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EXCELLENCE

A gap analysis between international best practice and current methods of disseminating non-technical capabilities to veterinary undergraduates in New Zealand

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Executive Summary

Where the value of 'analytical intelligence' (IQ) has traditionally maintained pre-eminence in veterinary medical education, the comparative importance of 'emotional intelligence' (EQ) has recently infiltrated the agenda. Educators often refer to the qualities encompassed by EQ as 'non-technical competencies' and acknowledge that veterinarians require more training in this area to be successful.

This study compares the dissemination of non-technical competencies at four international veterinary schools (University of Sydney; Nottingham University, Washington State University; Murdoch University) with the dissemination approach at the New Zealand Institute of Veterinary, Animal and Biomedical Sciences at Massey University in Palmerston North. The overall conclusion of this gap analysis is that *where the dissemination of non-technical competencies to veterinary undergraduates is concerned*, New Zealand may very well have been leading the way in 2002 – but in 2009, it is clear that the time is right for New Zealand to revisit its approach.

This study also invited New Zealand veterinary academics to comment on their role in the dissemination of non-technical competencies to veterinary undergraduates. The Australasian Veterinary Attributes provide a structure for the reporting of academics' comments. Results indicate that the biggest 'gap' between New Zealand and its international competition is the hesitation of autonomous academics to participate in an organised approach to the dissemination of non-technical competencies.

A 'chicken and egg' debate arises: does academic hesitation arise from the absence of a compelling rationale for change; or is organised change fundamentally non-compelling to autonomous academics? Given this debate, thoughts on how to formulate a 'compelling rationale for change' are discussed – followed by thoughts on how to design, develop, test and implement a revised approach to the dissemination of non-technical competencies among veterinary undergraduates.

Methodology

This study began with a **literature review** of international articles published on the subject of non-technical capabilities among veterinarians.

The study then investigated international **case studies**, with thanks to the following:

- Faculty of Veterinary Science, University of Sydney, Australia
  www.vetsci.usyd.edu.au/
  Rosanne Taylor, Acting Dean of Faculty
  Sanaa Zaki, Director of University Teaching Hospital
  John Baguley, Professional Practice and Year 5 Coordinator
- College of Veterinary Medicine, Washington State University, United States
  www.vetmed.wsu.edu/
  Kathy Ruby, Wellness and Professional Studies
- School of Veterinary Medicine and Science, Nottingham University, United Kingdom
  www.nottingham.ac.uk/vet/
  Liz Mossop, Veterinary Professionalism Paper Coordinator
- Division of Veterinary and Biomedical Sciences, Murdoch University, Australia
  www.vetbiomed.murdoch.edu.au/
  Jennifer Mills, Project Leader, Curriculum Development and Assessment Methods to Enhance Communication and Life Skills in Veterinary Students

Next, the authors invited a range of academic faculty from New Zealands' Institute of Veterinary Animal and Biomedical Sciences to participate in **qualitative interviews** with the Research Assistant. Nine academics responded to the request, one of which was the Programme Director. Each participant was interviewed for approximately 60 minutes. The following questions, which had been circulated in advance, were discussed during the course of the interview:

1. If any, **what** non-technical capabilities do you believe are relevant to veterinary undergraduates?

2. If at all, **why** do you believe non-technical capabilities are important?

3. If at all, **how** are non-technical capabilities currently being reinforced among veterinary undergraduates at IVABS? Please consider different stages: (a) Admissions; (b) Orientation; (c) Curriculum; (d) Mentoring.

4. If at all, **how** could non-technical capabilities be better reinforced among veterinary undergraduates at IVABS?

5. If anyone, **who** are the best people to be reinforcing non-technical capabilities among veterinary undergraduates?

Data collected during the course of the interviews was transcribed by the Research Assistant. **Data analysis** was followed by the presentation of **results**, which are organised in to logical categories found in the international literature.

To conclude, this study presents a **discussion** of the results, supported by a '**Change Management Plan'.**

Literature Review

1. Why are non-technical capabilities important?

The term ‘emotional intelligence’ (EQ) has become very popular in the business world. The essence of EQ is an awareness of: our own feelings; how to manage our own feelings; the feelings of others; and how our behaviours influence the feelings of others. Research from the business world indicates that high levels of EQ are intrinsically linked to the achievement of positive organisational outcomes. Research across 30 professional and managerial career fields reveals that between 47% to 56% of work/life success is the result of EQ (Stein & Book, 2000). Among leaders, the most critical skills in the U.S are said to be linked to emotional intelligence (Goleman, Boyatzis, McKee, 2002). Their research and the research of others suggests that as much as 79% of leadership success results from high EQ *(*Hay-McBer Consulting*).*

Where the value of ‘analytical intelligence’ (IQ) has traditionally maintained pre-eminence in veterinary medical education, the comparative importance of EQ has recently infiltrated the agenda. Educators often refer to the qualities encompassed by EQ as ‘non-technical competencies’ and acknowledge that veterinarians require more training in this area to be successful (Timmins, 2006)

It is easy to deduce that being a competent clinician is just the basic threshold skill necessary to be “in the game” (Burge, 2003). For example, it has been reported that 85% of pet owners consider their pets members of the family, and this increases the emotional content of conversations and decisions about the health of the pet (Timmins, 2006). However, it was not until the comprehensive KPMG ‘Mega Study’ and the Brakke-Baye Study commissioned by the AVMA in 1999 that discussion around non-technical competencies in the veterinary profession really gained momentum. The reports described a widespread deficiency of what they termed ‘non-technical competencies, knowledge, and attributes’ (SKAs) among veterinary undergraduates who were not being adequately prepared for life as a veterinary professional. For example, the study asked pet owners to rate the importance of 12 factors when choosing a veterinarian. Respondents’ first priority was that a veterinarian should be ‘kind and gentle’ (Brown & Silverman, 1999). KPMG thus concluded that the deficiency of SKAs was a significant risk to the long-term economic success of the profession (Brown & Silverman 1999).

2. Which non-technical capabilities are most important for veterinary professional life?

In response to the KPMG 'Mega Study', Personnel Decisions International (PDI), an organizational development consulting firm, was hired to undertake another study in 2000. The objectives of the PDI Study were to define: a generic definition of how success is measured in the veterinary profession; a list of nontechnical competencies that contribute to success; a set of recommendations for veterinary schools and colleges on how to develop the non-technical competencies most needed in members of the veterinary profession (Lewis and Klausner, 2003).

Inspired by progress being made in the United States and, with the help of Dr Donald Walsh from the University of California, 25 participants of a workshop at the University of Sydney in 2002, defined the following 'Australasian Veterinary Attributes' required in 'Professional Life' (Collins & Taylor, 2002):

- **Professional Duty of Care** – professional integrity; responsibility to animals, clients and the community; maintenance of biodiversity; preservation of the environment and agricultural sustainability; understanding of legal obligations and relevance to community health.
- **Effective and Empathetic Communication** – with clients, staff, peers and the community; in English or another language if appropriate; orally and in written form; with compassion, courtesy, respect, honesty and absence of discrimination.
- **An Understanding of the Business of Veterinary Practice** – compromising business fundamentals, organisational systems, human resource management, Key Performance Indicators, and ongoing quality control – with due attention to health and safety, knowledge management, design of hospitals, and complaint management.
- **Capacity for Self-Management and Self-Knowledge** – Including goal-setting and planning; information literacy and management; emotional intelligence; community leadership; change skills; teamwork; managing a career; work/leisure balance; and development and improvement of professional knowledge and skills.
- **Recognition of and Compliance with Ethical and Professional Standards** – In all areas of veterinary activity and with particular attention to the Code of Professional Conduct.
- **Adaptability and Ability to Collaborate –** with professional colleagues, support staff, clients and other professionals. Also by participation in veterinary organisations and through accepting responsibility for the education of the next generation of veterinarians.

3. How is the education of non-technical capabilities incorporated into veterinary programmes?

By 2002, with definitions of non-technical attributes in place, significant changes begun happening in both the United States and Australasia. Though it was once thought such attributes could not, or should not be taught (Heath 2006), there is now clear evidence that undergraduate outcomes related to professional attributes and personal development could be successfully addressed by targeted programmes (Cake, 2008). The concept of a professional attribute course has since been rapidly and widely adopted by North America and Australasian veterinary schools (Lloyd and King, 2004).

By June 2003, a survey was sent to all 27 Veterinary schools in the USA that were in operation at the time of the KPMG study. It was clear that changes were underway in five general categories: Admissions; Orientation; Curriculum; Co-curricular; Other (Lloyd & King, 2004).

• Admissions

Lloyd & King discovered in 2004 that, based on the recommendations of the PDI Study, several North American schools had initiated a behavioural event interview. Others had increased emphasis on non-academics in the admissions process. At least one school added a prerequisite business course as a requirement for admission.

It is worth noting that North American veterinary schools require candidates to have already completed an undergraduate degree. With greater experience, it could be assumed that North American veterinary students enter their programmes with more mature life skills. For example, **Washington State University** observe that their students are likely to have lived away from their parental home for several years, during which time they are likely to have faced some of life's more serious dilemmas – and are therefore able to maintain a healthy perspective.

During the selection process at **Nottingham University**, they make it clear that non-technical and technical competencies are valued equally. Applicants are asked to complete an on-line questionnaire exploring their non-technical abilities. Supporting evidence is required if the applicant progresses to the interview stage. The interview consists of three phases. First, the candidate receives a formal interview by one practising vet and one academic scientist. During this interview, candidates are required to talk about their knowledge and their exhibition of non-technical competencies. The second phase of the interview is a practical assessment, which tests candidates' individual non-technical competencies, e.g. communication and problem solving. The third phase is a team activity, during which candidates work with nine other interviewees. Interviewers observe candidates' ability to work in a team.

• Orientation

Lloyd & King discovered in 2004 that a number of North American schools were conducting team building exercises in their orientation programs. Other new features included an emphasis on Emotional Intelligence, Myers-Briggs Type Indicator, mentoring and leadership. At one institution, the orientation for new veterinary students had been extended to seven days.

Washington State University has been the pioneers of non-technical competencies at the orientation phase. The Cougar Orientation and Leadership Experience (COLE) takes place before the rest of the curriculum begins. COLE has become, "*a venue for alerting students to the rigours and challenges of the veterinary program, promoting peer collaboration and exposing students, in a preliminary way, to principles of servant-leadership, teamwork, emotional intelligence and effective communication".*

• Curriculum

Curricular activities were the most commonly reported response to the KPMG study. Changes included increased emphasis on topics such as team building, business management, marketing, professional and interpersonal skills, law / ethics, personal finance, communication, entrepreneurship and life skills (Lloyd & King, 2004).

Our study presents curricular information from five case studies:

– Washington State University, United States

While COLE is valuable, Washington State University believe that non-technical competencies cannot be taught through a single isolated event. Behavioural growth in these areas occurs over time and must be reinforced in a variety of contexts. Indeed, the adage is that seven or eight exposures to a paradigm are necessary for lasting behavioural change to occur. For this reason, the following initiatives focus on the dissemination of non-technical competencies in the curriculum:

- **Mini-campus** – These are held at the beginning of the spring semester for first, second and third year students. The objective is to revisit key COLE themes in the context of the previous semester and ask students how well the skills imparted at COLE prepared them for the semester just completed. The objective is for students to see that having these skills has actually helped them to handle more effectively the real-life challenges they face.

- **Success as a Veterinarian Course –** This spans three years of the curriculum and uses a varied pedagogical approach, e.g. small group problem solving; discussion; service learning opportunities; reflective portfolios.

