

University of Adelaide, School of Veterinary Science

Report on the Curriculum Plan by the Curriculum Committee (13th August, 2008)

Background

The School of Veterinary Science admitted its first students in 2008. An interim curriculum had been developed by a Curriculum Planning Committee in 2007 and used to obtain provisional approval from the University and from the accrediting body, the VSAAC. A decision was taken by the University to have most of Year 1 co-taught with students in the BSc (Animal Science) program. Both the Faculty and the VSAAC recognised this would create difficulties in 'developing a community of learning' among the veterinary students. The remainder of the curriculum has only been approved in broad outline and opportunities for modification remain. This outline envisaged a relatively conventional progression from basic sciences, through pre and para-clinical sciences (the Bachelor program) into clinical instruction (largely incorporated into the post-graduate program). The VSAAC indicated the need for vertical integration between the two programs and for exposure to clinical material in the BSc program to provide contextual relevance to the basic science and pre-clinical disciplines. It was also concerned about the adequacy of staffing and the possibility that over-reliance on teaching from service departments might cause a lack of an adequate veterinary focus particularly in terms of clinical relevance. It also challenged the University of Adelaide to produce a program that was unique and exciting, and which incorporated clinical integration.

The VSAAC commended the School on:

- the rigorous and diligent approach to establishing the veterinary curriculum;
- a willingness of other sections of the University to support its development and delivery;
- an intention to map student outcomes to the 'Day One Skills' defined by the RCVS as the 'Essential Competencies Required of the New Veterinary Graduate';
- an awareness of the risk of curriculum overload;
- the intention to implement criterion-based assessment.

The VSAAC recommended that:

- the pedagogical basis for the curriculum, its delivery and assessment, be determined by the newly appointed senior staff in 2008 and used to underpin all further developments of the curriculum;
- a committee be established to oversee the design and development of the curriculum which should have input from clinicians with experience in the development of clinical curricula;
- detailed mapping of the graduate attributes to RCVS competencies be completed

- consideration be given to increasing live animal exposure in Years 2 and 3 of the program.

The Head of the School, Professor Gail Anderson, has now taken up her post and other senior positions are being advertised with an expectation that most of these foundation appointments will be in place before the end of 2008. A Curriculum Committee has been established consisting of representatives from both the School of Veterinary Science and the School of Animal Science, from the School of Medicine and from the profession (including the President of the AVA and a senior research staff member from the Institute of Medical and Veterinary Sciences).

Professor David Newble, Emeritus Professor of Medical Education at the University of Sheffield and previously Associate Professor of Medicine at the University of Adelaide, has been engaged as the School's primary educational consultant to:

- provide advice on all aspects of curriculum review and development
- review current trends in veterinary education at national and international levels, as a basis for ensuring that the School positions itself as leader and innovator in veterinary education
- serve on the Curriculum Committee to assist in developing a curriculum plan which has a sound underpinning educational philosophy and takes into account recent developments in professional education, instructional methodology, information technology and assessment strategies.
- assist in managing the process associated with implementing planned curriculum initiatives
- assist in producing accreditation documents

Consultation Process

The Curriculum Committee and Professor Anderson plan to consult widely with present and future teaching staff, students, the profession and professional bodies. This process commenced with a 2 day Curriculum Development Workshop held in April 2007 attended by over 30 people. Professor Newble reviewed international trends in dental education and provided details of the process of curriculum development he was following. Professor Tim Parkinson (Massey University) and A/Professor Glen Coleman (University of Queensland) reviewed curricula and curriculum developments in Australasian veterinary schools.

The main focus of the meeting was the generation of an agreed set of **Vision Statements** for the curriculum which reflected both leading edge thinking in veterinary education and the views of staff and stakeholders. These statements reflect the educational philosophy underpinning the curriculum and will become the main drivers of the design and the educational methods to be adopted. Opportunities were provided for further comment prior to the Vision Statements being ratified by the Curriculum Committee.

A Curriculum Development website will be established to keep all informed about progress.

