

# **International benchmarking study of animal welfare education and training 2008**

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# Table of Contents

<b>Executive Summary</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>Project aim</b> .....	<b>5</b>
<b>Methodology</b> .....	<b>5</b>
<b>The assessment adequacies</b> .....	<b>6</b>
Appropriateness of the five adequacies .....	6
<b>Key Findings</b> .....	<b>7</b>
1. Companion Animal Education in Schools .....	9
Australia.....	9
International.....	10
Australia.....	12
3. Animals used in Research and Teaching.....	13
Australia.....	13
International.....	15
4. Livestock.....	16
Australia.....	16
International.....	17
4. Vocational Education and Animal Welfare.....	19
5. Teacher Training.....	20
6. Emerging Developments in Education.....	21
Australia's Primary Industries Education Foundation.....	21
Animal Law Education .....	22
<b>Conclusions</b> .....	<b>23</b>
<b>Appendix 1 – Other studies</b> .....	<b>26</b>
QUADS.....	26
OIE .....	26
USA.....	27
<b>Appendix 2 – Veterinary Science: animal welfare education and training</b> .....	<b>30</b>
Veterinary science education in Australia .....	30
Veterinary science internationally.....	31
<b>Appendix 3 – Tables</b> .....	<b>33</b>
<b>Appendix 4 - Website References</b> .....	<b>59</b>

## Executive Summary

The Australian Animal Welfare Strategy (AAWS) Education and Training Working Group commissioned a 2008 study to benchmark Australia's animal welfare education and training efforts against best practice internationally. The study built on a previous AAWS-commissioned stocktake of the range of higher education, vocational and industry training, schools programs and informal public education available in Australia about animal welfare.

The benchmarking study aimed to assess how well Australia performed when assessed against five key criteria, and how it could learn from a range of innovative (many on-line) international education and training programs. The study's five criteria were:

- (1) animal welfare clearly identified in course description;
- (2) coverage of animal welfare laws, codes and standards;
- (3) coverage of the Five Freedoms and 3 Rs;
- (4) inclusion of a practical component; and
- (5) assessment of student's level of competency.

Innovative award and non-award courses were found to have arisen from interdisciplinary collaborative efforts between University Schools of Agriculture, Schools of Veterinary Medicine and Livestock Behaviour or Animal Well-Being Research Units, but similar partnerships with animal industry sectors was variable. Involvement of animals varied in the courses, with some having none, through to those including interaction with both animals and producers.

The study identified possible future directions in animal welfare education in Australia, including: (1) certificate courses on animal welfare, bioethics and social concerns, (2) masters level studies in animals and public policy (3) undergraduate and postgraduate courses in animal law, and (4) the inclusion of animal conservation in animal welfare studies.

Education and training providers should be provided with the quality criteria and evidence of the best aspects of local and international practices to guide ongoing education and training program development and evaluation. Communication of the findings of this study to educators and vocational trainers, researchers, animal industry sectors, and policy makers will contribute to raising the standard of animal welfare education and training in Australia and hence to improved outcomes for the welfare of animals.

## Introduction

Australia has had an *ad hoc* approach to animal welfare education and training. The Australian Animal Welfare Strategy (AAWS), through its Education and Training Working Group, is attempting to redress this situation. The AAWS was developed over five years by the Australian Government with assistance from the National Consultative Committee on Animal Welfare, in consultation with state and territory governments, animal industry organisations, animal welfare groups and the general public. The AAWS is guiding the development of new, nationally consistent policies and enhancing existing animal welfare arrangements in all Australian states and territories.

The goals of the AAWS are to achieve:

1. an enhanced national approach and commitment to ensure high standards of animal welfare based on a concise outline of current processes
2. sustainable improvements in animal welfare based on national and international benchmarks, scientific evaluation and research, taking into account changes in whole of community standards, and
3. effective communication, education and training across the whole community to promote an improved understanding of animal welfare.

In April 2008, the AAWS Education and Training Working Group engaged consultants to undertake a study to benchmark Australia's animal welfare education and training efforts against best practice internationally. This project contributes to the goals of AAWS and also provides context for national outcomes.

The consultants, Mal Brown from SCARLET Consulting and Carolyn Munckton from CM Communications, also produced a stocktake in 2007/08 for AAWS on animal welfare education and training initiatives across Australia. This 550-page stocktake was the basis for choosing Australian examples to compare against animal welfare education and training activities in other countries.

The 2007/08 stocktake covered all the six AAWS sectors and reviewed formal and informal education and training ranging from postgraduate education through to schools education and education and information materials produced by animal interest groups. The draft of this comprehensive stocktake review was presented at the December 2007 AAWS Workshop and was extensively circulated to key stakeholders for comment before finalisation in February 2008.

The consultants and the AAWS Education and Training Working Group were confident that they had identified leading examples of animal welfare education and training in Australia.

The task in this second project was to identify leading international examples and to compare them with what is occurring in Australia.

### Definition:

“benchmarking refers to when organisations evaluate various aspects of their processes in relation to best practice, usually within their own sector. This then allows organisations to develop plans on how to adopt such best practice, usually with the aim of increasing some aspect of performance. Benchmarking may be a

one-off event, but is often treated as a continuous process in which organisations continually seek to challenge their practices.”<sup>1</sup>

Thus, in simplistic terms benchmarking is the process where you compare your process with that of a better process and try to improve the standard of the process you follow to improve quality of the system, product, services etc.

Attempting to benchmark animal welfare education and training in Australia against international 'best practice' is, by its very nature, quite difficult to define. Nevertheless the project has unearthed some outstanding examples and innovative approaches to teaching animal welfare at many educational levels.

The term 'animal welfare' means different things to different people and perceptions and understandings can differ between countries and cultures. For example, 'welfare' in France relates to 'social welfare' and what AAWS is referring to as animal welfare is more likely to mean 'caring' or 'well-being' to the French.

Differing legal systems and cultural backgrounds result in varying approaches to the use of animals for research, testing, or training in different countries. Nonetheless, their use should be always in accord with humane practices.

At the May 2008 meeting of the OIE (World Organisation for Animal Health) Permanent Working Group on Animal Welfare, the 172 signatory countries agreed to the following definition:

*Animal welfare means how an animal is coping with the way in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/ killing. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.*

The work undertaken and the information collected about what is occurring internationally through a benchmarking study will provide valuable direction for animal welfare education and training in Australia, irregardless of definitional or cultural differences.

The 2007/08 stocktake and this benchmarking study provide a foundation for strategic consideration of how to improve education and training in order to achieve improved outcomes for animal welfare.

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<sup>1</sup> Wikipedia, benchmarking definition, 25 July 2008 <http://en.wikipedia.org/wiki/Benchmarking>

## Project aim

The project aimed to determine how key animal welfare education and training initiatives in Australia compared with excellent international programs, through a benchmarking process using a range of quality criteria.

By benchmarking Australian animal welfare education and training against international practice, the Australian Animal Welfare Strategy (AAWS) will be better placed to facilitate good practice education and training across the Australian community for the promotion of improved understanding of and skills in animal welfare, and to achieve improvements in animal welfare outcomes.

## Methodology

This project undertook a high-level review of the content of a range of international animal welfare curricula using five criteria of adequacy and/or quality of the programs and curricula. Programs and curricula were identified in selected universities, vocational education institutions and secondary, primary and pre-school settings in Australia, USA, Canada, the UK, Europe and New Zealand. Additional examples were also identified in other countries and continents.

The review was primarily conducted through desk-top internet research. Key international academics and experts were identified and email communication with them established. Interesting feedback about this project was received, together with information about what was going on outside Australia.

Ten tables were developed with information about education and training in Australia and internationally. These tables provide summary indications of whether the five project adequacies were being met by the identified programs (see Appendix 3). It should be noted that not all adequacies were appropriate for all education levels and in some instances an assessment was not possible from the description available on websites/course handbooks.

**Table 1 - Sample of information identified for the Livestock/Production sector by the benchmarking project**

Program / Course	Adequacy 1 Course description includes animal welfare	Adequacy 2 Course covers animal welfare laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed
'Pig Ed' (National Centre for Pork Industry Training and Education - Australia)	✓	✓	✓	✓	N/I
Prairie Swine Centre Pork Interpretive Gallery and 'How Pigs are raised' (Saskatchewan Pork Development Board - Canada)	✓	✓	✓	✓	N/I
Animal welfare aspects of Good Agricultural Practice: Pig Production (Compassion in World Farming)	✓	✓	✓	✓	N/I

(N/I = not identified)

## The assessment adequacies

At the outset, the AAWS Education and Training Working Group identified five key adequacies that were to be used to assess education and training courses.

The five adequacies used to assess a course (or program) were:

1. Does the course description contain a statement that identifies animal welfare as a core component?
2. Does the course cover animal welfare laws, codes and standards?
3. Does the course cover the Five Freedoms and 3 Rs (refinement, replacement and reduction)?
4. Does the course contain a practical component with or without case studies?
5. How is a student's level of competency assessed?

The study attempted to identify education and training courses that cover animals in all the six sectors listed in the Australian Animal Welfare Strategy (AAWS):

- Livestock/Production animals
- Animals used for work, sport, recreation or on display
- Companion animals
- Animals in the wild
- Aquatic animals
- Animals used in research and teaching.

On a global scale, this review found that there was more information available on courses and programs for companion animals, livestock and animals used in research and teaching than for the three other AAWS sectors.

### *Appropriateness of the five adequacies*

During the course of the review it became clear that the five identified adequacy questions were often difficult to determine, or were not necessarily appropriate for all courses or programs. This was particularly true in terms of school-based education programs. In addition, answers about the adequacies did not necessarily emerge from an investigation of course structure or content.

For example, the Animal Welfare Program at the University of British Columbia, Canada, comprised two third-year undergraduate courses 'Animals and Society' and 'Animal Welfare and the Ethics of Animal Use'. The 3Rs and Five Freedoms were not specifically part of the curriculum of either of these courses, but would almost certainly come up during discussions about practical rule-of-thumb approaches<sup>2</sup>.

The five adequacy questions chosen as the basis for this study are particularly relevant to vocational training at the level of farm workers or laboratory animal care attendants who would need to know a few basics like codes, regulations, the 3Rs, etc.<sup>3</sup> However, it may have been more appropriate when attempting to assess the adequacy of animal welfare higher education courses to report on, whether the course allowed students to become familiar with different research methods used in the study of animal welfare and if they could apply the different approaches and theories to propose possible solutions to real-life animal welfare problems.<sup>4</sup>

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<sup>2</sup> Professor David Fraser, personal communication, 12 May 2008.

<sup>3</sup> *ibid.*

<sup>4</sup> *ibid.*

## Key Findings

This study identified a number of 'best practice' education and training programs both in Australia and internationally. All programs and courses identified in this study are included in Tables 1 to 10.

The 'overview' findings presented here are not set out by AAWS sector, rather they represent a snapshot of some the trends and characteristics of programs or courses identified during the study.

### Australia

- Extensive duplication and overlap exists between states in Australia in relation to animal welfare education and training courses and resources.
- The full-time Schools Animal Welfare Officer employed by the New South Wales (NSW) Department of Education & Training, the Catholic Education Commission and the Association of Independent Schools of NSW is an exemplar model.
- Australia lacks school-based education initiatives that are underpinned with animal welfare content that fits the curriculum in each state and territory and facilitates improved teacher training and teacher professional development.
- Australia is at the forefront of the increasing international interest in building on a limited number of existing courses that provoke attitudinal change resulting in improved handling of animals based on the innate behaviours of the particular species. For example, the 'Low Stress Stockhandling' School based in Queensland offer 2-day practical beef and/or sheep handling courses which have been attended by farmers, truckies and feedlot operators across Australia.
- The Australian Agri-Food Industry Skills Council's (AFISC) review of approved Training Packages and Training Package Reform is an important vehicle for ensuring the inclusion of animal welfare units of competency in vocational education training (VET).

### International

- Internationally there is a much stronger emphasis on humane/values education and the human-animal bond than was identified in Australia.
- Innovative international education initiatives include (1) certificate courses based around animal welfare, bioethics and social concerns, (2) a Masters of Science in Animals and Public Policy (3) undergraduate and postgraduate courses in Animal Law, and (4) animal conservation in animal welfare studies.
- Innovative award and non-award courses were found to have arisen from interdisciplinary collaborative efforts between University Schools of Agriculture, Schools of Veterinary Medicine and Livestock Behaviour or Animal Well-Being Research Units, but similar associations with animal industry sectors was variable. Involvement of animals varied in the courses, with some having none, through to those including interaction with both animals and producers.

- The proliferation of undergraduate animal welfare courses at overseas universities has much to offer Australia. Examples of innovative teaching techniques used to engage students in animal welfare including an inter-university 'animal welfare judging competition' for livestock/production animals at Michigan State University, animal clubs, and studies into the human-animal bond.
- Australia could achieve a faster transition to improved animal welfare education and training by adopting lessons from international programs, courses, resources and experiences. In addition to the dot point above these include:
  - The tried and tested student assignments used in the UBC undergraduate course 'Animals and Society'
  - Austria's animal welfare teacher training course, "School lesson: Animal Welfare"
  - WSPA's Animal Welfare Certificate Course for 12 to 16 year olds in Africa.
  - University of Prince Edward Island's Vet Camp for students in Years 7 to 9.
- The emergence of animal law as a post-graduate subject was identified in several Australian universities. International best practice, particularly an on-line post-graduate animal law course available from Massey University in New Zealand, could be considered by Australian courses.

## **1. Companion Animal Education in Schools**

### **Australia**

Companion animal education in schools in Australia was primarily focused on responsible pet ownership and preventing dog bites. There were a number of excellent programs that were well-resourced and had well-researched education materials written by teaching and animal science professionals and were developed to align with curriculum standards. The programs were developed under the auspices of different agencies or groups of agencies across the country.

The longest running program, the Australian Veterinary Association's **PetPEP (Pets & People Education Program)**, started in Western Australian in 1989. One advantage of this program was involvement of veterinarians, considered by most people as primary sources of information and education about animal care and welfare. PetPEP had materials and activities with learning outcomes that could be assessed using the Curriculum Profiles for Australian Schools. It also included classroom visits with trained dogs.

The Victorian Government's **Responsible Pet Ownership Program (RPOP)** had the advantage of being funded through dog registration, giving it a secure revenue stream and sustainable foundation. The Schools Program had been running since 2000 and was estimated to have reached 1 million Victorian school children.

The **NSW SPOT (Safe Pets Out There)** Program commenced in 2007 and was developed under the umbrella of the Australian Animal Council. It is a partnership between the NSW Government, the Australian Veterinary Association, the NSW Animal Welfare League, Delta Society Australia and the RSPCA NSW. It is targeted at the junior primary school level. The program was designed to reach all NSW primary students within three years and only has funding until the end of 2009.

The **Delta Dog Safe™** public health and education program specifically targeted dog bite prevention. The program was presented to junior primary school children by Delta accredited volunteers and participating local government staff members who had completed Delta training.