- **Leadership Development Forum** – This is a mandatory laboratory class that is linked to Success as a Veterinarian Course. Its aim is to reinforce the principles of positive group collaboration and group cohesion and to develop a sense of community among first year students. Students are re-organised into their COLE groups and are introduced to a leadership trait. In the forum, they discuss the importance of the trait to the veterinary school and profession. At the semester's end, presentations are given and evaluated by participating faculty and peers. Each group also evaluates their personal team effort and individual contributions.

- **Practicum** – Students are expected to participate in one of five practicum from a choice of: Pet Loss Hotline; Therapeutic Horse Programme; Ambassadors Group; Leadership Class / Change Agent Training Programme; Reverence for Life – Research Class around Animal Bond.

- **Diagnostic Challenge** – These are a renowned series of second-year training exercises that have existed since 1991. During the two weeks devoted to Diagnostic Challenges, students do not attend regular classes. Instead, they are assigned to 'clinic' groups of five peers, introduced to a simulated client, and given a description of how their assigned case might present to their 'clinic'. The exercise culminates in formal case presentations by the clinic groups in which they outline their literature searches, diagnostic steps, and treatment outcomes. At the completion of the Diagnostic Challenge case, groups of 25 convene for reflection. The groups are taught the art of constructive feedback and coached while giving verbal feedback to individual team members.

- **Veterinary Practice Management** – This is an elective course that is taught in the third year. Content previously focused on personal and professional finance; business law; the Veterinary Practice Act; human resource issues; professional / personal liability considerations. Recent additions include: interpersonal communications; group dynamics as they pertain to an animal health care team; the role of empathy in client relations. Students were shown how to make an appropriate recommendation to a client, how to earn a client's trust, and how a prudent follow-up increases the likelihood that a patient will receive the care it needs and deserves. Speakers used video presentations and role-modelling exercises to illustrate where medical practice, client satisfaction, client compliance, or patient care were either enhanced or diminished by effective or poor non-technical competence. Finally, scenario based interpersonal challenges faced in

veterinary practice, such as 'the disappointed client', the 'excessively bonded client', the 'thrifty client' and the 'aggrieved client' were used to demonstrate and reinforce essential professional skills**.**

- **Assessment –** The clinical faculty recently adopted a grading rubric that enables them to assess students' knowledge base, technical acumen, patient care, professional decorum and communication skills over the course of their clinical rotations. The same rubric is used to evaluate students' performance on the fourth year Clinical Proficiency Examination. Use of the rubric across courses establishes a consistency of message to the student body and confirms that non-technical competencies, including communications skills, are assessable attributes.

– Murdoch University, Australia

Murdoch University are involved in the Australian Learning and Teaching Council (ALTC) Grant (previously known as the Carrick Grant). The grant is to develop methods of 'Enhancing Communications and Life Skills in Veterinarians'; and to develop methods of assessment. There are three key projects being undertaken within the Murdoch University Curriculum:

- PROJECT 1: Participation in a questionnaire from the UK that uses the Goleman model of Emotional Intelligence to investigate attitudes towards animals. Results were very similar to the UK where females show more empathy – and as students mature through course they become more empathetic. The purpose of the activity is to raise self-awareness.

- PROJECT 2: A portfolio of challenges has been developed, e.g. client doesn't have the finances / client feels against euthanasia. These challenges generate discussion about ethical models of decision making. The scenarios are in the process being transferred online as Case Studies with the intention that they will prepare first years for Project 3.

- PROJECT 3: There are sessions based on the Calgary-Cambridge model, which is an aid to defining the curriculum and organise teaching in communication training programmes. It was designed by Kurtz and Silverman in the context of medical education. The framework incorporates five stages of consultation: Initiating the session; gathering information; building the relationship; giving information; and closing the session.

  In the first year, three students gather in a room to act as (a) client; (b) vet and (c) observer. The sessions are videoed. The initiative was trialled with actors, as per the Cambridge-Calgary model, but the cost is too much. In the second year, students attend

practices to observe consultations. Afterwards, they reflect on their experience in terms of the Cambridge-Calgary model. Students in 5th year attend ten placements, of which five are outside university. Afterwards, they have a de-brief tutorial to discuss difficult situations that were experienced with clients / other staff. The kinds of skills that are helpful in addressing these situations are then discussed.

– University of Sydney, Australia

University of Sydney 'Generic Attributes' underpin all units of study within the curriculum and focus on good communication, information retrieval, critical analysis, research and inquiry, effective team skills, and social and ethical responsibility (Canfield and Taylor, 2005). The Faculty of Veterinary Science at the University of Sydney aims to produce veterinarians who are competent, confident and compassionate (Taylor, 2002). Derived from University of Sydney's 'Generic Attributes', the 'Veterinary Attributes' (See Appendix 1) outline the knowledge, skills, and attitudes required for successful performance as veterinary practitioners and have been developed in consultation with the university, Australasian Veterinary Schools Board, the profession and the community. The veterinary curriculum is integrated and constructively aligned across all years to develop these attributes, and the fifth-year rotations directly assess demonstration of the attributes in clinical placements (Canfield and Taylor, 2005).

Every course from the first to the fifth year has a series of learning outcomes that are linked to the 'Veterinary Attributes', of which some are non-technical competencies. This means that academics are forced to understand what the professional programme is trying to achieve. Secondly, in order to create time for active student learning, timetabled teaching was reduced by 25% - and 'large class' teaching was limited to 50% of teaching time. This created "space" for the introduction of a stream called Professional Practice, which provided enhanced non-technical skill development. In addition, a lecture free final year of experiential learning in professional practice placements was introduced which further reduced classroom teaching time in the degree by 20%. This compression of traditional content teaching time challenged staff who were unable to continue with the existing teaching modes (lecture, tutorial and practical classes).

Professional Practice includes four units, which are taken in the two semesters of year 1, the first semester of year 2, and the second semester of year 3. Preparation for Veterinary Practice at the start of year 5 may also be regarded as a unit of Professional Practice. Professional Practice is designed to prepare students for life as professional veterinarians. Students learn personal and professional skills to enable them to adapt successfully to

university life, to understand all aspects of veterinary practice, and to take a leadership role in the community. In the first year, students build social networks and university study skills and investigate many branches of the veterinary profession. Students develop a deeper understanding of animal welfare, practice basic animal examination skills, conduct a research investigation, and visit Educational Support Practices (ESPs) to study communication, structure, and function in private veterinary practices. Classroom activities develop teamwork and communication skills for media interaction. In year 2, students continue to visit ESPs to develop an understanding of client and practice management. In year 3, legislative aspects of veterinary practice are explored in detail and students complete a comprehensive practice business plan (Canfield and Taylor, 2005).

The fifth year of the degree course is a lecture-free program of experiential learning to develop practical skills that will ensure students' success upon graduation. In effect, students act as interns and complete 10 four-week rotations over 12 months. Prior to rotations, students complete an intensive Preparation for Veterinary Practice unit that polishes their business principles, communication skills, knowledge of professional ethics and legislation, clinical skills, manipulative skills, and animal handling skills (Canfield and Taylor, 2005).

– Nottingham University, United Kingdom

The School of Veterinary Medicine and Science was established at Nottingham University in 2006. The School recognises that, in the context of disseminating non-technical capabilities, they are privileged to be 'creating' rather than 'changing' a culture.

The dissemination of non-technical competencies at Nottingham University is structured around a 'Personal and Professional Skills (PPS) Curriculum'. The PPS are listed in Appendix 2. Innovative elements of the PPS Curriculum include the following:

- **Personal and Professional Skills Module** – This is a compulsory module undertaken for the first four years of undergraduate study. The module summary is listed in Appendix 3. Sessions are mostly run in facilitated small groups. There is a two week introductory module at the start of year one. Initial topics are aimed at preparing students for the "Nottingham experience", so concentrate on team and group work and looking at differing assessment formats. Towards the end of the first year, students are given IT instruction (Word, Excel, PowerPoint and Publisher) and also interact with clients and their animals. From the second year the module includes whole year seminars with a range of external lecturers. Medical actors are used extensively for communication skills practice as per the Veterinary Version of the Calgary-Cambridge Guide. Nottingham University were proud to

note that they probably use medical actors more than most other schools. On other occasions called ‘meet the client afternoons’, students interact with real clients. On these afternoons, students ask clients about their animals’ medical history and what they want from their vet.

- **Electric Portfolio** – Students are required to complete a portfolio over the whole 5 years they are at Vet School. The portfolio is a “must pass” requirement within the Personal & Professional Skills (PPS) modules of the veterinary degree. But more importantly than this, it is an essential tool to help students collate their learning. There is a lot of information they need to take on board in order to become a qualified vet, and a portfolio will organise this and enable them to easily refer back to their experiences as they progress through the five years. The PPS learning outcomes are the backbone of the portfolio and describe what they are learning and being taught over the first three years during the BVMedSci course. All the documents they submit will be linked to the course learning outcomes. The portfolio is therefore a collection of evidence showing what they are learning. It is proof that they are absorbing and assimilating the information given in lectures and teaching sessions, and also records learning that takes place out of the vet school on placements and elsewhere. Importantly, it will also contain reflection by students about their learning. On a day to day basis, students are encouraged to add to their portfolio at least once a week. However, there are some mandatory components, including a Skills Diary and action plans. Their skills diary must be completed on a daily basis whilst on placements and whilst attending practicals.

- **E-vet Practice Business Game Proposal** – The proposal is a construction of the “e-vet practice”, a simulated veterinary business allowing development of short and long term business strategies. Students should be able to allocate various roles within their business to different members of their team. Ideally practices should be able to compete with each other both within schools and between the vet schools. Good and bad decisions will affect the progression of the practice, and these can relate to professional issues such as dealing with complaints as well as financial decisions e.g. how much to charge for services. Incorporating a simulation should turn the business teaching into a livelier, richer, more powerful learning experience. A realistic, substantive, “learn by doing” simulation will spark a highly desirable degree of student excitement about the subject matter of crafting and executing strategy. This will be far more pedagogically effective than using case analysis to show students how to make use of core concepts and analytical techniques. The e-vet practice should give students valuable practice in being active strategic thinkers and drilling them in responsible, ethical decision making.

- **Co-curricular**

This included educational programs developed to complement those available to students within the curriculum. Usually these do not involve college credit. These activities included student clubs and special student conferences, including a number of organisations that hosted regional School-to-Success Weekend Workshops (Lloyd & King, 2004).

– Murdoch University, Australia

Murdoch University invited students to attend the Veterinary Leadership Experience at Washington State University in 2007. Of the students that attended, two were inspired to establish student-run activity with the objective of mobilising other students who shared their interest in non-technical capabilities. They established a working group with outside funding from the Veterinary Business Managers Association (VBMA) in the United States. The Murdoch working group was the first outside North America to be established. The group ran a conference and produced a manual that targeted at other veterinary students. They hosted lunchtime seminars and enticed other students to attend by providing pizza. These lunchtime seminars featured external veterinary speakers. Murdoch are looking to reward attendance at these seminars with continuing education 'credit points'. The credit points are a new initiative that hasn't been implemented yet. The principle is to value students who demonstrate the behaviours that Murdoch University want graduate veterinarians to show.

- **Other**

These included mentoring programs designed to support veterinary students; continuing education programs; development of a well-planned marketing program; creation of an assistant dean for career development; commissioning of research projects in order to get a better understanding of the attributes required by veterinary graduates (Lloyd & King, 2004).