The Report

This report by the Curriculum Committee (CC) is prepared for the information of present and future staff and for comment on its content and recommendations. It provides an illustrated and written outline of a proposed curriculum modification which the Committee believes represents leading edge thinking in veterinary education. It is confident it will meet all the requirements of accreditation bodies both in its educational approach to teaching and assessment and in its coherent approach to identifying the outcome-based competencies and the core underpinning content of the curriculum. It expects some initial difficulties in achieving all of its ambitions in the first year of the program but hopes to work constructively with its partners in the Faculty of Sciences to achieve the levels of vertical integration and clinical input seen to be highly desirable by the School, the veterinary students and accreditation bodies.

It is essential that an overall plan be developed and approved by the School before more detailed discussions commence on each year and component of the curriculum, and to ensure that documentation for Faculty and University program approval can be completed before the end of the year.

The Curriculum Vision Statements

The most fundamental step in curriculum planning is to have a very clearly defined purpose and vision. If you do not know where you are going it is highly unlikely you will get there or even know if you have arrived at the right destination! Having an agreed set of Vision Statements is fundamental to our strategy and encompasses important aspects of our educational philosophy. It is an approach strongly advocated by Professor Newble who has been responsible for implementing this approach in medical schools overseas (Newble et al, 2005) and in Australia and, most recently, in the University of Adelaide School of Dentistry (information about which can be accessed on the Dental School's Curriculum Development website).

1. The veterinary curriculum will meet Australasian, RCVS and AVMA international accreditation standards.
2. The program will be outcome focussed where the aim is to produce graduates able to provide veterinary services relevant to the community, adopting a holistic, integrated and multidisciplinary approach to animal care and management; and who possess the Graduate Attributes of the University of Adelaide.

3. The program will structure clinical experiences throughout the curriculum to provide opportunities to gain expertise in general veterinary practice as well as obtaining experience in specialised veterinary practices.
4. The program will include experience with domestic and exotic species, and with livestock industries, aquaculture, bio-security and environmental protection.
5. The program will demonstrate a high degree of integration between the professional and practical components of the curriculum and the underpinning scientific components.
6. The program will expect the students to share responsibility for identifying and monitoring progress towards and achieving their learning outcomes.
7. The program will enable students to understand and adopt the principles of research and critical thinking; to undertake evidence-based practices and quality assurance activities; and to embrace life-long learning.
8. The program will place emphasis on the development of interpersonal skills; communication and team working skills; and appropriate professional behaviour.
9. The instructional approach will include integrated learning activities complemented by a range of other learning and teaching activities and supported by appropriately integrated assessment modalities.
10. Student assessment, both formative and summative, will be closely matched to the integrated learning and teaching activities and to their clearly defined outcome objectives.
11. Information and communication technology will be used appropriately to strengthen student learning and will be integral to the design and delivery of the curriculum.
12. The curriculum will be managed by a multidisciplinary team including experts in education and educational technology; representatives of the community, the wider profession and the students; and a senior school administrator.
13. Students along with professional and community stakeholders will have input into the design, implementation and evaluation of the program.
14. A quality assurance system will monitor the implementation and evaluate the outcomes of the curriculum.

The Curriculum Plan – Philosophy and Core Content

Vision Statement 2 states that the curriculum is to be '**outcome-focussed**' implying that the content and competencies to be learned during the whole program should be relevant to the ultimate roles of the veterinary practitioner. This has become one of the most influential basic philosophies of professional education over the last few years, though more evident in its application and implementation in medical schools than in veterinary schools (Harden,2002; Davis,2003; Newble et al,2005). There are various models of achieving this (Harden et al,1999; Ross et al,1999) but the one being adopted and adapted for the School is the 'Sheffield model' as developed by Professor Newble and his colleagues, and one which has been shown to be transferable to the Australian context in both medicine and dentistry (Newble et al,2005). It will be an innovative approach within veterinary education.

