary education is described. This chapter provides a review of the factors that influence and shape veterinary education today. The role of WBL experiences is highlighted and the key players in the delivery of this learning model are discussed. In Chapter 2, an educational perspective has been adopted to understand WBL experiences and, as such, those teaching and learning based factors that contribute to learning outcomes are illuminated.

In Chapter 2, a research approach known as phenomenography is described. Phenomenographic studies have been widely used to investigate variation in teaching and learning experiences in the higher education sector. It is not surprising that the experiences of placement supervisors may vary. There is variation in their training and expertise. They may have different understandings of what supervision involves and different ways that they go about doing this, including varying intentions concerning what students should learn, how students should learn and how they, the supervisor will facilitate this. The role of the placement supervisor is a key element in teaching and guiding veterinary students towards high quality outcomes that will equip them for transition into professional life. Supervisors' approaches and conceptions are likely to impact on the way they guide learning in a work-based setting and this could impact student learning and graduate transition into professional life.

An investigation of the variation in supervisors' experiences of veterinary intern placements was undertaken using a phenomenographic approach. Methods used to undertake this study are described in Chapter 3. Results of a preliminary phenomenographic study of 39 supervisor surveys are outlined in Chapter 4 and Chapter 5 goes on to provide the results of the larger phenomenographic study of 117 supervisor survey responses which was undertaken to describe the variation in supervisors' conceptions of and approaches to supervision of final year veterinary interns. Finally Chapter 6 provides a discussion of the results of the study investigating veterinary intern supervisor experiences. This chapter provides insights into the contribution that this study has to a body of research dedicated to educational development as well as the implications of this study with respect to an understanding of more complex and preferable ways to supervise, and what this means to those who depend on the engagement of this dedicated group of educational partners.

Chapter 1

Contextualising WBL in veterinary education

Introduction

Achieving quality in veterinary education has global implications. Veterinary education directly affects the quality of national veterinary services and this in turn impacts animal health systems and biosafety (World Organisation for Animal Health 2009, 2012). However numerous factors influence and challenge the delivery of quality veterinary education with the high costs of clinical and practical training a major challenge worldwide. It remains that veterinary education must be adaptive and responsive to change but it must also be delivered within accreditation and industry constraints.

Internationally veterinary curricula are shaped in response to these challenges and influences with the overarching intent being to ensure that veterinary graduates are capable of meeting the demands that will be placed upon them when they enter professional practice. Upon graduation veterinarians can operate autonomously in most countries; hence the focus has been on 'Day One' skills and competencies that assure profession readiness. WBL experiences form a critical component of current veterinary curricula both in Australia and overseas. There is more than a simple nod to the value of these experiences; veterinary school accreditation policies and procedures mandate substantial components of supervised practical learning and demand their inclusion.

All veterinary schools in Australia include some manner of WBL throughout their curriculum and all include penultimate WBL experiences specifically designed to support veterinary students in their transition to professional practice. Similarly structured, these WBL experiences involve educational partnerships with external supervisors of veterinary students playing a critical role. Formal determination of student progress remains the domain of university academic staff but supervisors are an integral player in this dynamic teaching and learning environment.

Supervisors in WBL environments play crucial roles that cannot be overlooked when considering the ongoing assurance of quality in veterinary education. It is incumbent on universities to ensure consistency and quality in the management and support of these critical educational experiences. To date there has been little empirical research conducted to investigate and understand the supervisor experience, particularly of extramural supervisors who are not employed as academics. This chapter seeks to contextualise the place that supervisors have in the delivery of veterinary education. Moreover it serves as an overture to research, conducted at The University of Sydney, investigating the experiences of supervisors of veterinary interns in WBL environments.

Factors influencing veterinary education

Training for veterinary students is complex and international demands for quality veterinary education are constantly challenged by a range of factors. The Office International des Epizooties (OIE), also known as the World Organisation for Animal Health, December 2010 report of the OIE *ad hoc* group on veterinary education emphasised a need for high quality veterinary education to meet the global need for high quality veterinary services (World Organisation for Animal Health 2010). Veterinary services broadly swathe private and public domains and include, but are not limited to, advocacy for animal welfare, animal disease surveillance and management, early detection and swift and appropriate responses to animal infectious diseases. In short veterinary services impact on the global safety of public health (World Organisation for Animal Health, 2009). Declining available resources (Fernandes 2005; Eyre 2011) and reduced government support for education in Australia, the UK and the USA are set against a global landscape of expanding information and a changing workforce (Lloyd et al. 2008; Frawley 2003). There is little argument that veterinary schools are under pressure to produce competent veterinary graduates who are independent professionals capable of delivering the high quality veterinary services that are demanded of them (Figure 1.1).

A number of key reports commissioned in the USA have reinforced the need for veterinary education to be adaptive and responsive to rapid changes. In the USA, three veterinary professional associations, the American Veterinary Medical Association (AVMA), the American Animal Hospital Association (AAHA), and the

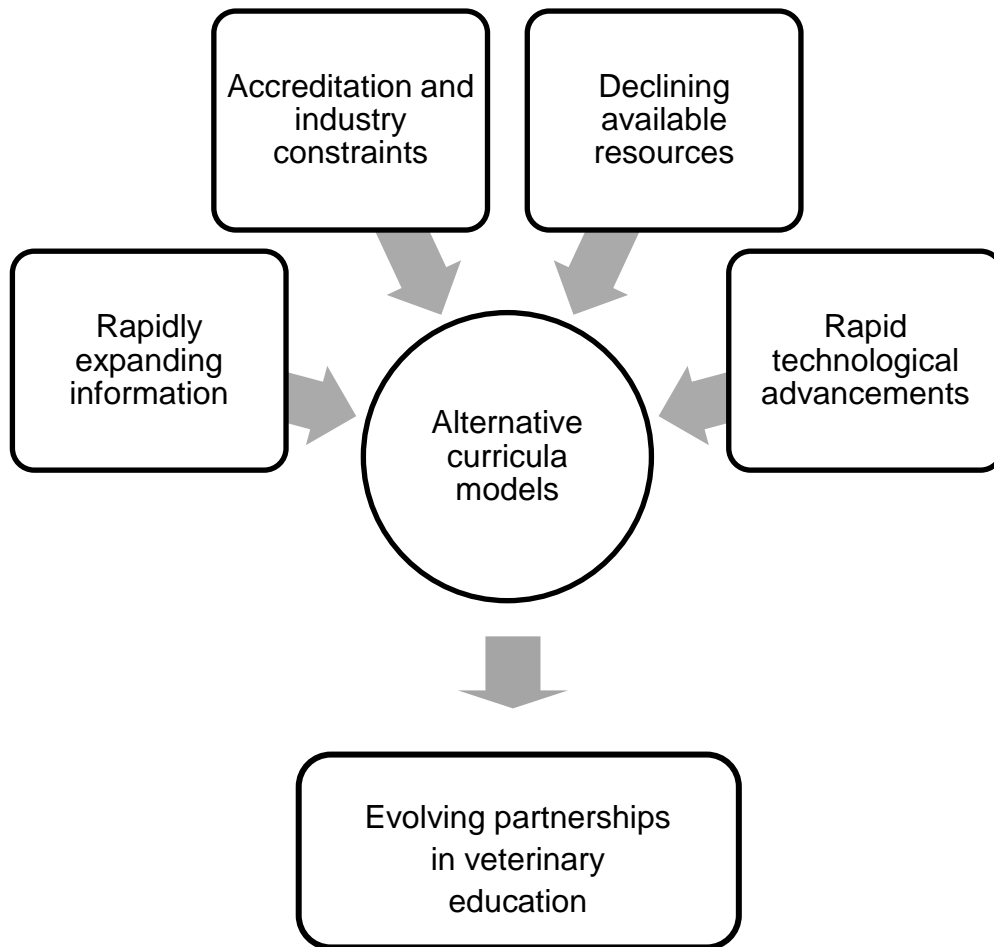


Figure 1.1. Factors influencing current veterinary curricula

Association of American Veterinary Medical Colleges (AAVMC) commissioned the KPMG Mega Study (Brown & Silverman 1999) and the AVMA commissioned the Brakke report (Cron et al. 2000) to identify where the profession was situated in an environment of economic challenges and new and changing driving forces. Both reports reinforced the need for curriculum development, identifying a need to improve and develop skills, knowledge and attributes in those areas of veterinary practice such as business acumen and management skills (Ilgen 2002). In 2006 a planning study using foresight technology was conducted by the AAVMC. This was done to assist in planning the direction of veterinary education that would be relevant in a world where change is rapid and occurs on a global scale (Prasse, Heider & Maccabe 2007). The authors suggested that the existing curricular models would not be adequate and proposed a core curriculum followed by immersion in an area of professional focus. Wider impacts on assessment and licensure would clearly result from such a move. In Europe similar issues have been raised with the VET2020

project recognising similar challenges and a need for veterinary education reform (Fernandes 2005). Models of future veterinary curricula vary in focus and emphasis but they all have in common a commitment to meeting the rapidly changing needs and trends of a global community (Figure 1.1). The global security of food, animal, human and environmental health depends upon this commitment.

Veterinary education needs to be adaptive and respond to change but how this change is modelled continues to be the cause of much debate. In response to the high cost of training veterinary students and in order to keep up with improving technologies the National Commission on Veterinary Economic Issues (NCVEI) in the USA has proposed alternative education models in which there is greater collaboration with the private sector (Lloyd et al. 2008). The distribution of clinical teaching beyond the walls of a traditional university teaching hospital environment is lauded by some as the answer to the financial challenges faced by veterinary faculties and ensuring career readiness of veterinary graduates (Eyre 2011). In some cases all of the clinical training occurs in an external environment, and in other, partially distributed models, clinical training occurs in both external clinics as well as university teaching hospitals. Some veterinary schools in the USA have embraced a distributed model of clinical veterinary training; the Western University of Health Sciences (WUHS) College of Veterinary Medicine and the Veterinary College at Lincoln Memorial University are striking examples but they are not without their critics. Despite the fact that these colleges have received at least provisional accreditation, there is a concern that such models fail to offer the necessary level of scholarly rigour and academic oversight, that there is an inadequate partnership between research and teaching necessary to ensure research and inquiry skills required for sustained professional practice and that this ultimately impacts on the quality of the programme offered (Marshak 2011). Despite these concerns it is generally accepted that there needs to be ongoing evolution and flexibility in veterinary education and that this must take place without compromising the quality of teaching.

Quality veterinary education must be assured and in most major economies this is achieved through a process of veterinary school accreditation (Table 1.1). In Australia and New Zealand the Australasian Veterinary Boards Council (AVBC), the

Table 1.1: International accreditation requirements for WBL in veterinary schools

Accreditation body	Website / Reference	Region / Countries included	Management group	Relevant policy and section	Key points (relevant to WBL experiences)
Australasian Veterinary Boards Council Inc.(AVBC)	http://www.avbc.asn.au/education (Australasian Veterinary Boards Council Inc. 2014)	Australia, New Zealand	Veterinary Schools Accreditation Advisory Committee (VSAAC)	VSAAC – Policies, Procedures and Standards Standard 8. Clinical Resources and Clinical Learning and Teaching	Guidelines provided for instruction in WBL setting; used for Self Evaluation Reports (SER) every 7 years and for annual reports Guidelines provided for WBL offered intramural, off-campus and formally contracted extramural clinical tuition and less formal extramural clinical tuition (EMS)
American Veterinary Medical Association (AVMA)	https://www.avma.org (American Veterinary Medical Association 2013)	United States, Canada	Council on Education (COE)	Accreditation Policies and Procedures of the AVMA Council on Education Chapter 7: Standard 4. Clinical Resources and Standard 9. Curriculum Chapter 8: Off campus and Distributive sites Appendix F: Distributive Model – Off-site Inspection Guidelines	Chapter 7: Guidelines and examples for the setting of clinical instruction (Standard 4) and curriculum requirement for clinical learning experiences (Standard 9) Chapter 8: Guidelines for the implementation of clinical educational experiences external to the University

<p>Royal College of Veterinary Surgeons (RCVS)</p>	<p>http://www.rcvs.org.uk/home/ (Royal College of Veterinary Surgeons 2013a) http://www.rcvs.org.uk/education/extramural-studies-ems/ (Royal College of Veterinary Surgeons 2013b)</p>	<p>United Kingdom</p>	<p>Education Policy and Specialisation Committee (EPSC)</p>	<p>RCVS Extramural Studies (EMS) Recommendations Policy and Guidance, November 2009 RCVS Guidelines on supporting student learning during EMS</p>	<p>Outlines the values and aims of EMS with reference to 'Day One Competencies'; details the structure and organisational guidelines for EMS Guidelines provide an overview of EMS structure in the 7 UK veterinary schools including the aims, organisational guidelines, and contacts</p>
<p>European Association of Establishments for Veterinary Education (EAEVE) in cooperation with the Federation of Veterinarians of Europe (FVE)</p>	<p>http://www.eaeve.org/ (European Association for Establishments for Veterinary Education 2012b)</p>	<p>European Union member countries</p>	<p>European Committee on Veterinary Education (ECOVE)</p>	<p>Evaluation of Veterinary Training in Europe Principles and Process of Evaluation and Manual of Standard Operating Procedures. Annex I</p>	<p>Curriculum guidelines and requirements are discussed in the Manual of Standard Operating Procedures, Annex I; includes a discussion of extramural training which must supplement intramural clinical training Guidelines and requirements are outlined in two stages: Stage 1: Annex 1a details the main indicators used to evaluate veterinary faculties and does not address outcomes Stage 2: Annex 1b provides detail for accreditation specifically addressing faculty management and assurance of quality</p>

veterinary professional registration boards' peak body, is responsible for quality assurance and accreditation of veterinary schools (Craven & Strous 2004). Informed annually by reports from the Veterinary Schools Accreditation Advisory Committee (VSAAC) the AVBC sets the minimum standards for accreditation. Developing and identifying minimum standards of quality is an active process. It is dynamic and needs to be an ongoing process to reflect global trends in veterinary services and expectations for graduates as well as ensure validity and currency both in Australia and overseas (Craven 2009; May 2008; Prasse, Heider & Maccabe 2007). Current VSAAC policies and procedures are, therefore, informed by publications produced by key international accreditation bodies and by a series of International Accreditation Working group meetings which have facilitated joint accreditation visits and harmonisation of processes. These key international accreditation bodies include the Royal College of Veterinary Surgeons (RCVS), the European Association for Establishments of Veterinary Education (EAEVE) and the American Veterinary Medical Association (AVMA) (Veterinary Schools Accreditation Advisory Committee 2010). Additionally the South African Veterinary Council (SAVC) has produced a similar document to that of the EAEVE and is also a part of the joint site visits. In short there is international recognition that the competencies of a quality veterinary graduate must include certain skills, knowledge and professional attitudes (Craven 2009) and this includes those required for entry level competence.

Internationally veterinary school accreditation policies discuss the inclusion of WBL experiences in veterinary education programmes (Table 1.1). Policies and procedures vary in structure and emphasis but all include a discussion of penultimate learning experiences that involve clinical education and training that may be off campus extramural training or take place within an intramural university veterinary hospital environment or be a mix of both. This review is focused on those 'capstone' professional learning experiences that take place towards the end of veterinary education programmes and are designed to support students in their transition to veterinary practice. Guidelines for the implementation of both core and non-core work-based education experiences are included in accreditation body policies and procedures. These guidelines extend from being quite broad based and open to interpretation (European Association for Establishments for Veterinary Education 2012b) through to a clearly defined and transparent commitment to

supporting the delivery of extramural training (American Veterinary Medical Association 2014, Royal College of Veterinary Surgeons 2013b).

The shape of current veterinary curricula

Since the mid 1990s veterinary curricula have steadily responded to international recommendations and moved away from traditional models that were content heavy and emphasised an accumulation of knowledge and skills. A need to move away from traditional didactic modes of curriculum delivery was highlighted in a number of key reports assessing the future demands and directions of the veterinary profession (European Association of Establishments for Veterinary Education 1990; Pritchard 1989). These key reports from both the USA and Europe identified the need to move away from a curriculum where the focus was on accumulating and reproducing large volumes of information. Indeed this cognitive overload risks a diminution of core skills in problem solving and critical evaluation. In an information rich age of rapid technological advancement it is not feasible or indeed possible to expect teachers of veterinary education to be the font of all knowledge. The emphasis has, in harmony with trends across many professional practice programmes, shifted and the focus of veterinary curricula in many countries has moved towards student centred learning (Fernandes 2005).

Veterinary curricula today have largely embraced strategies that promote problem solving, critical thinking, skill development and the development of professional attitudes (Dale, Sullivan & May 2008; Fernandes 2005). May (2008) suggests, however, that revision of veterinary curricular content must be ongoing. Certainly this is both a university and accreditation requirement but May (2008) reinforces a need to continue the incorporation of strategies that encourage students to engage in the learning process, to extract meaning and therefore develop deeper understandings of the veterinary discipline. In Australia the VSAAC minimum standards for curriculum guidelines reflect a commitment to student centred learning in which critical thinking and the development of professional attitudes is promoted (Veterinary Schools Accreditation Advisory Committee 2010). The University of Sydney Faculty of Veterinary Science identified a need for curricular review and in 2000 introduced a revised curriculum (Baguley 2006; Collins 2002). Moreover since its introduction the curriculum has undergone further revisions each year. Promoting

student centred learning and teaching the curriculum is designed to support the development of veterinary graduate attributes that are contextualised to the broad framework established by the University (Faculty of Veterinary Science 2012).

Essential competencies of a veterinary graduate

A need to clearly define the essential competencies of a veterinary graduate at Day One has been identified worldwide. In the report from the World Organisation for Animal Health (OIE) *ad hoc* group on veterinary education (2010) the development of a set of minimum competencies was identified to be of benefit to global public health. It is recognised, however, that differences do exist between individual countries and learning outcomes must be designed to also meet local contexts and needs (World Organisation for Animal Health 2010; Fernandes 2005). An agreed upon set of competencies essential at the point of entry to the veterinary profession must, therefore, include technical skills and knowledge especially as they relate to the provision of national veterinary services. Furthermore this must be accompanied by a more wide ranging education including competencies that involve attitudes and aptitude, the latter recognising individual skills and talents of the student (World Organisation for Animal Health 2010). Often referred to as generic or core graduate attributes these are the necessary outcomes of the higher education experience that extend beyond content knowledge and include skills and attitudes (Barrie 2006, 2007).

The World Veterinary Association (WVA), a federation of over 80 national veterinary associations around the world is equally committed to 'harmonised outcomes' of veterinary education. Unlike the OIE and veterinary accreditation bodies, the WVA does not have any direct control over veterinary education, and given the organisational and financial difficulties associated with facilitating 'harmonised' accreditation and evaluation of veterinary education, the WVA has chosen to focus on the development of a minimum set of Day One competencies (Jorna, Turner & Ostensson 2010). The WVA identifies that society has certain expectations of a professional veterinarian and these competencies are designed to address these needs. The minimum Day One competencies include those recognised by the OIE and further emphasise that this is the starting point from which a new graduate will develop with mentoring and support. Essential competencies detail disciplinary knowledge, technical skills as well as a commitment to the development of a range

of non-technical skills and highlight the importance of lifelong learning and an ability to seek new knowledge. A commitment to sustainability of the profession is central to the WVA position of global Day One veterinary competencies (Jorna, Turner & Ostensson 2010).

Veterinary education stakeholders in countries across the world similarly refer to Day One competencies required of veterinary graduates upon entry to the profession. In the USA the AAVMC convened the North American Veterinary Medical Education Consortium (NAVMEC) to deliver a roadmap for veterinary medical education in the 21st century (2011). This was prompted by recognition that the veterinary profession needed to commit to participation in global public health in an environment of educational change, where reduced funding allocations were coupled with decreasing numbers of highly skilled faculty in veterinary education (North American Veterinary Medical Education Consortium 2011). In line with WVA and OIE recommendations for a commitment to global health, core competencies include 'one health knowledge: animal, human, and environmental health' (North American Veterinary Medical Education Consortium 2011). Furthermore, the NAVMEC recommendations has included a range of professional competencies seen to be key in upholding the quality and standing of the profession. These competencies, or graduate attributes, include communication, collaboration, management of self, team and system, lifelong learning, scholarship and value of research, leadership, diversity and multicultural awareness, and the capacity to adapt to changing environments (North American Veterinary Medical Education Consortium 2011).

Across the Atlantic, in the UK and Europe, lists of recommended essential competencies at Day-One reflect similar themes. Essential competencies are grouped into three main categories and include: 1. General professional competencies and attributes, 2. Underpinning knowledge and understanding and 3. Practically-based veterinary competence (European Association of Establishments for Veterinary Education 2012a; Royal College of Veterinary Surgeons 2011). These benchmark standards reflect an international commitment to producing graduates who have the capacity to perform effectively as a professional – one who has underpinning knowledge and skill integrated with attitudes and attributes to commence and then maintain professional competence.

WBL experiences

Identified as being effective in the development of critical thinking and student autonomy (Billett 2009) professional education programmes typically now include some manner of work or clinical placement experience to aid in the transition to professional practice. Education programmes need to include strategies to ensure that students develop professional ways of being and Dall’Alba (2009) states that in order for a student to learn how to become a professional they must engage and interact with other professionals (Dall’Alba 2009). University curricula across a range of health sciences such as medicine, nursing, occupational therapy, speech pathology and veterinary science (Baguley 2006; Forbes 2011; Sheepway, Lincoln & Togher 2011; Sturman, Régo & Dick 2011) have recognised this need for inclusion of work-based placement experiences and it has been reported that WBL is included in 60% of Australian degrees (Martin 1998).

The nomenclature used to describe practical training programmes varies widely according to the discipline and structure of the work-based placement experience. In geography and geology these programmes are commonly referred to as ‘fieldwork’ (Stokes, Magnier & Weaver 2010) whereas in many healthcare programmes such as medicine, speech pathology and occupational therapy, practical experiences are included in ‘clinical education programmes’ (Sheepway, Lincoln & Togher 2011; Stenfors-Hayes, Hult & Dahlgren 2010; Rodger et al. 2008). Preceptorships, externships (Barker 1993) and clerkships (Olson 2008) are terms that have all been used to describe some manner of work-based placement experience in veterinary education. This research project focuses on the veterinary science internship programme (VSIP) offered at The University of Sydney. Within this programme work-based placement experiences are referred to as intern placements that are either intramural or extramural.

Workplace learning has long been identified as an integral part of assuring the quality of veterinary education (Royal College of Veterinary Surgeons 1998; Barker 1993); specifically being essential in developing and polishing skills for Day One competence. This fact underpinned the aims of the SILVER project – Supporting Independent Learning in Veterinary Extramural Rotations (Royal College of Veterinary Surgeons 1998). The three year project, funded by the Royal College of

Veterinary Surgeons (RCVS), explicitly focused on clinical extramural studies in veterinary education, with the outcome being a list of recommendations for ensuring the enduring quality of this critical component of the veterinary curriculum. Veterinary WBL experiences are seen as an opportunity to engage industry and enhance student knowledge and skills obtained within a university environment (Royal College of Veterinary Surgeons 2011). These well structured experiences also serve to reinforce concepts of lifelong learning, critical reflection and support student independence (Royal College of Veterinary Surgeons 1998, 2011) all of which are key to ensuring graduates have the capacity to persist and thrive in veterinary practice. Similarly the EAEVE directive on the recognition of professional qualifications states that practical training is required to complement theoretical knowledge and is seen as necessary in ensuring that a veterinary graduate is capable of performing their duties as a veterinarian (The European Parliament and the Council of the European Union 2005). In longitudinal studies investigating students' opinions on veterinary education, Heath, Lanyon and Lynch-Blosse (1996) found that almost all of those surveyed felt that veterinary training should include some type of work-based experiences.

In Australia there are currently seven veterinary schools and all of these are required by the VSAAC to include some manner of WBL as part of their curriculum. These experiences are placed throughout all stages of veterinary training from the pre-clinical period to those penultimate WBL placements that take place before entering professional practice. This review is focused on WBL experiences specifically designed to assist in the transition to veterinary practice. In all Australian veterinary schools these experiences are offered in the final 12 months of the degree irrespective of whether the qualification is a post graduate, extended masters programme, Doctor of Veterinary Medicine (DVM) as is the case at The University of Adelaide, or an undergraduate Bachelor of Veterinary Science (BVSc), or Bachelor of Veterinary Medicine and Surgery (BVMS). The veterinary degrees offered at The University of Melbourne and The University of Sydney are currently undergoing a change to the extended masters DVM model, Murdoch University has approval to move their double undergraduate programme to a BScDVM commencing in 2015 and The University of Queensland will be moving their degree programme in 2016. It is anticipated that the final year of the DVM at The University of Queensland, will be

largely modelled on the existing, final, full clinical placement year, BVSc programmes. Table 1.2 presents a broad outline of the current structure of final or transitional WBL placements across the seven Australian veterinary schools.

Understanding the essential elements of existing WBL experiences is important in ensuring the quality of veterinary education. Revision of veterinary curricula is ongoing. Moreover it is widely accepted that the evolution of veterinary training may involve alternative education models that could include greater collaboration with the private sector but this must take place without compromising the quality of veterinary education (Eyre 2011, Lloyd et al. 2008, Prasse, Heider & Maccabe 2007). As educational partnerships evolve questions must be asked regarding the level of responsibility that supervisors have for the quality of WBL experiences and what constitutes quality support for supervisors. Further to this, student learning outcomes are assessed during WBL experiences and student progress is impacted by this process. Indeed what role do supervisors currently play in assessment practices and the subsequent determination of student progress? In order to effectively and productively advance a discourse on the ongoing management and evolution of quality WBL in veterinary training it is both prudent and necessary to explicitly outline the essential elements of what is currently taking place in Australian veterinary schools.

This review provides an overview of the structure of penultimate WBL programmes in Australian veterinary schools in 2013 (Table 1.2) and goes on to provide an overview of existing supervisor support strategies as well as an outline of supervisors' contribution to student assessment (Table 1.3). It is important to note that prior to the final year of WBL, students must also complete a number of pre-clinical or animal husbandry experiences. These experiences take place in the early stages of the degree programme and are less structured than those in the final year. Pre-clinical experiences are followed by a period of preparatory, clinical extra-mural studies (EMS) and these are typically undertaken across a range of different types of veterinary work. The final EMS experiences are included in the WBL programme structures of final year and it is these penultimate practice experiences that form the focus of the research for this thesis.