Key points of interest:

1. Very good examples of schools education that incorporate strong animal welfare messages are available in Australia.
2. There existed significant overlap and duplication. This may have resulted from different groups being involved in their development (state governments, universities, professional and community organisations). Coordination of school-based animal welfare curricula and across the country should overcome existing duplication.
3. Program sustainability was also an issue for most of Australia's different companion animal schools education programs, with the exception of Victoria's RPOP with its assured on-going funding source.
4. Evaluation of programs was limited. The PetPEP Program and the Victorian RPOP had been evaluated. The benchmark for the type of evaluation AAWS needed to foster in animal welfare programs was set by the Monash University evaluation of Victoria's RPOP.

5. Dog bites of children aged 5 to 6 occur at a disproportionately higher rate than in the adult population. Consideration should be given to development of well-validated, age-specific education programs to teach correct behaviour when interacting with dogs.<sup>5</sup>

### **Monash Evaluation of Responsible Pet Ownership Program (RPOP)**

A Monash University evaluation study assessed the immediate and longer-term learning outcomes of the RPOP, delivered to children in the prep year of primary schooling. A further aim was to investigate the impact of class size on learning outcomes of the RPOP. Children's ability to identify potentially dangerous dogs through canine body language, their knowledge of how to interact with dogs, and their knowledge of aspects of responsible pet ownership were assessed by measuring the immediate (within two weeks following RPOP) and delayed (2 and 4 months post-RPOP) retention of this knowledge.

Key findings from the Monash evaluation were:

- Preparatory-aged children who had participated in the RPOP showed a better capacity to correctly identify emotions in cartoon, photographic, and video depictions of dogs than did those children who had not.
- In general, this effect did not persist 4 months after completion of the RPOP. In the case of the photographic presentations, children could correctly identify an angry dog, although this had disappeared in the groups that were assessed 2 and 4 months after the program.
- Children's role-play responses to interacting with a dog and its owner persisted for 4 months after the RPOP.
- In general, children did not identify dog behaviours that were relevant to the emotions of anger, fear, or happiness that had not been included in the RPOP. This suggests that there is specificity in the knowledge that the children received from the program.
- Children's knowledge of responsible pet ownership was higher for those who had just been through the program compared with those who had not. There was little evidence of retention of this information 2 and 4 months after instruction.

Results suggest that the test measures used are appropriate to assess the effects of the program with young children. That little longer-term retention of information (especially 4 months post-RPOP) was evident indicates the need for follow-up instruction to improve the longer-term learning outcomes of the RPOP.<sup>6</sup>

## **International**

### **People, Pet, Partnership (USA)**

People, Pet, Partnership (PPP) program at Washington State University was found to be a public service program run by the Center for the Study of Animal Well-being. The curriculum encouraged children to act with compassion and kindness towards animals and to act in this manner as adults. Children are shown the benefits of interaction with companion animals and the program teaches them how to be responsible pet owners.

The Center's Learning and Living Together: Building the Human-Animal Bond was another innovative pet care curriculum that covers four levels. The Grade 4 unit on dogs as companion animals is based around an interactive website that makes good use of technology to communicate the key messages to children.

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<sup>5</sup> Grahame J. Coleman, Margaret J. Hall and Margaret Hay (2008), An Evaluation of a Pet Ownership Education Program for School Children, ISNZ *Anthrazoos*, Vol 21, Issue 3, 271-284.

<sup>6</sup> *ibid.*

### **Singapore's Responsible Pet Ownership Program**

Singapore's Responsible Pet Ownership Program (RPOP), run by the Agri-Food and Veterinary Authority's (AVA) Animal Welfare Education Branch, was a well-resourced, comprehensive and sustainable companion animal education program. It not only had well developed schools materials but also included other initiatives that went beyond educating children, trying to instil in people more than just the basics of caring for a pet.

In 2004, the AVA intensified its responsible pet ownership public education efforts adopting a multi-prong approach to spread the message of 'A Pet Is For Life' to the public. These included responsible pet ownership events and roadshows, and mass media efforts such as advertorials, radio advertisements and television commercials. In addition, a Responsible Pet Ownership Icon was developed. AVA continues to work closely with animal welfare organisations and other like-minded organisations to create greater awareness on animal welfare.

#### **Singapore's Responsible Pet Ownership Program icon**

The Responsible Pet Ownership Program icon serves as a visual reminder to both existing and potential pet owners that a pet is a lifetime commitment. The icon depicts a heart-shaped paw resting on a human hand. Just as a mother holding her child's hand symbolises unconditional love, care and protection, the icon represents a pet owner's love for the pet. The colours of red and orange signify the warmth and strong bond between a pet and its owner. The hand, raised in pledge, symbolises a promise of life-long commitment to the pet.



Key points of interest:

1. The focus of the US PPP and similar Australian pet education programs varied, with PPP having an emphasis on compassion and kindness towards animals compared with a focus by Australian programs on responsible pet ownership and preventing dog bites. Interactive computer learning is a feature of the PPP.
2. Situating school-based programs within wider community initiatives, as in Singapore, could assist in reinforcing the animal welfare messages currently delivered via schools into the community and also provide in a more visible fashion acknowledgement of government commitment to the issue.

## ***2. Aquatics – recreational fishing education programs***

### **Australia**

Recreational fishing is a very popular pastime in Australia and State Governments, often in partnership with recreational fishing associations, have established successful Fishcare programs in all States. Fishcare Programs use educational materials and the assistance of Fishcare Volunteers to teach young children about responsible recreational fishing. There are schools programs and materials as well as holiday activities, such as fishing clinics. Fishcare extends beyond young Australians and school students and is also an important educational program aimed at all people interested in recreational fishing.

This research did not identify comparable recreational fishing education programs internationally. There were recreational fishing education programs in other countries, for example the USA, which had a stronger focus on environment and conservation with emphasis on issues such as water quality, rather than fish welfare.

Fishcare is done well in Australia, however like responsible pet ownership programs, it would benefit from a more coordinated national approach. States were largely 'going it alone' and there appeared to be low levels of inter-state communication. There also was a large amount of duplication at both the program management and delivery levels.

Key points of interest:

1. Australia appears to be an international leader in programs considering fish welfare in relation to recreational fishing.
2. Greater efficiency and also improved fish welfare outcomes may be possible with improved coordination and sharing of resources, experiences and the costs associated with managing recreational fishing education programs between Australian States.

### 3. *Animals used in Research and Teaching*

#### Australia

Australia has some outstanding examples of education and training related to animals used in research and teaching.

#### Animals Ethics Courses for Students

For postgraduate studies, and in some instances undergraduate courses, students are required to participate in an animal ethics course (or similar titled course) to ensure that they know their responsibilities in relation to animal welfare before they commence their research work where animals are being used. A number of Australian universities have followed the lead of the University of New South Wales and introduced formal assessment of students in animal use before issuing a permit to conduct research involving animals.

**Table 2 - Some of the notable Australian individual higher education short courses identified during the study**

Higher Education Institution	Program / Course	Description
University of New South Wales and University of Sydney	Caring for Animals in Research and Education (CARE)	CARE is a web-based, modular course that has been developed by a group from the University of NSW and the University of Sydney and has been designed to assist self-paced learning. CARE has been constructed as a series of modules that address the ethical, social and scientific issues relating to the use of animals for scientific purposes. Each module has a set of learning objectives and tasks as well as a list of additional resources, some of which are available on-line.
University of Newcastle	Research Animal Training Scheme (RATS)	RATS has been developed to provide researchers and teachers with the underpinning knowledge and practical skills to ensure: compliance with the legislation; humane animal use; ethical animal use; minimisation of risks associated with the use of animals. RATS consists of on-line modules, formal program (including practical modules) and resource materials. Participants are issued with a "Statement of Attendance" for the module/s successfully completed, and participants assessed as "competent" may be issued with a "Statement of Attainment" by TUNRA for related competencies from the national Diploma of Animal Technology (RUV50104) that is recognised throughout Australia.
Monash University	Course for Honours and Postgraduate students	Monash Animal Services / Animal Ethics Office runs practical Training Modules for Monash staff and students who may be involved in the use of animals in their research. The course includes lectures, videos, and hands on practical involving basic animal handling, how to administer substances by different routes, suitable restraint, blood sampling techniques including the volumes acceptable and frequency, and basic anatomy.
University of Western Australia	PAWES (Program in Animal Ethics, Welfare and Science) Program	Compulsory for new research staff, and post-graduate and honours students applying to use animals for scientific purposes. Experienced personnel wishing to update their skills and Animal Ethics Committee members are also welcome to apply.
University of Adelaide	Animal Ethics Course	A one-day course for staff, honours/postgraduate students held at the beginning of each year. The course provides the necessary information for carrying out animal experimentation in the University's Laboratory Animal Services managed animal facilities efficiently, productively and ethically, by having the highest regard for the policies and procedures in place to ensure animal well-being and experimental integrity and reliability.

### **NSW Schools Animal Welfare Officer**

The full-time Schools Animal Welfare Officer employed by the New South Wales (NSW) Department of Education & Training, the Catholic Education Commission and the Association of Independent Schools of NSW is an exemplary model. The Education Department actively promotes the fact that it has a full-time Schools Animal Welfare Officer along with reduction in animal use. Animal welfare case studies are included in resources such as the 'Animals in Schools' CD rom. The Program has a dedicated website for Animals in Schools and has produced 'Animals in schools: Animal welfare guidelines for teachers for use in their schools' as a printed publication, poster and CD rom. A single Schools Animal Care and Ethics Committee is the appointed animal ethics committee for all NSW schools.

### **Australia's participation in ICLAS**

At the higher education level, Australia is closely involved with the International Council for Laboratory Animal Science (ICLAS) in developing International Harmonization of Guidelines on Researcher Education and Training in Laboratory Animal Care and Use. The international harmonization of guidelines for the use of animals in research, teaching and testing is an emerging issue in the context of the globalization of research. ICLAS, as an international umbrella organisation, is well situated to act as a facilitator in this area.

ICLAS supports the harmonization of animal care and use policies, guidelines and other forms of regulation on a worldwide basis, as a reflection of the globalization of research. This does not mean standardization. ICLAS considers that each country should be able to maintain an animal welfare oversight system that reflects its cultures, traditions, religions, laws and regulations.

An international working group has agreed on the general principles for researcher educations and training and recommended international references include: The Canadian Council on Animal Care (CCAC) guidelines on: institutional animal user training with accompanying Recommended Syllabus for an Institutional Animal User Training Program; The Institute for Laboratory Animal research (ILAR) Education and Training in the Care and Use of Laboratory Animals, A Guide for Developing Institutional Programs; and The Federation of European Laboratory Animal Science Associations (FELASA) recommendations for the education and training of persons involved in animal experiments, Reports of FELASA Working Groups.

## International

### Ohio State University

The Ohio State University runs an online course in 'Animal Usage Orientation and Training'. Each individual involved in the care and use of animals must obtain a basic level of competency in these areas through participation in either the classroom or in the online Animal Use Orientation Course. This training must be updated no less than every three years. Access to the online course is password protected.

### Norwegian School of Veterinary Science

The Norwegian School of Veterinary Science runs a laboratory animal science course for researchers. It is a required course for undergraduate and postgraduate researchers. The course involves 35 hours of teaching and 3 days of practical training. It is a self-study course with an exam. A strong relationship exists between the Veterinary Science School and Science Faculties.

### Canadian Aquaculture Institute, University of Prince Edward Island

Fish accounted for approximately 23% of all research animals in Canada<sup>7</sup>. The Canadian Aquaculture Institute runs a 5-day intensive course titled 'Care, Handling and Use of Aquatic Animals' for people involved in the care and/or experimental use of fish.

Key points of interest:

1. Many Australian universities have developed good animal ethics courses which post-graduate students, and in some cases undergraduate students, must complete before commencing research work involving animals. A number of Australian universities have followed the lead of the University of New South Wales and introduced formal student assessment in animal use before issuing a permit to conduct research involving animals. Courses that involve formal student assessment will contribute to better animal welfare outcomes.
2. On-line training courses are becoming an increasingly popular teaching and learning medium. Australia's universities could benefit by considering some of the approaches used in international on-line courses. On-line courses offer a wide range of scenario modelling without involving any animals and contribute to improved animal welfare outcomes.
3. Institutions and Ethics Committees can use the general ICLAS Harmonization principles to establish their own training programs and to assess the training of researchers who have completed training programs at other institutions. However, while institutions do establish their own training programs, there is no accreditation system in place for these courses and (in the main) they are not formally recognised training courses. Formal assessment of the knowledge base and technical skills of the researchers that undertake these courses is uncommon.

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<sup>7</sup> Canadian Council on Animal Care's (CCAC) Animal Use Survey (1999).

## 4. *Livestock*

### **Australia**

#### **National Pork Industry Education and Training Centre and 'Pig Ed'**

One Australian example of a good education resource about livestock production involved the National Pork Industry Education and Training Centre (NPIETC). The Centre developed an excellent CD rom that allowed Year 8-12 students to explore a 'virtual piggery' and along the way be introduced to the animal welfare issues in the pig industry. In late 2006, the Centre posted 586 copies to Australian schools that offered agricultural education. However, when the NPIETC Education Program Manager presented to the National Association of Agricultural Educators conference in January 2007 few of the participants had seen or heard of the resource.

#### **Good Agricultural Practice: Pig Production**

In contrast to the distribution issues associated with the Pig Ed resource materials, Compassion in World Farming (CIWF) has put significant effort into developing resource materials on animal welfare issues, targeting school curricula, getting the resources into schools and working with teachers to evaluate the materials.

CIWF is an international animal protection organisation that actively campaigns to improve the lives of farmed animals worldwide. CIWF's has Headquarters in the UK, offices in France and the Netherlands, representatives in Australia and South Africa and works with like-minded organisations and individuals around the world. In Europe, CIWF coordinates the 36-member European Coalition for Farm Animals (ECFA).

Compassion in World Farming has received funding from 'Voiceless, the fund for animals' towards the development of educational projects in Australia since 2004. CIWF produces educational resources, including a DVD titled 'Farm animals and Us in Australia' presented and narrated by Hugo Weaving. A 28-second introductory clip has been added to the Youtube and MySpace websites.

In October 2007 CIWF partnered with Griffith University Centre for Public Culture and Ideas to hold a Symposium titled 'Humane Education: a compassionate ethic for animals'. Within a framework of Values Education the symposium brought together delegates from educational sectors across the nation, including practising teachers, lecturers, trainee teachers and tertiary students, together with parent bodies, government and animal welfare representatives.

CIWF has also produced a resource aimed at tertiary students titled 'Animal welfare aspects of Good Agricultural Practice: Pig Production'. This 184-page publication can be downloaded free in pdf format.

The resource is divided into four sections. The first section is an introduction to pig welfare, behaviour and the development of intensive production. The second section covers welfare aspects of the main stages of modern pig production (Dry sows, Farrowing sows, Piglets, Growing pigs, Boars). The third section deals with general aspects of pig welfare (Selective breeding, Environmental enrichment, Aggression, Stress physiology, Disease, Stockmanship). Section 4 covers legal, economic, environmental and social aspects (Pig welfare legislation, Economic, environmental and social aspects, Good agricultural practice and humane and sustainable development). Case studies include free range, organic and group-housing pig breeding.