4. What is the role of veterinary academics in the education of non-technical capabilities to veterinary undergraduates?

Despite the integration of non-technical capabilities into veterinary education, it is perceived by many students that non-technical capabilities are an optional 'add-on'. For example, history taking is often taught by specialists in teaching hospitals while communication courses are taught by psychologists. This can give inappropriate messages to learners: "Real" doctors take clinical histories and are not interested in communication, whereas communication teachers communicate but are not interested in

the clinical history (Kurtz, 2003). At **Murdoch University** in Australia, initial feedback has clearly identified the relevance of speakers as a primary issue, highlighting negative perceptions where professional attributes were advocated by people lacking credible experience, or where speakers were excessively cynical or scathing of the profession (Cake 2008).

To overcome the perception that non-technical capabilities are an optional 'add-on', ideally, academic educators would model non-technical competencies in addition to teaching them (Lloyd and Walsh, 2002). A study by the Australian National Commission on Veterinary Economic Issues (NCVEI) confirmed that everyone in the field, including academic educators, have an important responsibility in modelling leadership values to students (Mase, Lloyd, King, 2003). Leadership needs to become part of the veterinary culture in academic and non-academic settings, where all professionals must be held accountable for demonstrating and reinforcing good leadership behaviours (Lloyd, King, Mase, Harris, 2005).

However, the suggestion that academic educators should be held accountable for the dissemination of non-technical capabilities is met with some difficulty. Historically, the mission of veterinary schools has been to advance veterinary medicine by research and to train students to become competent doctors (Burge, 2003). Consequently, where the education of non-technical capabilities is concerned, several limitations arise:

- **Cynicism of Academics**

Staff have widely varied views of professional attribute teaching. This may define inherent limitations on the role of faculty in delivering the education of non-technical capabilities, and highlights the need for significant input from successful external practitioners (Cake 2008).

- **Pressure on Time**

One of the most challenging constraints is the enormous amount of material already covered in all professional veterinary curricula (Lloyd and Walsh, 2002); Veterinary curricula are pressured by the constant increase in knowledge and accreditation requirements (Cake, 2008)

Universities are chronically under-resourced (Cake, 2008); In Australian universities, academics teaching in large first-year science courses are facing many challenges in their endeavours to support student learning. Many of these difficulties arise from the increasing number and diversity of students, along with the reduction in resources (Peat, Taylor, Franklin 2005);

- **Capability of Academics**

Most who have pursued a career in veterinary medicine came through undergraduate studies in the sciences and have had little or no exposure to general leadership, management or business principles (Burge, 2003); Clinical faculty vary in their own training and knowledge base regarding communication as well as their expertise and comfort with teaching communication skills. Because of this, they often revert to the traditional medical history, the only approach they were taught in their own education (Kurtz, 2003); Veterinary academics typically have an introvert, rationalist Myer-Briggs personality profile less suited to this type of teaching (Ruby, unpublished data); Most academics no longer practice and retain only weak links to the profession, diminishing their experience base (Cake, 2008).

- **Role Clarity**

In New Zealand, the Government's Performance-Based Research Fund (PBRF) is perceived to be a clear message in favour of research on a national scale. At one New Zealand university, the pre-eminence of the PBRF is perceived to confirm, what are described as, *"the research-centric rules of the game for promotion."* Interviewees that have sat on promotion committees confirm that being a good teacher will do no one any favours at promotion time (Chandler, 2006).

- **Autonomous Academics**

One interviewee recollected very seldom being told what to do in a 45 years of academic experience. Academics acknowledge that they enjoy a level of trust , empowerment and freedom that is found in only a few other industries (Chandler, 2006). Given that academics are attracted by the large degree of autonomy, there is often difficulty in ensuring responsibility and accountability because introducing control mechanisms inhibits that autonomy and can reduce creativity (HEFCE, 1999).

- **Lack of Student Interest**

Ranking surveys of a mix of Veterinary Attributes have shown that professional attributes such as research skills, business management, and leadership are not intuitively ranked highly by either students or staff (Cake, 2008); It should not be assumed that students will automatically see the relevance of these issues. When students are faced with the need to grasp the entire breadth of veterinary medicine in four short years, their inconsistent interest in non-technical skills is not surprising (Lloyd and Walsh, 2002).

5. How could veterinary institutions generate interest among veterinary academics to become increasingly involved in the dissemination of non-technical capabilities to veterinary undergraduates?

Despite the limitations, we should expect our leaders to be good educators and our educators to be good leaders (Mase, Lloyd, King, 2003). This means we need to find methods of enabling and motivating academic educators. Suggestions include:

• Common Vision

Changing the way the veterinary profession approaches leadership will require working from a shared vision generated from a formal change process. (Lloyd, King, Mase, Harris, 2005). Faculties will need to debate the issue, 'what is core'? (Lloyd and Walsh, 2002)

- **Nottingham University** set out to define a common vision before the new veterinary school was established in 2005. The Dean and the Deputy Head of School informally surveyed veterinary graduates to understand what it was about their curriculum that was missing. The thing that came up again and again were the non-technical competencies. In this context, the organisational culture of the veterinary school has been created from the top. Consequently, academic faculty have realised from the outset that non-technical competencies are high on the agenda. The fact that, "it's happening in other institutions" also means that academics at Nottingham University do not want to get left behind.

- **Washington State University** began with a team of 'champions', which include theory academics, medical faculty, professional skills people, the Dean and the Associate Dean. They began by brainstorming what they wanted a veterinary graduate to look like. They used a combination of data from alumni and practitioners that were hosting students during work placements. Once the picture of an ideal veterinary graduate was agreed, the curriculum was reviewed. The Dean was vocal that the dissemination of non-technical competencies was everyone's responsibility.

- The Dean of the **University of Sydney** hosted workshops with stakeholders, including staff, students, the veterinary profession, industry, and key University personnel between 1998 and 2002. Some students felt ill-prepared to cope with the stressful transition to professional practice. Student leaders helped staff understand the detrimental effects on learning of an overcrowded, content-laden curriculum which lacked alignment to veterinary practice needs. The Dean and Faculty Executive Committee ensured adoption of a distributed, inclusive model of leadership which emphasized all staff taking personal responsibility for educational

change. This is known to be more sustainable than relying on a few enthusiastic teachers to create a climate of excellent teaching (Taylor and Canfield, 2006). In short, a cultural shift has been engineered among staff who are now aware of the impact they have on student learning in a social context.

- **Murdoch University** believe that change requires a Dean who is supportive of the cause. The Veterinary Programme Leadership Team at Murdoch includes a group of academics who are advocates of non-technical competencies and a couple of people who think it is nonsense. The Dean aims to influence the negative thinkers because, although it is alright for people to be different, the Dean believes that the rest of the veterinary profession is taking non-technical competencies seriously, so Murdoch cannot afford to be left behind.

• Ideas Exchange

National workshops should be conducted so faculty can share ideas for integrating non-technical competencies into their curricula (Mase, Lloyd, King, 2003).

- **University of Sydney** hosted planning sessions and a cultural change retreat to engage staff (academic and general) with the vision. Staff showed increased willingness to listen, debate, act in different ways and make changes in teaching practice. Some senior academic staff who found it difficult to adapt retired or left, replaced by incoming staff who embraced cultural change (Taylor and Canfield, 2006).

- **Washington State University** leadership team considered strategic opportunities where non-technical competencies could be weaved into the curriculum by 'allies'. The approach to secure 'allies' was to intrigue academics to read about non-technical competencies, which would hopefully inspire them to make small changes and begin to support the 'champion' team. This very informal approach via networking and ideas-exchange was deemed effective.

• Professional Development

Colleges and universities should strongly consider identifying faculty members with high potential, and to professionally coach them. Veterinarians must learn to allow outside experts to teach and help them (Mase, Lloyd, King, 2003). Faculty development programs should be created and used by all colleges (Lloyd, King, Mase, Harris, 2005).

- **Nottingham University** require all members of faculty to undertake a teaching qualification. In addition to the qualification, new members of staff are introduced to evidence in the literature about role-modelling and why it is so important. Consequently, there is an aura

developed around the importance of non-technical competencies among veterinary academics.

- **Washington State University** have a 'train the trainer' programme to help academics understand how to disseminate non-technical competencies during their teaching. It is a two day event that highlights techniques that academics can use in classes, not only to teach class but to enhance professional skills. The event especially helps academics facilitate small groups through experiential exercises, e.g. role plays. Academics themselves are taught how to help students reflect on this experience – what did I see about myself; what did I see about others; how did I interact with people; what do I want to change? In addition, Washington State University invite academics to work as co-facilitators of the Veterinary Leadership Experience.

- **University of Sydney's** faculty in-house leadership training program is run by external facilitators. Its aim is to give staff confidence and skills to take personal responsibility for change occurring in their personal and professional lives by helping them to develop a better understanding of how they interact with others to achieve goals and success (Canfield and Taylor, 2005). Important elements were: providing supported opportunities for staff to pursue their own creative ideas about improving student learning (small funds provided for teaching improvement projects); creation of flexible teams to implement new approaches; iterative development of new initiatives and a shared vision of alignment of the curriculum to Veterinary Attributes.

  In addition, since 2002, all new Faculty teachers have been assisted to complete the Graduate Certificate in Educational Studies (Higher Education) through the university's Institute for Teaching and Learning. This means new faculty commence with a shared understanding of good teaching practice and scholarship of teaching (Taylor and Canfield, 2006). The Thyne Reid Innovative Teaching Unit and the faculty's Teaching and Learning Committee then provide on-going development for academic and non-academic staff involved in teaching, including training in developing online learning resources, facilitating small group learning, integrating Veterinary Attributes into the curriculum, aligning learning outcomes, and evaluating effective methods of assessment (Canfield and Taylor, 2005).

  In addition, all staff, in addition to having supervisors, have mentors and are encouraged to form peer support groups or working teams to support their teaching, research, and professional development (Canfield and Taylor, 2005).

- # Reward Systems

This attention to the dissemination of non-technical competencies could be encouraged by a reward system for teaching, mentoring and leadership (Lloyd, King, Mase, Harris, 2005).

- **University of Sydney** encourage all academics to behave as role-models and demonstrate the non-technical competencies specified in the Veterinary Attributes. These behaviours are reviewed during staff evaluations.

Results

Overall, the results indicate unanimous agreement that non-technical capabilities are relevant to veterinary undergraduates, but there is debate about their level of importance.

Participants unanimously reflected that non-technical competencies are relevant to veterinary undergraduates in both their professional and their private lives. The general consensus was that the Australian Veterinary Attributes seem like a good summary of non-technical competencies. Participants elaborated that non-technical competencies are important, especially because veterinary undergraduates in New Zealand are asked to become professionals upon entry to the veterinary programme. One participant made the valid point that, *"clients don't know how smart you are but only how you deal with them."* It is therefore widely accepted that, "*if you have someone who can run surgery but not communicate with people, then they are no use*". However, participants also noted that the primary objective of the veterinary programme is to, "*ensure that graduates are equipped with adequate technical skills to deal with situations*". Consequently, it is believed that (rightly or wrongly) the majority of time and resources are allocated to the dissemination of technical skills.

Data collected about non-technical competencies is presented against the four categories found in the international literature: (1) Admissions; (2) Orientation; (3) Curriculum; (4) Role Modelling.

1. ADMISSIONS

Admission to the veterinary undergraduate programme is based primarily on academic grades. Applicants are only invited to present references in special circumstances. Emphasis is not placed on references because only ten days of experience in veterinary practice is required prior to admission. Research undertaken by Tony Charleston on behalf of the Veterinary Schools Advisory Committee in Australia and New Zealand indicates that academic grades are the best predictor of student performance in a veterinary undergraduate programme. Consequently, the New Zealand admissions process does not currently screen applicants for non-technical abilities.