Table 1.2. Overview of WBL programme structures in Australian veterinary schools in 2013

Australian state	University	Programme structure	Specific areas of professional practice included in the programme
New South Wales	The University of Sydney	<p>Duration: 12 months Structure: 10 core rotations including 5 extramural rotations and 5 intramural rotations</p> <p>Four intramural rotations are completed at the University Veterinary Teaching Hospital Sydney (UVTHS); completed over 12 weeks with minimum attendance of 15 days at each rotation; one intramural rotation is completed at the University Teaching Hospital Camden (UVTHC) and this includes a number of specified sub rotations</p> <p>Students attend a minimum of 18 days at each extramural placement with extramural rotations extending over a 28 days period</p> <p>Preclinical and preparatory clinical EMS experiences are required prior to the commencement of final year</p>	<p>Intramural UVTHS placements: primary accession medicine, referral medicine, anaesthesia and intensive care and small animal surgery</p> <p>Intramural UVTHC placement: equine and equine after hours service (3 weeks), livestock veterinary service (2 weeks), anaesthesia (1 week), pathology (1 week) and the small animal service (1 week)</p> <p>Extramural placements: rural mixed practice, rural public practice, small animal practice and two rotations are electives; elective rotations are selected by students at an approved location of their choice</p>
	Charles Sturt University	<p>Duration: 12 months Structure: 10 core clinical rotations; includes 5 extramural rotations; the remaining 5 rotations are generally completed within the university facilities or at an approved organisation or practice</p> <p>Generally the equine rotation is completed at the university Veterinary Clinical Centre, small animal rotations at the university teaching hospital and veterinary diagnostic services are usually completed at the university diagnostic laboratory; the specialism and livestock industries may be completed at an approved extramural facility but the option</p>	<p>Intramural or approved extramural placements: equine, small animal, veterinary diagnostic services, specialism and livestock industry rotations</p> <p>Extramural clinical rotations include dairy cattle, rural practice, mixed practice and state medicine which include a range of options such as Local Land Services and Departments of Primary Industries and an elective rotation of the student's choice</p>

		<p>is available for students to complete these rotations within the university facilities; when completed intramurally the specialism rotations are completed at the university Veterinary Clinical Centre or teaching hospital and the livestock industry rotations are completed at the Fred Morley Centre at the university</p> <p>Preclinical and preparatory clinical EMS experiences are required prior to the commencement of final year</p>	
Queensland	The University of Queensland	<p>Duration: 12 months</p> <p>Structure: 9 core rotations that are mixed intramural and extramural and include a one week intensive lecture block, 3 weeks of intramural vacation practical experience and 10 weeks of dedicated extramural placements; the small animal clinics rotation is 9 weeks and all other rotations are 4 weeks</p> <p>Intramural rotations are currently completed in a number of university facilities that include the small animal and equine hospitals at the university veterinary medical hospital in Gatton (including emergency veterinary services and intensive care) and a mixed practice experience offered at the Dayboro Veterinary Surgery; currently intramural placements are also still available at the university Small Animal Clinic and Western Animal Emergency Centre at St Lucia</p> <p>Preclinical and preparatory clinical EMS experiences are required prior to the commencement of final year</p>	<p>Intramural rotations are completed in the areas of veterinary public health and pathology, radiology, anaesthesia and intensive care, small animal clinics, rural veterinary practice, equine practice and either a clinical veterinary elective or a research veterinary elective</p> <p>Extramural placements also form part of the small animal clinics, livestock clinics (rural practice) and clinical elective courses with a small component of the veterinary public health course also dedicated to an extramural experience</p> <p>10 weeks of dedicated extramural placements involve a broad cross section of experience in a mixture of small and large animal or companion and pastoral animal experience</p>
	James Cook University	<p>Duration: 12 months</p> <p>Structure: 13 core rotations each a fortnight long, except for the abattoir rotation (1 week); additionally elective rotations</p>	<p>The core clinical rotations are small animal medicine, small animal surgery, anaesthesia, emergency and critical care, small animal primary accession, equine</p>

		<p>are completed over 8 weeks; this must include a clinical rotation but may also include paraclinical or research areas</p> <p>Intramural rotations are completed both on campus in the veterinary teaching hospital or at three contracted clinics staffed by university faculty/adjunct faculty and supporting staff; these include the primary accession practice (university owned) the equine and the dairy practice</p> <p>The only true extramural studies in final year are the electives and these must be approved by the university</p> <p>12 weeks of extramural work is required in an approved veterinary practice prior to the commencement of final year</p>	<p>medicine and surgery and two dairy cattle rotations; other areas covered include epidemiology and public health, beef and small ruminant medicine and production, paraclinical sciences and behaviour, anatomic and clinical pathology</p>
South Australia	The University of Adelaide	<p>Duration: 12 months</p> <p>Structure: Nine clinical and practical placements; each placement is one month</p> <p>Additionally 11 weeks of Extramural Studies (EMS) electives take place prior to commencing the final, third year of the Doctor of Veterinary Medicine; each EMS placement must be 2, 3 or 4 weeks duration</p>	<p>The core rotations completed in the final year of the DVM include equine clinical practice, production animal clinical practice, companion animal clinical practice, comparative diagnostic imaging and anaesthesia, pathology and diagnostic services, veterinary public health, transition to the veterinary profession and an elective</p> <p>The 11 weeks of EMS must include a 2 week period of first opinion clinical practice external to the university; the remaining 9 weeks may be completed within the Adelaide University Veterinary Clinics or externally in a private practice that may be specialist, research, public health, zoological or wildlife facilities, laboratories, government or research organisations</p>
Victoria	The University of Melbourne	<p>Duration: 12 months</p> <p>Structure: 25 weeks of scheduled clinical rotations (these are located both internally in the university veterinary teaching hospital and externally)</p>	<p>Internal rotations are undertaken in the areas of general practice, small animal medicine, small animal surgery, equine medicine and surgery, production animal medicine, diagnostic imaging, anaesthesiology, small</p>

		<p>19 weeks of elective extramural placements must be undertaken of which 15 weeks are to take place in the final year of the DVM programme; extramural elective placements are undertaken in sequences of 1 to 5 weeks duration</p>	<p>animal emergency medicine, specialty clinical disciplines and pathology</p> <p>External rotations are undertaken in the areas of veterinary public health, dairy cattle medicine and surgery, and shelter medicine and surgery</p> <p>Extramural elective placements are undertaken in approved veterinary practices in Australia or internationally, in government veterinary laboratories or equivalent, or in a veterinary research environment</p>
Western Australia	Murdoch University	<p>Duration: 12 months</p> <p>Structure: There are 24 weeks allocated to core rotations which are mostly intramural but some extramural work is required; additionally an elective unit of study takes place over 12 weeks</p> <p>Contact hours for rotations are approximately 30 – 40 hours per week</p> <p>An additional 14 weeks of extramural clinical work is completed at some time between 3rd and 5th year with a maximum of 5 weeks to be completed in 5th year</p>	<p>Core rotations are completed in the areas of small animal medicine, small animal surgery, equine practice, clinical pathology, diagnostic imaging, general practice, wildlife, public health and production animal</p> <p>Extramural rotations focus on the themes of professional development which include developing professional and life skills in a clinical context</p> <p>The 12 week (typically extramural) elective is selected by the students from one of the following areas: advanced topics in equine practice, advanced topics in mixed animal practice, advanced topics in veterinary science, advanced topics in wildlife, zoological and conservation medicine, advanced topics in small animal practice, advanced topics in production animal practice; the elective rotation may be a combination of extramural and intramural; for example, advanced topics in equine medicine is 4 weeks intensive intramural and 8 weeks extramural</p>

It is not surprising that the Australian (Table 1.2) and NZ veterinary schools structure their WBL experiences in a similar way. All of the schools are accredited by the AVBC and although there are nuanced differences the programme structures are remarkably similar. All offer experiences across a range of specific areas of professional practice that include veterinary public health and small animal, equine, rural and production animal veterinary practice. Additionally, university approved elective rotations are included offering students the opportunity to pursue specific areas of personal interest. All of the universities offer work-based experiences within veterinary teaching hospitals and clinics that are owned or affiliated to the university and in all cases students are also expected to complete work-based placements in approved facilities that are external to the university. Variation does exist in how the universities proportion the distribution of intramural and extramural work-based placement experiences, and which are essential versus elective, but in all cases the university faculty has general oversight of the programme.

In all of the veterinary schools the supervisors of veterinary student interns, including extramural veterinarians, contribute in some way to the progress of students (Table 1.3). Formal assessment requirements vary across the different rotations and may include written assignments, practical assessments and oral tasks but in each Australian veterinary school these formal assessment tasks are marked and graded by university faculty staff. It is clear, however, that whilst universities have oversight of the final assessment for a particular rotation, supervisor reporting is also used as a guide in determining the final grade. Supervisors are required to holistically assess students continually throughout the placement and at the end of a rotation submit an evaluation of the student using standardised rubrics with defined descriptors related to marks or scales. There is some variation in how supervisor reporting forms are structured but in all cases the emphasis is on the criteria or descriptors that guide the supervisor in their evaluation. All universities place an emphasis on the qualitative feedback provided by supervisors and student progress decisions are influenced by supervisor reporting. Although there is very little evidence of supervisors contributing to the quantitative evaluation of summative assessments it is evident that in all of the universities the supervisor feedback is a critical component in determining and

Table 1.3. Overview of WBL supervisor support and contribution to assessment in Australian veterinary schools

Australian state	University	Supervisor support	Supervisor contribution to assessment
New South Wales	The University of Sydney	<p>Written material that includes the Unit of Study Handbook, reports and forms</p> <p>Phone and email support is provided by the university and practice sites may receive a practice visit</p> <p>The Partners in Veterinary Education Conference is offered annually which includes a dedicated educational development component; contributes to Continuing Professional Development points for the practitioner</p> <p>A DVD has been developed to provide guidance on the 2nd and 3rd interview to be conducted with students during their placement</p> <p>University staff engaged in supervision are expected to participate in ongoing teaching and learning development activities</p>	<p>Different assessment requirements exist for each rotation and may include written assignments, oral tasks and practical assessments; these are marked and graded by faculty staff</p> <p>Supervisors continually evaluate students during a placement; the supervisor evaluates the student using the Supervisor Report Form (SRF) as a guide</p> <p>A student's grade for a particular rotation is determined by the Unit of Study Coordinator and the SRF is used as a guide in determining the final grade for a particular Unit of Study</p>
	Charles Sturt University	<p>Written materials that include information about the expectations of students; these also include templates with sets of defined descriptors against which the supervisor makes their assessment of the student</p> <p>Phone and email support provided by the university</p> <p>Practitioners are invited to visit the university one to two times a year and various issues associated with the internship year are addressed at these times; this contributes to Continuing Professional Development points for the practitioner</p>	<p>Different assessment requirements exist for each rotation and may include completion of a clinical skills handbook, mini clinical evaluations (mCEX), direct observation of procedural skills (DOPS) and written tasks such as case logs; these are marked and graded by faculty staff</p> <p>Supervisors assess student knowledge, skill and attitude (KSA) using a rubric with defined descriptors related to marks with values from 0 to 5 (with 5 being the highest score); KSA attributes vary and are</p>

		<p>University staff engaged in supervision are expected to participate in ongoing teaching and learning development activities</p>	<p>contextualised to rotation type; weighting is reduced for extramural rotations and emphasis is instead given to the qualitative feedback provided by the supervisor</p> <p>In intramural rotations the mCEX and DOPS activities contribute to the final assessment mark; they do not contribute to the final mark in extramural rotations but they do assist the supervisor in determining their final KSA assessment</p>
Queensland	The University of Queensland	<p>Written materials including handbooks and relevant forms and templates</p> <p>Phone and email support provided by the university via dedicated student rotations administration officer, an academic Clinical EMS Coordinator and academic coordinators for each rotation</p> <p>Current moves to offer standardised training tools for supervisors; this training will be an online learning tool and may form part of induction training for internal staff; the training consists of a number of modules that are relevant, flexible and in a form that is easily modified and updated; online learning will be available for extramural supervisors with completion of the training voluntary</p> <p>A high proportion of intramural supervisors have an educational qualification such as a Graduate Certificate of Higher Education; tutors at The University of Queensland have access to additional training with a focus on pedagogy but this is in a classroom setting; this programme is currently mandatory for all clinical staff</p>	<p>Different assessment requirements exist for each rotation and may include written assignments, oral tasks and practical assessments; these are marked and graded by faculty staff</p> <p>Students are assessed in the areas of knowledge, clinical skill, professionalism, interpersonal skills and technical skill; descriptors are provided to guide the supervisor in their assessment of students using a 7 point scale that extends from unsatisfactory to excellent; this is likely to be simplified to a 4 point scale from late 2013</p> <p>Supervisors provide a summative evaluation of students using a standardised rubric that can be accessed via an online assessment system (One45) or by returning an assessment form to the placement coordinator</p>

	James Cook University	<p>The university faculty oversees the programme; the 5th year coordinators consult closely with the coordinator of each rotation and also oversee assessment and student progress</p> <p>Clearly defined standards and criteria are provided to ensure consistency in grading</p>	<p>Students are assessed holistically and according to specific criteria; they receive a mark with comments at the end of each rotation</p> <p>Assessment is usually done by the rotation supervisor (usually the rotation coordinator) and one or more team members and checked by the year coordinator for clarity, fairness and consistency</p> <p>As rotation coordinators and supervisors are discipline experts they are given significant autonomy in student assessment</p>
South Australia	The University of Adelaide	<p>Written materials including handbooks and relevant forms and templates</p> <p>Phone and email support provided by the university</p> <p>There is currently no formal training offered to supervisors; the clinical supervisor must be a registered veterinarian</p> <p>Supervisors are given access to online journals through Adelaide University library services</p>	<p>Supervisors complete an assessment of student form which is checked by the university faculty EMS coordinator; these forms assess the students as satisfactory or unsatisfactory</p> <p>During the final phase of EMS placements students are required to complete a skills achievements record book which must be checked and signed off by the supervisor</p> <p>Additional assessment requirements include a submission of personal learning objectives and reflections with an appended daily case log summary and an EMS and Day One Skills Reflective Essay; these submissions are not directly assessed by the supervisor and are graded by academic staff at the university</p>
Victoria	The University of Melbourne	<p>Written materials including a sign to display in clinic</p> <p>Student feedback and evaluation forms are returned to clinics at the end of each year</p>	<p>Supervisors complete a GOALS evaluation form for the student; the GOALS evaluation is comprised of 80 questions with an ordinal scale for assessment; written comments may also be made; these scores</p>

		<p>Phone and email support from dedicated faculty staff</p> <p>There is currently no formal training offered to supervisors; supervisors must be graduates for a minimum of 5 years before being approved to supervise</p> <p>If the supervisor is an academic associate of the university they also receive access to university library services, attendance at public seminars at staff rates and attendance at an annual half-day conference for further training</p>	contribute to the overall extramural grade
Western Australia	Murdoch University	<p>Supervisors receive written material which includes reports, forms and the unit handbook which outlines what is expected of students</p> <p>Phone and email support from dedicated faculty staff; each unit of study has an overriding unit coordinator</p> <p>No formal training is offered to supervisors that are external to the university</p>	<p>Assessment varies for each rotation</p> <p>Supervisors are required to informally and subjectively assess students at all times; a form is submitted at the end of the rotation and if two criteria are below average the student is required to repeat the rotation</p>

guiding the assessment of veterinary interns (Table 1.3).

Supervisors are partners in the education of veterinary students and as such require academic support and guidance from the veterinary schools. Supervisors are in many cases employed at university teaching hospitals although they are often non academic staff primarily providing clinical general or specialist services. In those rotations where supervisors are external to the university remuneration for their contribution is mostly nonexistent or nominal at best. Supervisors do receive benefits for their contributions to veterinary education and these include access to faculty libraries and online journals and Continuing Professional Development points required for ongoing veterinary registration (Table 1.3). At The University of Sydney, Charles Sturt University and The University of Melbourne practitioners involved in supervision are formally invited to meet with the university at least once a year. At The University of Sydney this engagement with supervisors is structured and takes place in the form of an annual Partners in Veterinary Education Conference in which there is a dedicated educational development component. Various issues associated with the internship year are discussed during these sessions and this also contributes to Continuing Professional Development points for the practitioner. In 2014 an educational consultant is involved in the development of training workshops at The University of Sydney that are specifically targeted to support supervisors in their role as an educational partner.

Across all of the Australian universities supervisors of veterinary interns are given academic support and are guided in their role as an educator in a WBL environment. In all cases supervisors are provided with phone and email support from dedicated faculty staff (Table 1.3). Further to this, written materials are available to guide supervisors on issues associated with expectations and reporting requirements. Templates are provided with sets of defined descriptors against which supervisors make their assessments of the student. University staff engaged in supervision are in many cases expected to participate in ongoing teaching and learning development activities although this varies between universities. Formal education training is not a mandatory requirement for supervisors that are not employed by the university. At The University of Queensland and The University of Sydney current moves are underway to offer standardised training tools for supervisors. This would be delivered

in the form of an online learning tool and although available for all supervisors the completion of this training would be voluntary.

Veterinary Student Internship Programme at The University of Sydney

The Veterinary Student Internship Programme (VSIP) at The University of Sydney is a critical component in the professional education of the veterinary student. The programme is aligned to the development of desired attributes in a veterinary graduate and is designed to support the students in their transition to veterinary professional practice (Baguley 2006). It is currently completed over 12 months in the final year of the veterinary degree programme. Students are required to complete a minimum of 5 intramural and 5 extramural 3-4 week rotations. Intramural rotations are undertaken at the University Veterinary Teaching Hospitals in Sydney and Camden with extramural rotations undertaken at approved locations outside of the university. These extramural rotations must be undertaken in the areas of small animal practice, rural mixed practice and rural public practice. Students must also complete two additional elective rotations and it is expected that students will select these placements based on their individual interests and future career plans (Faculty of Veterinary Science 2011).

In order to effectively implement the internship programme, teachers or supervisors need to be prepared and the programme must be monitored. A consistent and structured programme must be delivered to meet both accreditation requirements and ensure that certain standards of learning outcome are met. Upon graduation it is essential that students are prepared to respond to the demands that will be placed upon them. At The University of Sydney, supervisors are provided with unit of study handbooks and are given phone and email support from the university. Moreover supervisors are invited to attend the annual Partners in Veterinary Education conference, part of which includes an educational focus. In 2007 supervisor feedback was obtained through practice visits and informal interviews facilitated by a Faculty Liaison Officer, a retired veterinarian who has maintained close links with both the Faculty and profession and has had involvement in the curriculum. Over 80 veterinary practices in NSW were visited and a formal report was submitted to the Learning and Teaching Committee in February, 2009 (J Baguley, 2012, pers. comm., 16 February). Recommendations of this report included a need to ensure ongoing

training in conducting interviews during placements and on accessing student feedback. A need for open transparent student feedback was highlighted as well as a need to ensure that there is clarity in what is required of supervisors in the completion of Supervisor Report Forms (J Baguley, 2012, pers. comm., 16 February). In response to the feedback received, a DVD was developed and this is now given to supervisors to provide guidance on how to conduct interviews with students during rotations. Since 2007, further rounds of practice visits have been conducted every one to two years with the most recent involving 110 practices in Sydney and across NSW. Similar themes were highlighted in the latest report with respect to accessing student intern feedback and despite greater confidence regarding student assessment it was suggested by some supervisors that there be further clarity in the structure of the language used in the supervisor reporting forms (Scarlett 2013). The report impressed that active support from the Faculty and constructive guidance in understanding the supervisors' role in the education of student interns would be valued and embraced.

Although well supported by the university it would be expected that the experience of the veterinary placement supervisor may vary. The delivery of a high quality veterinary internship programme at The University of Sydney requires the involvement of a diverse group of educational partners. Supervisors of veterinary interns include faculty staff, private mixed and small animal practitioners, district veterinarians and veterinary officers in public agencies and industries supporting rural public practice. The frequency with which supervisors accept students in their practices varies and the number of students hosted at any one time also varies. There is variation in the responsibilities, training and expertise of the placement supervisors. Some supervisors have completed qualifications in higher education particularly if employed by the university, or if they have completed residency training in a university setting, but many have had no formal training in educational theory.

Given this diversity in supervisors' prior experiences and expertise variation, it is fair to posit that the experiences of supervisors in WBL environments will vary. Supervisors may have different understandings of what supervision involves and different ways that they go about doing this. This includes having varying intentions concerning what students should learn, how students should learn and how they, the supervisor, will facilitate this. Their approaches and views are likely to impact on the

way they teach and supervise. Research, particularly in the area of human medicine, suggests that there are preferable ways to supervise and these may or may not be influenced by the supervisors' conceptions of supervision (Stenfors-Hayes, Hult & Dahlgren 2010; Stone et al. 2002). Some conceptions may make it easier for students to achieve desired learning outcomes and other conceptions may not. Understanding the factors that contribute to learning outcomes in a teaching and learning environment is further explored and discussed in Chapter 2. Currently there is little empirical evidence to support the assumption that supervisors have varying understandings of what supervision involves and varying ways of going about doing this. It is therefore pertinent to now investigate and describe the variation in the factors contributing to the supervisor experience.

Summary

The delivery of quality veterinary education is challenging. It is costly, time consuming and constrained by the demands of accreditation bodies and industry. The stakes are high and the implications are significant. There are inherent risks associated with an inability to sustain quality veterinary education; students will be vulnerable and ill-prepared to respond to the demands placed on them, animal, human and environmental health may be jeopardised, and biosafety threatened. In this chapter it is identified that WBL experiences are widely recognised to be integral in the delivery of veterinary curricula worldwide and this means an increasing reliance on educational partners; partners who have goals, motivations and drivers that may or may not be aligned with those of universities. Inconsistencies may compromise the quality of learning outcomes.

Critical in the development of desired graduate attributes these educational WBL experiences are pivotal in supporting veterinary students in their transition to professional practice. Supervisors in WBL environments play a crucial role in this important stage of veterinary education. Universities expect supervisors to fulfil a role in the education of future veterinarians and in all Australian veterinary schools supervisors have the capacity to directly impact student progress. Despite the fact that WBL experiences are universally embraced in a range of forms the supervisor experience is, to date, poorly understood. This is further discussed and clarified in Chapter 2 where an educational perspective has been adopted to understand and

describe experiences of WBL. Scholarly oversight of WBL is paramount and academic rigor must be maintained. It is, therefore, incumbent on universities to understand and articulate variation in supervisor experiences. The context of this thesis is WBL experiences in the VSIP at The University of Sydney. In particular, the work conducted for this thesis seeks to illuminate variation in supervisors' experiences; in their conceptions of what supervision is about and in their approach to supervision.

Chapter 2

Understanding teaching and learning based factors that contribute to learning outcomes

Introduction

The context of this thesis is WBL experiences in veterinary education and in this chapter an educational perspective is adopted to illuminate teaching and learning factors that contribute to learning outcomes in this context. Ways of understanding student and supervisor experiences of WBL are broadly examined in an attempt to identify those parts or elements of a student and supervisor experience that are more likely to deliver a quality learning experience.

Understanding teaching and learning experiences using a student learning framework is widely regarded and used as a means of benchmarking university courses and assuring quality and ongoing improvement in course design (Ginns, Prosser & Barrie 2007; Prosser & Barrie 2003; Barrie, Ginns & Prosser 2005). The core premise behind this position is that teaching and learning are fundamentally related and it follows that teaching factors influence the quality of learning. Within a particular teaching and learning context students approach their learning based on their perceptions, their prior experiences and the teaching approach used. Different ways of teaching are likely to encourage different ways of student learning. Furthermore the learning approach adopted by a student impacts the quality of learning outcomes (Biggs 2003; Ginns, Prosser & Barrie 2007; Prosser & Trigwell 1999; Ramsden 2003). Understanding the teacher experience is therefore a key component in improving the quality of student learning. Work-based learning environments are places of teaching and learning and supervisors in this context are key players in the teaching dynamic. It follows therefore that understanding the supervisor experience will contribute to improving the quality of student learning in a work-based environment.

The model selected to understand supervision and learning in a WBL environment is based on the 3P or Presage-Process-Product model of teaching and learning (Biggs 1987, 1989, Prosser & Trigwell, 1999). Given the underlying premise that teaching and learning are fundamentally related, a relational perspective has been used to

interpret the model of supervision and learning. In this chapter, the framework used to model a study of supervisor experiences of WBL is discussed, and it highlights elements of the supervisor experience that contribute to student learning in this context.

The author hypothesises that there is variation in supervisors' experiences of WBL. Supervisors will likely vary in their conceptions of what supervision is about and will vary in the way they approach their supervision. Some conceptions and approaches will be more likely to encourage quality student learning. Phenomenography was chosen as the research method for this study as it is designed to elucidate variation in teaching and learning experiences. It is described in this chapter in relation to variation in supervisors' experiences of WBL.

In Chapter 1 of this thesis, WBL in veterinary education is contextualised, and this chapter highlighted the need for universities to understand supervisor experiences in order to assure quality learning outcomes. In this chapter, a way of understanding these experiences is explored and discussed. The conduct of the study described in this thesis is further addressed in Chapter 3, and is aimed at understanding a particular teaching and learning context, namely WBL in veterinary education.

Experiences of WBL from an educationalist perspective

Surface and deep approaches to learning

Over the last 30 years a number of theoretical frameworks have been developed to describe the way that students experience their learning. Research in this field has been dubbed 'student learning research' and has largely developed from work done by Marton and Säljö (1976) who identified surface and deep approaches to learning amongst students. This has been supported and amplified by further research that suggests that students go about their learning in qualitatively different ways and the way in which a student approaches their learning affects the quality of learning outcomes (Prosser & Trigwell 1999; Ramsden 2003; Matthew, Taylor & Ellis 2010).

A surface learning approach is that which relies on rote memorization of facts and figures. This type of learning is formula driven and disparate. Students focus their attention on those parts or elements perceived to be important in meeting external demands. In the recent study of Matthew, Taylor and Ellis (2010) final year

veterinary student interns who adopted a surface learning approach assumed a tactical, pragmatic approach to learning. These students focused on expending just enough time and effort into acquiring knowledge and skill that will tick the right boxes in meeting assessment requirements and enable them to be procedurally competent after graduation. A deep learning approach is that which strives for meaning and understanding. There is a commitment to making connections with what the student already knows. Students focus their attention on the whole. These students are intrinsically motivated by a desire to make sense of their learning. Veterinary student interns adopting a deep approach were found to be engaged, self reflective and demonstrated a proactive commitment to independent professional practice (Matthew, Taylor & Ellis 2010). Many studies have confirmed that deep learning is closely associated with improved quality in learning outcomes (Prosser & Trigwell 1999) and this was found to be the case in the study investigating the variation in veterinary student intern learning experiences (Matthew, Taylor & Ellis 2010).

The student experience of work-based placements

Investigations of students' experiences of work-based placements suggest that these experiences are useful in facilitating a smooth transition from veterinary student to practitioner (Baguley 2006). In 2004 the first cohort of VSIP students were surveyed to determine students' opinions regarding the effectiveness of the programme. Responses were chiefly positive with students rating the programme highly for both the provision of learning opportunities and achievement of learning outcomes. When rating the learning opportunities offered by placements, 84% of students rated small animal centres as being excellent or good and 83% of students rated rural public practice as being excellent or good (Faculty of Veterinary Science 2005). The completion of case logs and receiving feedback were identified to be the most useful factors in these experiences. Furthermore, communication skills were identified by students to be one of the most important attributes contributing to success as a practitioner and work-based placements identified as vital for developing this competency (Baguley 2006).

At The University of Sydney the Student Course Experience Questionnaire (SCEQ) is specifically designed to provide the university community with information about teaching and learning experiences with the overarching goal being to improve the

quality of both teaching and student learning (Faculty of Education and Social Work 2014). The items included in the questionnaire are clustered together to provide information about a number of factor scales which include Good Teaching, Clear Goals and Standards, Appropriate Assessment, Appropriate Workload, Generic Skills and Learning Community. In 2013 a SCEQ was administered to fifth year veterinary science undergraduate students. This group of students had participated in the VSIP in 2013 (Institute for Teaching and Learning 2014). It is important to note that the 2013 fifth year SCEQ results reflect the overall course experience and so care must be taken when interpreting the results as reflective of student experiences of WBL. Responses indicated that 63% students agreed or strongly agreed with items related to the Good Teaching Scale which included the provision of useful and timely feedback, clear explanations, motivating students, making the course interesting and understanding students' problems. This factor can certainly be improved but it is important to note that there was only 7% disagreement with 30% neutral. Neutral perceptions associated with good teaching may be associated with unclear perceptions regarding the role of supervisors as teachers in a WBL context. A slightly higher proportion of 72% agreed that there were clear aims and objectives for the course and clear expectations for work standards. Further to this, perceptions of generic skill development were high with 84% agreement levels with the Generic Skills Scale. Student perceptions of the course rate highly, particularly with respect to skill development and clear objectives and expectations, but responses to the questionnaire do not go on to explore how these students approach their learning and nor do they provide information regarding the quality of the students' learning outcomes.