### **Australian National Mulesing Assurance Program**

The Australian National Mulesing Assurance Program (NMAP) is an example of a livestock production industry acknowledging the need to improve animal welfare conditions. One of the key aspects of ensuring the welfare of sheep that are mulesed is to ensure that operators are skilled, appropriate equipment is used and is of the highest standard and that the correct procedure is used. This can be demonstrated by operators being assessed to be competent.

There is much international angst and even boycotting of Australian wool due to mulesing procedures used by Australian farmers. The NMAP was developed to ensure that all surgical mulesing operators are encouraged to train and be assessed to a national standard. *"The national standard provides assurance to processors and retailers in the wool trade that Australia manages its livestock with world's best practice."*<sup>8</sup>

## **International**

### **Prairie Swine Centre Pork Interpretive Gallery**

The Pork Interpretive Gallery (P.I.G) is housed above in the attic of Prairie Swine Centre (PSC) Elstow Research Farm, Saskatchewan, Canada. PSC is a non-profit research corporation affiliated with the University of Saskatchewan. PSC maintains internationally recognised programs in research, technology transfer and graduate education directed at efficient sustainable pork production.

School students who visit the Gallery learn about modern pork production, see inside the barn and learn about the science, technology and social economics of pork production. The Gallery is focused on Grade 4-10 and addresses the science and social studies curriculum, high school agriculture sciences and biology curriculum.

The Gallery is built above a 600 sow farrow-to-finish barn housing a total of 6200 pigs. Knowledgeable staff lead guided tours with a maximum 15 students per guide.

The Gallery includes interactive displays on how pigs are raised, what they eat, modern housing, and what is done with the manure they produce. Also presented as part of the display are commitments to food safety, animal care and environmentally responsible livestock production. To support student visits, there is a series of Teacher's Resource Kits with very good information on animal welfare.

However, due to the current difficult economic situation within the pork industry, operations at PSC Elstow Research Farm have been suspended. As a result, tours are currently not available at the Pork Interpretive Gallery.

### **Certified Livestock Transporters Training Program**

In Canada, the Alberta Farm Animal Care Association (AFAC) has developed the Certified Livestock Transporters Training Program. This industry training course and support service for livestock truckers, shippers and receivers is focussed on the humane and safe transport of livestock and the regulatory requirements for Canada and the USA. The Certified Livestock Transporters training offers species-specific customised training on livestock handling. It includes recognising and dealing with livestock not fit to be transported and emergency accident response. The program consists of core content for all species and breakout modules for beef, hogs, horses, sheep and poultry.

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<sup>8</sup> National Mulesing Assurance Program website, February 2008.

## **AWTraining**

Members of AWTraining are Research Fellows or Lecturers at the University of Bristol, UK, Department of Clinical Veterinary Science, Division of Farm Animal Science. They have extensive research experience in the field of animal welfare during transport, stunning, slaughter, killing, carcass and meat quality relating to red meat animals, poultry and aquaculture.

Since 1993 AWTraining has been providing professional consultancy and training in animal welfare during food production. AWT uses the latest multimedia technology and is currently engaged in authoring and/or delivering professional consultancy, training and educational programs in UK, Scotland, Northern and Southern Ireland, Spain, Germany, Estonia, Lithuania, Bulgaria, Slovakia, South Africa, Thailand, Taiwan, Java, Bali, Costa Rica, Nicaragua, Brasil, Chile, and USA.

AWTraining has been recognised for providing 'excellence' in training at the World Food Congress in The Hague, Netherlands.

Key points of interest:

1. The NPIETC Pig Ed example demonstrates the need for a systematic approach to distributing education materials and supporting their appropriate use and evaluation. It is not sufficient to mail out education resources to schools and hope that teachers will use them. Teachers need support and assistance to integrate animal welfare education and information into their classrooms.
2. The NMAP program is an example of a livestock production industry attempting to address concerns of consumers in relation to animal welfare issues. It is not clear how well the benefits of this program have been communicated to buyers/consumers.
3. The cessation of student tours at the Prairie Swine Centre Pork Interpretive Gallery reinforces the need for sustainable animal welfare education programs.
4. The Australian livestock transportation industry could learn from the Canadian Alberta Farm Animal Care Association (AFAC) Certified Livestock Transporters Training Program.
5. The food industry is a world market and AWTraining courses are being delivered worldwide. The focus on welfare and quality during stunning and slaughter across the world must accommodate climatic, cultural and political differences. Where formal AWTraining courses would provide far too much specific information, Animal Welfare Workshops and training courses are being delivered to generate a level of understanding of welfare and quality issues.

## 4. Vocational Education and Animal Welfare

At the time of this report the Australian Agri-Food Industry Skills Council (AFISC) was managing concurrent reviews of vocational education training (VET) package competencies and overall training package reform. The AAWS Education and Training Working Group made a submission to the reviews. The submission noted that animal welfare competencies should be core to all vocational training programs involving animals, and that any review of competency standards should consider how standards are taught and assessed, and what support is available for the education providers.

During the 2007/08 AAWS Education and Training stocktake an interrogation was made of the National Centre for Vocational Education Research (NCVER) database for the year ending 2006. Whilst there were an impressive number of units related to animal welfare on offer, it was only through interrogation of the NCVER database that a clearer picture was obtained regarding uptake of these units. The participation results were not positive (see Figure 1).

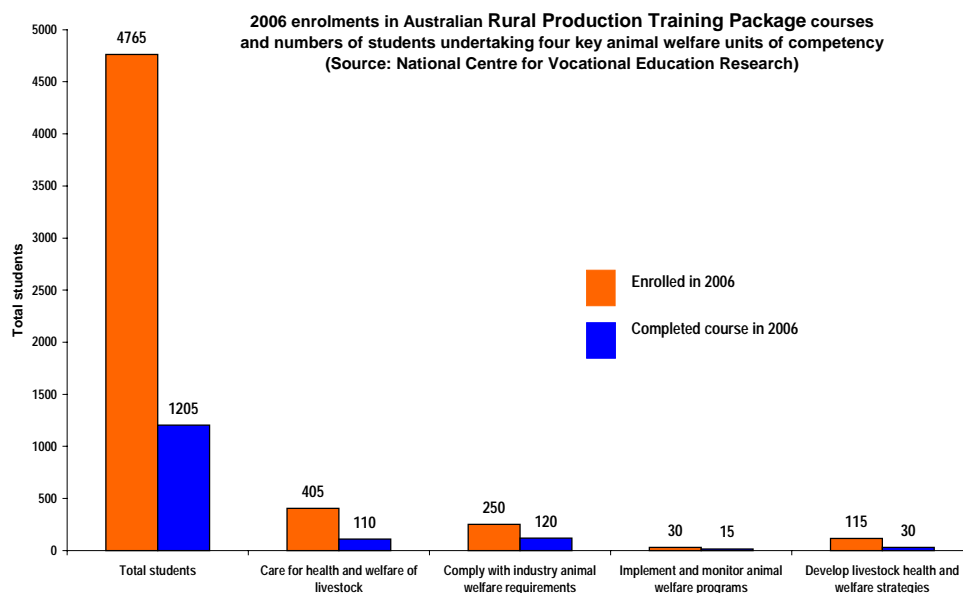


Figure 1: Uptake of animal welfare related competencies as part of the Rural Production Training Package.

Key points of interest:

1. Achievement of the objectives of the AAWS would be facilitated if at least one animal welfare competency unit was made a core area of study in all Agri-Food VET programs. This would help ensure all people trained to work with animals have appropriate attitudes and levels of skills and knowledge relating to animal welfare.
2. The NCVER database interrogation makes it clear that animal welfare is not considered in a consistent manner by training institutions. This is likely to impact on the quality of the teaching process. Further research into the quality of the teaching, including the animal welfare expertise of the educators, and the outcomes achieved should be an integral component of the Agri-food Skills Industry Council's work on new competency standards.

## 5. *Teacher Training*

This benchmarking project reinforced the findings of the previous 2007/08 stocktake of animal welfare education and training in Australia, that there is a distinct lack of animal welfare content in teacher training courses. Anecdotal evidence brought to the attention of the authors suggested that some classroom teachers have been picking and choosing information, often from animal activist websites, and presenting this information to their students.

There is an urgent need for inclusion of appropriate animal welfare content in teacher training courses. There is also an excellent opportunity for animal welfare education provided by the newly emerging area of 'Values Education' and the requirement that schools will develop 'Values Education' resource materials.

### **School Lesson: Animal Welfare, Austria and Germany**

The Teachers' Training Academy, University of Graz, Austria, offers training for teachers in animal welfare, 'School Lesson: Animal Welfare'. This program was developed in 1974 in response to reported increasing alienation from animals and the propensity to violence of children and young persons. Graduate teachers maintained a network, contributing their experience via regular meetings that aimed to keep teachers informed on current issues. Animal Welfare Teachers also worked in various regions of Germany.

Animal welfare lessons take place at any type of school and at any level of education, including kindergarten. Lessons are matched with the age and the requirements of children and young people. The subject teachers putting themselves forward for the services include religion, ethics, biology and geography; however, the issue can also be integrated into many other domains.

Structure of Lessons:

- Ethical approach to the subject: the significance of each living creature, the range of feelings of our fellow creatures
- Information/orientation part: supported by texts/poems, slides, foils, films and discussions
- Possible solutions: future perspectives, suggestions for changes in one's own – human – behaviour with regard to animals and to the environment.

Key points of interest:

1. The Austrian 'School Lesson: Animal Welfare' training provides an example of how teacher training can embrace animal welfare issues and that there are benefits that flow by providing on-going support for an informed network of experienced, practicing teachers.

## 6. *Emerging Developments in Education*

### **Australia's Primary Industries Education Foundation**

Over the past few years there has been increasing discontent among rural industry organisations and representatives as to the *ad hoc* nature of education programs surrounding Australia's primary industries in schools. Some industries have committed resources to support and encourage primary industries education in schools and others have not. In some instances, organisations that have invested funds are unsure as to the benefits that their programs, resources or activities may have accrued.

As a result of this, a variety of rural-based organisations have met and made representations to government to discuss future options. Many of those involved are aware of exemplary international programs designed to address the same issues.

An Australian company, the Primary Industries Education Foundation (PIEF), has been established to help overcome the current *ad hoc* nature of education programs in schools that have a focus on Australia's primary industries. This initiative has a broader focus than animal welfare, but once operational would provide a platform for school-based animal welfare education.

#### **The aims of the Primary Industries Education Foundation (PIEF) are to:**

- a. provide national leadership and coordination of initiatives to encourage primary industries education in schools through a partnership between industry, government and educators;
- b. commission, co-ordinate, facilitate and manage national projects to encourage primary industries education in schools;
- c. provide a source of credible, objective and educational resources for schools to maintain and improve community confidence in Australia's primary industries; and
- d. communicate primary industries research and development outcomes in a format accessible for schools and encourage interest within schools in primary industries related careers.

Delivery will largely occur through:

1. Developing and maintaining a web portal of educational resources and initiatives to encourage primary industries education in schools. This will allow sharing of existing resources and provide a central information source. The PIEF may audit existing agricultural education initiatives to set benchmarks and future goals to measure its performance.
2. Managing nationally focused primary industries educational projects for members and other organisations. The PIEF will provide cost savings for clients by removing the need to run separate projects targeted at the education frameworks of each state and territory jurisdiction. The PIEF could also enhance existing educational resources to encourage greater use in schools.
3. Managing the quality of educational resources coordinated and delivered by the company for credibility and objectivity. The PIEF will provide advice and potentially services on teacher professional development to assist in the uptake and use of primary industries educational resources.
4. Developing educational resources from the findings of members' key research projects. The company could provide information about primary industries related careers and career paths for school careers advisors.

### ***PIEF Outcomes***

- More efficient and effective use of members' effort and financial expenditure on primary industries focused education projects.
- A better informed and more aware education sector and community on the contribution of primary industries to our society.
- A greater understanding within the education sector and greater community of potential primary industries career pathways and training opportunities

## **Animal Law Education**

Animal law has gained increasing recognition as a distinct legal discipline in recent years. This is reflected by the emergence of courses in animal law, animal rights law and animal protection law in universities in New Zealand, the United States and, more recently, in Australia.

**University of New South Wales** "Animal Law" course – Australia's first animal law course commenced at the University of New South Wales in February 2005. The course is designed to be accessible to those with or without legal qualifications. It can be taken as part of a Masters of Law or a one-off course (with no need to be enrolled in a UNSW degree).

**Southern Cross University** – Undergraduate "Animal Law" course. The unit is taught over seven consecutive mornings. It can be taken as a one-off unit (with no need to be enrolled in a SCU degree).

**University of Wollongong** – Undergraduate law elective "Animal Law". This 13-week unit is available as a cross-institutional subject. Priority is given to UOW students and there are some law prerequisites, including administrative law.

**Monash University** – Undergraduate subject "Animal Rights Law" commenced in 2008. The unit begins with an analysis of different philosophical approaches to animal protection, namely animal rights v. animal welfare. Students then critically analyse Australian (State and federal), foreign and international laws relating to the use of animals in scientific experiments, sport, entertainment, food production, hunting and international trade. Students explore particular problem areas, including endangered species, standing of persons in litigation to protect animals, and regulation and liability of veterinarians. The unit concludes with a look at challenges to animal rights law and possible future directions.

**Deakin University** – Postgraduate course "Human, Economic & Legal Rights". The Deakin University Faculty of Business and Law course "Human, Economic & Legal Rights" includes an animal law component.

**Griffith University** – Undergraduate unit "Animal Law". First taught in January 2007 and offered again in 2008.

**University of Wollongong** – Third year law subject "Animal Law", first offered in July 2008.

## Conclusions

This review has found some international education and training courses that Australia could learn from and/or which may be suitable for the Australian environment. The review has also identified some factors that limit the opportunities for improved animal welfare education and training in Australia.

The key conclusions are:

1. There is a need for increased communication and cooperation between States in Australia to optimise animal welfare education and training courses and resources. Currently there is extensive duplication and overlap that is reducing the overall impact.
2. Australia must underpin school-based education initiatives with animal welfare content that fits the curriculum in each state and territory and facilitates improved teacher training and teacher professional development. Incorporating animal welfare content into schools education is a significant opportunity to advance animal welfare. Strategies include encouraging discussion about animal welfare in values education, providing a portal for easy access to all relevant information relating to animal welfare, and providing training in how to facilitate a balanced debate of animal welfare issues. International examples, most notably the 'School Lesson: Animal Welfare' teacher training program from Austria and Germany, have much to offer Australia.
3. The emergence of animal law as a post-graduate subject in several Australian universities provides the AAWS with an important opportunity. Most often animal law deals with animal rights as distinct from animal welfare. However the emerging prominence of animal law cases centred on welfare issues could be introduced into tertiary level courses involving the study of animals to ensure that today's law students, veterinary students and social science students all learn from these cases. Ideally this would involve an interdisciplinary approach to teaching animal welfare between veterinary science schools/faculties and law and social science faculties. International best practice approaches, particularly an on-line post-graduate animal law course available from Massey University in New Zealand, should be looked at for inclusion in Australian courses.
4. The proliferation of undergraduate animal welfare courses at overseas universities has much to offer Australia. Particularly some of the innovative teaching techniques used to engage students in animal welfare, such as an inter-university 'animal welfare judging competition' for livestock/production animals at Michigan State University, animal clubs, and studies into the human-animal bond.
5. Australia should take a lead in the increasing international interest in building on a limited number of existing courses that provoke attitudinal change resulting in improved handling of animals based on the innate behaviours of the particular species. Agricultural Colleges provide fertile ground for the introduction of such courses, in addition to industry sectors, especially the transport sector.