When asked to comment on the current admissions process, participants, particularly but not exclusively those with experience in the United States, observed that veterinary undergraduates in New Zealand are, *"very young and lack life experience".* The problem with this was highlighted by one participant: *"One of the things we have seen are that students are coming straight out of high school and their parents houses. We expect them [veterinary undergraduates] to deal with major decisions like death and financial decisions for farmers. Sometimes as veterinarians we fall down*

because there is so much pressure on us – there are so many trials on integrity. I'm not sure that these young people are prepared with the life skills to cope." It was observed by many that more mature veterinary undergraduates in the United States have, *"probably dealt with some serious life events"* and therefore more advanced non-technical competencies to succeed in spite of the pressure of their undergraduate programme. Even in New Zealand, one participant perceives that, *"students that are married with families are the better students"*.

The concern about life experience among veterinary undergraduates raises the question whether non-technical competencies should and/or could be evaluated during the admissions phase. There was some debate among participants:

On one hand, some participants believe that A-Grades are easy to achieve these days and that excellent students are differentiated by their non-technical competencies. Therefore, veterinary undergraduates should be interviewed and/or provide documented evidence of their experience in the field. Their first assumption is that these methods would be the most effective way for a selection panel to deduce whether the applicants' life experience had enhanced their non-technical competencies. Their second assumption is that non-technical competencies prepare veterinary undergraduates for student and professional life as a veterinarian.

Participants advocating a record of professional experience and/or employee testaments as a method of selection believe that, without a significant number of hours in the field, there is a risk that inexperienced undergraduates will become quickly disillusioned by the veterinary programme and/or eventually the, *"boring and repetitive"* nature of veterinary practice. Participants spoke of the naivety of students that believe veterinary life could be, *"scientifically challenging every day"* – and, among the more introvert, a failure to realise that a practising veterinarian, *"needs to enjoy a people environment".* Disillusionment has an impact on retention; student engagement (inc. stress and alleged suicide rates) and ultimately academic and professional success.

One participant presented an argument that the current method of selection on academic capability alone is flawed: *"Four people who would be great veterinarians but the door [to the veterinary undergraduate programme] is closed because they have only average academic skills. They would be great because they have huge experience in what they've done. For example, one is an equine dentist. Indeed, their experience puts my own experience to shame when I entered vet school. They have all dealt with clients and live animals."*

On the other hand, some participants believe that interviews result in, *"people who are good at interviews being selected".* It is mostly these participants who believe that academic ability should be the primary method of selection because, "*we need to know which students can endure the academic challenges ahead."* This is because Grade-A students have gone some way to prove that they are

capable of learning, *"vast amounts of technical information in a short time"*. Selection by grade is also more consistent than selection by interview, which could arguably result in veterinary students being recruited for their extrovert personalities than their ability to perform consistently over five gruelling years of study.

2. ORIENTATION

In 2008, Kathy Ruby brought COLE to Australia and New Zealand. For the first time, Massey University invited entry-level students to take part in the Veterinary Leadership Experience (VLE). The event took place over two and a half days and, in brief, the contents included some key topics alongside some well known (and some less well known) activities:

- TOPIC: History of VLE
- *Activity: Dragon's Tail*
- *Activity: Getting To Know You*
- *Activity: Challenge Zones*
- TOPIC: Paradigms In Veterinary Medicine
- *Activity: World People Map*
- TOPIC: Servant Leaders & Emotional Intelligence
- *Activity: Racoon's Circles*
- TOPIC: Appreciating Personalities
- *Activity: Myers-Briggs Personality Types*
- *Activity: Traffic Jams*
- TOPIC: Social Awareness & Relationship Management
- *Activity: Helium Sticks*

The general consensus among participants was that the annual Veterinary Leadership Experience (VLE) is an excellent idea. One participant noted, "*We have no time to even teach the students all the technical skills [never mind the non-technical competencies] – and then in the fifth year we tell them that technical skills are only part of their job. The VLE helps students be conscious of this [the need for them to develop non-technical competencies] from Day 1. It helps them look at themselves as adults as part of a profession."*

Another participant observed that the VLE was, *"potentially the first opportunity for students to get in touch with their feelings and realise that everyone else has these feelings about being under pressure."* In respect to feelings, the Myers Briggs exercise was also reported to, "*help students learn that people are different but nevertheless share the same human feelings".* An added benefit of the

VLE was that it involved professional veterinarians, which are the people that undergraduate veterinarians respect the most.

During the course of discussion, participants proposed that the VLE could become an, "*excellent forum to define their [academics] own Massey non-technical attributes".* It is believed that this would make for interesting debate and would potentially entice academics to become involved.

3. CURRICULUM

The veterinary undergraduate curriculum in New Zealand was reviewed between 1999 and 2002. Every academic that was working as part of the veterinary undergraduate programme in 2002 was invited to participate in the formulation of the 'Life Skills Knowledge or Experiences Required for the BVSc Programme'. Eight academics accepted the invitation and formed a 'Theme Group' together with two non-academic practising veterinarians from industry. The curriculum that was implemented in 2003 included 'Life Skills Knowledge or Experiences' among its desired learning outcomes. The agreed 'Life Skills Knowledge or Experiences' include the following topics, which influenced the 'Australasian Veterinary Attributes' that were collated in Sydney in 2002: *Veterinary Career Options; Time Management; Stress Management; Self-Awareness; Personal Physical Fitness; Stress and its Management; Assertiveness; Substance Abuse; Mental Health and Counselling; Team/Group Work; Work/Leisure Balance; Relationships; Grief Management; Personal Financial Planning; Career Planning; Cultural Awareness; Maori Culture.* The curriculum prescribed that the 'Life Skills Knowledge or Experiences' would be disseminated both explicitly via the Veterinary Professional Studies Paper and subtly; integrated throughout the veterinary undergraduate curriculum.

The Veterinary Professional Studies Paper

The veterinary undergraduate programme incorporates a compulsory half paper in the 5th Year called 'Veterinary Professional Studies'. The published description of this paper reads: "Elements of the legal system regulating veterinarians. Professional ethics and obligations to the public and state. Veterinary professional organisations. Veterinarians as communicators and educators. Maintenance of physical and mental fitness and safety as a veterinarian. Veterinary business management". The paper incorporates lectures delivered by guest speakers from across the university. For example:

- Department of Management – Veterinary Business Management
- School of Psychology – Coping With Stress
- Student Counselling Services – Career Planning
- Dispute Resolution Centre – Dispute Resolution
- Kaitautoko Maori – a Maori Culture and Veterinarians
- Department of Exercise and Sport Science – Maintaining Physical Wellbeing
- Veterinary Council of New Zealand – VCNZ
- MAF Biosecurity – Exotic Diseases
- Marketing, Veterinary Institute – Veterinary Sales
- New Zealand Veterinary Association – NZVA
- Medical Assurance Society – Personal Financial Management

When asked to comment on the Veterinary Professional Studies Paper, participants expressed a range of awareness. One participant admitted, *"I don't know anything about it [the Veterinary Professional Studies Paper]."* Other participants were vaguely aware of the Veterinary Professional Studies, but were not convinced of its efficacy. For example: "*I know that someone from Student Counselling gives some lectures in the first and second years. My recollection of student comments range from useful to not so useful."* One reason given for negative feedback was that, "*There is a perception that the Veterinary Professional sessions are an 'add-on' and sometime there could be a perception that they are a bit of a nuisance."* A particularly interesting theme that emerged was that students allegedly, "*Don't like the Student Councillor because he's not a veterinarian. There is a credibility issue. Students have more respect for the academics they know than external people, especially a psychologist."* Participants ultimately believe that, "U*nless the messages are authenticated by veterinarians, I don't think the students will be receptive no matter who it is delivered by."*

Integrated Dissemination

The 'Life Skills Knowledge or Experiences' can be found peppered throughout the five years of the veterinary undergraduate curriculum:

Knowledge or Experiences	Year	Paper in which topic is disseminated...	Owner
Veterinary Career Options	1	*Animal Behaviour, Handling & Welfare*	Vet Ac
Time Management	1	*Animal Behaviour, Handling & Welfare*	SCS
Stress Management	1	*Animal Behaviour, Handling & Welfare*	SCS
Self-Awareness	2	*Mechanisms of Disease*	SCS
Personal Physical Fitness	2	*Integrative Veterinary Physiology*	Vet Ac
Stress and its Management	2	*Integrative Veterinary Physiology*	Vet Ac + SCS
Assertiveness	2	*Mechanisms of Disease*	SCS
Substance Abuse	3	*Pharmacology, Therapeutics & Toxicology*	Vet Ac
Mental Health and Counselling	3	*Veterinary Clinical Studies*	Vet Ac + SCS
Team/Group Work	3	*Mechanisms of Disease*	SCS
Work/Leisure Balance	4	*Cattle Health and Production*	Vet Ac
Relationships	4	*Small Animal Medicine & Surgery*	Vet Ac + SCS
Grief Management	4	*Small Animal Medicine & Surgery*	Vet Ac+ SCS
Personal Financial Planning	5	*Veterinary Professional Studies*	External
Career Planning	5	*Veterinary Professional Studies*	SCS
Cultural Awareness	5	*Veterinary Professional Studies*	External
Maori Culture	5	*Veterinary Professional Studies*	External

There are a few things worth noting about the ‘integrated dissemination’ approach. Firstly, although the list above is available on request from the Programme Director, it is not published. Secondly, only six veterinary academics (Vet Ac) have formal ownership over the dissemination of ‘Life Skills Knowledge or Experiences’, of which three share that responsibility with the Student Counselling Service (SCS). Note that there are 95 academics in the Institute of Veterinary, Animal and Biomedical Sciences (IVABS). Thirdly, the ‘Life Skills Knowledge or Experiences’ do not feature in the induction process for new academic faculty. Fourthly, academics are not held accountable for the dissemination of non-technical competencies outside the scope of the papers listed above.

When asked how they believed non-technical competencies were currently being disseminated to veterinary undergraduates, participants articulated no awareness of the ‘integrated dissemination’ approach. Several participants expressed that any learning of non-technical competencies by

veterinary undergraduates was "*passive*", " *by accident*" or "*by osmosis*". One participant asserted that, "*Students need more non-technical competencies education – I don't know what **is** taught but I would be surprised if there was much of it."* With participants widely admitting that they were, "*unfamiliar with the entire curriculum"*, isolated examples of academics striving to disseminate non-technical competencies were detached from the wider programme. One participant believed it would be, "*very useful to have full picture of what is going on across the programme so that each academic has complete awareness of where else in the programme other people are attempting to incorporate non-technical competencies."*

Data collected in regards to the 'integrated dissemination' of non-technical competencies is presented against the categories from the 'Australian Veterinary Attributes' rather than the New Zealand list of 'Life Skills Knowledge or Experiences':

a) Professional Duty of Care

No comments were received by participants that specifically related to the sub-categories of 'Professional duty of Care', which include: **Responsibility to Animals**; **Professional Integrity**; **Responsibility to Clients; Responsibility to the Community**; **Maintenance of Biodiversity**; **Preservation of the Environment; Understanding of Legal Obligations** .

b) Effective and Empathetic Communication

Although most participants cited 'communication' as the most important non-technical skill, one participant believed that 'empathy' cannot and should not be taught. The rationale behind this argument is that 'taught' empathy is fake empathy and therefore transparent.

- **Written English** – One participant commented on the extremely poor standard of grammar displayed by veterinary undergraduates: "*There is little importance on literary skills such as correct spelling and grammar"*
- **With Clients –** One participant believes that many academics aim to disseminate client communication skills in *"subtle ways*". For example, the same participant helps students, "*put a positive spin on taking a blood test that has no results so that they might start to realise how to make the client feel like they've not wasted money, i.e. even though we haven't found anything, we have ruled a few things out."*

Another participant recalled that a colleague requires veterinary undergraduates to write letters to clients in *"client-speak",* which, the participant believes, is an effective way to help students learn how to communicate with clients.