A recent investigation of veterinary student intern experiences has explored the quality of learning in a WBL environment. Matthew, Taylor and Ellis (2010) described the variation in students' conceptions of what is learned in work-based placements and their approach to learning in this environment. Quantitative analysis of the qualitative results revealed a close association between students' conceptions of learning and their approach. That is, those students who adopted a surface or rote approach to their learning were more likely to report a disparate conception of what WBL was about and those who adopted a deeper or problem solving approach were more likely to report cohesive conceptions of learning in work-based environments.

Furthermore the quality of WBL outcomes was found to be closely associated with students' conceptions and approaches as those students with cohesive conceptions and deep approaches to learning were found to perform at a higher level (Matthew, Taylor & Ellis 2010).

The supervisor experience of work-based placements

An awareness of educational theory is needed to ground the practice of teaching in a work-based environment. Supervisors or teachers in a WBL environment need to be aware of the curriculum structure and assessment tasks as well as the philosophy behind them. Student needs will vary, difficulties may arise and there is likely to be a need for supervisors to respond to change (Sweet, Huttly & Taylor 2003; Higgs & Edwards 1999). It is anachronistic to teach or supervise students in a way that does not promote a quality student experience. If the student experience is not valued, those elements that are key to the success of work-based education will be lost (Sweet, Huttly & Taylor 2003). To ensure that there is no mismatch between teaching or supervision and the student experience, it is equally important to educate the educators. An understanding of the principles of educational theory set against developing self awareness is an important part of educator training (Sweet, Huttly & Taylor 2003). Successful teaching promotes self evaluation in students. Similarly reflection and self evaluation practices such as peer observation in tutor development programmes (Bell & Mladenovic 2008) are the key to changing teaching practice. It is suggested that good teaching takes place after reflection and when conceptions and actions converge (Saroyan & Amundsen 2001; Sweet, Huttly & Taylor 2003).

As discussed in Chapter 1 placement supervisors play a crucial role in the delivery of quality work-based placements. What constitutes effective teaching in a work-based setting has been the subject of much debate and required attributes of a work placement supervisor are difficult to quantify. Examination of the literature reveals that most research in this area has focused on clinical teaching and much of this is in the area of human medicine. The importance of particular attributes varies based on stakeholder bias and emphasis (Bolt, Witte & Lygo-Baker 2010). For example, university faculty staff, involved in providing clinical service in a veterinary teaching hospital, are also expected to be active in research and teaching. Supervisors of

veterinary students in a private veterinary hospital do not have the additional demands of research and formal lecture delivery, but instead are constrained by the need to maintain client goodwill and provide customer service in a timely and professional manner. These factors may underpin why there is variation in the perceived importance of desirable characteristics of a WBL supervisor. Irrespective of stakeholder bias, there is, however, general consensus that desirable characteristics of a clinical teacher include characteristics such as effective communication, actively involving students and being inspirational and supportive (Sutkin et al. 2008).

A successful WBL environment is a safe and trusting one. Although students are challenged they are not threatened. These environments are fostered by supervisors who are fair, empathic and flexible (Sweet, Huttly & Taylor 2003; Whitman & Schwenk 1997). In one particular study the teaching behaviours favoured by human medicine residents in ambulatory care included being fair and valuing the individual student, displaying confidence as a role model, having realistic goals and objectives, providing positive feedback and demonstrating clarity in actions and decision making (Stritter & Baker 1982). This study was supported by a later content analysis study of resident evaluations of family practice preceptors (Ullian, Bland & Simpson 1994). Behaviours linked with teaching excellence were remarkably similar and included being credible, supportive of the learner role and responsibilities, available, engaging and committed to teaching (Ullian, Bland & Simpson 1994). Similarly the SILVER report identified that those attributes required by a good placement supervisor needed to include the encouragement of active discussion, student participation, provision of feedback and responsiveness to students' learning needs. These attributes were highlighted in response to both practitioner and students' responses to questionnaires investigating perceptions of the role of an extramural supervisor (Royal College of Veterinary Surgeons 1998).

It is widely agreed that successful teaching in a clinical or work-based environment must move away from the traditional master and apprentice model in which transmission and imitation is the focus (Sweet, Huttly & Taylor 2003). As discussed in Chapter 1, in an information rich age of rapid change it is not plausible to expect that clinical teachers be the expert purveyors of all knowledge and skill nor is it

feasible to expect that students be capable of absorbing the large volumes of information and knowledge available today. In his discourse on teaching in higher education, Ramsden (2003) submits that quality teaching in higher education encourages quality student learning. Quality teaching is that which actively encourages student engagement and discourages surface approaches to learning (Ramsden 2003). Learning and assessment tasks must focus on the students' search for understanding and teaching must be organised to support this (Sweet, Huttly & Taylor 2003). Good teaching must produce students who are independent, reflective learners capable of engaging in lifelong learning (Sweet, Huttly & Taylor 2003).

Although different methods of work-based teaching have been described it is suggested that one aspect of successful teaching is dependent on matching the level of student activity to the ability of the student (Bibace et al. 1981; Whitman & Schwenk 1997). Passive students undertaking high stakes WBL experiences for the first time may need a more guiding supervisory style that involves questioning, information sharing and also some direction. As students gain in confidence and skill development a more facilitative and collaborative supervisory style is more appropriate (Bibace et al. 1981; Whitman & Schwenk 1997). Supervisory style may vary but in order to ensure that students remain engaged and active there must be flexibility and adaptation to student need and ability (Hersey & Blanchard 1982; Rose, McGartland & Joffe 1996; Higgs & Edwards 1999).

It would be expected that variation exists in supervisors' experiences of work-based placements. In a discussion of the quality of veterinary education in Europe, Fernandes (2005) acknowledges that diversity exists in teaching methods and approaches. Recognising that there is value in a standardised level of competency at graduation Fernandes (2005) identifies that there is also strength in diversity as it may suggest a greater alignment to local need. However, variability may lead to uncertainty which may undermine the quality of professional education programmes. At the University of Tennessee a perceived variability in the skills of clinical educators was, amongst other factors, linked to variability in the quality of rotation experiences (Lane & Strand 2008). Skills of the educator varied based on personality, confidence, experience, trust in students, approach to education and

availability (Lane & Strand 2008). Variation in supervisors' experiences may also be attributed to supervisors' uncertainty of their role. In examining a course designed to aid in the transition from pre-clinical to clinical veterinary learning at Utrecht University it was found that clinical teachers were uncertain of their role (Ramaekers et al. 2011). Clinical teachers recognised that students were required to engage in self directed learning activities but were uncertain of their role given that it combined a need to respond to learner needs, scaffold and provide additional information as requested. This study suggested that the course design could be improved by supporting the implementation of effective teaching; effective teaching being that which engages the students and responds to their varying needs.

Model for teaching (supervision) in a WBL environment

3P model of student learning

The model selected to understand teaching and learning in a work-based environment is based on the 3P or *Presage-Process-Product* model of student learning (Biggs 1987, Biggs 1989, Prosser & Trigwell, 1999). This model represents a system which describes student learning in terms of *presage* factors which exist before learning starts, the *process* of learning and the *product* or outcome of learning. The different 'p' elements in this model interact with one another and this model suggests that a student will approach their learning based on their previous experiences and the context of the teaching and learning environment. The student's approach to their learning, be it surface or deep, is influenced by their perception of the context and this influences the quality of the learning product (Prosser & Trigwell 1999). Similarly 3P models of teaching have been constructed in which presage, process and product components are described from a teaching perspective (Biggs 1989, 2003; Prosser & Trigwell 1999). Although frameworks that are based on the 3P model of student learning differ in focus (Biggs 2003; Entwistle 1997) they all highlight the importance of the learning context. The 3P model of supervision (Figure 2.1) represents the complex interrelationship between student learning and supervisor teaching in a WBL environment. It highlights the three key factors contributing to teaching and learning. These include presage factors which happen before learning takes place, the process of learning and the outcome of learning in a work-based environment, that is, the product.

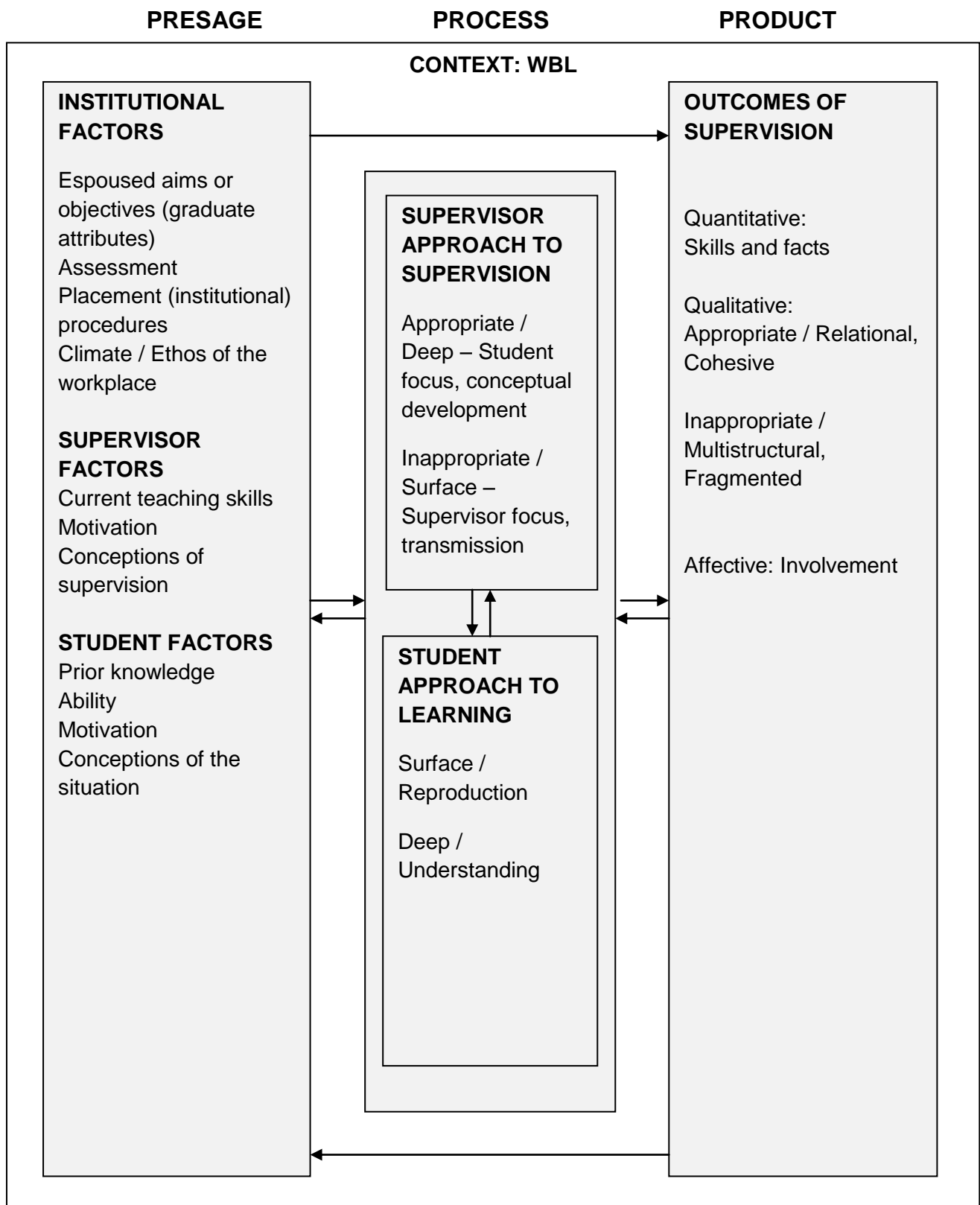


Figure 2.1. 3P Model of teaching (supervision) and learning in a WBL environment adapted from Biggs (1989), Biggs (2003) and Prosser and Trigwell (1999)

There are many different perspectives that can be taken when interpreting the 3P model of learning and teaching. A constitutionalist or non-dualist view is one in which an individual and their world are seen to be internally related (Marton and Booth 1997). Meaning and awareness are created from the internal relationship that exists between the individual and their world (Prosser & Trigwell 1999). This suggests then that the various components of the 3P model are internally related and are not seen to be independently constituted. Although supervisors' conceptions and approaches will be discussed independently they are considered from a constitutionalist perspective to be simultaneously present (Prosser & Trigwell 1999). From this perspective supervisors' conceptions of what supervision is about, their approach to supervision and the outcome of learning are related to one another. These components form an awareness of supervision and are simultaneously present. Given this perspective relational studies exploring conceptions, approaches and learning outcomes are possible. That is, studies can be done to explore whether supervisors' awareness or conceptions of supervision are related to their approach to supervision, and then whether this has a relationship with the quality of students' learning outcomes.

An early study investigating teachers' experiences from a relational perspective was that done by Patrick (1992). In this study, Patrick investigated qualitative variation in teachers' awareness by reviewing what high school history and physics teachers constituted as the object of study and then how they approached teaching it. Three broad categories of ways in which teachers experience teaching were developed from this data. The first identified a focus on content where the subject matter and students' relationship to it was seen to be unproblematic. In this category teachers used words such as "show" and "do" to describe the way they approached their teaching. The second group identified the object of study to be acquiring and accumulating necessary information. Learning of the subject was seen to be problematic but the way in which students learn it was unproblematic. Words used to describe the way of teaching included expecting students to "come to see", "recognise" and "understand". The third group focused on developing interpretations where learning was seen to be problematic. The act of teaching had a focus on the student where students were encouraged to "think", "connect" and "grow" (Patrick 1992). This study was supported by investigations of university teachers'

experiences of teaching (Dall'Alba 1991; Martin & Balla 1991; Samuelwicz & Bain 1992; Prosser, Trigwell & Taylor 1994; Martin et al. 2000) which clearly differentiated between experiences that were teacher directed through to those that were focused on what the students were doing. These studies indicated that a relationship exists between teachers' conceptions of their teaching and their approach to that teaching.

Teaching and learning are fundamentally related and it would follow that learning outcomes will be influenced by teaching based factors (Prosser & Trigwell 1999). This was recognised in Patrick's investigation of high school teaching which established that there was a relationship between how students learn a subject and the way in which it was taught to them (Patrick 1992; Marton & Booth 1997). Prosser and Trigwell (1999) argue that teachers have qualitatively different conceptions of teaching and learning and this is related to the teaching approaches adopted. Those teachers with a focus on teacher centred approaches using strategies of transmission and replication are found to have students that rely on reproduction or surface learning (Åkerlind 2008; Prosser & Trigwell 1999). This group of teachers are more likely to have less complete conceptions of teaching in which an awareness of what teaching is about primarily includes aspects of what the teacher is doing (Martin & Ramsden 1993; Prosser & Trigwell 1999). Conversely those teachers who adopt student centred strategies and intend their students to develop concepts are found to be more likely to have students that adopt deep learning or problem solving approaches. This group of teachers are more likely to hold conceptions of teaching that are more complete in which an awareness of what teaching is about includes their own role, the content and the developing understandings of the student (Martin & Ramsden 1993, Prosser & Trigwell 1999). Given this fundamental relationship between teaching and learning it follows that good teaching involves a commitment to those more complete teacher conceptions and approaches which are aligned to student conceptions and approaches that are more likely to encourage quality learning outcomes (Biggs 1999; Prosser & Trigwell 1999; Ramsden 2003).

From a constitutionalist perspective the context of WBL is integral to understanding the experiences of veterinary intern learning and teaching. When the supervisor enters the world of WBL an experience is constituted that may be different to that which would be constituted if that supervisor were a university academic entering a

lecture theatre. It is within this context that the 3P model of teaching and learning has been adapted to understand and investigate veterinary intern supervisors' experiences.

Presage factors

Presage factors refer to what precedes actual learning activities taking place. Various versions of the 3P model describe these factors in a range of ways but all include both teacher and student factors (Biggs 1989, Biggs 2003, Prosser & Trigwell 1999). In Biggs (2003) teaching context also includes institutional factors and in the WBL environment this would include the culture of the workplace, placement procedures and espoused aims or objectives of the university organising the intern placement. Supervisor factors considered to presage learning activities would include current teaching skill and experience, motivation and the supervisors' conceptions of what supervision is about.

It would be expected that there is variation in teachers' awareness or conceptions of the teaching and learning experience. Early studies by Annerstedt in 1991 and Sundqvist in 1993 (cited in Marton and Booth 1997, p.173) identified the variation in the structure of teachers' awareness with a key distinction being the focus, which was on either content, or on the student. In the first half of the 1990s a number of studies investigated the variation in teachers' conceptions of their experiences in higher education (Dall'Alba 1991; Martin & Balla 1991; Samuelwicz & Bain 1992; Prosser, Trigwell & Taylor 1994). The way in which teachers' conceptions are described vary in wording and number but all are logically ordered in a hierarchy ranging from those that are limited or less complete to those that are more sophisticated and complete (Prosser & Trigwell 1999).

Moving beyond a conventional university teaching environment Martin (1998) investigated the conceptions of academics involved in the supervision of work-based placement experiences amongst a range of professional disciplines and clear similarities were found between this study and those investigating traditional university teaching. Geography, geology, medicine and nursing are amongst a few of the disciplines that, like veterinary science, require the inclusion of professional development programmes that support students in their transition to professional practice. The conceptions of workplace learning in these environments have been

investigated in a number of these disciplines and different conceptions have been described (Forbes 2011; Paakkari, Tynjälä & Kannas 2010, Stenfors-Hayes, Hult & Dahlgren 2010; Stokes, Magnier & Weaver 2010). The parts or elements that constituted a conception do vary but they are ordered in a hierarchy of increasing complexity. At the simplest end of the hierarchy conceptions are generally about students picking up various skills and then at the most complex end of the hierarchy there is an emphasis on student engagement and collaboration. It would be expected that supervisors of veterinary interns will vary in their conceptions of what supervision is about, but there is no empirical evidence to support this hypothesis. The author submits that there is a need to further explore teaching conceptions in a WBL environment, and describe the variation in supervisors' conceptions of what supervision is about.

Process factors

The process of learning and teaching is that part of the system in which student and teacher or supervisor activities take place. Those activities which encourage deep learning approaches are seen as appropriate whereas those that encourage surface learning approaches are seen as inappropriate (Prosser & Trigwell 1999). Variation exists not only in individuals' awareness or conceptions of teaching and learning but also in their approach to that experience. Revealing an approach to a particular experience can be achieved through a description of the individuals' intent and strategy.

Investigations of the way in which an individual approaches an experience has developed from early work studying students' approaches to learning (Biggs 1987; Marton & Säljö 1984; Entwistle 1981). Emerging from these studies and confirmed in a number of studies since (Crawford et al. 1994; Matthew, Taylor & Ellis 2010; Prosser & Trigwell 1999), two qualitatively different learning approaches were described and these have been labelled surface or deep. An explanation of students' different approaches to learning have emerged from extensive '*student learning research*' referred to earlier in the discussion of surface and deep approaches to learning.

It would be expected that teachers would similarly have different approaches to teaching. As discussed earlier in this chapter, in the discussion of the supervisor

experience, numerous studies have attempted to describe the different ways in which teachers approach their teaching and these different approaches are often presented as lists of desirable teaching or supervisory characteristics (Stritter & Baker 1982; Ullian, Bland & Simpson 1994), or as different perspectives on teaching as described by Pratt (1998). The perspectives outlined by Pratt (1998) were developed from a study of 253 teachers' responses to the question "what does it mean to teach?" Five different perspectives on teaching adults in higher education were then structured based on teachers' beliefs, intent and actions. These perspectives are outlined by Pratt (1998) to range from the simplest transmission construct with a focus on content through to the social reform construct in which the focus is achieving a better society.

A key study based on a non-dualist, constitutionalist perspective (Trigwell, Prosser & Taylor 1994) revealed qualitatively different approaches to science teaching amongst 24 university academics. As with students' approaches to learning qualitatively different approaches were described in terms of the teachers' intent and strategies used (Trigwell, Prosser & Taylor 1994) and these categories were found to be empirically related. Strategies implemented ranged from being teacher to student focused with intentions being to transmit information through to developing conceptions. Further studies investigating teaching approaches in an academic university environment have revealed similar categories of description; intent varied from being 'to transmit' through to 'the development or change in student conceptions' and strategies varied from those that are teacher focused to those that are student focused. Further studies within an academic environment have developed from this initial investigation (Martin et al. 2000; Martin et al. 2001; Prosser et al. 2008) and they have identified similar descriptions of teaching approaches based on intent and strategy. There are nuanced differences in category descriptions but intent and strategy remain very similar at the simplest and the most complex ends of the hierarchy.

There are a limited number of studies developed from the same non-dualist constitutionalist perspective that investigate supervisors' approaches in a WBL environment. In one such study Forbes (2010) describes the qualitatively different ways in which clinical teachers approach nursing. The researcher aimed to raise awareness of clinical teachers' approach to their teaching but this study was

particularly focused on the act of nursing rather than the act of teaching (Forbes 2010). In this study intent ranged from 'performing tasks' at the simplest end of the hierarchy through to achieving 'individual patient outcomes' at the most complex end of the hierarchy. Strategies in this study were identified to be either nurse centred or patient centred. Although other studies have looked at a teaching perspective in a WBL environment the focus has been to investigate supervisors' conceptions rather than the way in which they approach their teaching. For example, studies have focused on student teachers' ways of experiencing the teaching of health education (Paakkari, Tynjälä & Kannas 2010), conceptions of what it means to be a good teacher and a good clinical supervisor in medical education (Stenfors-Hayes, Hult & Dahlgren 2010) and conceptions of the purpose of fieldwork in geography and geology (Stokes, Magnier & Weaver 2010). Studies of the experiences of supervisors in a WBL environment are emerging but there is little empirical research investigating approaches to teaching in a WBL environment.

In a seminal study investigating the relationship between teaching and student approaches it was established that there is link between approaches to teaching and the way that students approach their learning (Trigwell, Prosser & Waterhouse 1999). Those teachers who adopted an information transmission, teacher focused approach were more likely to encourage surface learning amongst students. Conversely students were more likely to adopt deep approaches to learning when the teacher adopted an approach that was student focused and encouraged conceptual development and change. Further studies have advanced this relational perspective of experiences in teaching and learning to domains beyond the traditional lecture theatre (Martin et al. 2003; Trigwell & Prosser 2009). Specifically this has been done to explore relationships between teaching and research (Martin et al. 2003) and relationships between experiences of leadership in teaching and approaches to university teaching (Trigwell & Prosser 2009). Given the relational nature of the 3P model of teaching / supervision and learning the author suggests a need for studies designed to reveal the qualitatively different approaches to supervision based on the intent and strategies used by the supervisor.

Product factors

Learning outcomes are essentially the product of teaching and learning. In Biggs' 3P model of teaching and learning (1999) the products of learning and teaching are

described as quantitative, qualitative and affective. In other words learning outcomes are described in terms of quantity, quality and involvement (Biggs 1999) or attitude towards learning (Biggs 1989). During the VSIP at The University of Sydney the measurement of whether learning outcomes are achieved is determined by a number of different methods designed to measure required graduate attributes. Students are required to complete a communication task confirmed by the supervisor, written assignments are submitted to Faculty, and the supervisor evaluates the intern's performance through the completion of the supervisor report form (Baguley 2006; Faculty of Veterinary Science 2011). In the WBL environment of a veterinary intern the quantitative measure of learning can be determined by the number of Day One skills a student can perform independently, the ability to provide factual information on demand as well as passing various challenges and quizzes. Qualitative measures are those that indicate the extent to which a students' understanding can be integrated into the overall structure of professional practice.

This way of describing learning outcomes draws upon research into the structure of learning outcomes led by Biggs and Collis (1982) resulting in the SOLO (Structure of the Observed Learning Outcome) taxonomy. In terms of a veterinary intern environment multistructural or fragmented learning outcomes are those where many relevant outcomes of learning are identified and achieved, but they are placed independently. In other words, they are not related or linked to the overall structure and understanding of professional practice. Conversely, relational or cohesive learning outcomes are more complete and complex and are those where students are able to draw upon their understandings when faced with a new context or domain. Affective learning outcomes identified by Biggs (1999) are likely to be closely related to the qualitative measures, and from a supervisor perspective would include an expanded awareness of what contributes to the teaching and learning experience in a WBL environment (Prosser & Trigwell 1999). From a student perspective affective learning outcomes are likely to also include a greater involvement in the WBL experience with this representing a shift to a more lifelong and reflective learning stance.

Phenomenography

Phenomenography is based on constitutionalism which, as previously described, is a non-dualist perspective in which an individual and their world are seen to be internally related. Effective in understanding the experienced world of teaching and learning, phenomenography is a research method used to describe the qualitatively different ways of experiencing a phenomenon which reflects the non-dualistic internal relationship between the experience and the individual who is experiencing it (Marton & Booth 1997; Prosser & Trigwell 1999). The work conducted for this thesis specifically seeks to understand the experienced world of supervision in a WBL environment.

Analysing the anatomy of supervisors' experiences involves consideration of two fundamental aspects; the *what* and the *how* (Marton & Booth 1997). The *what* aspect of the supervisor experience refers to supervisors' conceptions of supervision. The notion and scope of a conception is somewhat broad and exploring conceptions of supervision can seek to illuminate a specific aspect. For example, an analysis of the *what* aspect of supervision may focus on conceptions of what it is that supervisors' intend for students intend to learn; that is their conception of learning outcomes. Alternatively conceptions may be broadly analysed in terms of conceptions of what supervision is about. The *how* aspect of the supervisor experience refers to supervisors' approaches to supervision. An analysis of the experience of supervision is illustrated in Figure 2.2.

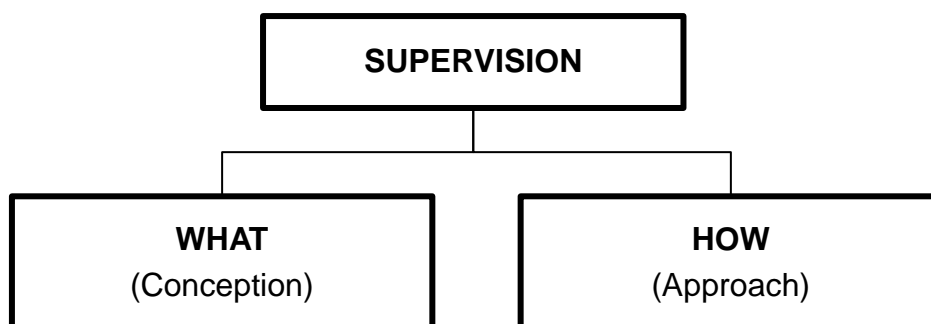


Figure 2.2. Analysis of the experience of supervision

Variation in the way individuals experience a phenomenon is core to phenomenography. There are a limited number of qualitatively different ways in which individuals are able to experience a phenomenon and these ways form distinct

groups or categories that can be definitively described (Marton & Booth 1997). Phenomenography involves forming concise and clear descriptions of the way in which individuals experience a phenomenon both in terms of its structure and its meaning (Marton & Booth 1997). Meaning and structure reflect an individual's awareness of a particular phenomenon. These aspects of awareness are entwined and occur simultaneously when an individual experiences something.

The meaning or referential aspect of an individual's awareness or *conception* of a phenomenon indicates what is being referred to or rather the focus or meaning attributed to the experience. This meaning is developed from the structure of awareness and from how this structure is related to the context (Marton and Booth 1997, p. 112). In the context of teaching and learning, the meaning, or focus of the phenomenon, can be described as being a given, imposed and unproblematic or it can be described as being constructed and problematic (Martin et al. 2000; Patrick 1992). The *internal horizon* of the structural aspect of awareness can be defined according to the component parts of the experience. The *external horizon* of the structural aspect of awareness then refers to that which surrounds the experience which needs to include the boundaries of this experience which distinguishes it from those captured in related categories.