6. The sustainability of programs and courses that include animal welfare is an important issue. For example, this study found an excellent pig education program for school students in Saskatchewan, Canada that was no longer available because of the downturn in the pork industry, whereas in Australia the long-term funding for the Victoria's Responsible Pet Ownership Program was assured via funding from annual dog registrations. This is an important factor for consideration when developing education programs.
7. The AAWS must stay involved with the Agri-Food Industry Skills Council's (AFISC) review of approved Training Packages and Training Package Reform to ensure the inclusion of animal welfare units of competency in vocational education training (VET). Periodic interrogation of the NCVET database should occur to monitor the uptake of animal welfare units of competency in vocational education courses.
8. Education and training providers in Australia should be provided with the quality criteria developed by the AAWS Education and Training Working Group and evidence of the best aspects of local and international practices to guide ongoing education and training program development and evaluation. Communication of the results of this study to educators and vocational trainers, researchers, animal industry sectors, and policy makers is expected to raise the standard of animal welfare education and training in Australia and lead to improved outcomes for the welfare of animals. [Some of the more innovative international education initiatives include (1) certificate courses based around Animal welfare, Bioethics and Social Concerns, (2) a Masters of Science in Animals and Public Policy (3) undergraduate and postgraduate courses in Animal Law, and (4) including animal conservation in animal welfare studies.]
9. The full-time Schools Animal Welfare Officer employed by the New South Wales (NSW) Department of Education & Training, the Catholic Education Commission and the Association of Independent Schools of NSW is an exemplary model that should be considered by all Australian states and territories.
10. In future, if more work is done on assessing education and training, consideration should be given to exploring a hierarchy of indicators of best practice for the different 'levels' of animal welfare education. For example: general community; primary school-based; high school-based; trade related; university (basic use in research and teaching); university (general societal) and university (teaching others) etc.<sup>9</sup>

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<sup>9</sup> Identified by Heather Yeatman, Chair of the AAWS Education & Training Working Group.

11. In April 2008, the Pew Commission on Industrial Farm Animal Production<sup>10</sup> released a comprehensive report after nearly three years of extensive consultation on farm animal industries impact on the public's health, the environment, farm communities and animal health and well-being. The report highlighted some of the negative impacts on the environment attributed to farming and this is ultimately reducing the debate about improving the welfare of animals. There is so much emphasis on the state of the environment that public debate about other important issues – such as animal welfare – are being forgotten.

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<sup>10</sup> Pew Commission on Industrial Farm Animal Production was formed to conduct a comprehensive, fact-based and balanced examination of key aspects of the farm animal industry. Commissioners represent diverse backgrounds and perspectives and come from the fields of veterinary medicine, agriculture, public health, business, government, rural advocacy and animal welfare.

## **Appendix 1 – Other studies**

During this project it became apparent that there was other work being undertaken on reviewing and improving animal welfare education and training. Australia's interests were represented in international fora with Australian Animal Welfare standards promoted within Office International des Epizooties (OIE) and the joint Quadrilateral Alliance – Australia, New Zealand, Canada and United States (QUADS). Reviews of programs in the USA have been undertaken and an international comparative study of veterinary programs.

### ***QUADS***

Dr Nicole Cormier, Canadian Food Inspection Agency (CFIA), advised that Canada had also commenced a benchmarking project in animal welfare. The Canadian study will involve identifying the various aspects of animal welfare for comparison and compiling lists of potential information resources. The main focus is to be on animal welfare during the transportation of animals and on humane slaughter for food consumption (CFIA's two animal welfare regulatory mandates) as well for disease control purposes. CFIA will be comparing regulatory (Codes of Practice) versus voluntary requirements, and looking at infrastructure as well as government resources dedicated to animal welfare in various countries.

### ***OIE***

Dr Ed Pajor of Purdue University is preparing materials on international animal welfare education for the OIE. Ed will present the results of the OIE Animal Welfare Educational and Research Resources Project to the 2<sup>nd</sup> Global conference on animal welfare conference in Cairo, Egypt, on Wednesday 22 October 2008.

The Council of Europe's Animal Welfare Unit, the European Union and the OIE held a joint conference in 2006 entitled 'Animal Welfare in Europe: Achievement and Future Perspectives'. A working group report presented to the conference covered the results of a questionnaire distributed to a group of countries including Austria, Czech Republic, Germany, Luxembourg, Poland, Slovakia, and Switzerland. The questionnaire included a section about animal welfare education and training.

Key findings from the survey were:

- Only one country did not have provisions for animal welfare training at veterinary undergraduate level but two countries had no postgraduate courses.
- Some countries had PhD and professional qualifications in animal welfare.
- One country noted that animal welfare was not regarded as a very important item in the undergraduate course and was limited to animal ethics, animal welfare legislation and ethology of farm animals.
- Some countries had recently introduced training requirements for drivers and had professional qualifications for slaughtermen.
- One country noted specific training in the catching and care of stray and free-roaming animals and care of experimental animals.
- One country reported a project 'animal welfare in and for schools' program to make animal welfare more popular. They also introduced information material for purchasers of pet animals to be provided for the handler in the scope of business activities.

Surveyed countries identified barriers/obstacles to implementation in animal welfare education and training. It should be noted that some of the obstacles and barriers identified are specific to the European Union context and operating environment.

The main barriers identified were:

- Motivation of veterinary staff for education and training in animal welfare
- Value of animal welfare at university level
- Relatively low understanding of foreign languages leading to delay of access to some information due to translation
- Need for basic and continuing education
- Inspection and execution lie in the provinces. Therefore manuals and check-lists were created by the Federal Ministry to facilitate execution in the provinces in conformity
- Lack of knowledge of animal needs
- Withdrawal procedure (seizure of animals) and follow-up care in case of large number of animals (financial resources - no state funds for such activities).

Surveyed countries also identified their current best practice initiatives:

- Training of specialists in animal experimentation
- Testing of husbandry systems
- Co-operation with universities and Non-Government Organisations
- Welfare seminars
- Educational training
- Academy for training of veterinarians
- Private initiatives
- A national education program. The project 'animal welfare in and for school' means that animal welfare is starting to become popular
- In the regulation concerning animal welfare controlling, a 60-hour curriculum is provided for the staff in charge of animal welfare checks
- Information material for purchasers of pet animals is provided for the handler in the scope of business activities
- To increase information for animal keepers on the legal provisions and to facilitate implementation, a compulsory administrative approval procedure will be instituted for new types of serially manufactured stable systems and new types of technical equipment for keeping animals
- Practical training for veterinary officers, private veterinarians
- Practical training for animal handlers or keepers.

It has not been possible to determine how far these initiatives, identified at this 2006 conference, have been implemented.

## **USA**

According to Dr Joy A. Mench from the Department of Animal Science, University of California, Davis, a notable change in the USA in the last 40 years has been the blossoming of undergraduate classes addressing animal welfare. She has recently published her findings on trends in education as a component of an investigation into USA farm animal welfare<sup>11</sup>.

Mench reports that the Center for Respect of Life and Environment (CRLE) maintains a database of courses taught in North America that deal with topics related to animals in society. Although the CRLE list is almost certainly incomplete, it identifies courses at eight Land-Grant universities (Colorado State, Cornell, The Ohio State

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<sup>11</sup> Mench, J.A., Farm animal welfare in the U.S.A.: Farming practices, research, education, regulation, and assurance programs, *Applied Animal Behavior Science* 2008

University, Purdue, University of California-Davis, University of Maryland, University of Massachusetts-Amherst and Washington State University) that are either entirely or largely devoted to teaching scientific principles of animal welfare.

Mench finds that there are even more courses that focus mainly on animal ethics, reflecting the general growth of the fields of animal and environmental ethics in the USA. In animal science departments that do not offer specific courses on animal welfare or ethics, these topics are now often integrated into the curriculum as a part of courses that cover contemporary ethical and social issues affecting animal agriculture (Swanson, 1999)<sup>12</sup>.

Also mentioned in Mench's study is Michigan State University (MSU) which has been particularly active in developing innovative approaches to animal welfare education. Along with other collaborating institutions, MSU started a unique course in 'animal welfare judging'. This involves presenting students, who have already been given the appropriate background information, with various scenarios (eg videos of sheep stockpersons performing various husbandry activities or of different tail docking methods), and then asking them to assess the welfare of the animals in those scenarios<sup>13</sup>. The students work in teams and compete with teams from other universities, a method of imparting practical knowledge modelled on the livestock and poultry judging teams that have been part of undergraduate education in USA animal science departments for many years.

The teaching of non-health related aspects of animal welfare to veterinary students seems to have lagged behind undergraduate teaching. There are apparently very few USA veterinary schools where animal welfare is taught as a stand-alone course, although required or elective courses that provide some information about animal welfare are sometimes incorporated into the curriculum. At the University of Pennsylvania, for example, animal welfare figures prominently in three courses: a mandatory veterinary ethics course, and two optional courses on animals and society and animal production systems<sup>14</sup>.

Levine *et al* (2005)<sup>15</sup> surveyed veterinary students at Cornell, and remark that the inconsistent attitudes expressed by the students towards companion versus farm animal welfare suggest that the study of animal welfare science, animal cognition, and farm animal behaviour need to be further developed within veterinary schools. Michigan State University has recently developed an on-line graduate (postgraduate) level course suitable for veterinary students in order to provide training in animal welfare (Siegford *et al*, 2005)<sup>16</sup>.

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<sup>12</sup> Swanson, J.C., 1999. What are animal science departments doing to address contemporary issues? *J. Anim. Sci.* 77, 354–360.

<sup>13</sup> Heleski, C.R., Zanella, A.J., Pajor, E.A., 2003. Animal welfare judging teams—a way to interface welfare science with traditional animal science curricula? *Appl. Anim. Behav. Sci.* 81, 289.

<sup>14</sup> Hewson, C.J *et al*, 2005. Approaches to Teaching Animal Welfare at 13 Veterinary Schools Worldwide, *J. Vet. Med. Educ.*, Vol 32, Issue 4, 422-437.

<sup>15</sup> Levine, E.D., Mills, D.S., Houpt, K.A., 2005. Attitudes of veterinary students at one US college toward factors relating to farm animal welfare, *J. Vet. Med. Educ.*, 32, 481–490.

<sup>16</sup> Siegford, J.M., Bernardo, T.M., Malinowski, R.P., Laughlin, K., Zanella, A.J., 2005. Integrating animal welfare into veterinary education using an online interactive course, *J. Vet. Med. Educ.*, 32, 497–504.

By placing the course online and collaborating with highly qualified instructors around the world, students anywhere can have access to the best education in animal welfare. Web-based interaction between students and instructors from many different institutions provides students with access to a broad network of animal welfare professionals and researchers as well as opportunities for dialogue and future collaboration.

Two on-line animal welfare classes are currently available at MSU, one at the graduate level and one at the undergraduate level. The graduate level course is 'Animal Welfare Assessment'. The undergraduate level course is 'Animal Welfare: Science & Society'.

Dr Wendy Koch, United States Department of Agriculture advised the consultants that the US is far behind Australia in its animal welfare education efforts, but that they do have a few good programs.<sup>17</sup> The programs identified by Dr Koch are included in the tables in this study.

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<sup>17</sup> Dr Wendy Koch, personal communication, 16 May 2008.

## **Appendix 2 – Veterinary Science: animal welfare education and training**

Veterinarians are often the first people in the line of duty to be confronted with animal welfare issues. They are also the first that people turn to for information and advice about good animal welfare practices. This report therefore includes considerable information on education and training about animal welfare for veterinary science students. The consultants identified some interesting international course/subject examples and studies and also completed an extensive review of what is happening in Australia.

### ***Veterinary science education in Australia***

From 2008 Australia has seven universities offering veterinary science degrees. This has increased from four universities just five years ago. An analysis of course content (see Table 10 in report), along with consideration of the Hewson *et al*/study<sup>18</sup>, makes it clear that Australian veterinary science courses measure up well against their international counterparts. Nevertheless, there are still some important lessons for Australia to learn from international approaches to education about animal welfare.

The Australian College of Veterinary Scientists (ACVS) Animal Welfare Chapter was established in the 1960s but only in the past two decades has there been a significant interest in this area. The Chapter was established to provide a forum for the training of veterinarians to a detailed knowledge and above average competence in animal welfare in all species. Course content includes, The Ethics of Animal Use, Physiological and Psychological Aspects of Adverse States, Animal Environments, The Veterinary Profession's Role in Animal Welfare, Veterinary Aspects of Animal Welfare, Specific Welfare Issues, Legislation and Animal Welfare and Human - Animal Relationships. Membership in this subject equips veterinarians to understand the scientific basis for optimum animal welfare and to be able to reason and debate coherently the legal and ethical aspects of animal welfare. To apply for membership of ACVS, a veterinarian must have a minimum of five years' industry experience.

The increase in the membership of the ACVS Animal Welfare Chapter has increased four-fold in the period 2004-08 – pointing to an increased interest in this area.

In Australia, thanks to an increase in the number of veterinary science degree courses available, there will be double the number of current graduates by 2012, which will still probably not be enough to meet the demand<sup>19</sup>. Australian graduates will also be in demand internationally.

Practising veterinarians with qualifications prior to 2000 may need further education specifically related to animal welfare to ensure they are up-to-date and cognisant of current standards for optimal animal welfare.

An important issue emerging in the current landscape is the preparedness of graduates to deal with the animal welfare issues they will encounter as practising veterinarians. Vet graduates need to understand the interplay of social expectations and legal requirements for animal protection and welfare and be able to respond accordingly.

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<sup>18</sup> Hewson, C.J *et al*, 2005. Approaches to Teaching Animal Welfare at 13 Veterinary Schools Worldwide, *J. Vet. Med. Educ.*, Vol 32, Issue 4, 422-437.

<sup>19</sup> Professor Ivan Caple, personal communication, July 2008.

This leads to consideration about how well, if at all, vet science, law and social science students are co-taught in relation to the human and legal implications surrounding animal welfare. The role of vets and their responsibilities these days goes way beyond health needs of animals. For example, research shows that in households where domestic violence occurs then there is often a concurrent abuse of the family pet.<sup>20</sup>

### ***Veterinary science internationally***

In 2005, Suzanne Millman and her colleagues published a report on the amount of time dedicated to the study of animal welfare training at the Ontario Veterinary College at the University of Guelph, Canada<sup>21</sup>.