Nevertheless, another participant observed that, *"some of our graduates do come across as arrogant, which doesn't help the reputation of our profession."* The same participant believed that students may have an elevated sense of superiority because they have been high achievers at university. Veterinary undergraduates may therefore require a better understanding of how to relate to clients, i.e. empathy.

- **With Staff –** no comments.
- **With Peers –** no comments.
- **With the Community –** no comments.
- **Oral –** One participant believed that public speaking and presentation should be done, *"more often than just the fourth year of the course. Students need to be doing non-technical competencies at every stage of the programme."*

  However, another participant reflected on an experiment that took place in the Anatomy department. One lecturer assigned a research project to groups of four or five students. The group was required to present their research to other students during class. The aim was for students to develop research skills and public speaking. Reflecting on the experiment, the participant observed that only one of the four students in the group was able to present in class, which meant that only 25% of the class experienced public speaking. Also some of the presentations were *"really poor or too detailed",* which meant that other students in the class were, *"short-changed".* In relation to oral presentations, several participants noted that it is labour intensive to mark group presentations.

  Another participant recalled a 10 minute topography assessment with first year veterinary undergraduates. This was not undertaken as a role play scenario but an exercise in improving oral communication. Each student was required to chose 4 cards. Each of the four cards represented a different area of a dog's body. From each card, the student was required to answer two questions. The assessment involved real dogs and two examiners – one examiner was an academic and one examiner was a volunteer client.

- **Comprehension –** One participant described how students habitually struggle to interpret examination questions. Consequently, the same participant allocates one lecture to an external speaker who aims to address this problem. Another participant believes that written

communication is the non-technical skill, which students are least able to perform. For example, "*fourth year students still think they can cut and paste text from other work – they do not demonstrate any ability to present an argument."*

One participant believed that veterinary undergraduates do not understand that everything they write and say is evaluated to some extent. It was proposed that one way to help students would be for academics to, *"Stop re-writing discharge letters written by students. Students themselves should be made to correct their mistakes – otherwise students do not realise the consequences [of their poorly written communications] and think that there is no reason to change."*

- **Compassion, courtesy, respect, honesty and absence of discrimination –** One participant believes that a veterinarian must be able to, "*Take a client with you in the decision making process. This doesn't mean just telling the client what must happen; instead the vet needs to come from a position of authority, which is earned by being trustworthy and honest".*

c) An Understanding of the Business of Veterinary Practice

- **Business Fundamentals –** One participant believed that all the 'Australasian Veterinary Attributes' were valid for veterinary undergraduates, except the Business of Veterinary Practice. Another participant believed that it should be compulsory for veterinary undergraduates to be exposed to the Business of Veterinary Practice since establishing their own practice is a significant career option for many graduates. Nevertheless, there was no awareness that Business Fundamentals are formally disseminated.
- **Health and Safety –** One participant believed that veterinary undergraduates would benefit from an education in risk management. Arguably not unique to the veterinary profession, graduates in the workplace must have the capacity to evaluate a situation for potential hazards. For example, a clinician must be able to identify the risks when a client arrives with a distressed dog and five curious toddlers. *Nevertheless, there is no indication that Health and Safety is formally disseminated.*
- **Knowledge management** – no comments.
- **Design of hospitals** – no comments.
- **Complaint management** – One participant recalled that veterinary undergraduates do not realise that they will, *"come across many situations where there is no right or wrong answer – but nevertheless they will have to provide advice that will satisfy their clients"*. The same

participant went on to say that high-achieving veterinary undergraduates, *"often become frustrated 'in the real world' where there is not always an obvious answer because it means they're not always going to experience success".* This means that veterinary graduates are often ill-prepared to cope with complaint management.

d) Capacity for Self-Management and Self-Knowledge

- **Goal-setting and planning** – From their first day at university, veterinary undergraduates are said to be, *"spoken to"* about personal organisation.

- **Information literacy and management** – Several participants observed that veterinary undergraduates are not, *"developing adequately"* in their early years. Consequently, upon progression to the Clinic during their 4th and 5th years, Clinicians are faced with undergraduates who do not have the self-learning skills to absorb knowledge; synthesise knowledge; and communicate synthesised knowledge to colleagues and clients. One participant believed that undergraduate problems originate in their high-school days where they are required only to regurgitate information rather than develop an understanding of self-motivated learning.

  Generally, participants indicated that they try not to spoon-feed undergraduates and encourage them instead to take responsibility for themselves. However, one participant believed that veterinary undergraduates would benefit from a preliminary course on the development of appropriate learning techniques. Another participant agreed, "*if independent learning skills could be learned during a pre-veterinary stage, this would make our curricular job easier – in fact, it would be a major achievement."*

  Aside from the burden on academics faced with ill-prepared undergraduates, one participant highlighted the need to manage student expectations: *"students struggle because of the volume of technical information available – they struggle to understand how to turn the information around and give it back to examiners, peers, colleagues and clients. Within a semester, you see the enthusiasm of these students fade away because they feel overwhelmed. A large part of the problem could be taken away if they knew what to expect in terms of learning skills and assimilation of knowledge."*

- **Emotional intelligence** – no comments.

- **Community leadership** – no comments.

- **Change skills** – no comments.

- **Teamwork** – Veterinary undergraduates are required to participate in teamwork during practical laboratory sessions. One participant invites an independent expert to make a presentation about 'teamwork' to students during their first laboratory of their first year. However, other participants make no structured attempt during their laboratory sessions to disseminate 'teamwork' as a non-technical skill. One participant offered an insight in to the predicament faced by academics:

  "At the moment I lecture 110 people in microscopic anatomy. It's difficult to get to know these people and help them develop non-technical competencies because I'm either talking to them in lectures or they are looking down a microscope in the laboratory. Even in laboratory session they work as individuals, not as teams. So, I am just struggling to see how I could add anything non-technical to this."

  By the third year of the veterinary undergraduate programme, participants reported greater opportunity for teamwork. One participant reported, "*In my own teaching at first and second year level we are not dealing with non-technical attributes. However, in the third year in laboratory sessions we are focusing on the practical part of the paper rather than on theory. This means students have the ability to...work in a group".*

  Several participants asserted that the most appropriate time to develop 'teamwork' as a non-technical skill was during the 4th and 5th years of the veterinary undergraduate programme. One participant described how 'rounds' (i.e. small group roster teaching) typically generate a sense of loyalty among students – because they *used* to work together in the same teams for the duration of the fifth year. However, a recent change in the curriculum means that students are organised in to rotating groups, which means that there is, *"now more about the 'I' in the small group roster teaching"*. On one hand, fifth year undergraduates are losing the opportunity to build a sustainable team; but on the other hand, they are learning about flexibility and adaptability.

- **Managing a career** – One participant believed that veterinary graduates are ill-prepared for a veterinary career because their undergraduate programme does not provide a sufficient, *"taste of reality".* It is a concern that veterinary undergraduates, *"do not understand how tedious it can be in the field when days are filled with pregnancy-testing cows or treating cats for fleas."*

- **Work/leisure balance** – Several participants alluded to the allegedly elevated suicide rate among veterinary undergraduates. There is an impression that veterinary undergraduates are exceptionally high achievers prone to succumb under the pressure to succeed. One participant believes that veterinary undergraduates need help to understand, "*not to take*

things so seriously – that failing a grade is not the end of the world or the worst thing that is going to happen in life."

Almost unique to this population, they are students that are often de-sensitised towards death as a result of animal euthanasia. It is worth noting that this remains an unsubstantiated myth and risks becoming a self-fulfilling prophecy. As a precaution, several measures are in place to guard against Work/Leisure *imbalance* among veterinary undergraduates.

- **Development of professional knowledge** – no comments.

e) Recognition of and Compliance with Ethical and Professional Standards

- **In all areas of veterinary activity** – One participant described how students are encouraged to uphold ethical standards. For example, they are verbally warned that: (a) joking around will not be tolerated; (b) there is a dress code in the laboratory; (c) there is a code of conduct in the laboratory, which includes interfacing with support staff. However, it was noted by the same participant that ethical standards are mostly disseminated through an, *"inherent ethos"* rather than explicitly communicated, unless stated in the student handbook.

  A couple of participants reflected on the *under*-emphasis of professionalism in the New Zealand veterinary profession. The perspective of these participants was influenced by their experiences in the UK and the United States. For example, it is perceived that American students are the last to leave classes because they are typically more thorough than domestic students. One participant offered an explanation for the discrepancy between professionalism among undergraduates in New Zealand and America:

  "I believe we are too matey with students and allow them to get away with things they shouldn't be doing. I believe that the Clinic 'rounds' need to be done more professionally. For example, when summarising a case, it should be done concisely and unambiguously using professional language. These standards need to be enforced by the academics who sometimes find it easy to slide in to the 'matey' way of thinking because they fear becoming perceived as a nag when they suggest that students and other colleagues shouldn't be so sloppy. As a result, the language used by academics has become lazy and we are currently erring on the situation where students are so accustomed to using 'lay-speak' that they don't know how to use professional language."

f) Adaptability and Ability to Collaborate

- **With professional colleagues** – One participant believes that 5th year students benefit significantly from the 'small group roster teaching'. This is because they learn to, *"adapt and collaborate with others, including staff in the faculty."*
- **With support staff** – no comments.
- **With clients** – One participant highlighted why veterinary undergraduates need to learn to collaborate with clients: "*Young pathology students believe they can look down a microscope and see why an animal has died. However, this is not the case – veterinarians need [to be able to work with their clients] to create a scenario".*
- **Participation in veterinary organisations** – One participant spoke about how veterinary undergraduates are contracted to work in commercial practices for 18 weeks during their 5th year. These commercial practices are invited to evaluate the students on their technical and non-technical competencies.
- **The education of the next generation of veterinarians** – no comments

4. ROLE MODELLING

Beyond the initiatives described under the sections 'Veterinary Professional Studies' and 'Integrated Dissemination', academics are not held accountable for the dissemination of non-technical competencies Consequently, the executive of the veterinary undergraduate programme have no indication whether non-technical competencies are being disseminated with any commitment by academics throughout the veterinary undergraduate programme. The executive are no stranger to feedback like, "*Unless the messages are authenticated by veterinarians, I don't think the students will be receptive no matter who it is delivered by"* – and, for this reason, the executive readily admit that 'role-modelling' is, *"an area we need to strengthen"*.

On one hand, many participants were in favour of developing themselves and other academics as role models of non-technical competencies. One participant said, *"This whole thing [about non-technical competencies] is about being role-models at every level".* Enthusiasm was strong among participants who believed, *"There is plenty of room for our academic faculty to develop and demonstrate good role modelling – I believe it happens in some places but I'm not convinced it happens universally."* Participants' reasons for doubting the prevalence of effective role-modelling became clear with stories of, *" students feeling judged and made to feel stupid rather than feel*

encouraged". Participants even described some colleagues as, "*rude and arrogant and try to keep students in their place".*

On the other hand, most participants were able to identify barriers that would potentially inhibit the success of academics taking an organised approach to being / becoming role models of non-technical competencies. One participant concluded, *"Ideally we would have everyone in the place being role models – but this is an unreal expectation".*

Data collected in regards to role modelling is presented against the categories found in the international literature:

a) Cynical Academics

Several participants noted that a fundamental barrier would be academic cynicism towards non-technical competencies. It was said that, even if all associated conditions were favourable, the general response would still be *"variable"* because academics perceive non-technical competencies as essentially, *"fluffy"* and *"nebulous".* One participant explained that, "*scientific minds like black and white results, which is a problem given that it is so hard to measure the fluffy stuff."*

b) Pressure on Time

Many participants expressed that it was, *"hard to envisage"* when and/or how they could begin thinking about non-technical competencies in a programme already overwhelmed with technical skills.