Descriptions of the *how* aspect of an individuals' experience are essentially describing *approaches* and in student learning research this refers to students' approaches to learning and teachers' approaches to teaching (Marton & Booth 1997, Prosser & Trigwell 1999). Using this framework (Biggs 2003, Prosser & Trigwell 1999) approaches to supervision can be defined according to the way that supervisors go about their supervision (*strategies*) and the *intent* behind the strategies used.

The *outcome space* of a phenomenographic study refers to the aggregate of categories of description that are established from the data collected (Marton & Booth 1997). The figure depicting an analysis of the experience of supervision (Figure 2.2) can now be elaborated and is illustrated in Figure 2.3.

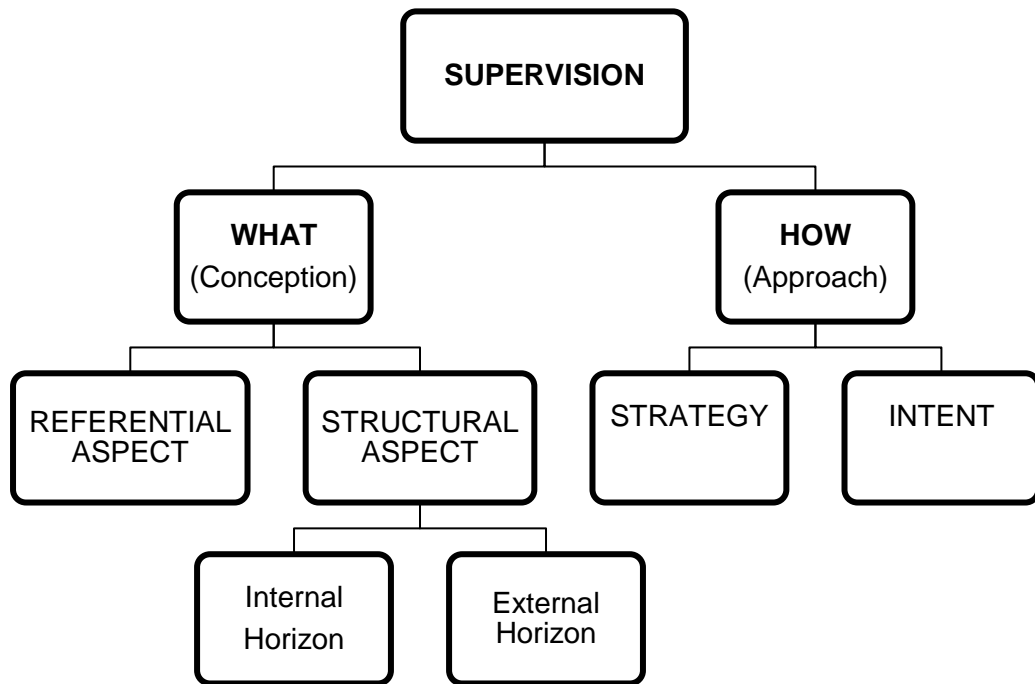


Figure 2.3. Amplifying an analysis of the experience of supervision

For phenomenography to be methodologically sound and robust under scrutiny it is essential that categories of description meet clear criteria. Marton and Booth (1997) list three criteria essential in the development of categories of description. First the category must clearly tell something about the way of experiencing the particular phenomenon under investigation. The second criterion is that the categories of description that form the outcome space must be in some way logically related. Typically in education this means that the categories form a hierarchy representing increasing levels of complexity or inclusivity. Finally it is the critical elements of variation in the data collected that must be captured in a category description. The system of developing categories must be parsimonious (Marton & Booth 1997). Extraneous variations in the way that groups of individuals experience a phenomenon are not significant and do not form part of the resultant outcome space or aggregate of categories of description.

Phenomenography is a research method well suited to studies that investigate experiences of higher education (Prosser & Trigwell 1999). Many of the studies previously discussed earlier in the section describing the 3P model of teaching and learning were developed from a non-dualist constitutionalist perspective and as such used phenomenography as the research method to reveal the qualitatively different ways of experiencing the phenomenon of teaching and learning. Early studies

focused on students' conceptions of learning (Marton & Säljö 1976) but over the last 40 years an understanding of other aspects of higher education teaching and learning experiences have been illuminated. In particular, studies of differences in the higher education teaching experience have centred on the differing ways in which teachers conceive of teaching and learning and different ways in which they approach their teaching (Martin & Balla 1991, Martin et al. 2000, Prosser et al. 2008, Prosser, Trigwell & Taylor 1994, Samuelwicz & Bain 1992, Trigwell, Prosser & Taylor 1994). These are in turn related to the quality of student learning outcomes (Prosser & Trigwell 1999, Trigwell, Prosser & Waterhouse 1999).

Summary

The 3P model of student learning and teaching formed the foundation of the recent study of Matthew, Taylor and Ellis (2010) investigating the experience of veterinary student learning in a WBL environment. It is pertinent to extend this understanding of veterinary WBL with the aim being to address questions about teaching or rather supervision in a WBL environment. That is, what is the qualitative variation in the way that supervisors conceive of their supervision? What are the qualitatively different ways in which supervisors approach their supervision? What is the nature of the relationship between supervisors' conception of supervision and their approach to supervision?

Increasingly phenomenographic research has worked towards an understanding of a wider view of the teaching and learning context, one that extends beyond the walls of the traditional university lecture theatre. As previously described geography, geology, medicine and nursing are amongst a few of the disciplines that, like veterinary science, require the inclusion of professional development programmes that support students in their transition to professional practice. Furthermore in recent years a number of phenomenographic studies have identified and described variation in aspects of the experience of teachers or supervisors in a workplace learning environment (Forbes 2011; Paakkari, Tynjälä & Kannas 2010; Stenfors-Hayes, Hult & Dahlgren 2010; Stokes, Magnier & Weaver 2010). Although veterinary work-based placement experiences have been roundly espoused in the literature similar phenomenographic studies have not yet been done to investigate the

experiences of veterinary intern placement supervisors to identify factors likely to be related to learning outcomes.

As previously described many studies in student learning have confirmed that there is a link between the quality of learning outcomes and students' approach to their learning where surface approaches resulted in reduced quality of learning outcomes (Marton & Säljö 1976; Ramsden 2003; Matthew, Taylor & Ellis 2010). Given that there is a link between teaching approaches to teaching and students' approaches to learning, the author submits that it is germane to investigate supervisors' conceptions of and approaches to supervision during veterinary intern placements as a component of improving the student learning experience.

Chapter 3

Method

Introduction

The purpose of this study was to describe the experience of veterinary intern supervisors in the context of a WBL environment. Building on the principles of student learning research described in Chapter 2, this study was designed to contribute to a growing body of research investigating the experiences of teachers in higher education (Dall'Alba 1993; Entwistle 1997; Forbes 2011; Martin et al. 2000; Prosser, Trigwell & Taylor 1994; Stokes, Magnier & Weaver 2010; Trigwell & Prosser 1996; Trigwell, Prosser & Taylor 1994; Trigwell & Prosser 2004; Trigwell, Prosser & Waterhouse 1999). It was specifically designed to complement the previous research of Matthew, Taylor and Ellis (2010) in which phenomenography was used to describe students' experiences of WBL. Previous research conducted from a second order phenomenographic perspective suggests that the context of the teaching and learning environment may impact on the experience of teaching (Martin et al. 2000; Prosser, Trigwell & Taylor 1994). The particular context of this study is that of a WBL environment and it is within this context that the experiences of veterinary intern supervisors were investigated and described. Specifically the teaching context of this study is the VSIP at The University of Sydney, the details of which are described in Chapter 1.

This chapter will describe the methods used to investigate supervisors' experiences of supervision. Phenomenography was the qualitative research method selected for this study as it describes the limited number of categorically different ways in which a group of individuals experience a phenomenon (Marton & Booth 1997). The investigations reported in this thesis consisted of two parts. A broad, large scale investigation of supervisors' experiences was prefaced by a preliminary phenomenographic analysis of surveys collected for a teaching evaluation activity.

In both the preliminary investigation and the later more extensive study aspects of supervisors' experiences of supervision were described in two ways; supervisors' conceptions (*what*) and their approaches (*how*). An analysis of the experience of supervision based on these aspects is detailed in Chapter 2. The preliminary

investigation was designed to explore supervisors' conceptions of what it is that supervisors intend for students to learn and secondly how supervisors approach their supervision. Subsequently, the broader large scale investigation of supervisors' experiences maintained the same tenor with respect to understanding the '*how*' aspect or approach to supervision. However, in the broader investigation of supervisors' experiences researchers identified a need to expand the understanding of the '*what*' component. Rather than maintaining a very specific exploration of one aspect, namely supervisors' conceptions of learning outcomes, the survey question was augmented to now explore and investigate supervisors' conceptions of what supervision is about. These aspects of the supervisors' experience were based on similar phenomenographic studies investigating academics' experiences of teaching in a university environment (Martin et al. 2000; Prosser, Trigwell & Taylor 1994; Trigwell & Prosser 1996). Quantitative analyses were additionally performed to determine the nature of the relationship between supervisors' conceptions and their approaches to supervision.

The description of the method used for both the preliminary investigation and the subsequent larger scale study includes a discussion of the research participants, the materials used and the procedures followed to conduct this study. Discussion of the materials outlines the tools used to collect data. A step by step description of the conduct of the study used in both investigations is provided and this includes a description of how the data sets were analysed.

Human Research Ethics approval was not required for the preliminary investigation under The University of Sydney guidelines on the review of low and negligible risk research, as the research involved data collected for teaching evaluation purposes where the participants had the option of remaining anonymous (Everett J, 2015, pers. comm., 3 March). Approval to conduct the subsequent large scale study was granted by the Human Research Ethics Committee at The University of Sydney, protocol number: 13601.

Research participants

The participants in both the preliminary investigation and the subsequent large scale study were all supervisors of final year, University of Sydney, veterinary science student interns. Further detail describing the context of this teaching environment is

discussed in Chapter 1. Supervisors of final year interns are either extramural or intramural. Extramural supervisors are involved in the programme on a voluntary basis and as such are not employed by the University. They are partners in the education of final year veterinary students and represent a range of veterinary industries that include small animal practice, equine practice, rural mixed practice, wildlife facilities, international veterinary facilities and government and public health facilities such as the NSW Local Land Services. Intramural supervisors are employed by The University of Sydney and are associated with the University Teaching Hospitals at either Sydney or Camden.

Participation in the preliminary teaching evaluation study was offered to all supervisors attending the 2007 Partners in Veterinary Education Conference at The University of Sydney. This conference is hosted annually by the Faculty of Veterinary Science for those who supervise final year students as part of the VSIP. Participation was voluntary and data was provided anonymously. There were 39 responses received from the 2007 conference attendees.

Participation in the subsequent larger study was offered to all supervisors of final year veterinary science interns at The University of Sydney in 2011. The University of Sydney database for supervisors of final year veterinary science interns includes 350 extramural and 38 intramural supervisors and all of these supervisors were invited to participate in this study. Follow up was done during the Partners in Veterinary Education Conference in July, 2011. Participation was voluntary and data was provided anonymously. The response rate was 30% with 118 responses received; 17 of these responses were received at the 2011 Partners in Veterinary Education conference. One response was excluded as it did not respond to the survey questions leaving a final data set of 117 responses.

Materials

Open ended surveys

The data that forms the basis for this thesis was collected through open ended surveys that were designed to explore supervisors' experiences of supervision. Survey questions were general and were modelled on survey and interview questions used in similar investigations (Ellis, Steed & Applebee 2006; Forbes 2011; Martin et al. 2000; Stokes, Magnier & Weaver 2010). The 2007 teaching evaluation

survey questions were designed by Dr Susan Matthew. Dr Matthew is an academic in the Faculty of Veterinary Science at The University of Sydney and, in this thesis, is also referred to as Researcher 2. The 2011 supervisor experience survey questions were designed by Ingrid van Gelderen, the author of this thesis, in collaboration with Dr Susan Matthew, Professor Rosanne Taylor and Dr Graham Hendry. In this thesis Professor Rosanne Taylor is referred to as Researcher 3 and Dr Graham Hendry as Researcher 4.

Although traditionally phenomenographic data is collected through interview (Åkerlind 2005) written data has formed the basis of analysis in numerous studies (Bradbeer, Healey & Kneale 2004; Crawford et al. 1994; Loughland, Reid & Petocz 2002; Marton & Säljö 1976; Stokes, Magnier & Weaver 2010). While an interview approach is one that enables interrogation to probe meaning (Åkerlind 2005; Trigwell 2006) this approach is intensive and time consuming and is less suited to large sample sizes. In contrast, written responses have been identified as an effective means to collect data for phenomenographic analysis (Trigwell 2006) and are particularly suited to analysis of a larger sample size (Minasian - Batmanian, Lingard & Prosser 2006). In this study written data collected from the responses to the surveys administered formed the basis for subsequent analysis.

Survey questions: 2007 Teaching evaluation questionnaire

Survey questions in the preliminary teaching evaluation questionnaire were designed to explore supervisors' conceptions of learning outcomes and their approach to supervision (see Appendix A). In this survey the question that explores conceptions or the '*what*' of supervision was designed to investigate a very specific aspect of the supervisors' conceptions of supervision, namely their conception of learning outcomes of the VSIP. The question was an open two part question chain as shown below. The second question was designed to explore supervisors' approaches to supervision. It consisted of an open three part question chain in order to gain an understanding of the strategies and intent that constituted the approach. The third question was designed to explore supervisors' perceptions of the relationship between working with a final year student and working with a new graduate veterinarian. Written data collected from the third question was not analysed for this

thesis but the question has been included for completeness. The 2007 teaching evaluation survey questions were:

During your supervision of final year students, what are you intending for them to learn? What are the main things you intend them to get out of your supervision?

How do you go about supervising final year interns? What things do you do? Why do you do these things?

Do you think there is any relationship between what students learn in final year and what they will be doing the following year as new graduates? Circle yes or no. If so what is it? If not, why isn't there a relationship?

Survey questions: 2011 Supervisor experience questionnaire

The open ended survey administered to all placement supervisors in 2011 contained three questions (see Appendix B). This larger scale study adopted a similarly designed questionnaire to that used in the teaching evaluation exercise administered in 2007 but a significant change was made to the question investigating conceptions. Rather than focusing on a very specific aspect of supervisors' conceptions the question was broadened in order to capture a more complete description of the 'what' aspect of supervisors' experiences. The second question was again designed to explore supervisors' approaches to supervision and mirrored the approaches question administered during the previous teaching evaluation exercise. A third question was again included to explore supervisors' perceptions of the relationship between working with a final year student and working with a new graduate veterinarian. This question was included to explore supervisors' perceptions of the similarities and differences between working with an intern and working with a new graduate. Written data collected from the third question was not analysed for this thesis but the question has been included for completeness. The 2011 supervisor experience survey questions were:

What do you think supervision of final year interns is about?

How do you go about supervising final year interns? What things do you do? Why do you do these things?

Do you see a relationship between how you work with a final year intern and how you would work with a new graduate veterinarian? If so how would you describe this relationship?

Researchers

The reliability of phenomenographic studies involves the participation of multiple researchers who engage in an iterative process of discussion, revision and verification of codings (Åkerlind 2005; Trigwell 2006). In order to ensure reliability of the qualitative research data phenomenographic analysis for the research conducted for this thesis was carried out using four researchers.

The research for this thesis was conducted from a second order perspective in which the experiences of the supervisors expressed in the survey responses were used as the basis for analysis. In other words, experiences were not described from observations of supervisor behaviour and were not based on how the researchers perceived the experience of supervision. Given that this study was conducted from a second order perspective and that the processes involved in qualitative analysis are interpretive and not entirely objective (Åkerlind 2005) it is important to provide a general overview of researcher background to support both the validity and reliability of this research.

The background to the primary researcher and author is provided in the introduction to this thesis. Researchers 2 and 3 are veterinarians and educators. They are both employed by The University of Sydney in the Faculty of Veterinary Science and have researched extensively in the area of veterinary education. Specifically Researchers 2 and 3 have previously conducted and published the results of a phenomenographic study investigating veterinary students' experiences of WBL. Researcher 4 is also employed by The University of Sydney in the Institute for Teaching and Learning and has published widely in the area of teaching and learning in higher education. Researcher 4 has extensive educational development and research experience which has included published studies using a phenomenographic approach.

Qualitative results: outcome spaces

Phenomenography is a qualitative research method resulting in an outcome space that defines the minimum number of categorically different ways of experiencing aspects of WBL supervision of veterinary students. In both the preliminary teaching evaluation study and the subsequent larger scale investigation of supervisors' experiences, outcome spaces were developed to capture this variation. The resultant outcome spaces, detailed in Chapters 4 and 5 respectively, were subsequently used for further quantitative analysis. While quantitative analysis of qualitative data was conducted to identify the number of supervisors' holding different conceptions and adopting different approaches (Bradbeer, Healey & Kneale 2004; Crawford et al. 1994; Stokes, Magnier & Weaver 2010) it is important to note that the primary aim of the phenomenographic analysis in this research was to describe the categorically different ways in which supervisors varied in their conception and their approach. In terms of pragmatic validity or the extent to which the results of this study have relevance to the intended audience (Åkerlind 2005; Trigwell 2006), in this case veterinary educational developers and supervisors of veterinary interns, it is the outcome space or resultant qualitative description of how supervisors vary in their conceptions and approaches that was particularly relevant. In this study further quantitative analysis (chi - square test and the phi coefficient) of the resultant outcome spaces was done to quantify the relationships between supervisors' conceptions and approaches. While it is relatively uncommon to use this type of quantitative analysis to support a phenomenographic approach this has been identified as a valuable addition in the methodology of such studies (Matthew, Taylor & Ellis 2010; Tight 2013).

Conduct of study

Data collection

Data for the initial investigation of supervisors' experiences of supervision was gathered through a survey that was administered during the 2007 Partners in Veterinary Education Conference. The aim of gathering this data was primarily to evaluate the teacher or supervisor experience and the results of this survey were subsequently presented at a DVM staff workshop in July, 2013. The supervisor evaluation surveys were provided in the attendees' conference satchels and completion of surveys was voluntary with data provided anonymously.

Data for the subsequent larger scale study was gathered through open ended surveys that were administered via the online survey software and questionnaire tool, Survey Monkey[®]. All veterinary intern supervisors were invited to participate by email. Within the email a link was provided to an online survey and participation was both voluntary and anonymous. In order to obtain a response rate sufficient to reveal significant differences between sub-groups in the sample population participants were offered the opportunity to enter a draw to win a veterinary textbook as a result of completing the survey. A separate online link was provided to enter the prize draw ensuring that no identifying features could be attached to the survey response and thereby retaining the anonymity of the respondent. Access to the online survey was made available for a period of 11 weeks. Follow up was done at the Partners in Veterinary Education Conference in July, 2011. Surveys were provided in the attendees' conference satchels and completion of the surveys was voluntary with data provided anonymously.

Phenomenographic analysis

Phenomenographic analysis of survey data was conducted in a series of steps that aimed to map the qualitative variation in the experience of veterinary placement supervisors. The first step involved Researcher 1 reading through all of the survey responses to identify an initial set of categories for supervisors' conceptions of learning outcomes (2007 survey) and conceptions of what supervision is about (2011 survey) and their approach to supervision. Responses to survey question 1 were used to identify the different categories describing supervisors' conceptions of learning outcomes (2007 survey) and conceptions of what supervision is about (2011 survey) and responses to survey question 2 were used to identify the different categories describing supervisors' approaches to supervision. Researcher 1 then analysed the structural variation of these categories independent of the survey responses. The next step involved regular meetings and discussion with all four researchers. These meetings were conducted to develop a stable set of categories and involved iteration between the categories and the survey responses. Categories of description were revised until a stable and final set of categories were developed. To test the communicability of the category descriptions a subset of 10 survey responses were tested by all of the researchers against the category descriptions.

The level of inter-researcher agreement was measured before and after the discussion. Finally Researcher 1 revisited all of the survey responses and the categories of description were used to classify the responses. Those responses that were either ambiguous or yielded little were put forward for further discussion with all researchers. Classification of these responses was finalised through consensus agreement amongst all researchers.

Validity and reliability

As with similarly designed phenomenographic studies this study used two types of validity checks, namely pragmatic and communicative validity checks (Åkerlind 2005). The pragmatic validity of a phenomenographic study is established if the results are valuable and provide useful insights to the intended audience (Åkerlind 2005). It is anticipated that the results of this study will form the basis of future educational support programmes that are made available to supervisors of veterinary interns. Furthermore these results would add to the growing body of phenomenographic research investigating work-based teaching and learning experiences specifically extending on the work of Matthew, Taylor and Ellis (2010), which investigated veterinary students' experiences of learning during the internship year. This will form the foundation for future studies looking more closely at the links between individual supervisors' experiences of supervision and their students' experiences of learning. Communicative validity was assured through the iterative process adopted in the analysis of the survey data. Discussions between all four researchers aimed to establish an interpretation of the survey data that was defensible to the intended audience, this audience being educational developers and supervisors of veterinary interns.

Reliability of this study was assured as the conduct of the study followed the methodological principles of similar phenomenographic studies, and reliability checks were employed to ensure the quality and consistency of results. As previously stated phenomenography is an interpretative qualitative research method and so an iterative process involving multiple researchers was employed to ensure reliability. Reliability checks commonly used in phenomenographic research include coder and dialogic reliability checks (Åkerlind 2005). Both were used in this study. Dialogic reliability was assured through the regular meetings that took place between all four researchers during which the interpretations of Researcher 1 were critiqued and

subsequent modifications were made to the categories of description. In the analysis of the teaching evaluation surveys, meetings were conducted every 2 weeks and dialogic reliability checks were performed over eight meetings. The dialogic reliability checks for the larger, 2011 data set were performed over 12 meeting sessions that were conducted 2 – 4 weeks apart. Final coder reliability checks were employed once a stable set of categories had been developed. A subset of 10 responses was independently coded by all four researchers and then discussed amongst the group. Measurements of inter-researcher agreement before and after discussion were recorded. A discussion of how the inter-researcher agreement levels were quantified is included in results chapters 4 and 5 in the sections titled 'Communicability of outcome spaces and inter-researcher agreement.' Previous phenomenographic research indicates that post discussion inter-researcher agreement levels of greater than 80% are considered acceptable reliability measures (Ellis et al. 2006; Matthew, Taylor & Ellis 2010; Trigwell, Prosser & Taylor 1994). Coder reliability checks were also performed on a number of occasions during analysis before a stable set of categories had been developed. These checks were done to inform revisions to the outcome spaces and as such they can also be considered as dialogic reliability checks.

Quantitative analysis

Results of the qualitative analyses conducted in this research yielded outcome spaces that were subsequently used for further quantitative analysis. Quantitative analysis was designed to both quantify the number of responses for each category and determine the nature of the relationships between supervisors' conceptions and approaches in each stage of this research. Following the completion of phenomenographic analysis all survey responses were classified for both their conception and approach. The frequency of distribution was calculated for each category. These results were then aggregated according to where they fell across the qualitative divide. That is, the frequencies of distribution were calculated for conceptions that were either fragmented or cohesive and approaches that were supervisor focused / transmission or student focused / conceptual development. The chi square (χ^2) tests were then performed to establish whether the quality of supervisors' conceptions and approaches were related. That is, whether a fragmented conception of learning outcomes and what supervision is about, were

related to a supervisor focused / transmission approach and whether a cohesive conception of learning outcome and what supervision is about were related to a student focused / conceptual development approach. The phi coefficients (Φ) were then determined as the Φ value provides a measure of effect size, with Φ values close to + / - 1.00 indicating a close association between the two variables. These values were calculated to establish the strength of the relationship between the conceptions of learning outcomes and the approach to supervision, and conceptions of what supervision is about and the approach to supervision.

Summary

Research conducted for this thesis used methods that were designed to capture the categorically different ways that supervisors' conceive of and approach their supervision. Further to this quantitative analysis of these qualitative results was carried out to describe relationships between aspects of supervisors' experiences; between supervisors' conceptions and approaches. The investigations reported in this thesis were conducted in two stages with data collected from two separate surveys. The first survey was administered in 2007 as a teaching evaluation exercise and the second survey, administered in 2011 was designed to more broadly examine supervisors' experiences of supervision.

Both stages of research discussed in this thesis used analogous research methods. The context of the teaching environment is WBL in the VSIP for both sets of data. Moreover an equivalent and matching conduct of study was used to analyse both the preliminary teaching evaluation survey and the subsequent broader survey administered to all supervisors of veterinary student interns. As outlined in this chapter there are nuanced differences between both stages of research, namely the purpose of the data collected for the two different surveys, the methods of collecting the data and the focus of the question probing an understanding of supervisors' conceptions.

This chapter has described the procedures used to analyse the data collected from both surveys as well as the reliability and validity checks that are consistent with other phenomenographic studies conducted from a similar perspective. The results of both stages of this research are outlined in the following two chapters. Chapter 4

discusses the results of the preliminary teaching evaluation investigation and Chapter 5 discusses the results of the subsequent larger study investigating supervisors' experiences.

Chapter 4

Results of a preliminary investigation of supervisors' experiences of supervision

Introduction

In this chapter, the results of a preliminary study, conducted using surveys administered for a teaching evaluation exercise during the 2007 Partners in Veterinary Education Conference, are discussed. The results of this study arise from the phenomenographic analysis of the 39 responses to an open ended survey administered to supervisors of final year veterinary interns. In this chapter, the varying ways that supervisors conceive of student learning outcomes, and the varying ways that supervisors approach their supervision, are revealed. Relationships between supervisors' conceptions and approaches were further investigated through quantitative analysis of the qualitative data. Results of the quantitative analysis of the qualitative data are also included in this chapter.

The components of the experience of supervision under investigation were the 'what' and the 'how'. The 'what' component investigated supervisors' conceptions of what students would learn during their intern rotation. Responses to this question were categorised on the basis of the structure of this awareness and the overall meaning or focus of this conception. The 'how' component investigated supervisors' approaches to their supervision. Categories of description for supervisors' approaches to supervision were developed from an analysis of supervisors' strategies and the intent driving these strategies. The resultant outcomes spaces for both supervisors' conceptions of learning outcomes and their approaches were revealed. These outcome spaces included the minimum number of varying ways that supervisors conceive of learning outcomes and the minimum number of ways that they approach their supervision. These categories are ordered in a logical hierarchy of increasing complexity.

Qualitative analysis identified four distinct, empirically inclusive hierarchical categories of description for both conceptions of what students should learn and supervisors' approaches to supervision. A qualitative difference was identified between categories B and C for both conceptions and approaches.

The categories of description are summarised below.

Categories of description for supervisors' conceptions of learning outcomes

- A: Collection of individual and isolated veterinary competencies
- B: Normative or standard veterinary practice defined by the supervisor
- C: Responsive veterinary practice
- D: Autonomous veterinary practice

Categories of description for supervisors' approaches to supervision

- A: Skills and information transmission
- B: Adaptive transmission of concepts and skills
- C: Active engagement in veterinary practice
- D: Supported responsibility in veterinary practice

Once outcome spaces for both supervisors' conceptions and approaches were finalised all survey responses were classified (see Appendix C). The frequency of distribution was calculated for each category and these were then aggregated to show where they fell across the qualitative divide; that is aggregated frequencies were calculated for conceptions that were either fragmented or cohesive and approaches that were transmission / supervisor focused or conceptual development / student focused.