This approach defines the outcomes under three broad categories – **University Graduate Attributes, Clinical Competencies and Underpinning Veterinary Sciences** (Basic, Clinical, Behavioural and Population Health). **Outcome Objectives** for each are defined in broad terms. Examples of University Graduate Attributes, which are defined by the University of Adelaide for all programs, are 'Is able to apply effective, creative and innovative solution, both independently and cooperatively, to current and future problems' and 'Is proficient in the appropriate use of contemporary technologies'. Examples of Clinical Competencies are 'Gathers relevant information about the patient'; 'Conducts relevant procedures' and 'Adopts a questioning approach'. Then, most importantly, these are used as a framework for preparing content blueprints around a comprehensive list of clinical problems that present to veterinary practitioners (eg cough, abnormal behaviour, diarrhoea). For each problem the specific competencies and underpinning knowledge required to understand, diagnose and manage the problem are identified. The total output from all the problem blueprints provides the content for the core curriculum. This approach has been highly successful in dealing with the perennial problem of professional curricula – content overload. It ensures that only content relevant to future veterinary practice is included and assessed in the core curriculum.

A provisional list of veterinary problems/presentations has been constructed based on published lists including the new UK Veterinary Group Diagnostic Code being developed under the leadership of the Royal Veterinary College (Brodbelt, personal communication). This will be validated locally. Groups of clinicians and scientists will then be involved in producing the blueprints which will ultimately be available on-line in a searchable core curriculum data base for use by both staff and students.

The Curriculum Plan – BSc (Animal Science:Pre Veterinary)

Currently, this is a three year undergraduate degree undertaken partly in conjunction with students in the BSc (Animal Science) program making a 2008 cohort of about 120 students. Students are admitted into the veterinary

program on the understanding and expectation that they will all continue into the post-graduate program and become eligible to register as veterinary practitioners able to pursue a wide range of clinical and scientific careers.

The School intends to use a body-system approach to the teaching of **Animal Structure and Function** (integrated teaching including relevant input, including comparative aspects, from disciplines such as anatomy, physiology, embryology, genetics, histology etc) during Years 2 and 3. Across Years 2 and 3 the underpinning sciences curriculum theme will, in addition to Animal Structure and Function, consist of the longitudinal integrated components **Animal Husbandry** and the **Scientific Basis of Veterinary Practice**. The latter will incorporate activities such as critical appraisal of the literature, evidence-based practice, principles of research and bio-statistics. It will continue in the post-graduate program leading into direct research experience and presentation of a project.

The **Professional and Practical Veterinary Competencies** theme will be allocated a larger proportion of time in Year 2 and 3. Students will be taught a range of Clinical Skills, where possible integrated with the systems-based learning of normal structure and function. Students will also undertake a variety of practice visits in order to experience the range of veterinary practice and potential career opportunities. In addition there will be a focus on developing Communication Skills, taking advantage of the School's simulation centre.

The students will undertake regular ILAs to demonstrate the relevance of the underpinning sciences to examples of actual veterinary problems and clinical presentations. Examples might be presented in paper form but the appropriate use of informational technologies should make it possible for real cases to be portrayed. The establishment of the on-site hospital should further enhance opportunities to base learning on real patients and to integrate clinical competences with the underpinning sciences.

The Curriculum Plan – Post-graduate Program

At present (2008) this program is badged as a Master of Veterinary Science. However, it is anticipated that this will change and that the program may become a Doctor of Veterinary Medicine degree to align it with interstate and international qualifications. Students entering this program will have successfully completed the BSc (Pre-vet) program with its focus on the basic and pre-clinical sciences.

The **Underpinning Veterinary Sciences** theme of the program will encompass the para-clinical sciences (eg pathology, microbiology,

parasitology, pharmacology and toxicology and integrate these with the teaching of the clinical sciences (eg mechanisms of disease, clinical medicine and surgery, therapeutics).

In the **Professional and Practical Veterinary Competencies** theme the students will be expected to develop the range of competencies required to diagnose, investigate and manage a wide range of conditions in relation to domestic and exotic species. The program will also provide students with knowledge and experience of animal husbandry in primary industry (including aquaculture), and with wildlife management. Public health and biosecurity issues will be particular features of the Adelaide program.