Partly, this is about not wanting to divert time away from the dissemination of technical skills. One participant asserted*, "especially in my area we wouldn't be interested in having parts of our paper diverted to something else – especially now that the time for pre-clinical has been reduced."* Another participant added, *"With my lectures, I don't have time to explicitly introduce non-technical competencies".*

Partly, this is about academic faculty simply not having, *"the time or mental energy to take on another layer of work".* The implication is that the workload (not to mention the training) required to analyse / plan / design / develop / implement / test innovative methods of disseminating non-technical competencies is too much of a burden on an academic faculty (especially Clinicians) already reported to be, "*fatigued and overworked largely due to poor organisation and an absence of collegial support."*

Participants expressed that the reality of the situation is that*, "while class numbers are increasing and human resources are maintained at a minimum – these are the areas [i.e. non-technical competencies] that will be neglected because they are less tangible when we want to hang our hats on something we've done well".* The issue of prioritisation is worth considering given reports from Clinicians that, *"reading the SOAPs take a while, so many people don't do it".*

Participants summarised that, given that the capacity of academics is already over-extended, there is a real danger that any suggestion they should *also* be thinking about disseminating non-technical competencies would be seriously resented. Consequently, participants added that any new focus on non-technical competencies would need to be preceded by a review / reallocation of resources, *"specifically the human hours available".* This applies to the human hours required to both prepare and deliver non-technical competencies – over and above technical skills.

c) Slippery Shoulders

Partly a result of academic cynicism and partly a result of pressure on time, several participants question, *"whose responsibility is it [the dissemination of non-technical competencies] anyway – is it the parent's job, the academic's job or the student's job?"* Another participant suggested that it was an, *"elitist culture in many schools"* that has led to the arrogance of many veterinary undergraduates. In any case, participants revealed that there is*, "a perception that it's someone else's job".* Some participants proposed that an academic's primary job, *"has to be to teach technical skills"* and therefore suggested, "*Could we direct students to other people who specialise?".* Among participants who **did** believe that the dissemination of non-technical competencies was partially the responsibility of academics, some did not believe it was **their** job: *"It would be responsibility of the Clinicians' focus on non-technical competencies with fourth and fifth year students."*

However, a significant number of participants believed that, *"The [veterinary] profession requires us [academics] to prepare them [students] for the pressures of the job – and the job requires them [graduating students] to have non-technical competencies."* One participant observed that the role of academics is especially important when disseminating non-technical competencies to **veterinary** undergraduates: "*We should remember that students see academics as their mentors – especially in vet – so really it is academics' responsibility."* Another participant agreed, *"Our students definitely have more respect for academics who have experience in their field – even the [veterinary] academics in 'the tower' are not seen to be as credible as the people in the clinic who have real life experience and are able to back up theory with real examples."* Another participant went on to say that people outside the veterinary world fail to be, *"really switched on about the [veterinary] profession and the needs of our type of students."*

In summary, most participants believed that, *"students like to hear things from people they see as relevant".* **In this context, participants found themselves asking whether there can be anyone more effective than veterinary academic faculty when it comes to disseminating non-technical competencies?**

d) Capability of Academics

Participants noted that, *even if* academics overcame their cynicism for a nebulous cause; were alleviated from time pressures; and conceded that the dissemination of non-technical competencies was their responsibility to some extent, there would still be another barrier: *"It would be difficult for many academics to take this role because they are bad at it themselves."* One participant believed that, *"Vets at Massey are lacking in non-technical competencies – the academics even more so than the students."* Another participant added, *"It needs to be recognised that academics are the exact same focused and driven workaholic people as the students – just a few years older."* To illustrate this point, another participant described, *"In my area there is a huge potential to help students develop non-technical competencies – but how would I do this? I wouldn't be comfortable getting involved in telling people how to behave in a group because I'm not outgoing myself – I can't berate the shy people to be extroverts."*

This begs the question whether, in order to disseminate non-technical competencies to veterinary undergraduates, it is first necessary to disseminate non-technical competencies to academics so that they may become effective role models. One participant made the point, *"How do we get academics who have no experience in the field to understand importance of non-technical competencies?"* Then again, another participant argued, *"The clinicians, for example, have been out there and have an understanding of what it is like. However, that doesn't mean they can teach it."*

In response to the question of how to 'train the trainers', participants offered four solutions:

- **Massey University Training and Development Unit (TDU)**

Participants revealed mixed feelings about training opportunities available through the Massey University Training and Development Unit (TDU). A few participants felt, *"The TDU courses would be helpful to help me develop as a disseminator of non-technical competencies."* However, on balance, participants felt that, *"TDU teaching courses don't seem relevant to veterinarians".*

- **Internal Seminars at the Institute of Veterinary Animal and Biomedical Sciences**

Several participants favoured in-house development opportunities organised by veterinary institute, specifically for veterinarians. One participant volunteered that, *"Some sort of ongoing support from IVABS forums would be good – one every few months that is focused on non-technical competencies and how they can be infiltrated into everyday teaching."*

When considering the scope of internal activity, other participants suggested that it should include a knowledge exchange, e.g. featuring external speakers and/or circulating references that academics could reflect on in their own time.

- **IVABS Enhancing Leadership Programme**

One participant described that, in preparation for teaching final year students, enormous value had been gained among Clinicians who attended the leadership conference. The participant reported, "*This started last year and was a full day programme offered by leadership people affiliated with Massey. It helped us realise that the students see what we are like and they will start to emulate us."* This initiative was said to be, *"as useful as the Veterinary Leadership Experience."*

- **The Veterinary Leadership Experience (VLE)**

Many participants were aware that academics had been invited to attend the first Veterinary Leadership Programme (VLE). Several participants had seized the opportunity to attend; several participants were unable to attend due to prior commitments; several participants decided not to attend because they were discerning about the value of the experience; and several participants did not attend because they were fundamentally (although not necessarily permanently) reluctant to get involved.

- Those who attended found the experience extremely valuable, saying that, "*Those academics that went on the VLE really profited, especially in terms of relationship building among staff."* Participants also found that the content of the VLE was as relevant to faculty as it was to students because, "*academics are under similar pressure to students*". Some *"The basics of leadership and non-technical competencies were a massive eye opener to me"*

- Those who were unable to attend were so inspired by positive feedback from others that they vowed to make an effort to attend in the future: *"It is something that I would like to go to next year. The experience of working with people in different contexts is always valuable, so I would be open-minded to personal and professional development."*

- Those who were sceptical explained that they had been, "*put off by the cheesy thing."* It emerged that these participants were concerned that an American solution was not

necessarily relevant to the New Zealand situation: "*It seemed very geared towards the US situation and I was not convinced of its relevance to New Zealand."* However, given the positive feedback from faculty that did attend, even discerning participants admitted, "*I have heard from staff who did attend that the experience was worthwhile."*

- Those who were reluctant explained that, despite having an interest in the VLE, "*I am facing the inherent problem that I don't want to divert my own time down another route, especially when it means grappling with nebulous material."*

e) Absence of Rationale

Participants began to reflect on how academics might respond to the suggestion that they should be responsible for the dissemination of non-technical competencies. A strong theme emerged that there is a current absence of rationale supporting this proposal. One participant summarised: *"Proof of concept is important because academics won't just jump on the band wagon. Often they will do the opposite just for the sake it".* Digging deeper in to 'proof of concept', participants believe that the proof must be relevant in the New Zealand context. One participant summarised, "*We really need to be clear about New Zealand context. We need a New Zealand answer to the New Zealand question."* Another participant highlighted that this was particularly true where the Veterinary Leadership Experience (VLE) is concerned: *"It [the VLE] seemed very geared towards the US situation and I was not convinced of its relevance to New Zealand. At no stage with the VLE has anyone said the NZ problem is the same as the US problem. For me to get involved in the VLE, I would need a really strong sense that it's worthwhile and well thought through – I would need to be inspired by rational information."*

Progressing with their thoughts, participants reflected on what kind of compelling evidence would mobilise an autonomous academic faculty. Participants suggested that evidence should be gathered from: (a) students; (b) graduates and (c) industry.

- **Students**

  Several participants believed that the root of the New Zealand 'problem' would only be fathomed if *more copious* feedback of a significantly *more candid* nature could be collected from students.

  To begin with, participants believed that, *"the students are not asked enough what's going on and what the problems are."* Arguably, the formal SECAT process serves this purpose, but participants are sceptical because they believe the system is flawed: *"Students fear giving honest feedback in the SECAT process"* and because, "*we have got to accommodate for the*

fact that students favour academics that make life easy and make students feel like they are achieving – even if there is no substance in their learning or eroding standards".

In this context, one participant believed that, "*the statistic that students are voting with their feet [when it comes to selecting fourth year courses] is far more telling [than the SECATS]".* Several participants provided some insight into why students are voting with their feet: *"There are some academics who do not treat students with sufficient respect – they treat them like children rather than future colleagues. How we [academics] interact with them [students] reflects on how they interact with clients or students, if they become academics. Somehow we have to break the power cycle among those who take their turn to abuse their positional power and influence."* Another participant added, *"They [students] see the academics demonstrating bad behaviour and the students think it's a show of strength that they [academics] can get away with because they are respected."* The inference is that some academics are inspiring students to adopt unconstructive behaviours (rather than positive non-technical competencies) that will encumber them as graduates.

In response to the problem of student candour in the formal SECAT process, participants believed that a new approach to gathering student data is required. One participant proposed that data should be gathered at intervals throughout the academic year, *"to accommodate for changes in attitude across the year and to avoid academics saying it's a snap in time."* Another participant suggested that the data should be gathered at all levels because, *"second years may not see the value of something until the fifth year".* Finally, another participant highlighted that, if students were going to be expected to provide meaty feedback, they would require an incentive, for example, *"give them $5 and put their name in a draw for a holiday".*

- **Graduates**

Several participants believed that veterinary graduates would be the most important people to interview. One reason is that, compared to students, graduates benefit from hindsight and real-life industry experience. Graduates would be able to comment on the non-technical competencies that helped them transition and prosper in the New Zealand industry. One participant perceived that non-technical competencies would be seen as important by graduates because these skills will help them, *"enjoy their jobs; decrease their stress and to cope with staying in practice".* Another participant added*, "it would be good to know what graduates are going to be needing down the road so we can start developing these skills early on"*.

- **Industry**

  Several participants spoke about the importance of interviewing industry employers because it is employers who are the end-users / ultimate clients of university services. The observation was made by one participant that, "I don't know if we are delivering the product that practitioners want. The emphasis of what they want has changed and so have the generations of students". This observation highlights participants belief that further investigation of the New Zealand 'problem' is required.

f) Autonomous Academics

Participants suggested that even a strong rationale would not mobilise some academics to take responsibility for the dissemination of non-technical competencies. This is because many academics simply do not like being told what to do. One participant illustrated this point: "*I'm not interested in ways of infiltrating non-technical competencies into my lectures*. *If someone told me to change the structure of my lecture, I wouldn't. I do believe in non-technical competencies, so I might be more inclined to get involved to some extent, but I won't be told what to do."* Another participant added, *"with the older guys, you can't tell them how to do their job – they are a bit arrogant and think they know best".*

On one hand, participants spoke about the importance of keeping autonomous academics involved. One participant asserted: *"If I was going to be involved with the VLE, I would like to be involved in part of the formulation of what we need to teach and why we need to teach it. I think we should be inviting people [academics] to analyse the evidence [of the New Zealand problem]. We need to discuss what's needed and how to fix it."* Other participants suggested that greater levels of involvement could be achieved by*, "more discussions and workshops"* and, *"providing references for us to read at our leisure*." Another participant noted that, if academics cannot be involved, they should at least be adequately informed: *"I would like to be informed about the way decisions were made and how the direction was decided."*

On the other hand, another participant said, "*I wouldn't want to be involved in discussion because I have other priorities. I would be open to spend an hour listening to suggestions about this. But the merest inkling of someone telling me what to do – I would tell them to go away in no uncertain terms... Even if the management prescribed it and I had to implement it – I would have no commitment to chasing outcomes."*" Other participants added that *"teaching people how to behave"* will always be perceived by some academics as, *"encroaching on people's freedom"*, *"offensive"* and *"patronising"*.