The relationship between supervisors' conceptions and their approaches was investigated using the chi square (χ^2) test and the strength of this relationship was determined using the phi coefficient (Φ).

Reliability was assured through a determination of the communicability of the category descriptions. Once a stable set of categories were developed subsets of 10 responses for both conceptions and approaches were independently coded by all four researchers. Before and after discussion classifications were recorded and inter-researcher agreement levels determined.

Categories of description for supervisors' conceptions of learning outcomes

Qualitative phenomenographic analysis of survey data revealed an outcome space of four, ordered categories of description for supervisors' conceptions of learning outcomes (Table 4.1). Data was collected from responses to the following survey question:

During your supervision of final year students, what are you intending for them to learn? What are the main things you intend them to get out of your supervision?

For conceptions of learning outcomes, Categories A and B represent fragmented conceptions as the focus is on parts or structural elements of the phenomenon. Categories C and D are qualitatively different and are described as being relational and cohesive. That is there is a focus on the experience of veterinary practice as it relates to the discipline of professional practice in a wider context. The categories are ordered from less to more complete conceptions of what students should learn with conceptions in Category D representing the most complete of all the conceptions (Figure 4.1).

Referential Aspect: Focus of learning outcomes

		Competencies are given - unproblematic		Competencies are constructed - problematic	
		Isolated veterinary competencies	Normative veterinary practice	Responsive veterinary practice	Autonomous veterinary practice
Structural Aspect: How the outcome of learning is constructed	Multistructural / Fragmented	A	B		
	Relational / Cohesive			C	D

Figure 4.1. Categories of description for supervisors' conceptions of learning outcomes

Table 4.1. Outcome Space: Supervisors' conceptions of learning outcomes

Category	Referential aspect (focus of learning outcomes)		Structural aspect (how the outcome of learning is constructed)		
		Meaning		Internal horizon	External horizon
D	Competencies are constructed - problematic	Autonomous veterinary practice	Relational / Cohesive	Professional and personal development entwined to enable autonomous veterinary practice. Independent practice and taking on the responsibility of veterinary practice is emphasised.	Delimited to autonomous veterinary practice.
C		Responsive veterinary practice		Complex interrelationship between skills, knowledge and context emphasised. This complex relationship is a dynamic one and responses to it need to be adapted in response to individual variation.	Delimited to tailoring veterinary practice in response to contextual variation. No recognition of a commitment to personal and professional autonomy.
B	Competencies are given - unproblematic	Normative veterinary practice	Multi-structural / Fragmented	Individual competencies related to the context of veterinary practice as a whole. Structure of veterinary practice is defined, normative and predetermined.	Delimited to normative or standard veterinary practice. Does not include an understanding of contextual variation and no links made to the wider context of professional practice.
A		Isolated veterinary competencies		Collection of individual, isolated competencies that are both technical (e.g. pregnancy testing, placement of IV catheters) and non-technical (e.g. team work, communication skills). Competencies are relevant but are listed independently. Competencies to be learned are a given and are those identified by the supervisor as being important.	Delimits learning outcomes to isolated competencies. No links are made to case management or practice as a whole. No indication of adaptation in response to variation in context

CATEGORY A: Isolated veterinary competencies

Referential aspect

Learning outcomes in Category A are conceived to be a collection of individual veterinary competencies that are not connected or related to one another or to the overall context of veterinary practice. This category is fragmented or multistructural. That which is learned is a given or is taken for granted. It is external to the student. The focus is on the acquisition of isolated and individual veterinary competencies that the supervisor presents to the student.

Structural aspect

Internal horizon: The internal horizon of this category includes individual, isolated veterinary competencies. These competencies include both technical, such as pregnancy testing and the placement of intravenous catheters, and non-technical competencies such as communication skills and team work. No links are made between these competencies and they are viewed in isolation.

Animal handling skills

Consulting skills – communication with clients

Surgery skills

Management skills in practice (Supervisor 34)

Although some responses include 'to get an idea of what mixed practice involves and how a mixed practice operates' Supervisor 8, 'understanding of clinical practice' Supervisor 31 and 'how practice works' Supervisor 32 there is no indication that this involves a logical connection to the technical and non-technical competencies listed. Rather these comments are detached and discrete.

How to approach and communicate with clients

How to perform a clinical examination

How to pregnancy test cattle

To get an idea of what mixed practice involves and how a mixed practice operates

And by no means least, the ability to make a decision (Supervisor 8)

Competencies to be learned are conceived to be a given. They are defined by what the supervisor recognises as important. The outcome of learning is something which is defined by the supervisor.

External horizon: The external horizon of this category delimits learning to isolated competencies. No links are made to case management or to veterinary practice as a whole. Adaptation in response to variation in context is not at the foreground of awareness in this category. There is no indication of the outcome of learning to include personal or professional autonomy.

CATEGORY B: Normative veterinary practice

Referential aspect

The meaning or focus of Category B conceptions is that of a defined experience of veterinary practice. Individual veterinary competencies are seen to be related to the overall structure of veterinary practice and are not viewed in isolation. The overall structure is that of standard or normative veterinary practice as dictated by the supervisor. Although relationships are made between individual competencies and the structure of veterinary practice it is still classified as fragmented or multistructural. That which is learned is a given or taken for granted. It is unproblematic and is external to the student. At the forefront of awareness are competencies in relation to veterinary practice as prescribed by the supervisor. There is no indication that this particular experience of veterinary practice is related to the wider context of the discipline of professional practice in the world or to personal autonomy.

Structural aspect

Internal horizon: The internal horizon of this category includes both technical and non-technical competencies and links are made to the context of veterinary practice as a whole. Within the structure of defined veterinary practice logical relationships are made between individual skills that are both technical and non-technical and the overall context of case management and veterinary practice.

I aim to improve their understanding of veterinary practice as a whole. What client expectations are, how to work up a case, how to handle situations with patients, clients and work mates. As a secondary is improving their practical skills – animal handling, venipuncture, surgery etc. (Supervisor 6)

Real world perspective on case management (Supervisor 24)

The concept of veterinary practice as a whole is very much a 'one size fits all' conception. Concepts to be learned are a given and are primarily those identified by the supervisor as being important.

Initially, an overview of how a small animal practice runs, including understanding the roles of all staff members. I expect them too (sic) orientate themselves with the practice layout, and basic protocols, and of course, all staff..... Main things to get out of supervision? – integrate practical skills with commonsense. Be motivated and empathetic when talking to clients. Have an idea of business needs in general. (Supervisor 35)

At the forefront of the awareness in this category is that students gain a so called 'real world perspective'. Although there is an indication that students learn to use or apply their knowledge and skills, this is done in a formulaic way.

How to be a professional

How private practice works

Dealing with clients

How to use their knowledge (Supervisor 5)

External horizon: The external horizon delimits this category to prescriptive practice in which context is important and is linked to an aggregate of competencies. There is no indication of adaptive expertise when linking individual competencies to the context of veterinary practice. Contextual variation is not recognised within this category. That is, there is no recognition of the need to adapt to limitations in individual ability, individual client preference and expectation, cost constraints, economic factors such as financial pressures and social factors such as the isolation that may be associated with living in isolated rural communities.

CATEGORY C: Responsive veterinary practice

Referential aspect

The meaning of this category is that the outcome of learning constitutes an understanding of the complex and variable nature of veterinary practice. In this category learning involves the student responding to or adapting to the variable nature of veterinary practice. This category is described as being cohesive as the focus is on veterinary practice in relation to the discipline of professional veterinary practice. That is, there is a focus on understanding or making sense of the practice experience which involves relating the experience to an understanding of a wider context. Learning outcomes include well developed graduate attributes beyond skills and knowledge to include adaptive expertise such as recognising one's own limitations and responding to these as well as social and ethical elements such as adaptation to suit client preference or cost constraints. Knowledge is constructed within the individual student and learning is essentially problematic.

Structural aspect

Internal horizon: The internal horizon of this category is a complex interrelationship between skills, knowledge and context. This complex relationship is a dynamic one and leads to contextual variation. The context of veterinary practice can be influenced by factors such as financial constraints, limitations in own ability and client preferences.

Adaptation to variation in context is at the foreground of awareness in this category. This category is similar to B in that it acknowledges the relationship between skills, knowledge and the context of veterinary practice but now there is recognition that this relationship is complex, dynamic and can vary. Adaptation may involve self directed research which can inform response or approach or it can support generalisations.

Common conditions seen and how to deal with them. To listen to the client, take a history, ask appropriate questions, record case notes in a way that others can continue with the case. Use available research resources for cases seen. How to interact with the team and relate well

to them. Experience variety of client expectations and how to adapt to this. (Supervisor 30)

Primarily to use the knowledge they have undoubtedly accumulated to solve the problems they will see in the practice, through integrating that knowledge with the clients' needs / limitations. (Supervisor 23)

Better understanding of what is possible, both in medical and surgical management and what the LIMITS are for a vet in general practice. (Supervisor 7)

In this category there is awareness that learning outcomes include higher order affective attributes. This refers to those skills that describe how a student reacts emotionally to the experience of veterinary practice. This includes understanding of elements such as the client animal bond, the impacts of living and working in a rural environment and recognising and valuing the emotional responses of clients.

Appreciation of normal small animal practice life – pressures, joys, limitations; understanding of importance of relations with clients – their expectations, frustrations, importance of relations and working with other staff. (Supervisor 16)

Enjoy country lifestyle and rapport with farmers.

Learn to understand and deal with client/animal bond. (Supervisor 21)

Understanding clients and sympathetic approach to their requirements regarding their pet's treatment. (Supervisor 4)

External horizon: The external horizon of this category delimits it to tailoring veterinary practice in response to contextual variation. Adaptation to variation is at the foreground of this conception. Subsumed within this are individual competencies that are both technical and non-technical and their links to the context of veterinary practice as a whole. This conception does not include recognition that learning involves a commitment to personal and professional autonomy.

CATEGORY D: Autonomous veterinary practice

Referential aspect

This category means that the outcome of learning is to engage in veterinary practice independently. In this category learning involves personal and professional development to the point where the student is brought to a state of personal and professional autonomy. That is, the student has the capacity to work independently and this is informed by an openness and ability to meet new challenges.

Like Category C conceptions in this category are described as being cohesive as the focus is on veterinary practice in relation to the discipline of professional veterinary practice. At the foreground of awareness in this category is the development of personal and professional autonomy. Knowledge is constructed within the individual student and learning is problematic.

Structural aspect

Internal horizon: The internal horizon of this category is similar to C in which there is a complex and dynamic relationship between skills, knowledge and context. Contextual variation is recognised and students learn to adapt to this and respond appropriately. As in Category C conceptions also includes affective attributes.

At the foreground of awareness in this category is that learning involves the development of an autonomous state. In this category the outcome of learning is for the student to make independent and informed professional decisions. This involves taking custody of case management. Commitment to a response is a key aspect in the development of personal and professional autonomy and is indicated by students taking responsibility for cases, formulating treatment plans and thinking independently.

Experience being part of a team

Recognise the importance and value of the client-animal bond

Appreciate the importance of effective communication

Gain practical surgical experience

Apply the theory that they have learned to real life situations by having input into case management

*Appreciate how client service, proper fee charging, case follow up and taking responsibility are all part of working in a successful practice.
(Supervisor 40)*

*I want them to become proficient in routine tasks.....
I want them to learn to team build with all members of staff and to formulate plans and take responsibility for cases. I encourage them to learn about fee structures and practice management. (Supervisor 20)*

Subsumed within this conception is the contextual variation inherent in veterinary practice and the need to respond to this. In conception D the focus has now shifted to the need for students to be independent and autonomous. That is they make decisions, commit to them and take the responsibility that goes with this. Implicit in this is accountability.

External horizon: The external horizon of this category delimits this conception to autonomous veterinary practice. This conception includes well developed graduate attributes and is the most complete and inclusive conception of learning outcomes reported by the participants in this survey.

Categories of description for supervisors' approaches to supervision

Qualitative, phenomenographic analysis of the survey data revealed an outcome space of four, ordered, categories of description for supervisors' approaches to their supervision (Table 4.2). Data was collected from responses to the following survey question:

Survey Question: When you are supervising interns, how do you go about it? What things do you do? Why do you do these things?

For approaches to supervision categories A and B represent approaches that use supervisor focused strategies with the intent being to transmit either skills and information or skills and concepts. Some adaptation to student interest or objectives is indicated in category B responses but any adaptation that does occur is designed to fit the student into a framework predetermined by the supervisor. Categories C and D are qualitatively different to A and B with respect to strategies used and intent. Category C and D use student focused strategies and the intent is to engage the student in veterinary practice. The categories are ordered from less to more complete approaches to supervision with category D representing the most complete of all the approaches (Figure 4.2).

		Intention			
		Transmission		Conceptual Development	
		Skills and information	Skills and concepts with adaptation	Active engagement	Supported responsibility
Strategy	Supervisor focused	A	B		
	Student focused			C	D

Figure 4.2. Categories of description for supervisors' approaches to supervision

Table 4.2. Outcome Space: Supervisors' approaches to supervision

Category	Approach	Strategies	Intent
D	Supported responsibility in veterinary practice	Student focused	Support student autonomy with limited supervision tailored to need.
C	Active engagement in veterinary practice	Student focused	Actively engage the student in all aspects of veterinary practice.
B	Adaptive transmission of concepts and skills	Supervisor focused with some adaptation to student interest and objectives	Show or expose student to version of veterinary practice to assist students in acquiring coherent understandings and robust capacities.
A	Skills and information transmission	Supervisor focused	Transmission by showing or exposing student to a selection of competencies. These are to be passively received by the student and then reproduced.

CATEGORY A: Skills and information transmission

Intent

The intent in this category is to show or expose the student to the supervisors' version of veterinary practice and then to transmit information and skills to the student that the supervisor chooses to provide. The intent is mostly to transmit skills and information. Intent does not include transmission of cohesive understandings or capacities such as case management in which links are made to individual skills, knowledge and context.

Observe initially – follow nurses, receptionist, kennel attendant so they get an overview of how a hospital works.

Allow student to ask questions, encourage interaction with clients and pets. Re-perform examination. (Supervisor 36)

Most Category A responses did not answer the question, 'why do you do these things' and so the intent was unclear in some of these responses. For example the following response indicates that the supervisor approaches supervision with a focus on surgery, difficult cases and the financial considerations of a case which presumably are those elements that the supervisor perceives to be important for the student to learn.

They become the surgeon while I assist or observe.

Difficult case to work-up.

Financial considerations of a case. (Supervisor 27)

Strategies

Strategies largely focus on individual skills or competencies. Students are given opportunities to perform or do individual skills but there is no evidence of strategies that develop coherent understandings and capacities. Students reproduce or replicate isolated competencies following observation.

Largely depends on student enthusiasm / competency.

Consultations: students sit in and observe.

Surgeries: students either observe or assist or perform minor procedures under supervision.

Outside work: venipuncture, preg testing (cattle) under supervision. (Supervisor 8)

Supervisors in this category present their version of practice to be passively received by the student. Any discussions or questioning that does occur is designed to reinforce or redirect to what the supervisor identifies as being relevant and meaningful.

.....discuss expectations → ensure they're realistic. Refocus each time. (Supervisor 26)

There are no strategies indicating that the supervisor is adapting the experience to student preference. Supervisor 8 did indicate that approaches largely depended on student enthusiasm or competence. However this does not indicate that the student has any agency or influence in the construction of any part of the placement experience.

CATEGORY B: Adaptive transmission of concepts and skills

Intent

The intent in this category is to show or expose the student to the supervisors' version of veterinary practice in order to assist students in acquiring coherent understandings and robust capacities.

Try to link the learning of skills to the disease or animal management issues behind the procedure. (Supervisor 2)

In this category the supervisor is mindful of the fact that the student may have a particular interest or objective. In Category B responses the supervisors' intent indicates that they will adapt the experience to meet these interests or objectives. The experience is, however, predetermined by the supervisor and any adaptation that occurs is designed to fit the student into an existing framework or structure.

Ensure they understand the way we do things at our practice. (Supervisor 31)

Then we address their learning aims and attempt to expose them to situations which will help them fulfil outcomes. (Supervisor 9)

This depends on the student and the rotation. Early in the year it has often been a confidence building mission. I work out what they want to learn and then either directly supervise or delegate to other vets/nurses to teach and supervise. (Supervisor 38)

Strategies

Strategies in this category are designed to assist students in linking individual competencies in order to acquire a more complete experience of veterinary practice. Rather than just focusing on individual skills or competencies there is now a focus on acquiring coherent understandings and capacities.

Under supervision I try to allow the intern to do as much of the work as possible allowing for time constraints and welfare. (Supervisor 2)

In this category strategies are still supervisor focused. The student is still presented with the supervisor version of veterinary practice although unlike Category A there may be adaptation to student interests. In this category the supervisor makes an attempt to cover those areas of practice that the student is particularly interested in or wishes to focus on.

Ask their expectations (Supervisor 32)

Meet initially to build relationship and establish areas of interest and focus. Plan next meeting. (Supervisor 30)

A combination of formal sit down session of talking through their goals and objectives and how they are being met and informal sessions as opportunities present. (Supervisor 1)

There is no indication that students are active in constructing their own experiences to develop conceptions or capacities. Rather students are presented with veterinary practice as the supervisor sees it and then the student is allowed to participate.

What the student does is a replication of what is presented to them by the supervisor. There is no indication that the supervisor is supporting or encouraging any input from the student in the construction of the veterinary experience.

Allow them to watch / participate in consults → see how to deal with clients of all types...(Supervisor 19)

1st week they usually observe my approach to each case.....during this time they TPR and follow my examination..... 3rd and 4th week, I hope they will lead on history, exam, treatment and client communication re procedures. The intern has first go and I will oversight or talk them through but they must do it. (Supervisor 22)

CATEGORY C: Active engagement in veterinary practice

Intent

The intent in this category is to actively engage and involve students in aspects of veterinary practice so that the student may develop deeper understandings and robust capacities. In this category the intent is to encourage and support the development of student independence in the cognitive and psychomotor domain.

Try to encourage independent thought and enjoyment of the diversity (not fear). (Supervisor 4)

In this category supervisors intend to support and encourage students to analyse and evaluate elements of the experience in order to develop understanding. This is done through questioning and discussions, case review and researching cases.

Get them think about disease processes by questioning and discussion. (Supervisor 11)

Encourage them to read up so they understand why we do things. (Supervisor 6)

The intent is to engage students in a way that will encourage their development as a professional. This includes involving the students in many aspects of veterinary practice. Intentions in this category fall short of giving the student complete autonomy. This category remains developmental although most supervisors intend

to bring students to a state where they are prepared for entry into professional practice.

All this aimed to treat them as vets so they are well prepared to think and act for themselves, but with very open channels of communication so they feel supported and able to ask questions. (Supervisor 6)

Strategies

Strategies are largely student focused and students are encouraged to be actively engaged and involved in veterinary practice.

In Categories A and B the focus is on the student being allowed to take part in the experience of veterinary practice which is presented to them by the supervisor. Category C is qualitatively different as the focus is on involving the student in the construction of their experience of veterinary practice. There is a definite shift in this category to a more student centred approach.

Involve them in cases at all levels – nursing and practitioner. (Supervisor 4)

Intern is present for and involved in discussions with clients re their animals treatment. Intern is involved alongside nurses with daily observations and medication of hospitalised patients. (Supervisor 15)

Students are engaged and challenged to develop their understandings and capacities. They are encouraged to research cases, be active in case rounds, seek the opinion of others, formulate treatment plans and be involved in discussion and review of cases.

Get them to think about disease processes by questioning and discussion. (Supervisor 11)

Set them small tasks to research in the practice library about cases they are doing. (Supervisor 10)

Always explain what I am doing, pose issues for the student to consider, rationalise and even debate, after a consultation is over. (Supervisor 7)

*Get them to verbally explain what they are doing – keep us both happy.
(Supervisor 35)*

Apart from assisting with a variety of surgery, consultations and in house treatments interns are prompted to formulate plans of treatment, differential diagnosis. (Supervisor 37)

There is an indication that supervisors use strategies that are moving towards encouraging interns to practice in a way similar to that of a new graduate however strategies in this category fall short of encouraging students to engage in practice autonomously. For example, Supervisor 10 sets tasks for the intern to research which suggests a directive strategy. A student engaged in practice autonomously would still be encouraged to research but would know to do this and would not require that these tasks be set. That is, strategies in Category C do not require students to commit, be accountable for their actions or take on complete responsibility in the practice experience.

CATEGORY D: Supported responsibility in veterinary practice

Intent

The intent in this category is to support student autonomy with limited supervision that is tailored to need.

...carry out according to ability / confidence. (Supervisor 12)

Involved in cases as much as possible – give them cases to handle with direct supervision and guidance. (Supervisor 13)

This category is similar to Category C in that interns are actively engaged in many aspects of veterinary practice but in Category D there is a subtle shift towards a more holistic experience of veterinary practice as evidenced by quotes such as ‘we treat interns as new grad’ (Supervisor 3) and ‘I basically have them do my job’ (Supervisor 25). Supervisors in this category intend to move the student from developing deep understandings and robust capacities to supporting them in the action of performing autonomously as a vet.

Strategies

Strategies in this category encourage active student involvement in the practice experience. Strategies are student focused and they are similar to Category C in that students are engaged and challenged to construct their own understandings and robust capacities. In Category D however strategies have shifted towards supporting students in autonomous practice. For example in Category C students were asked to formulate treatment plans whereas in Category D students are encouraged to intellectually commit to their decisions in case management. That is, students are given opportunities to take on the responsibility of veterinary practice in a way similar to that of a new graduate in professional practice.

They are directly involved in monitoring and decision making of complex cases and have them commit to what they would do to handle a case then discussion of how I would handle it. (Supervisor 13)

Supporting student autonomy has been described as being humanistic and this in turn is likely to facilitate humanistic beliefs, behaviour and psychological well being in the students (Williams & Deci 1998). In essence supporting student autonomy is the ultimate form of a student centred approach to education. That is, the student is provided with a meaningful rationale or guide to veterinary practice and is then given choice and opportunities to practice independently in a supportive environment. The following response to the question regarding approach to supervision has been transcribed *in toto* as it articulates this approach most completely.

B4 start

- *create a roster/timetable based on a new graduate roster 4 weeks prior to start date.*
- *Run down general dress expectations, practice philosophy; staff and client expectations.*

1st Week

- *Initial days have them shadow myself to understand general consulting procedures and surgical protocols → Towards end of week allowing independent supervised initial consults and procedural duties.*

2nd Week and 3rd Week

- allocation of medical and surgical cases to student to formulate plans and carry out according to ability / confidence.

Why? Best way I see to expose the students to the unpredictable problems they will face and develop their own plan to deal/discuss them. (Supervisor 12)

In this category there is range in the level of support given to students. Some responses indicated support for autonomous practice but little detail was provided on how this would be offered. For example Supervisor 25 states that 'I basically have them do my job. Where they can perform what I would be doing (if they weren't there) I allow them.' This supervisor goes on to say that 'Overall I provide a "hands on" guide to mixed practice.' Ultimately a category D approach was determined and agreed by all four researchers to be at the foreground of this particular response.

Analysis of the relationship between supervisors' conceptions of learning outcomes and approaches to supervision

Once outcome spaces were developed for supervisors' conceptions of learning outcomes and supervisors' approaches to supervision all of the survey responses were classified (see Appendix C). Table 4.3 shows the distribution of supervisor conceptions and approaches to supervision ($n = 39$). Over half of the supervisors (59%) reported fragmented conceptions of learning outcomes but a slightly lower proportion reported using transmission / supervisor focused approaches (51%).

Table 4.3. Distribution of supervisor conceptions of learning outcomes and approaches to supervision

Supervisor conception		n	%	Supervisor approach		n	%
Fragmented	A	10	26	Transmission / Supervisor focused	A	7	18
	B	13	33		B	13	33
Cohesive	C	12	31	Conceptual development / Student focused	C	14	36
	D	4	10		D	5	13
Total		39	100	Total		39	100

Relationships between supervisors' conceptions and their approaches were investigated using the chi square (χ^2) test and the strength of this relationship was determined using the phi coefficient. Table 4.4 shows the relationships between conceptions and approaches. In this table O is the observed frequency and E is what would be expected if the results were due to chance.

Chi square test

The chi square test is used to determine whether the two variables (supervisor conceptions and supervisor approaches) are related. The null hypothesis is that the observed results are due to chance.

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Where O = Observed frequencies and E = Expected frequencies

Table 4.4. Relationships between supervisors' conceptions and approaches to supervision

Supervisor Conception	Supervisor Approach		Total
	Transmission / Supervisor focused (A and B)	Conceptual development / Student focused (C and D)	
Fragmented A and B	O = 18 (46%) E = 11.79	O = 5 (13%) E = 11.21	23
Cohesive C and D	O = 2 (5%) E = 8.21	O = 14 (36%) E = 7.79	16
Total	20	19	39

$$\begin{aligned} \chi^2 &= \frac{(18-11.79)^2}{11.79} + \frac{(5-11.21)^2}{11.21} + \frac{(2-8.21)^2}{8.21} + \frac{(14-7.79)^2}{7.79} \\ &= 3.27 + 3.44 + 4.70 + 4.95 \\ &= 16.36 \end{aligned}$$

A significance level of 0.001 was chosen – that is, there is a probability of < 1 in 1000 that the dependent measure is due to chance only. The χ^2 value with one degree of freedom and a $p < 0.001$ (there is a less than 1 in 1000 chance that the results are due to chance) is greater than 10.83 so therefore the null hypothesis (H_0) can be rejected.

Phi coefficient

$$\chi^2 = n\Phi^2$$

Φ is the phi coefficient and reveals the degree or strength of relationship between the two variables. That is, Φ provides a measure of the effect size. A Φ value of 0.10 indicates a small effect, 0.30 a medium effect and 0.50 a large effect (Gravetter & Wallnau 2005). A Φ value close to + / - 1.00 indicates a close or strong association between the two variables.

The results for this data analysis are:

$$n = 39, p < 0.001, \Phi = 0.65$$

The Φ value is 0.65 indicating a strong association between the two variables, supervisor conceptions and supervisor approaches.

Communicability of outcome spaces and inter-researcher agreement

As discussed in Chapter 3 phenomenographic analysis for this study was conducted using four researchers. These researchers are listed below:

Researcher 1 – Ingrid van Gelderen

Researcher 2 – Susan Matthew

Researcher 3 – Rosanne Taylor

Researcher 4 – Graham Hendry

The communicability of the outcome spaces and levels of inter-researcher agreement for supervisors' conceptions of learning outcomes and for supervisors' approaches are provided in Tables 4.5 and 4.6 respectively. Agreement levels for supervisors' conceptions of learning outcomes before discussion were 80% or more between Researcher 1 and the other researchers. A 100% inter-researcher consensus agreement was reached after discussion for all 10 responses. Agreement levels for supervisors' approaches before discussion were 70% or more between Researcher 1 and the other researchers. A 100% inter-researcher consensus agreement was reached after discussion for all 10 responses. This meets the requirements for phenomenographic research in which post discussion inter-researcher agreement levels of 80% or more are considered acceptable reliability measures (Ellis et al. 2006, Matthew, Taylor & Ellis 2010; Trigwell, Prosser & Taylor 1994).

Table 4.5. Communicability of outcome space for supervisors' conceptions of learning outcomes and inter-researcher agreement.

Supervisor ID number	Researcher 1	Researcher 2		Researcher 3		Researcher 4		Consensus Agreement
		Before discussion	After discussion	Before discussion	After discussion	Before discussion	After discussion	
1	B	B	B	B	B	B	B	B
2	B	C	B	C	B	B	B	B
3	C	C	C	A	C	C	C	C
8	A	A	A	A	A	A	A	A
12	D	D	D	D	D	D	D	D
15	C	C	C	C	C	C	C	C
34	A	A	A	A	A	A	A	A
35	B	B	B	B	B	B	B	B
38	C	D	C	C	C	C	C	C
40	D	D	D	D	D	C	D	D
Percentage Agreement		80%	100%	80%	100%	90%	100%	100%

Table 4.6. Communicability of outcome space for supervisors' approaches to supervision and inter-researcher agreement.