The University of Guelph is internationally recognised as a leader in animal welfare and within the Veterinary College is the Colonel K.L. Campbell Centre for the Study of Animal Welfare. Millman maintains that, while animal welfare receives significant attention within the agricultural college, it is limited within the veterinary curriculum. Veterinary students receive four hours of instruction in animal ethics and apply their knowledge within the communication lectures and laboratories, totalling 11-15 hours. Compulsory coursework explicitly addressing factual components of animal welfare science, welfare assessment, and associated animal-related policy constitute only 12 hours throughout the four-year Doctor of Veterinary Medicine curriculum. However, an elective final-year clinical rotation and a graduate course specific to animal welfare were offered for the first time in 2004/05. Student interest in animal welfare is evident through their participation in summer research projects in animal welfare, an animal welfare mentor group, and a student-run animal welfare club that organises an Animal Welfare Forum each October. Veterinarians have important contributions to make in decision making about animal welfare issues, at clinician and policy levels. Although motivated individuals can seek out opportunities to expand their knowledge of animal welfare, Millman maintains that a compulsory senior-level course in animal welfare is needed to develop the necessary depth of understanding of this discipline if veterinarians, as a profession, are to meet society's expectations about animal welfare.

Also in 2005 the *Journal of Veterinary Medical Education* published a paper titled 'Approaches to Teaching Animal Welfare at 13 Veterinary Schools Worldwide'<sup>22</sup>. The principal author, Caroline J. Hewson, contacted a number of university veterinary schools/faculties around to request information about animal welfare education. The consultants understand that the 13 schools detailed in the paper are those that actually responded to Hewson. These are therefore not necessarily the most outstanding examples. Although, it is presumed they have a good approach to integrating animal welfare into their curricula because they were keen to share their approach. It was not possible to make contact with Caroline Hewson to get further information about this study.

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<sup>20</sup> The Animal Abuse and Domestic Violence resources website: [www.vachss.com](http://www.vachss.com)

<sup>21</sup> Suzanne T. Millman, Cindy L. Adams, Patricia V. Turner., Animal Welfare Training at the Ontario Veterinary College, *J. Vet. Med. Educ.*, Vol 32, Issue 4, 447-450.

<sup>22</sup> Hewson, C.J *et al*, 2005. Approaches to Teaching Animal Welfare at 13 Veterinary Schools Worldwide, *J. Vet. Med. Educ.*, Vol 32, Issue 4, 422-437.

This paper comprises brief descriptions of 13 veterinary schools in Europe, North America, South America, and Australasia. It summarises undergraduate training in animal welfare at the respective schools and how students are assessed. This benchmarking report does not include information or details from Hewson's paper, but would be of interest to anyone wanting to compare international veterinary science courses.

At Massey University in New Zealand, the postgraduate veterinary science course includes a subject animal law. The law underpins all interactions with animals, whether that interaction is direct or indirect, and is consequently relevant to veterinarians and the performance of their professional duties. Additionally, the veterinarian is generally acknowledged as a key animal health and welfare professional within society, and is therefore often the first point of contact for inquiry and discussion regarding animal related issues.

The course aims to ensure that, upon successful completion, the participant has a superior understanding and knowledge of relevant principles, duties and issues as related to animals, and how those principles have practical application to the veterinarian, and the activities of those who come under the veterinarians supervision. Furthermore, the course will extend the veterinarians professional knowledge beyond considerations of health, to the legal issues in respect of welfare, rights thereby maintaining and strengthening the credibility of the veterinarian within the community as a key professional in matters regarding animals.

The Massey University course is divided into 10 modules. A study guide contains an introduction and objectives for each module and some relevant introductory reading material. There is a very strong on-line component and participants will gain further understanding of the topic areas through class discussion and research on the world wide web. There is no final examination for this course with the bulk of the assessment performed though two assignments, complemented by three short on-line tests.

## Appendix 3 – Tables

Table 1: Examples of Animal Welfare Education and Training in Australian Primary Schools

Note. At the Primary School level there may not be an overt attempt to include this project's adequacies, although there may a general intention. Hence 'Not applicable' (N/A) has been used. The column titled "Other comments" contains information about why the education & training listed below has been identified as "good practice". The table also indicates whether evaluation has been done, which the writers believe is important for education programs.

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Companion Animals	<b>PetPEP – Pets &amp; People Education Program.</b> Australian Veterinary Association [AVA] Program (since 1989).	Not applicable at this level	Not applicable	Not applicable	Program includes visits to schools with trained dogs	Not assessed	Designed to educate children about responsibilities and issues associated with pet ownership and interacting with animals. Evaluated in 1996 by the Centre for Research in Science, Technology & Environmental Education, University of Canberra Evaluated in 2002 by University of Queensland's Social & Economic Research Centre. Only Australia-wide program. Reaches 40,000 students per year.
	<b>Victoria's Responsible Pet Ownership Program.</b> Victorian Government Schools Education Program (since 2000). Funded by dog registration fees payable to local government.	Not applicable	Not applicable	Not applicable	Program includes visits to schools with trained dogs	Not assessed	Has reached over 1 million Victorian school children in 7 years through school visits. Comprehensive Teacher's Kit in line with curriculum standards. Funding guaranteed through registration fees. Evaluated by Monash University. Review of hospital data indicates significant decline in 0-4 yr olds hospitalised for dog bite injuries (1998-2004) and few admission rates for 5-9 yr olds.
	<b>SPOT (Safe Pets Out There) NSW Program.</b> Partners: NSW Government, Animal Welfare League (AWL), AVA, Delta Society Australia and RSPCA. (Funded 2007-2009)	Not applicable	Not applicable	Not applicable	Program includes visits to schools with trained dogs	Not assessed	Designed to reach all NSW primary students within 3 years. Targeted to junior primary with three modules: 1. Kindness & Humanity 2. Safe Behaviour Around Dogs 3. Pet Care Program not yet evaluated.
	<b>Rights, Roles &amp; Responsibilities</b> (Years 5 & 6) RSPCA Victoria Education Program	✓	✓	Not applicable	✓	Aligned with Victorian Essential Learning Standards (VELS) Level 4	Children encouraged to develop a deeper understanding of the needs of animals. They become aware of the implications and the responsibilities required in caring for animals and how the RSPCA can play a part in this. They are challenged to think about animal welfare issues through discussions on current RSPCA campaigns and animal case studies.
Animals in the Wild  Animals used for Work, Sport, Recreation & on Display	<b>Australian Wildlife Health Centre</b> (AWHC) at Healesville Sanctuary/ Melbourne Zoo.	Not applicable	Not applicable	Not applicable	Interactive school visits available  Hands-on interactive activities available	Not assessed	State-of-the-art facility where students observe wildlife management and care in action. Teacher and student resources on caring for wildlife. On-line learning resources. Students share the daily veterinary decision-making as the expert team treats sick, injured or orphaned wildlife in need of specialist care. Immersion in the daily action of the emergency room, chance to observe surgery, help vet diagnose a case in the laboratory and meet recovering patients. Zoos Victoria engages students and teachers in Education Programs that include Early Childhood, Early Years, Middle Years, Later Years, VCE and Student Conferences.

Table 1 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Aquatic Animals	<b>Get Hooked It's Fun to Fish</b> Recreational Fishing Schools Program run by Fishcare in Victoria. Schools Program and National Junior Fishing Codes Education Kit	Not applicable	✓	Not applicable	Includes interactive and hands-on activities	Not apparent	Includes sustainable fishing practices such as 'catch & release'. Endorsed by Peak body 'RecFish Australia'. National Junior Fishing Codes Education Kit - updated in 2002 to include information on "Animal Welfare Aspects of Recreational Fishing."
	<b>'Fish for the Future' Education Package</b> Western Australian Government	Not apparent	Not apparent	Not apparent	Not apparent	Not apparent	'Values' identified as a key outcome – "Students will value fish and other aquatic creatures as an exhaustible resource that must be managed effectively to ensure their survival for the use of present and future generations." Divided into 4 main learning areas: fish habitat, aquaculture, recreational fishing and commercial fishing. Linked to WA curriculum major learning outcomes of relevant learning areas.
Livestock/ production animals	<b>'Farm Animals and Us in Australia'</b> Compassion in World Farming	✓	Not applicable	Not applicable	✓	Not apparent	Small group discussion and opinion forming exercises covering farm animal welfare issues. Teacher evaluations available from CIWF
	<b>Pork Industry Education Program (PIEP)</b> - An education program on pig farming and pork production for primary schools. Developed by Monash University, Australian Pork and the Victorian Department of Primary Industries.	✓	✓	In part	✓	✓	An interactive multimedia educational resource developed as a virtual reality farm, giving senior primary and junior secondary students the opportunity to actively engage in learning about a commercial farming system. Students learn about an operating commercial piggery to extend their current limited knowledge about pig farming. Whole class, small group, individual and collaborative approaches to learning are supported. Evaluation confirmed that students learned and retained the knowledge that they gained about pork farming.
Animals used in research and teaching	<b>Schools Animal Welfare Officer</b> Full time officer employed by NSW Department of Education & Training (DET) & Catholic Education Commission (CEC) & the Association of Independent Schools of NSW (AIS NSW).	✓ Education Department clearly identifies that it has a F/T Schools Animal Welfare Officer	✓	✓ Department promotes reduction in animal use	✓ Case studies included in resources such as CD rom	Not apparent	Dedicated human resource as well as a website for Animals in Schools Resources include "Animals in schools: Animal welfare guidelines for teachers for use in their schools." (as publication, poster and CD rom). Schools Animal Care and Ethics Committee (SACEC) is the appointed animal ethics committee for all NSW schools.

**Table 2: Examples of Animal Welfare Education and Training in Australian Secondary Schools**

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Livestock/ production animals	<b>Farm Animals &amp; Us in Australia 1 &amp; 2</b> Compassion in World Farming	Implied but not specific	In part	In part	✓	Not apparent	Compassion in World Farming (CIWF) is an International Farm Animal Welfare Organisation that has produced a DVD and educational resource package especially for Australian schools. Small group discussion and opinion forming exercises covering farm animal welfare issues. Teacher evaluations available from CIWF.
	<b>Western Australian Colleges of Agriculture</b> WA Department of Education and Training Six residential campuses located on farms offering Vocational Education and Training (VET) Certificate courses for Year 11 and 12 male and female students.	Not apparent	Not apparent	Not apparent	The farms provide a learning resource for students to acquire and practice skills associated with the agriculture	✓	WA Colleges of Agriculture offer an exceptional hands-on opportunity to study agriculture, including livestock/ production animals. This Australian secondary school model provides excellent opportunities for learning about animal welfare.
	<b>New South Wales (NSW) Agricultural High Schools</b> A number of NSW High Schools have a school-farm and facilities as part of their campuses.	Not apparent	Not apparent	Not apparent	The farms provide a learning resource for students to acquire and practice skills associated with livestock production	✓	Like the WA Colleges of Agriculture, these High Schools offer hands-on opportunity to study agriculture, including livestock/ production animals. This Australian secondary school model provides excellent opportunities for learning about animal welfare.
	<b>Queensland Australian Agricultural College Corporation</b> <ul style="list-style-type: none"> <li>• Australian College of Tropical Agriculture</li> <li>• Dalby Agricultural College</li> <li>• Emerald Agricultural College</li> <li>• Longreach Pastoral College.</li> </ul> Agricultural education and training in a range of specialisations, across <u>five campuses</u> located in a range of different geographic and climatic regions.	Not apparent	Not apparent	Not apparent	The farms provide a learning resource for students to acquire and practice skills associated with livestock production	✓	Like the WA Colleges of Agriculture, these High Schools offer hands-on opportunity to study agriculture, including livestock/ production animals. This Australian secondary school model provides excellent opportunities for learning about animal welfare.
	<b>PigEd</b> National Centre for Pork Industry Training & Education (NCPITE) and Australian Pork	✓	✓	✓	✓	✓	✓

Table 2 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Livestock/ production animals	Woolpro in Schools Department of Agriculture and Food, WA	✓	✓	✓	✓	✓	This Program provides support to farm staff, teachers and students at all WA agricultural colleges by keeping them up to date with new information and technologies covering best management practice for sheep and wool production. Teachers are provided with a range of practical and classroom activities that inform and encourage students to pursue best management practices at school and in the workplace. Professional development opportunities are offered to teacher and farm staff annually, while new information and resources are sent to participating colleges throughout the year. Teacher education & training has been identified as an important way of improving animal welfare education & training that is provided to students.
Animals used for Work, Sport, Recreation & on Display	Certificate II in Equine Industry Hamilton and Alexandra College– link to VET education & training	Implied but not specific	In part	In part	✓	✓	Students are able to have their horses housed on the school campus.
Animals in the Wild  Animals used for Work, Sport, Recreation & on Display	Australian Wildlife Health Centre - Vet for a Day Program (Years 9-11) AWHC at Healesville Sanctuary/ Melbourne Zoo.	Animals in the Wild	Not apparent	Not apparent	Not apparent	Interactive school visits available  Hands-on interactive activities available.	State-of-the-art facility where students observe wildlife management and care in action. Teacher and student resources on caring for wildlife. On-line learning resources. Students share the daily veterinary decision-making as the expert team treats sick, injured or orphaned wildlife in need of specialist care. Immersion in the daily action of the emergency room, chance to observe surgery, help vet diagnose a case in the laboratory and meet recovering patients. Zoos Victoria engages students and teachers in Education Programs that include Early Childhood, Early Years, Middle Years, Later Years, VCE and Student Conferences.
Animals used in research and teaching	Schools Animal Welfare Officer (Full time officer employed by NSW Department of Education & Training (DET) & Catholic Education Commission (CEC) & the Association of Independent Schools of NSW (AIS NSW).	✓ Education Department clearly identifies that it has a F/T Schools Animal Welfare Officer	✓	✓ Department promotes reduction in animal use	✓ Case studies included in resources such as CD rom	Not apparent	Dedicated website for Animals in Schools. Resources include "Animals in schools: Animal welfare guidelines for teachers for use in their schools." (as publication, poster and CD rom). Schools Animal Care and Ethics Committee (SACEC) is the appointed animal ethics committee for all NSW schools.