Most participants believe management would be fighting a losing battle with the most change-resistant contingent and advised management to initially channel their energy in to those who are most change-friendly. Apart from which, one participant said, "*there is no guarantee that those who are change resistant wouldn't sabotage positive initiatives with their negativity".*

g) Role Clarity

Participants reflected on one final theme: What happens if management reach the conclusion that non-technical competencies are an important outcome of the veterinary programme – and that academic cooperation is necessary to achieve this outcome, in *spite* of change-resistance? Several participants believed that the only answer is for academics to be formally held accountable. One participant said, *"The big guys need to talk about non-technical competencies in every way possible – they need to make it part of my assessment every year by asking what [non-technical competencies] I've implemented".* Where those who are change-resistant are concerned, participants noted that the leaders of the veterinary programme would need to be*, "prepared to confront academics about short-comings"* and to, *"keep academics aware that their role is not just to teach but to inspire improvement".*

However, participants also noted that role models need role models, meaning that*, "while the students need good role models among academics, academics need good leadership from the executive".* One participant went on to say that, *"people who are high up need to be starting the culture change – right from the top down to year heads and paper coordinator level need to be bought into the philosophy. Then they all need to think about how to address non-technical competencies in each part of the curriculum. Then the paper coordinator level need to empower, enable and lead by example to others below them".*

Participants vocalised respect for those at the top of the veterinary programme. The Veterinary Leadership Experience (VLE) was quoted by several participants as a good example of an initiative coming from the top: *"it is good because they [the executive] have believed in it from the start."* Participants advised the executive:

- to work harder at, *"getting the generic skills in the headlines";*
- for the Head of Institute to become more influential in the cause because, "*he makes you want to do something, rather than make you feel badgered in to doing something"*;
- for the executive to be always, *"up at the front explaining how this event [or other initiative] is helping us achieve our goals".*

- for the executive to, *"allow all this [participation in initiatives] to be done during office hours to show Massey's commitment [to non-technical competencies],"* including, *"allowing faculty to leave the clinic to attend events".*

h) Student Reluctance

On a final note, a couple of participants shared the concern that, even if academics became effective role models of non-technical competencies, many students ultimately object to non-technical competencies in the curriculum. This fact is fundamentally de-motivating for academics. One participant explained*, "One time we tried being transparent with students by telling them how non-technical competencies were going to be taught to them – they threw it back in our face because they don't believe this is why they are here. So, we don't do that anymore. Nothing we do is broadcast or documented."* However, in contrast, other participants believed that student cynicism about non-technical competencies is learned from academics. The implication is that, if academics were to become effective role models of non-technical competencies, students would be inspired to adopt them.

Discussion

The overall conclusion of this investigation is that *where the dissemination of non-technical competencies to veterinary undergraduates is concerned*, New Zealand may very well have been leading the way in 2002 – but in 2009, it is clear that the innovations of 2002 were never implemented to their full potential because the majority of academic faculty were never aligned with changes. This does not mean that the overall quality of the veterinary undergraduate programme has been compromised, but that the time is right for New Zealand to revisit its approach to the dissemination of non-technical competencies (which has already started with the introduction of the VLE in 2008). This gap analysis indicates that the biggest 'gap' between New Zealand and its international competition is the hesitation of autonomous academics to participate in an organised approach to the dissemination of non-technical competencies. At this point we enter a 'chicken and egg' debate: does academic hesitation arise from the absence of a compelling rationale for change; or is organised change fundamentally non-compelling to autonomous academics?

The scope of this study was to comment on current methods of disseminating non-technical competencies to veterinary undergraduates – and therefore the scope of this discussion is simply to make an informed recommendation on how to change the current method of dissemination, if desired. This discussion is organised in to the following phases that also reflect the 'Change Management Plan': Analysis; Design; Development; Test; Implementation; Evaluation.

Analysis

The question of how New Zealand should revitalise its approach is complex. To unravel this complexity, the first phase of the approach must be 'Analysis'. Nobody from any profession enjoys change for the sake of change. This does not necessarily mean that people are change-resistant but instead discerning. Of all professions, academics are among the most discerning. We know this because, in addition to being highly intelligent, academics are strongly motivated by autonomy (Chandler, 2006). In this context, it is more important than ever for the executive of the veterinary undergraduate programme not to embark on change without a compelling rationale – a burning platform or a golden carrot. Most importantly, this study has revealed that academics do not widely believe that 'the American problem' or 'the Australian problem' are relevant in the New Zealand context. *Thus, the executive must first focus on establishing whether or not there exists a compelling rational for change that is specific to veterinary academics in New Zealand.*

Participants in this study highlighted that the 'Analysis' would require a carefully considered methodology. As experts in the field of data collection, academics are unlikely to be convinced by a rationale that is based on anything less than a robust approach to analysing 'the New Zealand problem'. In order to understand 'the New Zealand problem', this study recommends that executives begin with a qualitative investigation into which non-technical competencies industry employers believe are desirable among graduates – and then undertake a quantitative gap analysis to measure to what extent graduates are entering industry already equipped with these non-technical competencies. The gap analysis would involve feedback from industry employers and recent graduates themselves. The second stage of understanding 'the New Zealand problem' would be to measure the extent to which veterinary undergraduates believe that desirable non-technical competencies are being disseminated to them; how effective they find the dissemination techniques; and to what extent they are motivated to learn each non-technical skill. This study advocates that the surveying of undergraduates should take place in the middle and at the end of each semester to account for the fluctuation of students moods throughout the academic year. The final stage of understanding 'the New Zealand problem' would be to measure the extent to which veterinary faculty believe they are currently disseminating each of the desirable non-technical competencies. This study advocates that the combination of feedback from industry, undergraduates and academics will adequately define 'the New Zealand problem' – if indeed there is one that is relevant to academics.

Design

IF the 'Analysis' phase indicates that there is room for improvement in the dissemination of non-technical competencies among veterinary undergraduates, this study advocates a consultative approach when designing a solution to 'the New Zealand problem'. This study also advocates that the design of any framework for the dissemination of non-technical capabilities should take place within the context of a curriculum review to ensure that the initiative is understood to be integral to the learning outcomes of the wider veterinary programme.

However, the 'Design' phase is loaded with jeopardy. Executives are likely to discover that, on one hand, academics don't want to be told what to do but, on the other hand, they don't want to be involved in the 'Design' phase because they already have too much on their plates – take, for example, the reasonably unsuccessful attempt to mobilise New Zealand's veterinary academics in 2002. Stuck between a rock and a hard place, this study would recommend that executives remain hopeful that, with a little encouragement, faculty will become increasingly participative. Remembering that role-models need role-models, this study indicated that the veterinary executive should make themselves visibly and vocally committed to securing enthusiasm for non-technical competencies. A deliberate approach to transparent 'cascading' communications is recommended. The principle is for

the BVSc Leadership to become a regular and reliable source of information – and that information is guaranteed to find its way to 'grass-roots' via the appropriate channels. This means that the Executive brief Group Leaders who, in turn, brief Team Members. This study recommends that the effective *verbal* cascade of information becomes a specific objective.

Consequently, this study proposes that the 'Design' phase is peppered with events that are non-compulsory but simply offer every member of faculty the opportunity to be involved in the formation of policy. It is recommended that the first of these events should be a faculty debate on the 'direction of non-technical competencies education' in light of the 'Analysis' phase.

Consultation is often seen to be laborious because, 'he who shouts the loudest wins' or 'too many cooks spoil the broth'. However, skilfully facilitated debate should be open and honest yet constructive and without fear of retribution. All feedback should be noted and considered by the executive at a later date – after which the executive should offer a rationale for their final policy decisions. This last stage is important else those who offer feedback will soon grow tired of feedback being ignored and an apathetic population will ensue. This study recommends that final policy decisions (i.e. 'the solution') should be documented in an Action Plan broken down by the categories found in international literature: Admissions; Orientation; Curricular; Role Modelling.

Development

After 'Design' and before 'Implementation', this study recommends that the executive plan for a 'Development' phase. The 'Development' phase recognises that, on average, only 1 in 10 new strategies ever come to fruition – because the solution is incongruous with the current environment. The 'Development' phase prepares the environment in which the new solution is to be implemented. For example, this study indicates that, should the 'Analysis' phase expose a compelling rationale for a new approach to the dissemination of non-technical competencies, the executive may need to examine whether the organisational strategy of the veterinary institute can effectively accommodate the aforementioned new approach. This study indicates that any new approach may require the executive to re-visit 'the way things have always been done around here'. For example:

- Does **human resource** policy reward the dissemination of non-technical competencies?
- Does the **organisational structure** provide tiers of leadership?
- Could **processes** be streamlined to relive pressure on academic time?
- Could **technology** be used to better effect in order to relive pressure on academic time?

Test

Once the 'Development' phase is complete and the environment is fertile for change, this study recommends that the executive implement a 'Test' phase. The objective of the Test phase is for willing volunteers / champions to trial the changes proposed and 'test' for flaws in the process. This provides an early opportunity for the leadership to resolve any teething problems before changes go 'live'. Reports arising from the 'test' phase will also generate confidence among a discerning workforce that the changes proposed can be effective – and are therefore worth the investment of their energy. Of course, the 'Test' phase implies that the proposed solution has been designed complete with measureable Key Performance Indicators (KPIs). This is important among scientists who respond better to tangible results than nebulous outcomes.

Implementation & Evaluation

This study advocates that recommendations from the 'Test' phase are incorporated in to the solution produced in the 'Design' phase – leaving little to chance before the big Go-Live Day, which marks the beginning of the 'Implementation' phase. Guarding against the cynical perception that new plans are rarely implemented to fruition, this study recommends that the 'Implementation' phase transitions to an 'Evaluation' phase of continuous improvement. As time passes, continuous evaluation will highlight that there is room for continuous improvement – and that 'Implementation' is only the start of the change journey. Structured executive communication should be scheduled to remind faculty not to take their 'eye off the ball' when it comes to delivering their contribution. Reporting progress at regular intervals also encourages those who contribute that their efforts are being recognised as worthwhile. This study indicates that progress should be reported for five years until those undergraduates who are in their first year at the commencement of the project graduate in to the workplace and can therefore be evaluated by industry employers. It would be expected that incrementally better results would be observed year-on-year.

This study indicates that, if the executive of the New Zealand veterinary undergraduate programme follow the recommendations in this discussion, that the adoption of change throughout the faculty will be maximised. However, it is worth noting that, according to the 'Diffusion of Innovations Theory' presented by Everett Rogers in 1962, 16% of the workforce in any organisation are likely to be 'Laggards' who simply feel that the change doesn't suit them. Nevertheless, with the prospect of maximal change-adoption among faculty, this study believes that the executive can be excited about what the New Zealand veterinary undergraduate programme can achieve through the improved dissemination of non-technical competencies: ultimately the provision of an *even better* service to clients (students) and end-users (industry employers). .