Supervisor ID number	Researcher 1	Researcher 2		Researcher 3		Researcher 4		Consensus Agreement
		Before discussion	After discussion	Before discussion	After discussion	Before discussion	After discussion	
1	B	B	B	B	B	B	B	B
4	C	C	C	C	C	C	C	C
9	B	B	B	A	B	B	B	B
11	D	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C
19	A	A	B	B	B	C	B	B
20	D	D	D	D	D	D	D	D
24	B	B	B	B	B	B	B	B
27	A	A	A	A	A	D	A	A
36	A	A	A	A	A	A	A	A
Percentage agreement		90%	80%	70%	80%	70%	80%	100%

Chapter 5

Results of a large scale investigation of supervisors' experiences of supervision

Introduction

This chapter provides the results of a large scale study conducted using surveys administered in 2011 to all supervisors of University of Sydney, final year veterinary interns. Results of this study arise from the phenomenographic analysis of the final data set of 117 responses to the open ended survey. This chapter reveals supervisors' varying conceptions of what supervision is about and the varying ways that supervisors approach their supervision. Relationships between supervisors' conceptions and approaches were further investigated through quantitative analysis of the qualitative data. Results of the quantitative analysis of the qualitative data are also included in this chapter.

As described in Chapter 4 the components of the experience of supervision under investigation were the 'what' and the 'how'. In order to generalise and expand an understanding of supervisors' conceptions, this study broadened the 'what' component of the experience from the preliminary study and designed this study to investigate supervisors' conceptions of what supervision is about rather than simply focusing on their conceptions of learning outcomes. As with the preliminary investigation responses to the 'what' question were categorised on the basis of the structure of this awareness and the overall meaning or focus of this conception.

The 'how' component investigated supervisors' approaches to their supervision. In the large scale study the question exploring approaches did not change from that administered in the preliminary investigation. Categories of description for supervisors' approaches to supervision developed from an analysis of supervisors' strategies and the intent driving these strategies. The resultant outcome spaces for both supervisors' conceptions of what supervision is about and their approaches are revealed. These outcome spaces capture the minimum number of categorically different ways that supervisors conceive of what supervision is about and the minimum number of ways that they approach their supervision. These categories are ordered in a logical hierarchy of increasing complexity.

Categories of description are summarised below.

Categories of description for supervisors' conceptions of what supervision is about

- A: Imposed acquisition
- B: Imposed application
- C: Collaborative development
- D: Scaffolding autonomy

Categories of description for supervisors' approaches to supervision

- A: Skills and information transmission
- B: Adaptive transmission of concepts and skills
- C: Active engagement in veterinary practice
- D: Supported responsibility in veterinary practice

Once outcome spaces for both supervisors' conceptions and approaches was finalised all survey responses were classified (see Appendix D). The frequency of distribution was calculated for each category and these were then aggregated to show where they fell across the qualitative divide; that is aggregated frequencies were calculated for conceptions that were either fragmented or cohesive and approaches that were transmission / supervisor focused or conceptual development / student focused.

The relationship between supervisors' conceptions and their approaches was investigated using the chi square (χ^2) test and the strength of this relationship was determined using the phi coefficient (Φ).

Reliability was assured through a determination of the communicability of the category descriptions. Once a stable set of categories were developed subsets of 10 responses for both conceptions and approaches were independently coded by all four researchers. Before and after discussion classifications were recorded and inter-researcher agreement levels determined.

Those responses that remained difficult to classify were reviewed by all researchers once a stable set of categories was developed. These responses were ambiguous

with respect to allocating the response to a particular category. In some cases the respondent did not clearly answer the question asked and some provided minimal detail. Classification of these responses following inter-researcher discussion is provided in Appendices E and F.

Supervisors' conceptions of what supervision is about

The investigation of supervisors' conceptions of what supervision is about was conducted using data collected from responses to the following survey question:

What do you think supervision of final year interns is about?

All responses to the question 'What do you think supervision of final year interns is about?' indicated that supervision is about providing an experience of veterinary practice in the 'real world'. There is recognition that WBL gives students an opportunity to experience veterinary practice beyond that which can be provided in an academic university environment. Whilst this was consistently identified across most of the responses phenomenographic analysis sought to identify the variation in supervisors' conceptions of what supervision is about.

Analysis of the responses resulted in an outcome space that described the variation in supervisors' conceptions as well as the structural relationships between the varying ways in which supervision is conceived. The outcome space includes the minimum number of categories that describe the varying ways that supervision is conceived. The categories of description for conceptions are logically and empirically ordered in an inclusive hierarchy (Åkerlind 2005; Marton & Booth 1997; Matthew, Taylor & Ellis 2010).

Analysis of the responses was based on identifying both the focus or referential aspect of supervisors' awareness of what supervision is about as well as the structural nature of this awareness. The structural aspect of the supervisors' awareness involves describing the different parts of this awareness, how these parts relate to one another and how this relates to the whole phenomenon of what supervision is about (Marton & Booth 1997; Matthew, Taylor & Ellis 2010). Essentially the structural aspect describes how the focus of what supervision is about is put together or constructed.

Qualitative analysis identified four different categories of description for supervisors' conceptions of what supervision is about. The categories of description are logically related and are ordered from less to more complete with Category D representing the most sophisticated of all the conceptions. The conceptions form a logically and empirically inclusive hierarchy as structural elements included in Categories A and B can be found in Categories C and D. A qualitative shift was identified between Categories B and C.

The key variation in the referential aspect for conceptions of what supervision is about is described in terms of whether the experience of veterinary practice is imposed or whether it is constructed within the individual student (Martin et al. 2000, Patrick 1992) (see Figure 5.1). In Categories A and B veterinary practice is imposed. It is a given and is external to the student and unproblematic. In Categories C and D veterinary practice is constructed within the individual student. It is not a given and is problematic.

The qualitative shift in structural variation for the conceptions of what supervision is about, is described as being from multistructural for Categories A and B to relational for Categories C and D (Biggs & Collis 1992, Martin et al. 2000) (see Figure 5.1). In Categories A and B supervision is multistructural as the focus is on individual but relevant elements of veterinary practice that are external to and disconnected from the professional development of the student. There is no indication that these elements of veterinary practice are integrated with the professional development and autonomous practice of the individual student. The supervisor is in the foreground of these categories. These categories are described as fragmented as they represent a limited awareness of what supervision is about (Crawford et al. 1994; Ellis et al. 2006; Marton & Booth 1997; Matthew, Taylor & Ellis 2010).

In Categories C and D, supervision is relational as the focus is on relevant elements of veterinary practice that are integrated with the students' own understandings and professional development. There is evidence of collaboration between supervisor and student in constructing the learning experience and the experiences of veterinary practice are integrated with the professional development of the student and autonomous practice. The student is in the foreground of these categories. Categories C and D are described as cohesive as they represent a more complete

and complex awareness of what supervision is about (Crawford et al. 1994; Ellis et al. 2006; Marton & Booth 1997; Matthew, Taylor & Ellis 2010).

Referential Aspect: Focus of what supervision is about

		Veterinary Practice is imposed		Veterinary Practice is constructed	
		Imposed Acquisition	Imposed Application	Collaborative Development	Scaffolded Autonomy
Structural Aspect: How the experience of supervision is constructed	Multistructural / Fragmented	A	B		
	Relational / Cohesive			C	D

Figure 5.1 Categories of description for supervisors' conceptions of what supervision is about

Categories of description for supervisors' conceptions of what supervision is about

Qualitative phenomenographic analysis of survey data revealed an outcome space of four, ordered categories of description for supervisors' conceptions of what supervision is about (Table 5.1).

Table 5.1. Outcome Space: Supervisors' conceptions of what supervision is about

Category	Referential aspect (focus of supervision)		Structural aspect (how supervision is achieved)		
		Meaning		Internal horizon	External horizon
D	Veterinary practice is constructed	Scaffolding Autonomy	Relational / Cohesive	Engagement with the student to foster their combined professional and personal development. The capacity to engage autonomously with veterinary practice is emphasised. Supervision is seen as problematic and is focused on how the experience is constructed within the individual student.	Delimited to scaffolding autonomous veterinary practice.
C		Collaborative development		Collaboration with the student and tailored supervision to engage students in the fundamentals of professional practice. The interrelationship between student skill and knowledge and the context is emphasised. Supervision is seen as problematic and is focused on how the experience is constructed within the individual student.	Delimited to collaboration and tailored supervision which engages student in fundamentals of professional practice. It remains developmental and there is no recognition of a commitment to supporting student autonomy.
B	Veterinary practice is imposed	Imposed application	Multi- structural / Fragmented	Facilitation of the application of skills and knowledge in a work-based environment. Application is in context and related to a standard or pre-determined version of veterinary practice that is supervisor directed although there may be some adjustment to student variation. Supervision is seen as unproblematic and external to the student. It is directive and supervisor focused.	Delimited to facilitating the application of skills and knowledge in normative or standard experience of veterinary practice. It is not about a collaborative relationship between the supervisor and student. Supervision is not about the student constructing the experience and is not seen as problematic.
A		Imposed acquisition		Acquisition of relevant skills and knowledge through reproduction or exposure.	Delimits supervision to the acquisition of skills and knowledge. Supervision is not

				Supervision is about showing or exposing the student to elements of veterinary practice. Supervision is seen as unproblematic and external to the student. It is directive and supervisor focused.	tailored or adjusted to student variation and does not recognise existing student knowledge or skill. Supervision is not about the student constructing the experience and is not seen as problematic.
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CATEGORY A: Imposed acquisition

Referential aspect

Supervision is about giving students an experience of veterinary practice. This experience is one that is imposed by the supervisor. Students are exposed to an experience of veterinary practice that is predetermined by the supervisor or the nature of the placement.

Exposing to vet [animal] behaviour → problems seen, diagnosis and treatment. (Supervisor 12)

Some students have had limited life experiences, and this at least exposes them to the big wide world outside the hallowed halls. (Supervisor 36)

Exposure of students to applied aspects of clinical practice. (Supervisor 95)

Supervision is about providing an insight into a particular, well defined experience of veterinary practice and the student is the audience.

Give them an understanding of the way we operate. (Supervisor 73)

The focus is on the student acquiring the supervisors' perspective of a practice experience. This may include giving the student their perceptions of best practice and what this entails. The student is in essence a blank slate.

Structural aspect

Internal Horizon: In this category the conception of supervision is multistructural. The focus of supervision is on an experience of veterinary practice that is external to the student and the experience of supervision is one that highlights individual aspects of a veterinary practice experience that is both predetermined and supervisor focused. The student is the audience for supervisor expertise.

Give them an introduction into the field of veterinary science we work in. (Supervisor 118)

Supervision is about giving the student the supervisors' insights and an experience of veterinary practice. Students passively acquire knowledge, skills and insights in an unproblematic way. Supervision is about the demonstration of veterinary practice

and students are conceived to acquire any skill or knowledge through imitation or simply by being exposed to the practice experience.

Demonstrating best practice..... demonstrating best management of time.....exposure to a broad range of cases.....demonstrating good practice management. (Supervisor 19)

Giving insights and guidance into the required skills and attitudes needed for vet students to prepare to enter practice. (Supervisor 85)

External horizon: Category A delimits supervision to the acquisition of an experience of veterinary practice that is external to the student. Students may acquire skills and knowledge but there is no evidence that the student is bringing anything to the experience. Supervision is not about guiding students in the application or development of prior knowledge or skill.

In this category the experience of supervision is not about relating the rotation experience to the overall discipline of professional practice. Supervision is not collaborative and there is no evidence of student development in which students' understanding is integrated and related to the discipline of professional practice. Supervision is not about the construction of students' own experiences and there is no evidence of support of student autonomy.

CATEGORY B: Imposed application

Referential aspect

Supervision is about facilitating the application of students' knowledge and skill in an imposed practice environment. In Category B supervision is about providing a bridging experience between the theoretical academic environment of a university and the so called 'real world' of the supervisors' notion of veterinary practice. Like Category A the experience of veterinary practice is imposed on the student by the supervisor. As in Category A the supervisor remains in the foreground of the experience.

Preparing them for real-time general practice....Academic background to clinical cases is last– that's what Universities are for! (Supervisor 8)

Giving real life experience about work as a vet. (Supervisor 94)

Providing a useful bridging experience between academia and the realities of life and work as a veterinarian. (Supervisor 78)

The experience is seen as a transitional one in which students are prepared for veterinary practice in an environment that is presented to them by the supervisor. The student is seen to be an active participant but this occurs within a given supervisor directed construct of veterinary practice.

Supervision allows 'risk-free' participation of the novice and massage of an intern's approach from academic to pragmatic. (Supervisor 11)

Structural aspect

Internal Horizon: In this category, as in Category A, the conception of supervision is multistructural as the focus of supervision is on an experience of veterinary practice that is external to the student. Like Category A this experience highlights individual aspects of a veterinary practice experience. The construct of veterinary practice is defined and controlled by the supervisor although the student participates by doing what is directed by the supervisor.

Students generally need practical experience at applying what they know theoretically, and often don't necessarily have plenty of hands on animal experience yet. I am happy to try to give them the opportunity to have a go at things, after having first tried to clearly enunciate what is required and demonstrate if they are unfamiliar or unsure of what I am saying. (Supervisor 94)

Supervision is about facilitating the transition from academia to veterinary practice through the provision of practical experiences. In this category supervision is about controlled, directed instruction of interns who apply knowledge and skills as the supervisor directs.

Applying their theoretical skills into practical experience. (Supervisor 106)

It is acknowledged that the student already has theoretical knowledge and some skill and the intern experience is viewed as an opportunity to apply this in context.

Assisting with the transition between university (theoretical knowledge) and the workplace (practical knowledge and skills, application of theoretical knowledge). (Supervisor 116)

Application of skills and knowledge is conceived to be unproblematic. It is formulaic and the student is applying theory with the emphasis on that which the supervisor identifies as important for the student to learn. There is adjustment to the competency level of the student but tasks and expectations are still determined by the supervisor.

Establishing where their knowledge/skills are strong/weak and informing them about both....Show them how to apply their memorised/learnt knowledge and extrapolate. (Supervisor 75)

External horizon: Category B delimits supervision to facilitating the application of skills and knowledge in a defined version of veterinary practice. Although the student is applying knowledge and skill the practice experience is not internally constructed by the student but instead is prescribed or defined by the supervisor.

In this category supervision is not about the relationship between the supervisor and the student. There is no recognition that supervision involves engagement of the student in linking skills and knowledge to elements of professional practice. Supervision is not collaborative and there is no evidence that supervision is about scaffolding or supporting student autonomy. In this category supervision does not build the necessary skills for effective lifelong learning.

CATEGORY C: Collaborative development

Referential aspect

In Category C supervision is about the collaborative development of the student. As with Categories A and B, supervision is about mentoring to prepare students for life as a practitioner, but in this category there is a qualitative shift to a focus on the student. The student is now at the foreground of the experience.

Orient them in the profession...help the interns to know what they want to do. (Supervisor 1)

Supervision is about fostering a mutually beneficial environment for the student and the animal patient. (Supervisor 20)

The experience is not imposed on the student. Rather it is cooperative and there is a qualitative shift from being supervisor directed to supportive.

Supervision of veterinary interns is about supporting, teaching and experiencing working as a team in a veterinary hospital. (Supervisor 43)

I see it as an opportunity of letting interns 'fly the nest' while still in a kind of controlled environment. (Supervisor 67)

Structural aspect

Internal horizon: In this category the conception of supervision is relational as the focus of supervision is on an experience of veterinary practice developed or constructed within the student. Supervision is responsive and dependent on the students' interest and expertise. The focus of supervision is on the relationship between supervisor and intern. Supervision is supportive and developmental.

To encourage self confidence by showing and explaining that no one is perfect and that first principle medicine will find most answers... The intern taking the lead is of great importance. (Supervisor 68)

As much as anything we encourage the students to get involved with as many cases and procedures as possible so that their confidence grows. (Supervisor 86)

Supervision is about collaborating with the student to engage them in the fundamentals of professional practice. Students are involved and engaged in professional practice beyond knowledge and skill acquisition or application.

To help develop interns clinical skills and reasoning by actively discussing cases with clinicians. It also provides an opportunity for the supervisor to have to think about what they do and why they do it – to justify and critically evaluate their own work. (Supervisor 99)

In a practical sense, it gives the chance over an extended period of time.... to be involved in the daily workings of a veterinary hospital. The internship

program allows the prospective graduate to be involved in the constant balancing of the needs of the client, their budget, the difficulties with diagnostics in the veterinary world, appointment time pressure and workplace issues, in addition to needing to use their veterinary skills for the patient. (Supervisor 92)

The complex interrelationship between the students' skills and knowledge and the context is emphasised as it is in Category B but in Category C the relationship between skills, knowledge and context is seen as problematic. Students are not applying knowledge and skill in a formulaic way that involves imitation or supervisor direction. Through active involvement in the practice experience the student self manages and develops their skills and knowledge.

External horizon: Category C delimits supervision to collaboration with engagement of the student in the fundamentals of professional practice. This category remains developmental. Despite a focus on support and the relationship between supervisor and student there is no articulated commitment to staged support of student autonomy so it falls short of facilitating independent practice. Students are involved in the development of their own professional practice but in this category there is no evidence of support of the student's capacity to be responsible for professional and personal decisions.

CATEGORY D: Scaffolding autonomy

Referential aspect

Supervision is about scaffolding professional autonomy. This category takes a broader perspective of supervision beyond student skill development, clinical application and professional development. Supervision is about ensuring that the student has the capacity for successful independent practice.

Supervision of final year veterinary interns is about easing veterinary students into becoming veterinarians. It is about....providing limited responsibility so that students can begin to take on the role of the clinician. (Supervisor 102)

As in Category C the experience is not imposed by the supervisor and the focus is on the student. The student in Category D is at the foreground of the experience and

unlike Category C the student is changed as a result of the supervisor student interaction.

Structural aspect

Internal horizon: Supervision is about relating the discipline of veterinary practice to a wider context that involves taking a holistic, broader perspective in which the student is engaged as a prospective graduate or an existing colleague.

In this category supervision is about scaffolding self direction and responsibility with encouragement of independence and autonomy.

Each individual will be at a different stage and if not advanced enough to be given responsibilities with pets immediately in the clinic address these issues and teach them to become responsible and shape ongoing growth in themselves. (Supervisor 105)

Supervision is about fostering involvement and participation in a holistic practice experience in which professional and personal development is entwined. This involves elements such as encouragement of lifelong learning, work life balance and enthusiasm for the profession.

Giving students the confidence to practice their profession independently in the real world and to expose them to some techniques (rather than all science/knowledge) to be a life-long learner and to problem solve logically. (Supervisor 29)

It's also about showing how working has to be balanced with other things in life, hopefully again by example. It is about allowing them to do things, but this has to be juggled with their existing competence and experience, the client's expectations, but most of the well-being of the patient. (Supervisor 37)

As in Category C the relationship between skills, knowledge and context is seen as problematic. Students are challenged to construct their own experiences and develop the skills necessary for professional autonomy. This includes those skills necessary for independent practice which will sustain the student throughout their professional life. Examples of this include taking on the responsibility of case

management, making decisions independently, encouraging self directed enquiry and a commitment to life-long learning.

External horizon: Category D is delimited to the support or scaffolding of autonomous veterinary practice.

Supervisors' approaches to supervision

The investigation of supervisors' approaches to supervision was conducted using data collected from responses to the following survey question:

*How do you go about supervising final year interns? What things do you do?
Why do you do these things?*

Phenomenographic analysis of the responses to these questions was modelled on the studies of Trigwell, Prosser and Taylor (1994) and Martin et al. (2000) which investigated the varying ways in which university teachers approached their teaching. In this study analysis of the survey responses resulted in an outcome space that described the minimum number of categorically different ways that supervision is approached.

As supervision was not observed the approach to supervision was categorised from a second order perspective and this approach was constituted in terms of the strategies used; 'How do you go about supervising final year interns? What things do you do?', and their intentions; 'Why do you do these things?'

Qualitative analysis identified four different categories of description for supervisors' approach to supervision. Categories developed for supervisors' approaches are closely aligned to those revealed in the preliminary investigation discussed in Chapter 4. In the broader investigation responses to the approaches question mapped closely onto the outcome space described in Chapter 4 but a larger collection of data resulted in the modification of some details. As a result there are minor differences in the detail of category descriptions for supervisors' approaches to supervision.

The categories of description are logically related and are ordered from less to more complete with Category D representing the most sophisticated of all the approaches. The approaches form an empirically inclusive hierarchy as elements of strategies used in Categories A and B can be seen in the most complete approach in Category D. A qualitative difference was identified between Categories B and C. An intention to transmit is inconsistent with an intention to change student conceptions and so the hierarchy is empirically inclusive but not logically inclusive with regard to intentions (see Figure 5.2).

Supervisors' intentions ranged from a transmission intent seen in Categories A and B through to developing conceptions and supporting student autonomy seen in Categories C and D. In Category A the intention is to transmit skills or information to the student and in Category B the intention is to transmit a coherent experience of veterinary practice in which skills and knowledge are linked to the overall discipline. In Category C the intent is to actively engage and involve the student and in Category D the intent is to support student autonomy.

Supervisors' strategies ranged from being supervisor focused, seen in Categories A and B, through to being student focused as seen in Categories C and D. Strategies in Categories A and B focus on what the supervisor is doing, showing or presenting to the student. Categories C and D use strategies that focus on what the student is doing. The student is challenged to be engaged in veterinary practice and Category D has the most developed strategies in that active student involvement is encouraged in a way that resembles that of a new graduate.

		Intention			
		Transmission		Conceptual development	
		Skills and information	Coherent concepts and capacities	Active engagement	Supported responsibility
Strategy	Supervisor focused	A	B		
	Student focused			C	D

Figure 5.2. Categories of description for supervisors' approaches to supervision

Categories of description for supervisors' approaches to supervision

Qualitative phenomenographic analysis of survey data collected revealed an outcome space of four, ordered categories of description for supervisors' approaches to supervision (Table 5.2).

Table 5.2. Outcome Space: Supervisors' approaches to supervision

Category	Approach	Strategies	Intent
D	Supported responsibility in veterinary practice	Student focused	Support student autonomy with limited supervision tailored to need.
C	Active engagement in veterinary practice	Student focused	Actively engage the student in all aspects of veterinary practice to develop student conceptions.
B	Adaptive transmission of concepts and skills	Supervisor focused with some adaptation to student interest and objectives	Show or expose student to a version of veterinary practice to assist students in acquiring coherent understandings and robust capacities.
A	Skills and information transmission	Supervisor focused	Transmission by showing or exposing student to a selection of competencies. These are to be passively received by the student and then reproduced.

CATEGORY A: Skills and information transmission

Intent

The intent in this category is to transmit skills and / or information to the student. In Category A responses the supervisors' intent indicates they aim to show or expose the student to a version of veterinary practice that is predetermined and identified by the supervisor as being important and relevant.

To maximise students' exposure to condition / techniques that they may encounter in practice. (Supervisor 109)

The supervisor does not intend to transmit cohesive understandings or capacities such as case management in which links are made between individual skills, knowledge and context. In this approach supervisors intend to transmit individual components or aspects of veterinary practice identified by the supervisor as important for the student to learn.

I believe students need to be competent with basic stuff that they will be expected to be able to do from day 1 if I was employing them. (Supervisor 44)

Strategies

Strategies in this category are supervisor focused. Supervisors in this category present their version of practice to be passively received by the student. Strategies include showing a version of veterinary practice and demonstrating or showing individual skills or competencies. Students are given opportunities to reproduce or replicate isolated competencies following observation. There is no evidence of strategies that develop coherent understandings and capacities.

I talk to them, take them with me in my work routine in the field or office and ask them to copy me where possible. (Supervisor 32)

They follow the leads of me and my other vets. We set them tasks and give them supervision when needed and asked for. (Supervisor 44)

Any student involvement, discussions or questioning that does occur is designed to reinforce or redirect the student to what the supervisor identifies as being relevant and meaningful.

I show them a (simple for me that is) task and ask them to do it themselves (sic) next, which they can never do. I then ask them to for example take an xray which they can't do properly because they have never been taught to. I then point out that their xray is non diagnostic. At this point we are beginning to make progress. (Supervisor 79)

There are no strategies indicating that the supervisor is adapting the experience to the individual student. That is, there is no indication that the student has any agency or influence in the construction of any part of the placement experience.

CATEGORY B: Adaptive transmission of concepts and skills

Intent

Supervisors intend to transmit skills and concepts to the student. As in Category A the supervisor aims to show or expose the student to a version of veterinary practice that is predetermined by external demands and is identified by the supervisor as being important and relevant. The aim in this category is to transmit an experience of veterinary practice in which skills and knowledge are linked to the discipline of veterinary practice. This forms a more complete and coherent experience than that transmitted in Category A.

It is essential to expose them to the wider aspects of veterinary science. (Supervisor 38)

Use cases to demonstrate principles of vet medicine and application of those principles as having a 'real case' often crystallises their knowledge learnt at Uni. (Supervisor 17)

As in Category A the experience is predetermined by the supervisor and any adaptation that occurs is designed to fit the student into an existing framework or structure.

I do this to show how I approach and think about cases and how I do things. Practical advice on everyday occurrences. (Supervisor 16)

..they will get a better appreciation of what I think is required in the job. (Supervisor 58)

Why (I do these things) is because I believe vets need a very firm grounding in the basic anatomy, physiology and pharmacology of the animal. I emphasise going from First Principles a lot. Those have really not changed much. (Supervisor 25)

Strategies

As in Category A strategies in this category are supervisor focused. In Category B strategies are designed to assist students in linking individual competencies to acquire a more cohesive experience of veterinary practice. Rather than just transmitting individual skills or competencies the supervisor demonstrates a more cohesive experience of veterinary practice.

We try and teach a whole farm approach (lateral thinking) rather than dealing with one sick animal what are you going to do about the rest? (Supervisor 118)

In Category B the supervisor may adapt the placement experience in response to the supervisors' perception of student competency or to a particular student interest or objective. As with Category A the student is presented with the supervisor version of veterinary practice but in this category the supervisor may include those areas of practice that the student is particularly interested in or wishes to focus on.

Initial discussion with student with regard to what he/she would like to do / what perceived weaknesses or areas he / she would like to develop – i.e. what is it they would like to get from program to help themselves and relate this to what is possible and what it is uni supervisors expect. (Supervisor 101)

We take time to explain consultation technique and the reasons for our approach to any consultation then get them to watch it in practice. Then depending of the interns ability get them to participate in consultations by taking history and examinations and forming differential diagnosis before checking this and prescribing treatment or further intervention. (Supervisor 39)

Strategies are directed by the supervisor and although adapted to the individual needs of the student what the student does is largely a replication of what is expected at that particular practice or is driven by external demands such as

assessment. There is no indication that these strategies encourage the student to have agency in the construction of the learning experience. Student involvement, discussions or questioning that does occur is designed to reinforce or redirect the student to what the supervisor identifies as being relevant and meaningful.

*I start by following through with the organised meeting to outline students' goals, make sure they are realistic and discuss the communication task.
(Supervisor 3)*

There is no indication that students are active in constructing their own experiences to develop conceptions or capacities. Rather students are presented with veterinary practice as the supervisor sees it and then the student is allowed to participate.