The **Scientific Basis of Veterinary Practice** component will build upon the knowledge obtained during the BSc (Pre-vet) program. Year 4 will build on the work undertaken in the first three years with the introduction of more detail on research methods, study design and bio-statistics. Students will all undertake a research project working in association with established researchers and research programs. This project will be presented for assessment in written and verbal forms to peers and staff. The application of Evidence-based Practice will be expected during clinical attachments.

Teaching within the Underpinning Veterinary Sciences theme will largely have been completed and assessed by the end of Year 5. Year 6 will consist of a range of compulsory and elective rotations and might be conceptualised as a **Student Internship**.

Personal Development

The curriculum plan contains a Personal Development component running through all years of the program. In many medical programs there is a 'Personal and Professional Development' course. However, our preference is to separate these two aspects. Professional development is a definable entity best thought of as a competency of equal importance to clinical, interpersonal and technical skills. To ensure this happens the observable and measurable aspects of professional development are clearly defined under '**Professional Behaviours**' in our Veterinary Competencies Outcome Objectives and as such will be rigorously assessed.

Personal Development, on the other hand, is unique to every student and is not something that is assessable. The University and the School have a pastoral responsibility to assist students with their transfer to the University environment and, if required, to provide help with study skills. The School, particularly as for much of the program students will not have easy access to the facilities on the main campus, will offer mentorship and a range of other

supportive activities. While not all academically related they may have an important impact on academic success and personal comfort. A highly valued mentorship program is currently in place in the dental school utilising private practitioners which is run by the local branch of the Australian Dental Association. It is hoped that a similar scheme might be arranged through the Australian Veterinary Association. The CC strongly supports the establishment of a formal in-School mentorship arrangement where students are met on a regular basis as it is well known that students in trouble are often the least likely to seek or take advantage of offers of assistance with personal and academic problems.

Action Plan

The following acts as a summary of the key action points incorporated into the Curriculum Plan which demonstrate how the CC will attempt to ensure that each of the Curriculum Vision Statements are addressed.

Curriculum Vision Statements	Action Points
<p>1. The veterinary curriculum will meet Australasian, RCVS and AVMA accreditation standards.</p>	<ul style="list-style-type: none"> • Match of curriculum themes to RCVS Essential Competencies (Day 1 Skills) • Audit of core curriculum data base to ensure it matches guidance documents of accreditation bodies
<p>2. The veterinary curriculum will be outcome focussed where the aim is to produce graduates able to provide veterinary services relevant to the community, adopting a holistic, integrated and multidisciplinary approach to animal care and management: and who possess the graduate attributes expected of the University of Adelaide.</p>	<ul style="list-style-type: none"> • Development of a set of Outcome Objectives (including University of Adelaide Graduate Attributes) • Development of a list of Veterinary Problems and Presentations relevant to all domestic, wildlife and exotic species • Development of Problem/Presentation Blueprints • Construction of Core Curriculum Data Base • Introduction of Practice Placements from the beginning of the program • Professional and Practical Veterinary Competence theme components focussed on delivering holistic care in both public and private practice settings