**Table 3: Examples of Animal Welfare Education and Training in the Australian Industry and Vocational Education & Training (VET) Sector**

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Livestock/ production animals	<b>Certificate III in Agriculture (Dairy)</b> National Centre for Dairy Education Australia (NCDEA)	Not Identified	Not Identified	Not Identified	✓	Not Identified	The NCDEA is attempting to standardise VET training courses related to the dairy industry Australia-wide. This is an important advancement in education and training in the Commonwealth environment where each state often develops and runs its own courses (in accordance with AFISC Training Packages) in isolation from other states.
	<b>PigTrain</b> National Centre for Pork Industry Training and Education (NCPITE)	Not Identified	✓	Not Identified	✓	✓	The NCPITE has developed PigTrain a CD-based resource package with pig-related competencies for levels II and III of the Rural Production Training Package.
	<b>Rural Training Production Package</b> Agrifood-Skills Industry Council and RTOs Package includes specific animal welfare units	Not Identified	✓	Not Identified	Not Identified	✓	Training Package is currently under review. AAWS has made a submission to the review in order to improve outcomes for the welfare of animals.
	<b>National Mulesing Assurance Training</b> One-day training program delivered by the Kondinin Group Industry Training in collaboration with the Livestock Contractors Association for surgical mulesing operators in the sheep industry	✓	✓	Not Identified	✓	✓	The NMAP was developed to ensure that all surgical mulesing operators are encouraged to train and be assessed to a national standard. NMAP mandates mulesing contractors must be accredited by 31/12/06 and owner operators who mules by 31/12/08. One of the key aspects of ensuring good welfare is to ensure that operators are skilled, that the equipment used is appropriate and of the highest standard and that the correct procedure is used. NMAP is an important industry initiative to improve the welfare of sheep that are mulesed.
	<b>Certificate III in Agriculture (Horse Husbandry)</b> TOCAL College	Not Identified	Not Identified	Not Identified	✓	✓	One-year full-time course with a focus on stockhorses.
	<b>Saleyard Operators Course</b> A Pilot Program being run by TOCAL College for saleyard managers	✓	✓	✓	Interactive school visits available Hands-on interactive activities available	✓	The NSW Department of Education and Training (in consultation with Agrifood Industry Skills Council and the Saleyard Operators Association of NSW) funded the Pilot Program of the Saleyard Operators Course run by TOCAL College in 2007. The Pilot is developing a Draft Saleyard Operations Skill Sets and Qualifications in line with the National Saleyard Quality Assurance Scheme (NSQAS).

Table 3 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Animals used for Work, Sport, Recreation & on Display	<b>Diploma of Equine Stud Management</b> Northern Metropolitan Institute of Technology (NMIT)	Not Identified	✓	Not Identified	✓	✓	Yr 1 of course includes 150 hrs of study on health & welfare strategies.
	<b>Horse Health &amp; Welfare short course</b> National Centre for Equine Education	Not Identified	✓	Not Identified	✓	✓	
Companion Animals  Animals used in research and teaching	<b>Animal Care &amp; Management Training Package.</b> Agrifood-Skills Industry Council and RTOs Package includes specific animal welfare units	✓	✓	Not Identified	✓	✓	
Animals in the Wild	<b>Conservation and Land Management Training Package</b> Agrifood-Skills Industry Council and RTOs Package includes specific animal welfare units	Not Identified	✓	Not Identified	✓	✓	
	<b>Code of Practice and Game meat courses and firearms competency tests for licensing of all professional shooters</b> Kangaroo Industry Association of Australia	✓	✓	Not Identified	✓	✓	NSW, Queensland, South Australia and Western Australia have established courses for harvesters on handling game meat to be used for human consumption. The courses are called different names. The successful attendance at the appropriate course is a condition of a harvester's licence in NSW, Queensland and South Australia. It is a voluntary condition in Western Australia.
Aquatic animals	<b>Seafood Industry Training Package</b> Agrifood-Skills Industry Council and RTOs Package includes specific animal welfare units	Not Identified	✓	Not Identified	✓	✓	
	<b>Certificate II in Recreational Fishing</b> National Fishing Industry Education Centre (Natfish)	Not Identified	✓	Not Identified	✓	✓	

**Table 4: Examples of Animal Welfare Education and Training in the Australian Higher Education Sector (Postgraduate)**

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Animals used in Research & Teaching	<b>Animal Ethics Course</b> University of Adelaide	✓	✓	✓	✓	Not Identified	A one-day course for staff and honours/postgraduate students held at the beginning of each year.
	<b>Postgraduate studies</b> Centre for Animal Welfare and Ethics (CAWE) School of Veterinary Science at the University of Queensland.	✓	✓	✓	✓	✓	The Centre aims to improve the understanding of animal welfare, and ethical issues concerned with animal welfare, through research, teaching, legislation and training.
	<b>Research Animal Training Scheme (RATS Program)</b> University of Newcastle	✓	✓	✓	✓	✓	RATS was developed to provide researchers and teachers with the underpinning knowledge and practical skills to ensure compliance with legislation, humane animal use, ethical animal use, minimisation of risks associated with use of animals.
All sectors (but mainly Livestock /Production)	<b>Masters of Animal Welfare (Research) and PhD in Animal Behaviour and Welfare</b> Animal Welfare Science Centre/Faculty of Land and Food Resources, the University of Melbourne	✓	✓	✓	✓	✓	From 2009, the Animal Welfare Centre will teach core subjects for the Postgraduate Diploma in Animal Welfare and the Masers in Animal Welfare by Coursework at the University of Melbourne – a significant expansion.
Animals in the Wild	<b>Master of Applied Science (Wildlife Health and Population Management)</b> University of Sydney (also Graduate Certificate and Diploma)	Not Identified	Not Identified	Not Identified	Uni of Sydney Wildlife Health & Conservation Centre (WHCC)	✓	Combination of veterinary and biological sciences with emphasis on multi-disciplinary approach to the development of wildlife management strategies.
Animals in the Wild Animal used in Work, Sport, Recreation & on Display	<b>Postgraduate Certificate in Veterinary Conservation Medicine</b> Murdoch University	✓	✓	Not Identified	✓	✓	Designed to provide veterinarians with training & expertise in wildlife, zoo and conservation medicine. Conservation medicine is an emerging discipline that involves the integration of veterinary medicine, conservation biology and public health.
All	<b>Post-Graduate Foundation in Veterinary Science</b> University of Sydney	Not Identified	✓	Not Identified	Not Identified	✓	Foundation established to provide continuing education for veterinarians. Regular refresher courses. Distance education.

Table 5: Examples of Animal Welfare Education and Training in the Australian Higher Education Sector (Undergraduate)

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
All	Bachelor of Veterinary Science Murdoch University	✓	✓	✓	✓	✓	Animal welfare is a discrete 1 <sup>st</sup> year unit. Subsequently, it is reinforced informally through various units in remaining 4 years. Animal & Human Bioethics is the <b>core first year unit</b> . Units in Animal Systems I, II & III also include significant animal welfare components, as does Veterinary Medicine and Surgery I.
Animal used in Work, Sport, Recreation & on Display	Bachelor of Equine Science Charles Sturt University	Not Identified	Not Identified	Not Identified	Not Identified	✓	Requires more emphasis on animal welfare.
Aquatic Animals	Bachelor of Aquaculture University of Tasmania	Not Identified	Not Identified	Not Identified	Not Identified	✓	Requires more emphasis on animal welfare.
Animals used in Research & Teaching	CARE (Caring for Animals in Research and Education) is University of NSW and the University of Sydney	✓	✓	✓	✓	✓	An on-line course designed for students using animals or animal tissue in research projects. CARE consists of a number of separate self-paced learning modules that address the ethical, social and scientific issues relating to the use of animals for scientific purposes. Each module has a set of learning objectives and tasks as well as a list of additional resources, some of which are available on-line.
	Research Animal Training Scheme (RATS) University of Newcastle	✓	✓	✓	✓	✓	Developed the to provide researchers and teachers with the underpinning knowledge and practical skills to ensure compliance with the legislation, humane animal use, ethical animal use, and minimisation of risks associated with the use of animals. RATS consists of on-line modules, formal program including practical modules, Resource materials.
	PAWES (Program in animal ethics, welfare & science), University of Western Australia	✓	✓	Not Identified	✓	✓	Compulsory for new research staff, and post-graduate and honours students applying to use animals for scientific purposes. Experienced personnel wishing to update their skills and Animal Ethics Committee members are also welcome to apply.
	Course for Honours and Postgraduate students Monash University	✓	✓	✓	✓	✓	Monash Animal Services / Animal Ethics Office runs practical Training Modules for Monash staff and students who may be involved in the use of animals in their research. The course includes lectures, videos, and hands on practical involving basic animal handling, how to administer substances by different routes, suitable restraint, blood sampling techniques including the volumes acceptable and frequency, and basic anatomy.
	Animal Ethics Course University of Adelaide	✓	✓	✓	✓	Not Identified	A one-day course for staff, honours/postgraduate students held at the beginning of each year. Provides the necessary information for carrying out animal experimentation in the University's Laboratory Animal Services managed animal facilities efficiently, productively and ethically, by having the highest regard for the policies and procedures in place to ensure animal well-being and experimental integrity and reliability.

Table 5 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Livestock/ Production	<b>Bachelor of Applied Science (Animal Studies)</b> University of Queensland	✓	✓	✓	✓	✓	This course provides an option to study animal welfare. The Centre for Animal Welfare and Ethics (CAWE) was established at the University of Queensland to develop innovative practices, guidelines and management strategies to protect animals, enhance their health and ensure that the five standard freedoms of animal welfare are met. Its mission is to improve understanding of animal welfare, ethical issues concerned with animal welfare, through research, teaching, legislation and training.
	<b>Bachelor of Livestock Science</b> University of New England	✓	✓	✓	✓	✓	Four -year Degree course. More emphasis on animal welfare required.
Animals in the Wild	<b>Bachelor of Science (Wildlife Management)</b> University of Western Australia	✓	✓	✓	✓	✓	Includes a 3 <sup>rd</sup> year subject in Animal Ethics and Welfare.

**Table 6: Examples of International Animal Welfare Education and Training in Primary Schools**

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Livestock/ Production animals	<b>Operation OutReach</b> A National Humane Education and Literacy Program for Elementary Schools. American Humane Education Society (AHES)	✓	Not applicable	Not applicable	✓	Not Identified	Operation OutReach-USA provides training for teachers at the local level. It also provides teachers with classroom materials, lesson plans, and free books for students to encourage literacy and the responsible treatment of all living things. Operation OutReach-USA is designed to build on itself in each of the elementary grades through exposure for seven years. Students receive a personal library of 14 animal stories by the time they complete the sixth grade.
	<b>Farm animals: Who Cares?</b> Alberta Farm Animal Care (AFAC)	✓	Not applicable	✓	✓	Not Identified	AFAC has developed curriculum-based, farm animal welfare resources for Alberta students. Through an exploration of the needs and behaviours of farm animals, these resources explain how farmers are sensitive to their animals and provide for their needs. Resources for teachers and students include 'Farm Animal Care' and 'Farmers care for their Animals'.
Companion animals	<b>People-Pet Partnership (PPP)</b> Washington State University	Not Identified	Not Identified	Not Identified	✓	Not Identified	PEP is a public service program is within the <u>Center for the Study of Animal Well-Being</u> at the College of Veterinary Medicine at Washington State University. The curriculum encourages children to act with compassion and kindness towards animals and to act in this manner as adults. Specifically, this is accomplished by showing children the benefits of interaction with companion animals and teaching them how to be responsible pet owners. The Learning and Living Together: Building the Human-Animal Bond is an innovative pet care curriculum that covers 4 levels: K-Gr 1 (Getting Acquainted with Pets); Gr 2 (Little Critters as Pets), Gr 3 (Cats as Companion Animals), Gr 4 (Dogs as Companion Animals).
	<b>Responsible Pet Ownership Program, Singapore</b> Agri-Food and Veterinary Authority (AVA) Singapore (Animal Welfare Education Branch)	✓	✓	Not Identified	✓	Not Identified	AVA actively promotes responsible pet ownership to equip existing and potential owners with knowledge on the care and responsibility that comes with owning a pet. As part of its educational efforts, AVA has been reaching out to students to inculcate a sense of responsible pet ownership through talks at schools since 2001. Program comprises: Talks and Visits; Teaching Resources; RPO Ambassador Programme; RPO Pet Pal Badge Programme; RPO Skits Programme; Pet Corners In Schools. The Program has an <b>excellent logo</b> .
All Sectors	<b>World Animal Day</b> <a href="http://www.worldanimalday.org.uk">www.worldanimalday.org.uk</a> One of the best animal and animal welfare resource available.	✓	✓	Not Identified	✓	Not applicable	Teacher and student resources for all countries and languages. World Animal Day was started in 1931 at a convention of ecologists in Florence as a way of highlighting the plight of endangered species. Since then it has grown to encompass all kinds of animal life and is widely celebrated in countries throughout the world. Since the official World Animal Day website was launched in 2003, the number of World Animal Day events taking place throughout the world has increased every year.

Table 6 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Companion animals  Animals in the Wild	Kindness Clubs and International Animal Welfare Education (IN AWE) World Society for the Protection of Animals (WSPA)	✓	Not Identified	✓	✓	Not Applicable	This educational programme for animals, people and the environment is aimed at teachers working with 5–16 year olds. It aims to integrate animal welfare education into school curricula by working with governments, organising teacher training workshops and providing materials. Working with governments, teachers and some Member Societies, WSPA helps embed animal welfare into the school curriculum of several countries in Africa, Asia and Latin America. 200 Kindness Clubs in 23 countries across Africa with a total membership of around 10,000 children.
All sectors	Animal Welfare Education Database (AWED) Developed by WSPA and World Animal Net (WAN).	✓	Not Identified	Not Identified	✓	Not Applicable	The database contains comprehensive descriptions of good quality animal welfare education resources from around the world. The descriptions include educational level, aims and objectives, content, further information and details of where to obtain further information and ordering details. It is hoped that this will aid educators in their search for appropriate resources. It is not an online shop where resources can be purchased.
	Animal Welfare Certificate Course WSPA (Africa)	✓	Not Identified	✓	✓	Not Identified	This extra-curricular program is led by a trained teacher and leads to a Certificate in Animal Welfare on completion. It is designed to develop an understanding and knowledge of the treatment and care of domestic and farm animals. It aims to nurture compassion, respect and empathy towards animals. Target Age Level: Primary education 5 -11.
	Education Program RSPCA (UK)	✓	✓	Not Identified	✓	Not Identified	Print and interactive resources for Primary pupils (includes Animals and the law; Animals and us; Farm animals; Media in society). RSPCA UK has free, tested curriculum-linked resources written by teachers. More than 80 different lesson ideas with teacher and pupil fact sheets, pupil activity sheets and engaging photos and pictures.