CATEGORY C: Active engagement in veterinary practice

Intent

Supervisors intend to actively engage and involve students in aspects of veterinary practice so that the student may develop deep understandings and robust capacities. In this category there is a qualitative shift to providing an experience that is driven by the student where the intent is to change and develop the students' conceptions of veterinary practice

In this category supervisors intend to provide a supportive environment in which to challenge students to develop their own understandings.

*Challenge them..... Help them learn and think and apply knowledge.
(Supervisor 100)*

I use this approach in an effort to encourage them to think and apply their knowledge. (Supervisor 117)

The intent is to actively engage students in a way that will encourage their development and confidence to practice as a professional. Intentions in this category fall short of giving the student complete autonomy. This category remains developmental although most supervisors intend to bring students to a state where they are prepared for entry into professional practice.

Strategies

In Category C strategies are largely student focused and students are encouraged to be actively engaged and involved in veterinary practice. In Categories A and B the focus is on the student being allowed to take part in the experience of veterinary practice which is presented to them by the supervisor. Category C is qualitatively different as the focus is on involving the student in the construction of their own experience of veterinary practice. There is a marked shift in this category to a more student centred approach.

Students are engaged and challenged to develop their own understandings and capacities. They are encouraged to research cases, be active in case rounds, seek the opinion of others, formulate treatment plans and be involved in discussion and review of cases. Discussion is collaborative and value is given to student input. Students are challenged to consider how they would approach a case and there is a commitment to supporting students in developing a style of their own.

When presented with a case ask them what they would do, not what I would do – imagine that it is 3 months down the track and they are the vet and that is how they have to think about cases. (Supervisor 66)

I get them to become involved in cases from consultation right through to discharge. I discuss cases with them and quiz them regularly on what they would do rather than telling them what I will do. (Supervisor 117)

This approach includes strategies that recognise varying approaches to case management and encouraging students to think independently.

Ensure they get experience with all vets in the practice to help them see a range of work and communication styles, to settle on a style of their own. (Supervisor 61)

We try and rotate the veterinary students on different days amongst different employed vets – after all there is more than one way to skin a cat! (Supervisor 31)

Mentor them into developing their own system. (Supervisor 2)

Students have free rein to involve themselves in any cases. (Supervisor 56)

There is an indication that supervisors use strategies that are moving towards encouraging interns to practice in a way similar to that of a new graduate however strategies in this category fall short of encouraging students to engage in practice autonomously. Students in Category C are not required to commit and then be accountable for their actions or take on complete responsibility in the practice experience.

CATEGORY D: Supported responsibility in veterinary practice

Intent

In Category D supervisors intend to support student autonomy with limited supervision that is tailored to need. In this category supervisors intend to move the student from developing deep understandings and robust capacities to supporting them in the action of performing autonomously as a professional.

This is to try and make them life-long learners and to get into the habit of consolidating and extending their knowledge. (Supervisor 29)

This category is similar to Category C in that supervisors intend to actively engage students in a way that will encourage their development as a professional but in Category D there is now a subtle shift towards an experience that closely resembles that of a new graduate.

I like to make them as independent as possible and ensure they are self motivated. (Supervisor 43)

To encourage independent thinking and decisions. (Supervisor 6)

Strategies

Strategies in this category encourage active student involvement in the practice experience. Strategies are student focused and encompass those in Category C in that students are engaged and challenged to construct their own understandings and develop robust capacities. In Category D however strategies have shifted towards supporting students in autonomous practice. For example in Category C students were asked to formulate treatment plans whereas in Category D students are

encouraged to both formulate treatment plans and intellectually commit to their decisions in case management. That is, students are given opportunities to take on the responsibility of veterinary practice in a way similar to that of a new graduate in veterinary practice. The student is required to commit and be accountable for their actions.

Medicine – responsible for cases in hospital – to carry out treatments, evaluate patient care, physically be responsible for patient care. Allow access to all case records, path results etc, to formulate differential diagnosis, treatment plan. (Supervisor 13)

I encourage them to be working as if they have just graduated with me there to bounce ideas off and help where required. (Supervisor 112)

Supporting student autonomy involves providing the student with a meaningful rationale or guide to veterinary practice. The student is then given the choice and opportunities to practice independently in a supportive environment.

We first strive to have the student become comfortable with us and with the hospital. Then we start to ask them for thoughts and plans about cases with our help...Once we feel they are confident and capable, they are allowed to act independently, seeking assistance at any time. (Supervisor 55)

Analysis of the relationship between supervisors' conceptions and approaches

Phenomenographic analysis established outcome spaces that described the qualitative variation in both supervisors' conceptions of what supervision is about (Table 5.1) and their approach to supervision (Table 5.2). These outcome spaces formed the basis of quantitative analysis of the survey data in which all responses were categorised for their conception and their approach (see Appendix D).

Quantitative analysis of the qualitative data ($n = 117$) revealed that just over half of the supervisors (55%) reported a fragmented or multistructural conception of what supervision is about (Table 5.3). A slightly lower proportion of supervisors (51.5%) reported using a transmission / supervisor focused approach to their supervision. Conversely just under half of the supervisors (45%) reported a cohesive or relational conception of what supervision is about and a slightly higher proportion of supervisors (48.5%) reported using a conceptual development / student focused approach.

Table 5.3: Distribution of supervisors' conceptions of what supervision is about and approaches to supervision

Supervisor conception		n	%	Supervisor approach		n	%
Fragmented	A	16	14	Transmission / Supervisor focused	A	15	13
	B	48	41		B	45	38.5
Cohesive	C	47	40	Conceptual development / Student focused	C	45	38.5
	D	6	5		D	12	10
Total		117	100	Total		117	100

It was anticipated that those supervisors who reported fragmented or multistructural conceptions of what supervision is about would be more likely to use transmission / supervisor focused approaches to supervision and those that reported relational or cohesive conceptions would be more likely to use conceptual development / student focused approaches. As indicated in Table 5.4 a chi square (χ^2) test was used to determine whether these two variables were related or whether the observed results

were due to chance. The null hypothesis is that the observed results are due to chance.

Table 5.4 shows the relationships between conceptions and approaches. In this table O is the observed frequency and E is what would be expected if the null hypothesis is true. A significance level of 0.001 was chosen; that is there is a probability of < 1 in 1000 that the dependent measure is due to chance. The χ^2 value with one degree of freedom and $p < 0.001$ is greater than 10.83 so therefore the null hypothesis (H_0) can be rejected. This indicates that supervisor conceptions and supervisor approaches are related.

The phi coefficient (Φ) was determined to reveal the degree or strength of the relationship between a supervisor's conception and their approach. A Φ value close to + / - 1.00 indicates a close association between the two variables. The Φ value of 0.624 established that the relationship between a supervisors' conception of what supervision is about and their approach to supervision was strong (Gravetter & Wallnau 2005).

Table 5.4. Relationship between supervisors' conceptions and approaches to supervision

Supervisor conception	Supervisor approach		Total
	Transmission / Supervisor focused (A and B)	Conceptual development / Student focused (C and D)	
Fragmented A and B	O = 51 (43.5%) E = 32.8	O = 13 (11.1%) E = 31.18	64
Cohesive C and D	O = 9 (7.69%) E = 27.18	O = 44 (37.6%) E = 25.82	53
Total	60	57	117

$n = 117$, $\chi^2 = 45.66$, $\Phi = 0.624$, $p < 0.001$

Communicability of outcome spaces and inter-researcher agreement

As discussed in Chapter 3 phenomenographic analysis for this study was conducted using four researchers. These researchers also conducted the preliminary study discussed in Chapter 4 and are listed below:

Researcher 1 – Ingrid van Gelderen

Researcher 2 – Susan Matthew

Researcher 3 – Rosanne Taylor

Researcher 4 – Graham Hendry

The communicability of the outcome spaces and levels of inter-researcher agreement for supervisors' conceptions of what supervision is about, and for their approaches to supervision, are provided in Tables 5.5 and 5.6 respectively. Agreement levels for supervisors' conceptions of what supervision is about, before discussion, were 70% or more between Researcher 1 and the other researchers. A 100% inter-researcher consensus agreement was reached after discussion for all 10 responses. Agreement levels for supervisors' approaches to supervision, before discussion, were 70% or more between Researcher 1 and the other researchers. A 90% inter-researcher consensus agreement was reached after discussion for all 10 responses. This meets the requirements for phenomenographic research in which post discussion inter-researcher agreement levels of 80% or more are considered acceptable reliability measures (Ellis et al. 2006, Matthew, Taylor & Ellis 2010; Trigwell, Prosser & Taylor 1994).

Table 5.5. Communicability of outcome space for supervisors' conceptions of what supervision is about.

Supervisor ID number	Researcher 1	Researcher 2		Researcher 3		Researcher 4		Consensus Agreement
		Before discussion	After discussion	Before discussion	After discussion	Before discussion	After discussion	
1	C	C	C	C	C	C	C	C
8	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B
20	C	C	C	C	C	C	C	C
37	D	D	D	C	D	C	D	D
43	C	D	C	D	C	C	C	C
73	A	A	A	A	A	A	A	A
94	B	B	B	B	B	B	B	B
95	A	A	A	A	A	A	A	A
102	D	C	D	C	D	D	D	D
Percentage Agreement		80	100	70	100	90	100	100

Table 5.6. Communicability of outcome space for supervisors' approaches to supervision and inter-researcher agreement.

Supervisor ID number	Researcher 1	Researcher 2		Researcher 3		Researcher 4		Consensus Agreement
		Before discussion	After discussion	Before discussion	After discussion	Before discussion	After discussion	
13	D	D	D	C	D	D	D	D
19	A	B	B	B	B	A	B	B
47	A	B	A	B	A	A	A	A
50	B	B	B	B	B	A	B	B
51	C	C	C	C	C	C	C	C
59	D	D	D	D	D	D	D	D
75	D	D	D	D	D	C	C	D
84	C	C	C	C	C	C	C	C
89	C	C	C	C	C	D	C	C
100	C	C	C	C	C	C	C	C
Percentage agreement		80	90	70	90	70	80	90

Chapter 6

Discussion

Introduction

Supervisors of veterinary interns play a key role in teaching and guiding students in their transition from the theoretical world of university academia to the world of veterinary professional practice. The way in which supervisors conceive of their role and approach their supervision will likely impact the way that students approach their learning in a WBL environment. This in turn will likely influence the quality of student learning. The main aim of this study was to first identify and describe the variation in supervisors' experiences of supervision in a WBL environment and secondly identify those types of supervisor experiences that are more likely to encourage quality learning outcomes.

This study validates the hypothesis that there is variation in supervisors' experiences in a veterinary WBL environment. Supervisors' conceptions of supervision varied; in what they intended students to learn and what they conceived supervision to be about. Variation was also found in the way that supervisors approach supervision; in what they did, the way they went about doing it and why they were doing it that way. The different conceptions and approaches to supervision were described and these categories of description formed empirically inclusive hierarchies of increasing complexity. Quantitative analysis of these results further revealed that there is a close association between the quality of supervisors' conceptions and their approach to supervision.

Whilst it is not surprising to discover that there is variation in the experiences of veterinary intern supervisors this study provides empirical evidence to substantiate this claim. All of the supervisors of University of Sydney veterinary interns were invited to participate in this study and these supervisors represent a broad range of specific areas of veterinary professional practice. These include small and large animal practice, specialist referral practices, government veterinary facilities working largely with livestock and herd health issues and university veterinary teaching hospitals. Those supervisors employed within veterinary teaching hospitals may have academic duties in addition to their clinical supervision whilst many supervisors

may have no other teaching experiences apart from having once been taught themselves.

The universal intent of WBL experiences is to enhance knowledge and skill and to engage students in professional practice. There is little doubt that variation exists in both the nature of the veterinary practice rotation and in the prior experiences of supervisors but there is a common ground with respect to the context of this study. The experiences investigated were those of supervisors in a veterinary intern WBL environment. That is, all of the supervisors were undertaking supervision of final year, University of Sydney veterinary science students. Students are expected to engage in a broad range of professional practice veterinary experiences to ensure that they graduate as a competent veterinarian (Faculty of Veterinary Science 2013b). Although there are nuanced differences based on the nature of the placement, supervisors of veterinary interns have a clear role that is defined by the Faculty and is outlined in the Veterinary Student Internship Programme, Intramural and Extramural Rotations, Unit of Study Guide (Faculty of Veterinary Science 2013b). The role is one in which the supervisor is required to provide feedback and support students in their transition to professional practice through a range of experiences that address skills, knowledge and the broader elements of professional practice such as decision making, planning and professionalism which encompasses ethical, social and professional understanding (Faculty of Veterinary Science 2013b).

In order to describe the variation in supervisors' experiences a phenomenographic research approach was used. Widely used in the investigation of teaching and learning in higher education, the experience or act of supervision in this study was described based on an investigation of the 'what' and 'how' components of supervision (Marton & Booth 1997). This was elaborated in Chapter 2 and is summarised in Figure 6.1. Using phenomenographic methods, conceptions describe the 'what' component of the experience of supervision; in the first study this specifically referred to conceptions of learning outcomes and in the second larger study this referred to conceptions of what supervision is about. Approaches describe the 'how' component to the experience of supervision; strategies undertaken in the act of supervision and the intent behind those strategies.

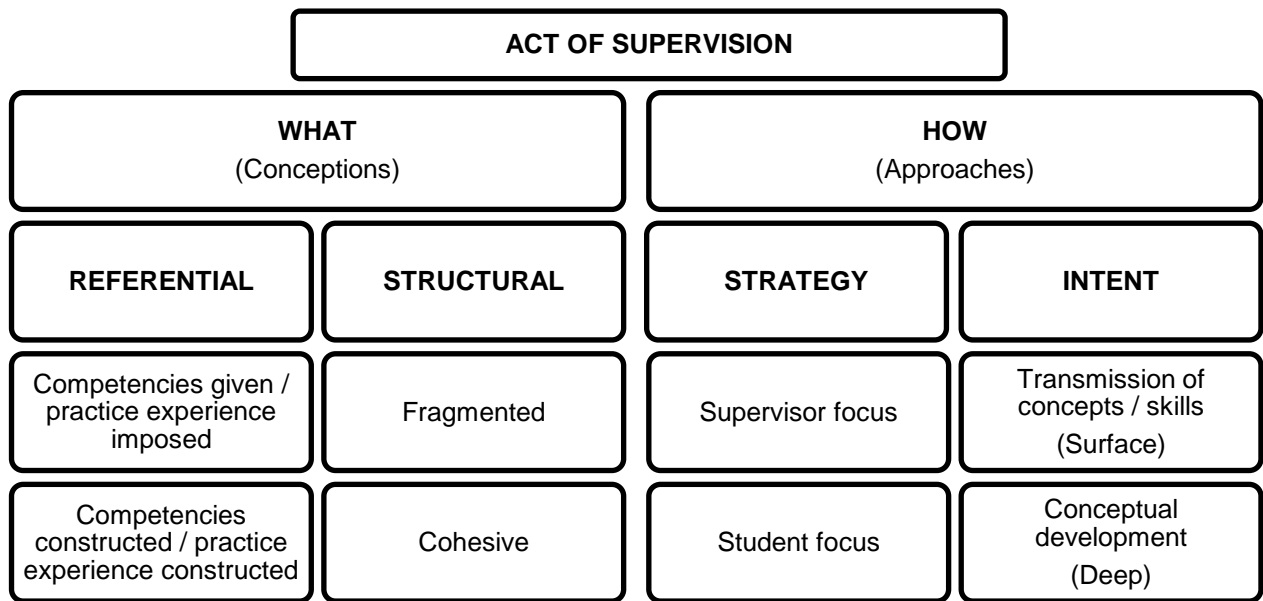


Figure 6.1. Anatomy of the act of supervision – analysed in terms of the what and how components of this experience.

Discourse on the variation and relational nature of aspects contributing to the supervisor experience

Supervisors' conceptions of learning outcomes in a WBL environment

Variation in supervisors' conceptions was initially revealed in a preliminary teaching evaluation survey conducted to explore supervisors' conceptions of what they intended students to learn in a WBL environment. Phenomenographic analysis of the survey responses revealed that supervisors conceive the learning outcomes of WBL experiences in two qualitatively different ways; fragmented (multistructural or non-relational) and cohesive (relational).

Supervisors with fragmented conceptions focused on parts or structural elements of an experience of veterinary practice that was pre-determined by factors that were external to the student. Those supervisors with the simplest conception of learning outcomes conceived learning outcomes to be a collection of individual and isolated veterinary competencies such as placing intravenous catheters, pregnancy testing and non technical skills such as communicating effectively in a team. Whilst these competencies are certainly relevant to veterinary professional practice, supervisors reporting these conceptions did not conceive learning outcomes to be linked to the wider context of professional practice nor did they recognise the potential for learning

outcomes to include an understanding of the contextual variation in veterinary professional practice.

Cohesive conceptions are qualitatively different to those that are fragmented as the focus is on the experience of veterinary practice as it relates to the wider experience of professional practice. The experience of veterinary practice is not simply given to the students or predetermined by the supervisor. It is one in which the complex relationship between the skills, knowledge and context is adapted to the individual student variation. Supervisors with the most complex conceptions of learning outcomes in this study emphasised independent veterinary practice in which personal and professional autonomy were entwined.

The focus of supervisors' conceptions in this preliminary survey was that of the expected learning outcome of the WBL experience. The 'what' component of the supervisor experience was investigated with a very specific focus on the outcome of learning in a work-based environment. Results parallel findings investigating academics' conceptions of the object of study (Martin et al. 2000) in which variation was described in terms of how subject matter was structured (multistructural or relational) and how it was conceived (given or constructed). In order to expand the awareness of what supervisors conceive supervision to be about researchers in this study recognised that it was necessary to further probe supervisors' understandings of what supervision is about and broaden the question asked of supervisors.

Supervisors' conceptions of what supervision is about

The variation in supervisors' conceptions of what supervision is about reflected a similar structural and referential divide to supervisors' conceptions of learning outcomes. Supervisors were found to conceive of what supervision is about in two qualitatively different ways. Phenomenographic analysis established differences in the way of conceiving supervision that were based on the focus or meaning of the conception and the way in which the experience of supervision is structured. In keeping with the nomenclature used in other studies investigating the experiences of teaching and learning in higher education (Biggs & Collis 1982; Martin et al. 2000) the two distinct types of conceptions were identified as being multistructural and relational.

Multistructural conceptions were those where supervisors constructed an experience based only on individual, albeit relevant elements of veterinary practice that were disconnected from the holistic professional development of the student. These conceptions can also be referred to as fragmented (Crawford et al. 1994; Ellis, Steed & Applebee 2006; Marton & Booth 1997; Matthew, Taylor & Ellis 2010) as they represent a limited awareness of what supervision is about. The focus of veterinary practice is imposed by the supervisor on the student. At the lowest, most elementary end of the hierarchy a pre-determined experience of veterinary practice is simply given to students. The experience of WBL is conceived to be unproblematic. In these experiences students are conceived to acquire knowledge and skills through exposure or through reproduction of what the supervisor identifies to be important.

Relational conceptions were those where supervisors constructed an experience that related an experience of veterinary practice to the holistic development of the students' own professional practice. Relevant elements of veterinary practice are integrated with the students' own understandings and professional development. These conceptions are also described as cohesive (Crawford et al. 1994; Ellis, Steed & Applebee 2006; Marton & Booth 1997; Matthew, Taylor & Ellis 2010) as they represent a more complete and complex awareness of what supervision is about. The focus of veterinary practice is constructed by the student rather than given to them. In these more complex conceptions the experience of WBL is conceived to be problematic. At the highest, most complex end of the hierarchy the experience of supervision is collaborative and in these conceptions the capacity to engage autonomously with veterinary practice is emphasised.

Supervisors of veterinary interns hold conceptions that vary in ways similar to those previously described amongst university academics. In a study investigating science teachers' conceptions of learning and teaching (Prosser, Trigwell & Taylor 1994) the focus of teaching was found to similarly vary from those where the emphasis was on either knowledge from the syllabus or teachers' knowledge through to those where the emphasis was on that of the students knowledge. In this 1994 study the focus of teaching was described as involving knowledge from the syllabus, from the teacher or from the student (Prosser, Trigwell & Taylor 1994). Academics' conceptions of what they are actually teaching were further revealed to vary from multistructural

conceptions where the focus was on knowledge that was given or taken for granted through to the higher more complex and relational conceptions where knowledge was conceived to exist within people and be constructed within the student (Martin et al. 2000). Knowledge from the syllabus and knowledge from the teacher are similar in the way that veterinary practice in this study was described as being imposed on the student. In both, the focus remains essentially unproblematic and external to the student. Similarly teaching conceptions where focus is on the knowledge of the student are comparable to those supervisor conceptions where veterinary practice was constructed by the student. In both cases the focus is problematic and is internal to the student.

All of the veterinary supervisors surveyed for this study were engaged in some manner of veterinary professional practice and it would be fair to posit that most of these supervisors would have at best an elemental understanding of educational theory. Of the 388 veterinary intern supervisors invited to participate in this study only 38 were employed by the University. Notably, although the supervisors of veterinary interns in a WBL environment would likely have an elemental understanding of pedagogy their conceptions of what supervision is about vary in remarkably similar ways to those of university academics. Similarly the distribution of conceptions was comparable. In the Martin et al., (2000) study of academics' conceptions of the object of study, 50% of participants conceived knowledge as given and 50% conceived knowledge as being constructed and problematic. In this study of veterinary intern supervisors 55% of workplace supervisors conceived veterinary practice to be imposed and 45% conceived it to be constructed by the student. Most respondents in this study would likely have had very little formal training in teaching and learning and so it is not surprising that a lower proportion of workplace supervisors conceive of supervision in a more complex way compared to those of university academics in a similar study. What is perhaps a more important revelation is that such a high proportion (45%) of participants conceived of supervision in a relational and cohesive way.

Previous investigations specifically designed to investigate conceptions in a WBL environment have largely focused on the experiences of both students and academic staff (Martin 1998; Paakkari, Tynjälä & Kannas 2010; Stokes, Magnier & Weaver

2010). Certainly there are clear parallels to the findings in this study with previous conceptions also described as fragmented and non-relational though to cohesive and relational. Very little previous research has extended this analysis to focus on those who are involved in WBL beyond students or academic staff. Increasingly WBL environments involve those who are not directly employed or involved in academe; what are the conceptions of work-based experiences of this pivotal group of key stakeholders? A study investigating the conceptions of clinical nurses in a WBL environment (Forbes 2011) is one which has sought to explore these conceptions but the focus was on conceptions of nursing rather than providing a specific analysis of the teaching or supervision in this environment. This study of veterinary intern supervisors has now clearly provided empirical evidence to reveal the full range of experiences of teaching or supervision in a WBL environment that is not simply restricted to the experiences of those within academe.

Supervisors' approaches to supervision

Supervisors were found to approach their supervision in two qualitatively different ways. Aspects of variation in approaches were modelled on similar studies (Martin et al. 2000; Trigwell, Prosser & Taylor 1994) with differences in the way that supervisors approach their supervision revealed in terms of the strategies used and the supervisors' intent in adopting that particular approach. Phenomenographic analysis of the survey data identified two distinct approaches to supervision; supervisor focused strategies where the intent is to transmit skills and information or skills and concepts and student focused strategies where the intent is to engage the student in veterinary practice.

At the lowest end of the approaches hierarchy strategies are focused on what the supervisor is doing. Supervisors intend to transmit by exposing students to a selection of information and competencies or a specific experience of veterinary practice. This is intended to be passively received by the student and may be reproduced. At the most complex end of the hierarchy strategies are focused on what the student is doing. Supervisors intend to support student responsibility and autonomy and supervision is tailored to need. These findings echo the variation described in the approaches of university academics in terms of both approach and intent (Martin et al. 2000; Trigwell, Prosser & Taylor 1994).

Similar studies in a WBL environment have also identified a qualitative divide in the way that supervisors approach the experience of WBL (Forbes 2010; Stenfors-Hayes, Hult & Dahlgren 2010). In essence, approaches can be described in one of two ways; those where supervisors use strategies and adopt an approach which places themselves at the foreground through to those that recognise that they are certainly part of the *mise en scène* and yet identify that they are not the protagonist. Previous studies investigating approaches in a WBL environment have not specifically sought to focus on the experience of workplace supervision from a teaching perspective although they clearly recognise the implications as they relate to an awareness of what constitutes effective workplace teaching (Forbes 2010; Stenfors-Hayes, Hult & Dahlgren 2010). Despite this different focus on how the approach was investigated there are similarities in the substance of the results. For example clinical teachers of nursing were found to approach nursing in two ways; patient focused or nurse focused (Forbes 2010) and studies investigating medical teachers' understanding of what constitutes a good teacher identified that approaches were either student or clinical supervisor centred (Stenfors-Hayes, Hult & Dahlgren 2011).

Varying approaches to teaching in a range of contexts have been widely reported in the literature and this study was designed to add to this body of knowledge as well as identify those approaches that are more likely to encourage quality learning outcomes. Research in a university teaching environment has led to the development of instruments designed to measure aspects of variation in approaches to teaching in a specific context (Trigwell & Prosser 2004). Using instruments such as the Approaches to Teaching Inventory those approaches more likely to encourage higher quality learning outcomes or deep student learning were those where the teacher adopts a conceptual change / student focus to their approach. A surface approach to learning was more likely to occur when the teacher adopted a transmission / teacher focus to their approach (Trigwell & Prosser 2004). Similarly the more inclusive and complex approaches of clinical teachers of nursing were those where the focus was on the patient (Forbes 2010) and perceptions of what it means to be a good clinical supervisor of medical students were those where the focus is on the student's learning or growth (Stenfors-Hayes, Hult & Dahlgren 2010). It is therefore appropriate to posit that those approaches to veterinary intern

supervision in a WBL environment that are more likely to yield higher quality learning outcomes are those where students are challenged to engage autonomously in professional practice. These are the approaches where the student is actively engaged in developing their own understanding and robust capacities, but more than this, they are encouraged to intellectually commit and take responsibility in a way that resembles that of a new graduate.

Relationship between supervisors' conceptions and their approach

The foundation of understanding teaching and learning experiences in a work-based environment was based in this study on the 3P or Presage-Process-Product model of teaching and learning (Biggs 1989, 2003; Prosser & Trigwell 1999). From this perspective it would be expected that supervisors' approaches to supervision would be related to their conceptions of teaching and learning in this context. Statistical analysis using a chi square test (χ^2) revealed that in a WBL context of teaching and learning supervisors' conceptions of what supervision is about are indeed related to their approaches and this relationship is moderately strong. That is, a supervisor with a conception that supervision is about imposed acquisition of disparate, albeit relevant elements of veterinary practice that the supervisor deems to be important, is more likely to adopt an approach using strategies that are supervisor focused in which the intent is to transmit skills and information to the student. Conversely at the more complex end of the hierarchy a supervisor with a conception that supervision is about scaffolding student autonomy is more likely to adopt an approach using strategies that are student focused where the intent is to tailor the support of student autonomy to need.

Despite this strong relationship between supervisors' conceptions and approaches it was interesting to note that not all supervisors reporting a fragmented or multistructural conception were found to adopt a supervisor focused, transmission approach to their supervision. In the large scale study 45% of supervisors surveyed ($n = 117$) reported relational conceptions of what supervision is about and yet 48.5% reported using conceptual development, student focused approaches. A similar distribution was identified in the earlier teaching evaluation study in which supervisors' conceptions of learning outcomes was investigated. In this study 41% of supervisors surveyed ($n = 39$) reported a relational conception but 49% reported using a student focused approach to supervision. In both cases there is slightly

higher proportion of supervisors adopting a more complex approach compared to their conceptions of supervision in a WBL context. It is encouraging to note that there is a slight tendency for supervisors to adopt a more complex, higher quality approach to their supervision despite their conception, and it is possible that this is due to other influencing presage factors impacting on the process of teaching and learning in this context as described in Chapter 2. Institutional factors are likely contributors to the process of supervision. At The University of Sydney supervisors and students participating in the VSIP are provided with written support materials (Faculty of Veterinary Science 2013b). Veterinary placement requirements as well as the role of the supervisor are clearly articulated in these documents and it is likely that these institutional guidelines have a role in encouraging approaches to supervision that are more complex and relational.