<p>3. The program will structure clinical experiences throughout the curriculum to provide opportunities to gain expertise in general veterinary practice as well as obtaining experience in specialised veterinary practices.</p>	<ul style="list-style-type: none"> • Development of hospital facilities at Roseworthy • Establishment of University accredited teaching practices • Creating elective opportunities to undertake electives in remote areas, interstate and overseas
<p>4. The program will include experience with domestic and exotic species and in livestock industries, aquaculture, bio-security and environmental protection</p>	<ul style="list-style-type: none"> • Creating opportunities for experience and electives
<p>5. The program will demonstrate a high degree of integration between the professional and technical components of the curriculum and the underpinning scientific components.</p>	<ul style="list-style-type: none"> • The 6 year program structured into 2 overarching academic themes – Underpinning Veterinary Sciences and Professional and Practical Veterinary Competencies • A range of Integrated Learning Activities (ILAs) throughout the program organised around the Veterinary Presentations and Problems which will link practice with the underpinning sciences • Underpinning Veterinary Sciences integrated under body systems • Implementation of a School wide Assessment Strategy which mandates integrated assessment both horizontally and vertically (progressive testing)
<p>6. The program will expect students to share responsibility for identifying and monitoring their learning outcomes.</p>	<ul style="list-style-type: none"> • ILAs • Introduction of Portfolios • Included as part of management planning
<p>7. The program will enable students to understand and adopt the principles of research and critical thinking; to undertake evidence-based practices and quality assurance activities; and to embrace life-long learning.</p>	<ul style="list-style-type: none"> • Underpinning Veterinary Sciences theme components focussed on research principles and critical thinking in all years of the program • Professional and Practical Veterinary Competence theme components involving the application of an evidence-based approach to veterinary practice in the later years of the program • Research attachments and electives • Opportunities for undertaking inter-collated degree • ILAs and projects
<p>8. The program will place emphasis on the development of interpersonal skills; communication and team working skills; and appropriate professional behaviours.</p>	<ul style="list-style-type: none"> • Communication skills teaching and training commencing in the first years of the program • Acting as veterinary nurse assistant in practices settings • Experience in a wide range of practice settings • Professional Behaviours a major academic component of the Veterinary Competence theme and assessed as such • Multi-disciplinary activities
<p>9. The instructional approach will include integrated learning activities complemented by a range of other learning and teaching activities and supported by appropriately integrated assessment modalities.</p>	<ul style="list-style-type: none"> • ILAs of various formats supported by lectures, small group activities, seminars, practical classes, IT based activities (including distance learning), simulations etc • Implementation of the School's Assessment Strategy
<p>10. Student assessment, both formative and summative, will be closely matched to the integrated learning and teaching activities and to their clearly defined outcome objectives</p>	<ul style="list-style-type: none"> • Implementation of the School's Assessment Strategy • All assessments aligned with the Presentation/Problem Blueprints located in the Core Curriculum Data Base
<p>11. Information and communication technology will be used appropriately to strengthen student learning and will be integral to the design and delivery of the curriculum.</p>	<ul style="list-style-type: none"> • Full utilisation of MyUni • Core Curriculum Data Base • Take opportunities to utilise other Virtual Learning Environments which might become available • Take advantage of Web based technologies

<p>12. The curriculum will be managed by a multi-disciplinary team which will include experts in education and educational technology; representatives of the community, the wider profession and the students; and a senior dental school administrator.</p>	<ul style="list-style-type: none"> • Establishment of a Curriculum Implementation Committee with the appropriate representation as indicated in the Vision Statements and the directors of themes and other major components of the curriculum • Communication with the School's Curriculum Committee during the transition period • Involvement of an instructional designer to support staff in developing e-learning materials
<p>13. Students along with professional and community stakeholders will have input into the design, implementation and evaluation of the program.</p>	<ul style="list-style-type: none"> • Curriculum conferences and workshops open to all stakeholders • Curriculum Development website • Organization of special meetings to discuss curriculum development • Regular meetings and communication with the Australian Veterinary Association
<p>14. A quality assurance system will monitor the implementation and evaluate the outcomes of the curriculum.</p>	<ul style="list-style-type: none"> • Establishment of a Curriculum Review Committee • Establishment of a Learning and Teaching Committee

Summary

In summary, the modified curriculum plan proposed builds on the previous curriculum. It seeks to design a curriculum which meets the aims described in an agreed set of Curriculum Vision Statements, and in doing so takes into account the requirements and specific recommendations of the accreditation bodies. There will be clearly defined learning outcomes; and approaches to teaching and learning (and assessment strategies) which support integration. The full implementation of the plan may not be possible in 2009 because of the need for negotiations with service departments for proposed changes to the early years.

References

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