Table 7: Examples of International Animal Welfare Education and Training in Secondary Schools

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Livestock/ Production animals	Farm Animals & Us 1 & 2 Compassion in World Farming	✓	✓	✓	✓	Not Identified	Compassion in World Farming (CiWF) is an International Farm Animal Welfare Organisation that has produced a DVD and educational resource package especially for schools. Small group discussion and opinion forming exercises covering farm animal welfare issues. Teacher evaluations available from CIWF.
	Farm Animal Welfare in Alberta Alberta Farm Animal Care (AFAC)	✓	✓	Not Identified	✓	Not Identified	Teacher's Guide to Farm Animal Welfare in Alberta; DVD - Livestock Welfare in Alberta; Audio CD - Farmers Care for Their Animals.
Companion Animals	"Extend the Web" Program American Society for the Prevention of Cruelty to Animals	✓	Not Identified	✓	Not Identified	Not Identified	A variety of low-cost educational materials for educators, children, and parents. Also 'The Web of Life' classroom lessons. Humane Education emphasis.
Companion animals  Animals in the Wild	International Animal Welfare Education (IN AWE) World Society for the Protection of Animals (WSPA)	✓	Not Identified	✓	✓	Not identified	This educational programme for animals, people and the environment is aimed at teachers working with 5–16 year olds. It aims to integrate animal welfare education into school curricula by working with governments, organising teacher training workshops and providing materials. Working with governments, teachers and some Member Societies, WSPA helps embed animal welfare into the school curriculum of several countries in Africa, Asia and Latin America. 200 Kindness Clubs in 23 countries across Africa with a total membership of around 10,000 children.
All sectors	Vet Camp Atlantic Veterinary College, University of Prince Edward Island	✓	Not Identified	Not Identified	✓	Not identified	One week, behind-the-scenes experience into the world of veterinary medicine for students in Years 7 - 9. Interactive activities include viewing surgeries, touring anatomy and pathology labs, learning about radiology, checking out microscope labs, and getting hands on with aquaculture and fish health, clicker training, animal welfare, and more. Awarded Best Community Outreach Program by the Canadian Council for the Advancement of Education. Over 10 years, more than 1300 young students have participated.
	Education Program RSPCA (UK)	✓	✓	✓	✓	Not identified	RSPCA UK has free, tested curriculum-linked <a href="#">resources</a> written by teachers. More than 80 different lesson ideas with teacher and pupil fact sheets, pupil activity sheets and engaging photos and pictures. In the UK, the RSPCA has regional teams provide training and support to teachers across all key stages of the curriculum; and can help to plan and deliver the animal welfare aspects of subjects such as science and citizenship. They work intensively with teachers, supporting them to develop informed, responsible and active citizens. Includes resources on the Animal Welfare Act.

Table 7 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
All sectors	<b>Animals &amp; Us</b> SAFE (Save Animals From Exploitation) NZ	✓	✓	✓	✓	Not identified	Animals & Us is an education initiative provided by SAFE, New Zealand's leading advocate for animal rights and animal welfare. SAFE was founded in 1932 and has 10,000 members and supporters. Animals & Us provides resources on animal issues for teachers and students in New Zealand secondary schools, including: Animal welfare and animal rights, Animal abuse, cruelty and animal protection, Animal testing, research and animal experiments, New Zealand battery farms. The resources are designed to engage students in issues that are topical, popular with young people, and increasingly debated in general society and academic circles. Animals & Us has been peer reviewed and created in consultation with experts in the fields of animal advocacy & education.
All sectors	<b>Animal Welfare Certificate Course</b> WSPA (Africa)	✓	Not identified	✓	✓	Not identified	This extra-curricular programme is led by a trained teacher and leads to a Certificate in Animal Welfare on completion. It is designed to develop an understanding and knowledge of the treatment and care of domestic and farm animals. It aims to nurture compassion, respect and empathy towards animals. Target Age Level: Secondary education 12-16
Livestock/ Production	<b>Campaigns for Farm Animal Welfare</b> <b>Citizenship Studies</b> Compassion in World Farming (CIWF)	✓	✓	✓	✓	Not identified	Objectives: This resource describes the history of political campaigns for the welfare of farm animals. It shows how animal welfare groups have campaigned locally, nationally and internationally to improve the welfare of farm animals. It is developed to let students form their own opinion on these issues. Student booklet contains: 1. Intensive Systems for Keeping Farm Animals (discussion activity). 2. The Ban on the Sow Stall an Example of a National Campaign. 3. The Ban on the Battery Cage - an Example of a European campaign. 4. A Global Issue - The World Trade Organisation (WTO) and Animal Welfare. 5. Alternatives to Factory Farming. 6. What the Consumer Can Do. 7. Ideas for Research, Discussion and Action. 8. Live Animal Exports - a Current Campaign.

Table 8: Examples of International Animal Welfare Education and Training in the Industry and Vocational Education and Training (VET) Sector

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Livestock/ production animals	<b>Accreditation Program</b> Humane Farm Animal Care (USA)	✓	✓	✓	Not applicable	Only applicable at the farm level	Developed with the welfare of the individual animal in mind, Certified Humane standards ensure that the animal is treated humanely and in accordance with the highest farm animal welfare standards available today, as the animal is raised, transported and processed. The Program includes a Policy Manual (March 2008), and leverage of suppliers and restaurants. Humane Farm Animal Care (HFAC) is a non-profit organization created to offer a certification and labelling program for meat, eggs, dairy and poultry products from animals raised according to Humane Farm Animal Care's <i>Animal Care Standards</i> . A consortium of animal welfare organizations, as well as individuals and foundations, fund Humane Farm Animal Care.
	<b>Certified Livestock Transporters Training Program, Canada</b> Developed by the Alberta Farm Animal Care Association (AFAC), in conjunction with an <u>extensive industry advisory group</u> . Canadian Certified Livestock Transporters (CLT) Training Program	✓	✓	✓	Not identified	✓	An industry training course and support service for livestock truckers, shippers and receivers. It focuses on the humane and safe relocation of livestock and the regulatory requirements for Canada and the US. CLT offers species-specific customized training on livestock handling, loading and biosecurity. It includes recognizing and dealing with livestock 'not fit to be transported' and emergency accident response. Core content for all species and breakout modules for beef, hogs, horses, sheep and poultry.
	<b>Putting Farm Animal Welfare on the Agenda Project (Canada)</b> Partners: Agriculture and Agri-Food Canada's Advancing Canadian Agriculture and Agri-Food Program; The Agricultural Adaptation Council in Ontario; The Manitoba Rural Adaptation Council; The Saskatchewan Council for Community Development and Alberta Agriculture and Food).	✓	✓	✓	✓	Not applicable	This Canadian project aims to enhance communication and advance farm animal welfare. It includes workshops & Speakers Bureau; Communication and Publications; Farm Animal Handling Training (workshops & resources for livestock transporters); Farm Animal Welfare. Research Database. See: <a href="http://www.livestockwelfare.com">www.livestockwelfare.com</a>
	<b>AWTraining</b>	✓	✓	✓	✓	✓	Members of AWTraining are Research Fellows or Lecturers at the University of Bristol, UK, Department of Clinical Veterinary Science, Division of Farm Animal Science. They have extensive research experience in the field of animal welfare during transport, stunning, slaughter, killing, carcass and meat quality relating to red meat animals, poultry and aquaculture. Since 1993 AWTraining has been providing professional consultancy and training in animal welfare during food production all over the world. AWTraining has been recognised for providing 'excellence' in training at the World Food Congress in The Hague, Netherlands.
	<b>Farm Animal Welfare Council (UK)</b>	✓	✓	✓	Not applicable	Not applicable	Farm Animal Welfare Council is an independent advisory body established by the UK Government. Its terms of reference are to keep under review the welfare of farm animals on agricultural land, at market, in transit and at the place of slaughter; and to advise the Government of any legislative or other changes that may be necessary. Web-based information on stockmanship and farm animal welfare. See <a href="http://www.fawc.org.uk">www.fawc.org.uk</a>

Table 8 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Companion Animals	<b>Companion Animal Behaviour &amp; Welfare (Distance Learning Package CD-rom)</b> University of Edinburgh Distance Learning Animal Behaviour & Welfare Group, Division of Animal Health & Welfare, Royal (Dick) School of Veterinary Studies.	✓	Not identified	✓	✓	Not identified	This CD-ROM based package provides users with information on animal behaviour, how the behaviour of companion animals is affected by the environment in which they are kept, and how this can lead to the development of behavioural problems. See <a href="http://www.vet.ed.ac.uk/animalbehaviour/ecourse/">www.vet.ed.ac.uk/animalbehaviour/ecourse/</a>
	<b>Courses in Animal Care &amp; Vet Nursing Also short courses.</b> The College of Animal Welfare (UK).	✓	Not identified	✓	✓	✓	New Advanced National Diploma in Animal Care planned for Sept 08.
	<b>Educational Materials for Animal Shelter Workers</b> University of California, Davis, School of Veterinary Medicine	✓	Not identified	Not identified	Not identified	Not identified	Student Masters thesis (under development).
Aquatic animals	<b>'Aquanet' Seminar Series</b> Canada's research network comprising 21 university and other aquatic research organisations.	✓	✓	Not identified	✓	Not identified	Canada Seminar Series includes specific workshops on fish welfare. One of AquaNet's five strategic activity areas is increasing the number of highly qualified personnel through education and training. AquaNet complements academic training with practical, sector-relevant learning opportunities, and supports knowledge exchange between AquaNet and the aquaculture sector. Target audiences include graduate students, postdoctoral fellows, and research assistants involved in AquaNet research projects.
Aquatic animals Animals used in Research & Teaching	<b>Care, Handling and Use of Aquatic Animals</b> Canadian Aquaculture Institute, University of Prince Edward Island	✓	✓	✓	✓	✓	A 5-day intensive course for people involved in the care and/or experimental use of fish. The program targets veterinarians, animal health/laboratory technicians and scientific researchers with entry to mid-level experience with aquatic animals.
Aquatics	<b>Fish Welfare Course</b> British Veterinary Association Animal Welfare Foundation	✓	✓	Not identified	✓	Not identified	Fish Veterinary Group CD-Rom complements the Fish Welfare Course in demonstrating best practice in a number of fish farming areas. The CD-Rom is interactive, and involves stills and under water footage of procedures including crowding and netting. Consultants have requested a copy of the CD.
Animals used in Research & Teaching	<b>International Council for Laboratory Animal Science (ICLAS)</b>	✓	✓	✓	✓	✓	ICLAS does not provide training but supports education and training courses around the world. (see ACLAM; AALAS; CCAC; ECLAM; FELASA; and JALAM).
	<b>National Institutional Animal User Training (NIAUT) Program.</b> Canadian Council on Animal Care (CCAC)	Not identified	✓	✓	✓	✓	CCAC conducts assessment visits to participating institutions using animals at least every three years, and follow-up visits by the CCAC are also carried out. The Canadian Council for Animal Care has made freely available 12 web-based basic training modules for animal users to pursue at their own pace. The key principles are relevant to Australia and internationally.

Table 8 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Animals used in Research & Teaching	<b>NORINA - A Norwegian Inventory of Audiovisuals</b> Norwegian School of Veterinary Science	✓	✓	✓	✓	Not applicable	A database of >3800 audiovisual aids that may be used as alternatives or supplements to the use of animals in teaching & training (Lower Secondary to University). Awarded the Nordic Prize for Alternatives to Animal Experiments in 2003. This prize is awarded jointly by three Nordic animal welfare organisations: Swedish Fund for Research without Animal Experiments, the Finnish Julian van Wendt Fund and The Danish Society for the Protection of Laboratory Animals.
	<b>Laboratory Animal Science Course for Researchers</b> Norwegian School of Veterinary Science	✓	✓	✓	✓	✓ Self-study and exam	5 days of theoretical teaching (35 hours) 3 days of practical training tailored to the individual's needs. Required course for researchers.
	<b>Animal Care Short Course</b> University of Guelph (Canada) Campbell Centre for the Study of Animal Welfare	✓	✓	✓	✓	✓ Formal recognition on the graduate transcript is accorded to graduate students who successfully complete the Animal Care Short Course	A one-day course for researchers. Graduate students utilizing animals at the University of Guelph must demonstrate that they are familiar with animal welfare issues and adequately trained in animal care and use. The course introduces aspects of laboratory animal science, animal welfare and animal care. The course familiarises participants with existing regulations and guidelines to explain the need for them The course demonstrates the need for understanding animal care and welfare both for protecting the user and the animal from potentially harmful zoonoses and to help improve the quality of research and teaching The course puts into perspective the moral and ethical obligations to the animal so the user can weigh objectively the costs to animals against benefits gained from their use.
	<b>The National Animal Welfare Education Program, Conferences and Workshops</b> The Animal Welfare Information Center (US), The Office of Laboratory Animal Welfare.	✓	✓	✓	✓	✓	Institutional Animal Care and Use Committee (IACUC) 101: "The Basics" a full-day interactive training course. IACUC 201 PLUS: "The Process" & "Special Topics" is a highly interactive program building on IACUC 101. The Animal Welfare Information Center (AWIC) is mandated by the Animal Welfare Act (AWA) to provide information for improved animal care and use in research, testing, teaching, and exhibition.
	<b>Training workshops for members of Institutional Animal Care and Use Committees (IACUCs)</b> Scientists Center for Animal Welfare (SCAW)	✓	✓	✓	✓		IACUC-Advanced workshops are for experienced IACUC members and others who work with laboratory animals. Workshops focus on advanced protocol review and other issues. For example, what to look for in a protocol that includes relieved and/or unrelieved pain and distress; how to recognise and evaluate the level of pain and distress; appropriate end points stated in the protocol; special environmental conditions required because of potential pain and/or distress.

**Table 9: Examples of International Animal Welfare Education and Training in the Higher Education Sector**

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
All sectors	<b>Animal Welfare and the Ethics of Animal Use</b> University of British Columbia (Canada) Animal Welfare Program	✓	✓	✓	✓	✓	An interdisciplinary course that introduces students to many of the ethical issues surrounding the use of animals in agriculture, science, and society. The course covers (1) scientific research that attempts to understand and improve animal welfare, (2) philosophical positions on animal use, and (3) relevant developments in society, economics and the law.
	<b>Concepts in Animal Welfare (CAW) and vocational training</b> WSPA and the School of Clinical Veterinary Science, University of Bristol	✓	✓	✓	✓	✓	The Concepts in Animal Welfare syllabus has been designed to facilitate teaching animal welfare at veterinary faculties worldwide. Vets can play a major role in improving animal welfare through their own actions and by influencing others.  Developed with the School of Clinical Veterinary Science, University of Bristol in 2003, the CD ROM syllabus was revised in 2007 and has been sent to over 850 universities worldwide. Over 400 lecturers have been involved in animal welfare workshops and conferences organised by WSPA.  WSPA also supports agricultural vocational training in Kenya that integrates an animal welfare perspective.
	<b>Animal Welfare and Bioethics</b> University of Maryland (USA) Department of Animal and Avian Sciences College of Agriculture and Natural Resources	✓	✓	✓	✓	✓	Department ranked among the Top 10 Animal Sciences departments in the nation in 2007.
	<b>BSc (Hons) Animal Management &amp; Welfare</b> University of Lincoln (UK)	✓	✓	✓	✓	✓	Year 1 unit 'Introduction to Animal Welfare' introduces the principles behind the protection of animals and creates an awareness of the diverse issues involved in this field. Particular emphasis is given to the general approaches used to evaluate and protect an animal's well being. Topics include the approaches used in assessing welfare, environmental enrichment and abnormal responses to captivity.  Year 3 unit 'Assessing Animal Welfare' explores the scientific study of animal welfare. Particular attention is paid to the methodological and interpretative issues relating to this discipline. Common misunderstandings and popular misconceptions that hinder the objective assessment and improvement of welfare are examined so students are able to develop their own defensible stance on these issues. The unit covers the contributions of animal scientists, welfare organisations, legislators, producers and consumers to the design and running of captive animal environments. There is a focus on the animal's biological requirements in captivity and the implementation of good husbandry practice within farm, laboratory, zoo and companion animals.