Relationship between the experience of supervision and the quality of learning in a WBL environment

The foundation of this study was one in which supervision and learning in a work-based environment were seen to be fundamentally related. When viewed from a constitutionalist perspective meaning and awareness are created from the internal relationship that exists between the individual and the context of a WBL environment. Supervisors' conceptions and their approach to supervision were described independently but from a constitutionalist perspective they can be seen to be both simultaneously present and related. From this perspective it can be suggested that the product or outcome of supervision is also related to both the supervisors' conceptions and their approach. When understanding the context of learning in a work-based environment using the 3P model of teaching and learning the experience of the student and the relationship that this experience has to that of the supervisor is equally relevant.

Significantly it has been reported that teachers who report using a transmission / teacher focused approach to teaching are more likely to encourage surface learning in their students (Trigwell, Prosser & Waterhouse 1999). Surface learning approaches are widely reported to be associated with lower quality learning outcomes (Marton & Säljö 1976; Matthew, Taylor & Ellis 2010; Ramsden 2003; van Rossum & Schenk 1984) and this would suggest that the experiences of the teacher,

that is their conception and their approach, are likely to be related to the quality of student learning.

It is important to note that the main aim of this specific study was to describe varying ways in which supervisors conceive of and approach supervision in a work-based environment. Given the relational perspective upon which this study was based it would be fair to posit that in the context of a WBL environment the varying ways that supervisors conceive of and approach their supervision, that is the varying ways of experiencing supervision, may be related to the quality of learning in that context. This study does not seek to verify a causal link between supervisor conceptions, their approach and the quality of student learning nor does it provide empirical evidence to suggest that supervisors with complex conceptions and student centred approaches that support student responsibility produce higher quality outcomes of learning. In fact, identifying a moderately strong relationship between supervisors' conceptions and approaches involved taking this study beyond a strict adherence to the principles of phenomenography. When viewed from a 3P constitutionalist perspective the relational nature of these parts of the supervisor experience is, however, certainly not surprising and does suggest that supervisor experiences are likely to be related to the quality of student learning.

Contribution of this study to body of research

WBL is a critical component of professional practice education programmes for reasons that extend well beyond a commitment to the development of independent, autonomous graduates well prepared to engage in professional practice (Dale, Sullivan & May 2008; Rodger et al. 2008). In an information rich world where technological advancements are swift, educators are challenged to produce graduates with attributes that extend beyond an appropriate level of knowledge and skill. Effective transition to professional practice requires the capacity for dialectic or critical thinking as well as the ability to behave professionally; this includes personal and intellectual autonomy, communicating effectively, and ethical, social and professional understanding (Faculty of Veterinary Science 2013a). This is a challenging task and one that must be undertaken against a background of declining available resources (Boud & Solomon 2001; Eyre 2011; Fernandes 2005; Frawley 2003; Jones, Yeung & Webb 1998; Lloyd et al. 2008; Rodger et al. 2008; Smyth

2013). As such the inclusion of WBL experiences are widely embraced by educational developers across most professional practice disciplines that include but are not limited to the disciplines of medicine, nursing, speech pathology, occupational health, physiotherapy and veterinary science (Baguley 2006; Forbes 2010; Magnier, Dale & Peard 2012; Rodger et al. 2008; Sheepway, Lincoln & Togher 2011; Tynjälä, Välimaa & Sarja 2003). This is the model for the future direction of professional practice curricula and as such it is imperative that informed and empirical research is dedicated to ensuring the integrity of such programmes (Scholz, Trede & Raidal 2013; Tynjälä, Välimaa & Sarja 2003).

For the last two to three decades universities have not only recognised the value of WBL experiences for their students but have also realised the importance of facilitating some way of bringing students' academic knowledge into communion with practical experiences (Baguley 2006; Martin 1998). Whilst this is universally agreed upon it remains challenging to find consistency in the discussions that frame an understanding of this unique learning environment. WBL experiences are widely discussed in the literature in a variety of ways and using varying nomenclature. Clearly it remains challenging to find appropriate language to convey what defines a WBL experience, what it is modelled on, how it is structured and indeed what are the roles of the key players. A discussion of WBL models is included in Martin's 1997 study, 'The effectiveness of different models of work-based university education' and more specifically by Scholtz, Trede and Raidal (2013) in which a sociocultural perspective is suggested as a way to frame an appropriate understanding of veterinary WBL. Whilst it is not within the scope of this thesis to explore the various models of university facilitated WBL, the studies conducted for this thesis contribute to the ongoing discourse on the development of appropriate models that can frame an appropriate and valid understanding of veterinary WBL.

Traditionally referred to as a clinical placement or practicum in the disciplines of medicine, veterinary science and nursing (Martin 1998) in this study veterinary internship experiences were deliberately referred to as work-based. Clinical work certainly constitutes a large proportion of the internship year but veterinary professional practice extends well beyond a clinic environment. Rotations completed by students during an internship year also include public and mixed practice, research and elective rotations that may include, but are not limited to, working in

conservation biology, zoo and exotic animal medicine and surgery, applied pharmacology, production animal health and specialist referral practice (Faculty of Veterinary Science 2013b). The list is clearly long and varied. Learning during the veterinary intern year is intended to support the transition to professional work in all its forms and as such it has been termed WBL. In 1998 Martin reported that at least 60% of all Australian university degree programmes included some form of WBL (Martin 1998). Given the moves towards embracing WBL in all of its forms it is likely that this figure is now higher than 60%. Undergraduates engaged in fieldwork in the discipline of geography, teaching placements in the discipline of education and clinical placements in speech pathology and occupational therapy are just some examples of existing WBL experiences in universities both in Australia and internationally. As such, it is expected that the results of this research in veterinary intern supervisor experiences will go some way to further an understanding of experiences of supervisors in a range of WBL environments.

The theoretical basis to investigating WBL experiences in this study originated from the Presage-Process-Product model of student learning (Biggs 1989, 2003; Prosser & Trigwell 1999). Ultimately the goal in adopting a student learning perspective is to improve student learning. This is a significant point in understanding the relevance of this study and its place within the 3P model of student learning. Although this study has independently constituted descriptions of supervisors' conceptions and approaches it is important to note that the approach and conception are simultaneously present. From a constitutionalist perspective the supervisors' conceptions and approaches are related both to each other as well as the outcomes or products of these experiences. Significantly a recent study investigating the experiences of veterinary science interns illuminated the varying ways in which students conceived of and approached their learning in a work-based environment (Matthew, Taylor & Ellis 2010). Further to this the relational nature of student conceptions, approaches and achievement was revealed. As teaching and learning are fundamentally related (Biggs 2003; Prosser & Trigwell 1999; Ramsden 2003) this study goes some way to developing an insight into ways of effective supervision in line with the experiences of the student.

Using a phenomenographic approach experiences within a specific context can be described and analysed (Marton 1981; Prosser & Trigwell 1999). From a

constitutionalist, phenomenographic perspective the context of the teaching and learning environment is critical as meaning is internally constituted from the relationship between the individual and their world. Previous phenomenographic studies have described the varying ways in which university academics conceive of and approach their teaching and supervision within a university setting. Further to this relationships have been found in the way in which these conceptions and approaches are linked to the quality of learning (Prosser et al. 2008; Trigwell, Prosser & Waterhouse 1999). The context of teaching and learning will impact on experiences of teaching and learning and an experiential description of teaching and learning in a university environment will not necessarily be the same as that seen in a WBL environment. For example an individual teaching in a university lecture hall will not necessarily conceive of and approach their teaching in the same way as they conceive of and approach their supervision of an intern student in a clinical setting. In this study the varying ways of experiencing supervision in the context of a WBL environment have now been explored.

Despite this, WBL environments are places of teaching and learning and it is not wholly unsurprising that results of this study were not dissimilar to experiential descriptions of teaching in a more traditional higher education environment. In both the WBL environment investigated in this study and previous studies investigating a more traditional university learning environment (Martin et al. 2000; Prosser, Trigwell & Taylor 1994; Trigwell & Prosser 2009; Trigwell, Prosser & Waterhouse 1999) relational and problematic conceptions were more likely to be associated with approaches that used strategies that were student focused, where the intent behind those strategies was to develop and / or change student conceptions and understandings.

It is interesting to note that a similar range of variation in the experiences of supervisors to that of university academics was revealed despite significant differences in their presage characteristics. While some of the respondents in this study are likely to have been working in intramural teaching hospitals most were external to the university with their primary focus being that of veterinary professional practice; small animal practice, rural mixed practice, public practice or research. Teachers in higher education are by definition immersed in an environment dedicated to the practice of teaching and learning. These teachers are constrained

by the institutional demands of an educational organisation and are expected to have an understanding and commitment to current educational practices and pedagogy. One can posit that similarities in the experiential descriptions and range of variation can in some way be due to the very essence or point of WBL. Intern experiences are included in professional practice programmes to give students experiences in their future area of work and are designed to foster the development of personal and professional development (Faculty of Veterinary Science 2013b; Martin 1998). Further to this supervisors are guided by the University in understanding their role and responsibilities in achieving this goal. This is done through conferences and through the use of written materials and phone support from the University. In other words supervisors are scaffolded to have an understanding of the learning context in much the same way as academics are in a university environment. Further to this extramural supervisors of veterinary interns are not remunerated for their involvement in this programme and those who are intramural supervisors are still expected to ensure that their primary focus is that of professional veterinary practice. There is a sense of altruism associated with supervisors who take an active role in the internship programme and as such it is likely that these individuals maintain a personal commitment to the educational development of future veterinarians. That is, veterinarians who choose to be involved in an internship programme will be likely to have a heightened sense of the principles of educational pedagogy.

In keeping with phenomenographic methods the results of this study reflect variation in supervisor experiences based on the collective responses to the survey questions (Åkerlind 2005). It was never the intent to describe individual conceptions and approaches to supervision as each response to the survey question was analysed within the context of all of the survey responses to each question. This study does not, for example reveal whether a supervisor in a small animal clinic is more likely to adopt a more complete approach to supervision compared to a supervisor in public practice or vice versa. It is not the goal of a phenomenographic study to do this. Rather the goal is to describe the different ways of experiencing supervision at a given point in time and in a given context which is that of WBL. Furthermore this study sought to reveal the relationships amongst these different ways of experiencing supervision and found that these different ways of experiencing

supervision are logically related in a hierarchical way extending from those that are less complete to those that are more complete.

As discussed in chapter 2, phenomenographic methods are well suited to studies in higher education. Previous research investigating veterinary students' experiences of the VSIP used phenomenographic methods (Matthew, Taylor & Ellis 2010). Although alternative data collecting instruments and scoring systems could be considered for an investigation of supervisors' experiences, they were not considered for this study. This study was specifically designed to complement the previous work of Matthew, Taylor and Ellis (2010) and to facilitate future comparative analysis investigating relationships between supervisors' experiences and students' experiences of WBL. Methods used in phenomenographic studies are robust, well defined and clearly structured (Åkerlind 2005, Tight 2013). As such, a phenomenographic approach was the most appropriate research methodology for this study investigating supervisors' experiences of the VSIP.

Using a quantitative approach to extend on the analysis of the qualitative data adds to the understanding of supervisors' experiences of supervision, but it is important to note that some elements contributing to the full range of variation in experiences is not explicitly identified when the responses are fitted within the 2 x 2 matrix. A qualitative divide between the B and C categories for both conceptions and approaches enabled this analysis to be performed but these quantitative results must be interpreted alongside the qualitative outcome spaces to ensure that the full range of variation in supervisor experiences is fully appreciated and understood.

A discussion of the variation in the supervisor experience in this thesis is limited to that aspect of the supervisor experience explored by the survey questions. The focus of the preliminary teaching evaluation survey was on what supervisors conceive the learning outcomes to be and so variation in conceptions is limited to this aspect of the 'what' component of supervision. In order to expand the understanding of the supervisor experience the researchers identified a need to further probe supervisors' understandings of what supervision is about and therefore broaden the questions asked. This involved administering a survey to all supervisors of University of Sydney, final year veterinary interns. Significantly the question designed to explore

supervisors' conceptions was changed in order to capture a wider perspective of what supervisors' conceive supervision to be about.

Implications

Quality, sustainable veterinary education is a dynamic process which realises graduates with the capacity to successfully transition to the workplace and thrive. It must be a student centred experience that prepares graduates for successful independent practice. In Australia and overseas the inclusion of practical WBL experiences are widely regarded to be an essential component towards achieving this goal and indeed accreditation policies demand their inclusion. On these points there is little dispute but the costs, particularly of clinical, practical and work-based training, are high and therein lies the rub. High costs have the potential to impact student debt and erode the very essence of sustainability in veterinary education and indeed the profession. As previously stated the wider implications of this to national health and biosafety cannot be overstated. It is not within the scope of this thesis to dissect the costs of education and the implications of this to veterinary training and career attrition but it is a critical determinant of the direction of WBL experiences in veterinary education. Innovative educational practices involving partnerships with external providers are framing the current discourse on WBL in veterinary education and central to these discussions is the need to ensure academic oversight and scholarly rigor to these experiences. The research conducted for this thesis is well placed to provide much needed clarity on what is currently taking place in this unique teaching environment and further to this it has provided insights into what constitutes quality supervision in WBL.

Research conducted for this thesis has sought to situate WBL in a narrative that is firmly grounded in educational theory. Previous research and understandings of WBL have confidently explored and described student experiences in this way (Matthew, Taylor & Ellis 2010) but, until now there has been a somewhat tentative discourse on supervisor experiences from this perspective. Framing veterinary WBL teaching and supervisory practices from this perspective is new and is well placed to support and enhance current practices designed to ensure that WBL maintains a robust level of scholarly rigor with appropriate academic oversight.

In this study understanding student learning in the context of a WBL environment is based on a relational perspective. This has significant implications inasmuch as the findings can be considered from the core premise that what the supervisor conceives of and does will influence what the student conceives of and does during a placement experience. There are varying ways to conceive of and approach supervision and some of these ways are more complete or complex. It would be fair to suggest that more complex conceptions and approaches to supervision are more likely to encourage quality student outcomes. Supervisor experiences that are more complex and complete are clearly aligned to the goals of the veterinary internship programme; that is to support students in their transition to professional veterinary practice in an environment where the supervisor is both mentor and colleague (Baguley 2006, 2009; Faculty of Veterinary Science 2013b). In this environment a student is able to transition towards engagement in the act of being the professional veterinarian and all that this involves; self direction, an intellectual commitment to their own decisions, critical reflection as well as the skills and knowledge that underpin these capacities.

The practical implications of the research conducted for this thesis are significant. Conceptions that support and encourage a dialectic mode of supervision are to be encouraged (Dale, Sullivan & May 2008). It is necessary that supervisors recognise the significance of encouraging students to think critically and engage in 'being' the professional (Dall'Alba 2009). Consistent with the more complex approaches described in this study this involves using strategies that are student focused. Students are engaged in a way that closely resembles that of a new graduate. This does not simply suggest hands off abandonment of the student. Rather there is a collaborative relationship between student and supervisor in which students are given meaningful support to think and act independently, commit to decisions made, and then critically reflect on their progress. Active involvement in case rounds, research projects, review of cases, formulation and ideally a commitment to diagnostic and therapeutic plans is both encouraged and valued.

Much is made of clinical and practical skills in the current discourse amongst veterinary educators. Indeed The University of Sydney, most recent practice visits report (Scarlett 2013), highlighted supervisors' interest in defining what a student

must achieve during their intern rotations in terms of lists of skills. In light of the results of the research conducted for this thesis, any moves to formalise structured lists of skills that must be assured in a WBL environment should be considered with caution. An emphasis on teaching to 'must complete' lists of skills will surely shift the focus of what is in the foreground of awareness for both the student and supervisor. This is particularly the case if these form part of the assessment in a WBL setting. Teaching to 'must complete' lists of practical and clinical skills is fraught with risk as it is clearly aligned to fragmented conceptions of supervision and will likely encourage transmission approaches that are supervisor focused.

Supervisors of veterinary interns are partners in veterinary education but their role in the educational narrative is somewhat equivocal. Whilst contributing to the assessment of students through supervisor reporting forms and the provision of a workplace in which students develop skill, knowledge and the defined graduate attributes, the final call on student outcomes remains the domain of university academic staff. Currently all Australian universities provide guidelines and various support strategies that include written materials, dedicated phone and email support, and non compulsory educational development activities. External participation in veterinary intern programmes is largely voluntary and for these supervisors mandatory participation in educational training is problematic. It is not the intent of the author to suggest that supervisors of veterinary interns be compulsorily required to engage in educational pedagogy training. Rather the results of this research reveal the variation in supervisors' conceptions of what supervision is about and in how they approach their supervision and it would be fair to suggest that these findings be incorporated into existing support strategies provided to supervisors.

The results of this study can be used to provide meaningful and valid structure to supervisor development and training programmes. As it is with teacher development (Åkerlind 2008; Hendry 2009) supervisor support and training are necessary to encourage supervisors to critically reflect on their own experiences and expand their awareness of what supervision is about and how to approach that supervision. New conceptions, skills and strategies that closely align with the more complete and complex descriptions of supervisor experiences can be embedded in supervisor educational development programmes and support materials. Indeed the needs of

the supervisor must be central to the planning and design of formal and informal support strategies. Educational development programmes including conferences and seminars may well be important in fostering valuable relationships between veterinary schools and external partners but the primary focus of these must be clearly aligned towards the development of quality educational practices.

The future directions of the work conducted for this thesis are wide and far reaching. Specifically, in a veterinary education context, further research involving semi-structured interviews would permit researchers to more deeply probe supervisors' experiences which would, in turn, yield a richer set of category descriptions. Moreover, this study was not designed to compare the conceptions and approaches of intramural versus extramural supervisors and this would be a valuable area of future study. Intramural supervisors are immersed in an environment dedicated to the education of future veterinarians and in many cases have undergone training in educational pedagogy. It might, therefore, be expected that an intramural supervisor may report more complex conceptions and approaches to their supervision compared to that of an extramural supervisor. This study did not seek to reveal potential differences between different groups of supervisors but such work would add significant insights into an understanding of the 'why' dimension of supervisors' experiences. Additionally, student surveys administered at the time of placements could be used to investigate and establish correlations between supervisor and student conceptions and approaches. Future studies using graduate surveys and practice partner surveys could also be done to determine whether there is a link between placement supervisors' conceptions and approaches and the success or otherwise of the students' transition into practice.

The implications of this research extend beyond WBL in a veterinary context. As previously discussed, in 1998 WBL experiences were included in 60% of Australian degree programmes (Baguley 2006; Martin 1998) and it would be fair to posit that 16 years later this figure is likely to be higher. There are similarities between the structure of WBL in veterinary education programmes and those found in other disciplines. At The University of Sydney the Faculty of Health Sciences (Faculty of Health Sciences 2014) administers a suite of allied health disciplines that include but are not limited to speech pathology, occupational therapy, physiotherapy, exercise

and sports science and exercise physiology. All of these courses require students to complete some form of practicum, clinical or professional fieldwork experiences. Nursing, dentistry and medicine also require students to be engaged in WBL in order to meet the professional practice requirements of their course (Faculty of Dentistry 2014; Faculty of Medicine 2014; Faculty of Nursing 2014). It is valid to suggest that the findings of this study may guide targeted support and training for supervisors involved in WBL experiences across a wide range of professional practice disciplines. Further to this the educational modelling used in this study would be appropriate to use in the investigation of other aspects of WBL in both veterinary science and a range of professional practice disciplines. That is, studies from a constitutionalist perspective using phenomenographic methodologies would be well suited to further probe an understanding of supervisors' experiences of WBL.

Conclusion

WBL experiences are a valuable and increasingly essential component of many professional education programmes. These experiences are designed to be closely aligned to a student centred approach to teaching and learning and are seen to be well suited to supporting students in their transition towards 'being' the professional. In an environment of declining available resources and reduced government funding (Boud & Solomon 2001; Eyre 2011; Fernandes 2005; Frawley 2003; Jones, Yeung & Webb 1998; Lloyd et al. 2008; Rodger et al. 2008; Smyth 2013) it would be expected that universities will continue if not increase their reliance on alternative and innovative educational practices of which WBL is a part. As such it is incumbent on universities to consider how WBL environments are managed and how teaching and learning activities are supported, monitored and sustained.

A constitutionalist perspective, widely used to understand teaching and learning experiences, is an appropriate choice to model an understanding of WBL environments. From this view there is internal relationship between an individual and their world; an awareness or conception is related to an approach and this is related to the outcome of that experience. These elements are simultaneously present and can be used to describe an experience of teaching and learning. Phenomenography is a research method based on a constitutionalist view and in this study has been used to describe the qualitatively different ways in which supervisors conceive of and

approach their supervision. Conceptions of what supervision is about and approaches to supervision have been found to be related and further to this more complex and complete ways of conceiving and approaching supervision have been identified. More complete and complex conceptions and approaches are those in which the student is in the foreground and collaboration is emphasised. Individual skills and particular knowledge is recognised to be important but more importantly is seen more broadly in that these skills and knowledge need to be integrated with the students' own understandings and professional development. Students are challenged to be actively involved in professional practice in a way that closely resembles that of a new graduate. These complex and complete ways of experiencing supervision are closely aligned to quality teaching (Ramsden 2003); that is a student centred approach to supervision which encourages students to effectively problem solve and engage actively and deeply in veterinary professional practice.

The effective and ongoing provision of WBL experiences needs to ensure that targeted and credible support is provided for the professionals that supervise students during these placements. Given their increasing reliance on WBL experiences universities are bound to ensure that valid and reasonable supervisor support and training continues to exist and evolve. Strategies employed by universities and faculties will need to vary to suit the needs and distinctiveness of the WBL environment and may be formal or informal but all should be designed to expand conceptions of what supervision is about and encourage methods of delivery that are more likely to be aligned with a student centred approach to supervision.

Appendix A
2007 Teaching evaluation questionnaire

FINAL-YEAR SUPERVISION EXPERIENCES

PRACTICE TYPE: _____ **DATE:** _____

Instructions: Think about your experiences supervising final-year interns. Answer the following questions in relation to your understanding of the purpose of final year. Try to write at least 10 sentences for each question.

Question 1

During your supervision of final-year students, what are you intending for them to learn? and What are the main things you intend them to get out of your supervision?

Question 2

When you are supervising interns, how do you go about it? What things do you do? and Why do you do these things?

Question 3

Do you think there is any relationship between what students learn in final year and what they will be doing the following year as new graduates? Circle **yes** or **no**. If so, what is it? If not, what isn't there a relationship? (Use the back if you want.)

Appendix B

2011 Supervisor experience questionnaire

Supervisors' experiences of veterinary placements

Survey Instructions:

Please read the Participant Information Statement before commencing this survey.

The following survey asks you three questions about your experiences of supervising veterinary placements. Please answer each question as fully as possible in the style that you would use when writing to a friend.

Question 1

What do you think supervision of final year interns is about?

Question 2

How do you go about supervising final year interns? What things do you do? Why do you do these things?

Question 3

Do you see a relationship between how you work with a final year intern and how you would work with a new graduate veterinarian? If so how would you describe this relationship?

Appendix C

Classification of responses to preliminary survey of supervisors' experiences

Supervisor ID number	Conception of learning outcomes	Approach to supervision
1	B	B
2	B	B
3	C	D
4	C	C
5	B	B
6	B	C
7	C	C
8	A	A
9	B	B
10	C	C
11	B	C
12	D	D
13	D	D
14	B	B
15	C	C
16	C	C
17	C	C
18	C	C
19	A	B
20	D	D
21	C	C
22	B	B
23	C	C
24	B	B
25	B	D
26	A	A
27	A	A
28	-	-
29	A	A
30	C	B
31	A	B
32	A	B
33	A	A
34	A	A
35	B	C
36	A	A
37	B	C
38	C	B
39	B	B
40	D	C

Appendix D

Classification of responses to large scale survey of supervisors' experiences

Supervisor ID number	Conception of what supervision is about	Approach to supervision
1	C	C
2	C	C
3	B	B
4	C	C
5	C	C
6	C	D
7	C	B
8	B	B
9	B	C
10	C	B
11	B	B
12	A	A
13	B	D
14	B	B
15	C	C
16	B	B
17	B	B
18	C	B
19	A	B
20	C	B
21	B	B
22	C	C
23	C	D
24	C	C
25	B	B
26	B	C
27	B	B
28	C	B
29	D	D
30	C	C
31	C	C
32	A	A
33	A	B
34	A	A
35	C	C
36	A	B
37	D	C
38	A	B
39	B	B

Supervisor ID number	Conception of what supervision is about	Approach to supervision
40	C	B
41	B	B
42	B	C
43	C	D
44	B	A
45	B	C
46	C	C
47	B	A
48	-	-
49	B	B
50	C	B
51	C	C
52	B	B
53	B	A
54	C	C
55	C	D
56	C	C
57	B	B
58	B	B
59	D	D
60	A	B
61	C	C
62	A	A
63	B	C
64	B	B
65	B	A
66	C	C
67	C	C
68	C	C
69	B	C
70	C	D
71	B	B
72	B	B
73	A	C
74	C	C
75	B	D
76	C	C
77	A	A
78	B	C
79	A	A
80	C	C
81	A	B
82	B	A

Supervisor ID number	Conception of what supervision is about	Approach to supervision
83	B	B
84	B	C
85	A	B
86	C	C
87	B	B
88	B	A
89	C	C
90	B	A
91	B	A
92	C	C
93	C	C
94	B	B
95	A	B
96	C	B
97	C	C
98	C	C
99	C	C
100	C	C
101	B	B
102	D	D
103	B	B
104	D	D
105	D	C
106	B	B
107	B	B
108	C	C
109	B	A
110	C	C
111	C	B
112	B	D
113	B	C
114	C	C
115	B	B
116	B	B
117	C	C
118	A	B

Appendix E

Equivocal survey responses: Classifications of conception following inter-researcher discussion

Conception	Researcher 1	Researcher 2	Researcher 3	Researcher 4	Consensus agreement after discussion
13	B	B	B		B
14	B	B	B		B
21	B	B	B		B
24	B/C	C	B	C	C
28	B	C	C		C
35	C	C	C		C
42	B/C	B	B		B
45	B/C	B	B		B
46	B	C	C		C
50	C/B	C	C		C
51	C	C	C		C
65	B	B	B		B
83	B	B	B		B
89	B/C	C	C		C
97	C	C	C		C
111	B	C	C		C
112	B	B	B		B
117	C	C	C		C

Appendix F

Equivocal survey responses: Classifications of approach following inter-researcher discussion

Approach	Researcher 1	Researcher 2	Researcher 3	Researcher 4	Consensus agreement after discussion
4	C	C/D	C	C	C
7	B	B	B	B	B
9	C	C	C	C	C
14	A/B	B	B	B	B
18	B/C	B	C/B	B	B
20	B	B	B	C	B
23	C/D	C/D	D/C	D	D
26	C	C	C	C	C
28	B	B	B	B/C	B
53	A	A	B/A	A	A
61	C	B	C	B/C	C
64	B	B	B	B	B
70	C/D	D	D	D	D
71	B/C	C/B	B	B	B
73	C	C	C	C	C
88	A	A	A	A	A
103	B/A	B	B/A	B	B
111	A/B	B	A	B	B

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