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Appendix 1

Veterinary Attributes, University of Sydney

1. Research and Inquiry

Graduates of the Faculty of Veterinary Science will be able to create new knowledge and understanding through the process of research and inquiry.

- Apply an understanding of normal and abnormal animal structure, function and behaviour for diagnosis, management and prevention of animal disease
- Identify, define and analyse problems affecting animal health and production
- Collect and use the best available evidence to diagnose, prevent, cure or manage animal health problems
- Maintain effective skills for identifying and responding to emerging animal diseases and issues
- Engage in research-based practice, using critical judgment and creativity
- Collaborate in the generation, application and dissemination of new knowledge to benefit animal health and welfare
- Have an informed respect for the principles, methods, standards, values and boundaries of their discipline and the capacity to contribute to and question these
- Critically evaluate existing understandings and reflect on the limitations of their own knowledge

2. Information Literacy

Graduates of the Faculty of Veterinary Science will be able to use information effectively in a range of contexts.

- Identify acquire, store, retrieve, interpret, critically evaluate and use scientific, clinical and other relevant information in print and electronic sources
- Prepare a scientific or clinical report in a form suitable for publication and presentation
- Use networked services and information technology efficiently in research, professional development and practice management
- Investigate emerging technologies and determine their relevance to the profession

3. Personal and Intellectual Autonomy

Graduates of the Faculty of Veterinary Science will be able to work independently and sustainably, in a way that is informed by openness, curiosity and a desire to meet new challenges.

- Make independent, informed professional decisions and implement them in managing animal health
- Evaluate one's own abilities, identify deficiencies and commit to continuing professional learning
- Identify situations where additional expertise is necessary, seek specialist services and refer patients professionally
- Prepare a curriculum vitae, identify work opportunities, apply, present at interview and negotiate an employment contract
- Have the capability and commitment to initiate and respond to change
- Develop a capacity for managing one's own personal, physical, emotional and social needs to sustain satisfaction and contribution to profession

4. Ethical, Social and Professional Understanding

Graduates of the Faculty of Veterinary Science will hold personal values and beliefs consistent with their role as responsible members of local, national, international and professional communities.

- Practice veterinary science professionally:
  - with primary consideration to the welfare of the animals in care
  - to uphold the ethical standards and legal requirements of the profession
  - to meet the health and safety needs of oneself, colleagues, ancillary staff, clients and the community with colleagues, ancillary staff, clients and the public with respect and without discrimination
- Apply the principles of animal welfare to the humane management and euthanasia of animals
- Ensure animal products are free of chemical residues and other contaminants
- Protect the natural environment, maintain biodiversity and conserve endangered species
- Ensure sustainability of agricultural activities through the practice of veterinary science on livestock that considers the economic and social needs of farms and the livestock industries
- Practice veterinary science in Australia with awareness of the need to keep Australia free of non-endemic diseases and ensure exported animals are free of disease
- Practice veterinary science in countries other than Australia with awareness of local differences

5. Communication

Graduates of the Faculty of Veterinary Science will recognise and value communication as a tool for negotiating and creating new understanding, interacting with others, and furthering their own learning.

- Communicate effectively in English, both orally and in writing, with a variety of recipients and audiences and using a variety of media
- Consult effectively, eliciting the history and clinical signs from clients systematically and with sensitivity
- Prepare and maintain records of clients and animals and the results of veterinary interventions and procedures promptly, accurately and concisely
- Work effectively as individuals, partners and as members of a team
- Contribute or lead a group in cooperative problem-solving
- Communicate with colleagues, ancillary staff, clients and the public with patience, empathy and compassion

Appendix 2

Personal & Professional Skills Generic Learning Outcomes, Nottingham University

These learning outcomes should be integrated into other modules as appropriate. Session organisers/module convenors writing learning outcomes should ensure they have included necessary PPS learning outcomes as sessions are developed. Students should be able to:

Group working

1. Work as a group to solve a problem
2. Communicate effectively whilst working with their peers
3. Divide tasks fairly between members of a group
4. Identify issues within a group and form a strategy to resolve them
5. Identify personal levels of contribution within a group and reflect on it.
6. Time keep effectively to ensure all tasks are completed.
7. Make fair and effective use of resources within a group

Communication skills

1. Identify difficulties associated with communicating with different sectors of the public
2. Communicate their ideas effectively to their peers
3. Communicate with their peers or members of a team (e.g. on EMS) in order to complete a set of instructions or a given task.
4. Show a high level of written communication skills
5. Show a high level of verbal communication skills
6. Listen attentively to information given to them
7. Listen attentively to their peers
8. Give a clear and informative verbal presentation
9. Produce a poster clearly communicating their ideas/outcome to others
10. Show effective leadership skills in order to complete a task
11. Communicate effectively using the video conferencing equipment.
12. Recognise the powerful nature of body language (non verbal communication) and use it effectively to enhance communication skills

Information Technology

1. Use Microsoft Word to produce a written document
2. Use Microsoft Excel to produce a spreadsheet including use of formulae
3. Use Microsoft Publisher to produce a leaflet or poster
4. Use Microsoft PowerPoint to produce a presentation or poster
5. Use the internet to research a given topic
6. Understand the use and limitations of a virtual learning environment
7. Effectively use an e-learning package to complete a given task
8. Reflect on use of information technology and how it may or may not enhance the learning experience

Learning Resources

1. Research appropriate material for a given topic
2. Use Pub Med to search for literature on a given theme
3. Use Medline to search for literature on a given theme
4. Use Web of Science to search for literature on a given theme
5. Use the contents page and index of text books to effectively search for information
6. Recognise the limitations of web based resources such as “Google” and “Wikipedia”
7. Clearly and concisely make notes on a given topic from a lecture, presentation, demonstration or textbook.
8. Cite references accurately, consistently and appropriately using the Harvard referencing system

Reflection

1. Define the process of reflection
2. Understand the requirement of reflection in professional behaviour
3. Define the differences between descriptive and critical reflection
4. Form SMART targets
5. Reflect on their achievements and form targets for improvement
6. Engage in reflective practice in order to make changes to their learning

Professionalism

1. Define professionalism and apply the definition within a veterinary context
2. Apply the RCVS ten guiding principles and discuss their use in practical situations
3. Give examples of professional and unprofessional behaviour
4. Recognise the level of professional behaviour expected by SVMS both within and external to the school
5. Understand the student code of conduct and apply it in all situations relating to school activities
6. Dress and behave in a professional manner whilst meeting members of the public
7. Introduce themselves appropriately to a member of the public
8. Maintain confidentiality as appropriate

Learning and study methods

1. Identify gaps in their personal knowledge and identify potential learning resources
2. Identify an appropriate learning strategy for different problems
3. Recognise the limitations of certain study methods and be prepared to use a range in order to achieve the desired outcome

Work Life balance/time management

1. Work through and complete a task sheet in a given period of time
2. Organise their time efficiently in order to create an effective work life balance
3. Recognise the physiological signs of stress in themselves or their peers.
4. Know routes for assistance if experiencing stress
5. Prioritise tasks as appropriate, recognising emergency situations as they arise

Problem solving/critical thinking/decision making

1. Understand what is meant by critical thinking
2. Use a critical analytical process when solving a problem
3. Consider a range of possible solutions in order to solve a problem, analysing them logically and systematically
4. Gather information from a range of sources in order to solve a problem
5. Analyse and synthesise information, weighing up competing evidence and modifying viewpoints in the light of new information.
6. Consider other peoples points of view and use empathy when solving a problem
7. Understand the difference between an argument and an opinion
8. Draw appropriate logical and summative conclusions about an argument

Media

1. Understand the role of the media in delivering veterinary information to members of the public
2. Describe the different formats media may take and understand their use in different situations e.g. national animal health emergencies

Questioning techniques

1. Describe the difference between open and closed questions and give examples of both
2. Ask clear and concise questions during teaching sessions where appropriate
3. Use the discussion forum of webct to ask module related questions
4. Show empathy with clients whilst asking difficult questions – appreciate the clients perspective
5. Use appropriate, positive non verbal techniques to facilitate question answering
6. Recognise and respond to non verbal cues from the client/tutor/other whilst answering their questions

The practice team (including paraprofessionals)

1. Identify the different roles and duties of people within the practice team
2. Discuss the importance of team work and helping each other in the practice situation
3. Recognise the importance of communicating effectively at all times within the practice situation
4. Recognise the role of the RVN and their extensive skills and abilities
5. Ask for help from RVNs where appropriate
6. Acknowledge the qualifications of paraprofessionals including physiotherapists, BEVA qualified equine dental technicians, behaviourists (APBC/CABC/CAWC qualified), osteopaths, chiropractors.
7. Communicate effectively with paraprofessionals

Case Management/planning

1. Discuss the reasons for using case planning methods
2. Identify different strategies of case management in use in the practice situation
3. Manage a case from admission to discharge, informing the veterinary supervisor of all steps at all times as necessary
4. Write an effective planning strategy for a case or herd
5. Communicate a case plan effectively to peers or other members of the practice team
6. Recognise the role of others in case management including the owner

Disease prevention

1. Identify methods of prophylaxis for the prevention of disease
2. Describe specific strategies for the prevention of disease
3. Communicate preventative health care messages effectively to clients
4. Develop a logical approach to an infectious disease scenario, including risk management, spread of disease, disease prevention, treatment and control, and zoonotic implications.

Numeracy

1. Understand and manipulate numbers in order to perform basic tasks e.g. drug dose calculations
2. Show familiarity with statistical techniques as necessary
3. Interpret relevant statistical findings.

Research skills

1. Understand the relevancy of research to the veterinary profession
2. Appropriately design and analyse clinical research projects
3. Critically evaluate scientific information
4. Understand some complexities of research

Ethics

1. Describe the interdisciplinary field of applied ethics and be better able to relate to relevance of the subject
2. Discuss the ethical responsibilities of veterinary surgeons
3. Identify the ethical issues that arise from the different uses of animals and facilitate the discussion of a number of the prominent ethical dilemmas
4. Interpret of the notion of animal-human contracts and appreciate animal rights and animal welfare arguments relating to animal production

Careers

1. Appreciate the many different roles available to qualified veterinary surgeons
2. Describe the postgraduate career structure available to vets in the UK
3. Describe the purpose and method of use of the RCVS PDP

Business and management

1. Articulate the importance of business management in all aspects of the veterinary profession.
2. Discuss the economics of veterinary practice.
3. Identify sources of income and expenditure in veterinary practice.
4. Describe the principles of marketing in the veterinary context, identifying all stakeholders in the process
5. Describe the role of professional indemnity insurance and the Veterinary Defense Society.
6. Discuss the legal aspects of the veterinary profession and issues of liability and negligence.

Appendix 3

Personal & Professional Skills Module Summary, Nottingham University

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Year 1 topics

- Introductory weeks
- Learning and study methods
- Assessment methods
- IT skills
- Problem solving and communication – EMS scenarios
- Professionalism
- Work Life Balance
- Client expectations
- Communication – introducing yourself, questioning techniques

Assessment – portfolio, IT project, reflective essay, MCQ exam

Year 2 topics

- Ethics
- Communication skills – history taking, giving a presentation
- Introduction to research.

Assessment – portfolio, scientific report, communication skills OSPE, ethics paper.

Year 3 topics

- Communication skills – giving information
- Case planning
- Disease prevention
- Compliance
- Animal-human interactions
- Euthanasia and bereavement
- Professionalism
- Careers

Assessment – portfolio, communication skills OSPE, case plan, MCQ

Year 4 topics

- Role of paraprofessionals
- Management
- Clinical audit
- Business and finance
- Career planning including postgraduate qualifications
- Professionalism
- Entrepreneurship

Assessment – portfolio, e-vet practice summary, business plan