Table 9 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
All sectors	Numerous courses: <b>Principles of Farm Animal Care and Welfare</b> <b>Animal Welfare: Does it matter?</b> <b>Agri-food Systems Trends and Issues</b>						The Campbell Centre at the University of Guelph offers a variety of educational opportunities, including formal training in animal welfare science, a regular public lecture series, seminars and symposia.
	<b>Veterinary Studies Electives:</b> Animal Welfare Science Clinical Rotation Elective Animal Welfare	✓	✓	✓	✓	✓	
	<b>Graduate Level Course: 'The Scientific Assessment of Animal Welfare'</b> University of Guelph (Canada), Campbell Centre for the Study of Animal Welfare						
	<b>MSc Animal Welfare</b> University of Northampton (UK)	✓	✓	✓	✓	✓	First MSc exclusively in animal welfare in UK. Considers the measurement of welfare and behaviour as well as the relationships between human beings and animals.
	Animal Sciences subjects: <b>'Animals in Rural and Urban Context'</b> <b>'Sustainable Development of Animal Systems: Issues and Options'</b> <b>'Future Livestock Systems'</b> Wageningen Institute of Animal Sciences (The Netherlands)	✓	✓	✓	✓	✓	All undergraduate course subjects linked to the European Masters in Animal Management.
Livestock/ production animals  and all sectors	<b>Animal Science Masters Program and the course 'Protection and welfare of animals'</b> Swedish University of Agricultural Sciences (Uppsala, Sweden) Department of Animal Environment and Health	✓	✓	✓	✓	✓	

Table 9 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Livestock/ production animals	<b>Animal Welfare course - Seminar in Animal Welfare and Human-Animal Interaction; Animal Welfare Assessment (new in 2009)</b> Purdue University (USA) School of Veterinary Medicine Centre for Food Animal Well-being	✓	✓	✓	✓	✓	ANSC 404 - Animal Welfare: A multi-disciplinary course that introduces students to the fields of animal behaviour and the ethics of animal use.
	<b>Contentious Social Issues in Animal Agriculture, and Applied Animal Behavior</b> Oregon State University (USA) College of Agricultural Sciences	✓	✓	✓	✓	✓	On-line course that discusses contentious issues including role of animal products and human health; use of hormones and antibodies; new animal biotechnologies; animal rights/welfare; livestock grazing on public lands.
Livestock/ production animals	<b>PhD Program</b> Aarhus University (Denmark) Faculty of Agricultural Sciences Department of Animal Health, Welfare and Nutrition	✓	✓	Not identified	✓	✓	
	<b>BSc Animal Science</b> Norwegian University of Life Sciences (UMB) (Norway) Department of Animal and Aquacultural Sciences	✓	✓	Not identified	✓	✓	The UMB Department of Animal and Aquacultural Sciences places a strong emphasis on the welfare of livestock animals and aquatic animals. Eg research shows that stress in female fish can negatively affect their offspring.
	<b>Animal Use On-line training course</b> Ohio State University (USA) Department of Animal Sciences (partnership with AWSC, Australia)	✓	✓	✓	✓	✓	Animal Use On-line training course.
	<b>BSc Applied Animal Science</b> <b>BSc Agricultural Science</b> Scottish Agricultural College (SAC) (UK)	Not identified	Not identified	Not identified	Not identified	✓	
Livestock/ production animals	<b>Introductory Animal Welfare Assessment and four on-line courses:</b> <b>1. Animal Welfare Judging; 2. Issues in Animal Agriculture; 3. Animal Welfare Assessment; 4. Animal Welfare: Science and Society.</b> Michigan State University, (USA) Animal Behavior and Welfare Teaching Program	✓	✓	✓	Field trip required	✓	Multidisciplinary online computer-based instruction in animal welfare science and related issues including physiology, behaviour, human-animal interactions, suffering and pain, ethics, health, assessment and standards, and economics. Enhanced understanding of the physiological and behavioural indicators of animal welfare. Ethical values in the assessment of welfare status. Intercollegiate competition. In 2006 the ABWG team received an honourable mention in the category of fully on-line courses.

Table 9 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Work, Sport, Recreation & on Display	<b>BSc Equine (Behaviour, Welfare &amp; Rehabilitation)</b> The Open College of Equine Studies (TOCES) (UK)	✓	Not identified	Not identified	Not identified	✓	Distance learning course run by TOCES. All TOCES courses are primarily distance education with some on-site study weeks with visiting professional lecturers. Two subjects in degree course: Equine Welfare and Equine Behaviour & Welfare.
	<b>BSc Honours Degree in Animal Behaviour and Welfare</b> University of Chester (UK)	✓	Not identified	✓	✓	✓	Gives both practical experience with animals and an academic understanding of animal behaviour, their biology and their welfare.
	<b>Bachelor of Equine Sciences</b> University of Natural Resources and Applied Life Sciences (Austria)	Not identified	Not identified	Not identified	Not identified	✓	
Companion animals	<b>Animals and Society</b> University of British Columbia (UBC) (Canada) Animal Welfare Program	✓	✓	✓	✓	✓	An interdisciplinary introduction to the place of animals in human society. The course introduces students to (1) the place of animals in mythology and Western thought, (2) the role of animals in world food production, biomedical research, companionship and entertainment, and (3) attempts to safeguard animals through practical innovations, the humane movement and the law.
	<b>Animal Welfare Certificate</b> (Distance Education only) UBC & Thomson Rivers University (TRU) (Canada)	✓	✓	Not identified	✓	✓	Developed by TRU in cooperation with the British Columbia Society for the Prevention of Cruelty to Animals, originally to provide background education for BC SPCA staff. The course covers practical aspects of animal health and animal care with emphasis on companion animals, as well as legal, organisational and safety issues arising in the humane movement. It provides excellent preparation for students interested in working in the BC SPCA or similar agencies.
	<b>Undergraduate Program in Animal Welfare and Societal Concerns</b> Purdue University School of Veterinary Medicine (USA) Centre for the Human Animal Bond	✓	✓	✓	✓	✓	This course is required for students involved in the interdisciplinary "Animal Welfare and Societal Concerns" program of study. The seminar discusses current topics in animal welfare and other areas involving the interaction of humans and animals. Outside speakers present their perspectives in various areas.
All sectors	<b>Course on Animal Welfare for Veterinary Surgeons and others</b> University of Cambridge, Department of Veterinary Medicine	✓	✓	✓	✓	Not identified	This Course is structured to cover the curriculum for the RCVS Certificate in Animal Welfare Science, Ethics and Law and comprises a combination of lectures, videos and discussions. Taught by Professor D.M. Broom and others, Centre for Animal Welfare and Anthrozoology in the Department of Veterinary Medicine, University of Cambridge, Professor D.B. Morton and colleagues, Department of Biomedical Science and Biomedical Ethics, University of Birmingham and invited lecturers, in particular Mr. M. Radford, Department of Law in the University of Aberdeen.

Table 9 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Companion animals	<b>Introduction to the Human-Animal Bond in Veterinary Medicine: Courses 1 &amp; 2.</b> Washington State University College of Veterinary Medicine On-line education	Not identified	Not identified	Not identified	Not identified	Not identified	Although not focussed on animal welfare, this course explores the concept of the human-animal bond.
	<b>The Ethics and Values Signature Program (ESVP)</b> <b>The Master of Science in Animals and Public Policy (MAPP)</b> Tufts University (USA) Center for Animals and Public Policy	✓	✓	Not identified	✓	✓	The Tufts University Centre for Animals and Public Policy promotes the welfare of animals and improves human/animal relationships.
	<b>Bachelor of Applied Science (Animal Management and Welfare)</b> UNITEC (NZ)	✓	✓	Not identified	✓	✓	Three year, full time course starting in 2009. The Bachelor of Applied Science (Animal Management and Welfare) offers a holistic approach to animal management, integrating theoretical concepts with practical application in both simulated and real-world situations.
All sectors	<b>Universities Federation of Animal Welfare (UFAW)</b> involves 27 academic institutions, including UBC, University of Edinburgh, Iowa State University, Massey University, Royal Veterinary College and Unitec NZ.	✓	✓	Not identified	Not identified	Not identified	The UFAW provides an important network for academics involved in studies of animal behaviour and welfare. The application of principles of animal behaviour and physiology to assessment and improvement of the welfare of wild, captive, and domestic animals. Information is shared on topics such as animal pain, stress, cognition, motivation, emotions, and preferences, as well as environmental enrichment methods.
All sectors	<b>Animal Behavior Graduate Group - Ethics of Animal Use</b> University of California, Davis (USA) Department of Animal Science	✓	✓	Not identified	✓	✓	A core curriculum is required of all students in their first year. Its aim is to introduce students to the breadth of approaches to animal behaviour, and to encourage the interdisciplinary thinking that distinguishes our program. The remainder of the curriculum is split into four specialities: (1) behaviour and conservation of wild animals, (2) animal management and welfare, (3) ethology and evolutionary bases of animal behaviour, and (4) physiological bases of animal behaviour.

Table 9 continued

AAWS Sector	Program/Course	Adequacy 1 Course description includes AW	Adequacy 2 Course covers AW laws, codes & standards	Adequacy 3 Course covers 5 Freedoms & 3 Rs	Adequacy 4 Course has practical component with/without case studies	Adequacy 5 Student's level of competency assessed	Other comments
Aquatics	<b>European 2-yr Master in Sustainable Aquaculture (BM-SA)</b> Provided by a consortium of universities. Norwegian University of Life Sciences, UMB (Norway) as co-ordinator, the Hólar University College (Iceland), the Norwegian School of Veterinary Sciences (Norway), the Swedish University of Agricultural Sciences (Sweden), Szent Istvan University (Hungary), Universidad de Las Palmas de Gran Canaria (Spain), University of Copenhagen (Denmark) and University of Stirling (Scotland).	Not identified	✓	Not identified	Not identified	✓	Course focuses on the development of a sustainable aquaculture industry, involving the best available competence merged with deeper insight of environmental, <b>animal welfare</b> , economic and resource consequences of any decision.
Animals used in Research & Teaching	<b>Animal Science courses, including: Rights and Welfare of Animals AND Companion Animal Management.</b> Washington State University (USA)	✓	✓	✓	✓	✓	
Livestock/ Production	College of Agricultural, Human and Natural Resource Sciences, Department of Animal Sciences						
Companion							
Animals used in Research & Teaching	<b>Animal Use On-line training course</b> Ohio State University (USA)	✓	✓	✓	✓	✓	
All sectors	<b>BvetMed; BVetMed (Accelerated); BSc/BvetMed; BSc(Hons) Vet Nursing; Vet Gateway programme; BSc Biovet Sciences (was BSc Vet Sciences); Foundation Vet Nursing; BSc Vet Pathology</b> Royal Veterinary College, University of London (UK)	✓	✓	Not identified	✓	✓	
All sectors	<b>International Animal Law's (IAL) Animal Law course, part of the Veterinary Masters Degree.</b> Massey University Veterinary School (NZ)	✓	✓	Not identified	✓	✓	

Table 10A: AAWS and Australian Veterinary Science Courses

	University of Melbourne Faculty of Veterinary Science	University of Sydney Faculty of Veterinary Science	Murdoch University School of Veterinary and Biomedical Sciences	Charles Sturt University School of Animal and Veterinary Science	James Cook University School of Veterinary and Biomedical Sciences	University of Queensland Faculty of Natural Resources, Agriculture and Veterinary Science	University of Adelaide Faculty of Sciences
Overview	<p>The Faculty of Veterinary Science will be joining the Melbourne Model as from 2011, with the first graduate professional entry program commencing in 2012. Entry to the graduate professional entry program will require prior completion of an undergraduate degree - the Bachelor of Science offered at the University will provide one of the pathways to the new graduate professional entry Veterinary Science degree. The last intake for the current pre-veterinary stream will be in 2009, with the very last intake for the current four-year Bachelor of Veterinary Science degree being in 2010. The University is still in the process of finalising the structure of the new graduate professional degree.</p> <p><b>Veterinary Professional Studies</b> includes an introduction to laws, ethics and morals, organisation of the veterinary profession and the management of animals in society. Learning is achieved through students working in syndicate groups, and presenting oral and written presentations. [Comparing and contrasting cultures and countries provide students with an international perspective for the rest of the curriculum].</p> <p><b>Animal Health, Management and Welfare 1A and 1B</b> involves practical classes which are undertaken at the animal welfare shelters - dealing with shelter management, biosecurity, aggression tests, euthanasia of unsuitable animals, preparing suitable animals for adoption, educating the new owners.</p> <p><b>Animal Health, Management and Welfare 2A and 2B</b> include lectures on the codes of practice</p>	<p>Veterinary Science at the University of Sydney is a five-year course with a strong emphasis on animal handling skills, and includes teaching programs in a wide range of animal industries. Students spend 12 weeks on horse, pig, beef and dairy cattle, sheep, and poultry farms. These experiences develop competency in animal management. Classes in dog and cat handling are also included in the course. There is also a strong commitment to provision of opportunities for students to spend time in veterinary practices and these extramural links with practising veterinary surgeons are an important component of the BVSc program.</p> <p>A unit of study titled 'Animal Behaviour and Welfare Science 3' covers normal and abnormal behaviours in domestic and captive species. This is one of the core knowledge areas for veterinarians because it facilitates the recognition of disease states and helps veterinarians to make informed comment on animal welfare issues. The course includes demonstrations from expert animal handlers and trainers.</p>	<p>At Murdoch University's School of Veterinary and Biomedical Sciences animal welfare is initially presented as a discrete unit in first year. Subsequent to this, animal welfare is reinforced informally through various units in the remaining four years. As from 2008, a new veterinary program has been approved, with a general science year followed by a new five-year vet curricula.</p> <p><b>Animal and Human Bioethics</b> is a core first year unit for veterinary students and is taken as an elective by other biomedical or biological science students. A variety of lectures are given from both Murdoch staff and others off campus, for example, RSPCA, Perth Zoo and DAFWA. Tutorials include activities such as a formal debate and AEC role playing.</p> <p>Topics covered include welfare assessment (five freedoms, physiological responses and behaviour), agriculture and animal production systems, public interest groups (RSPCA, animal rights groups, DAFWA culling programs), animals in society and companion animals (human-animal bond), conservation and wildlife (wild animal management) euthanasia and ethics at the end of life (religious slaughter), animal experimentation, animal use and education and ethical decision making in a vet clinic or laboratory).</p> <p>Reinforcement of animal welfare themes is continued in various units in the latter years. The 2008 curricula includes:</p> <p>Animal Systems I - an analysis of animal welfare in animal production systems (intensive and extensive systems).</p> <p>Animal Systems II - more detailed animal welfare topics concerning both companion animals and farm animals -</p>	<p>The School of Animal and Veterinary Sciences at Charles Sturt University provides undergraduate courses in Animal Science, Equine Science and Veterinary Science. The School also teaches into the Agriculture degree, managed by the School of Agricultural and Wine Sciences, for those students selecting the Livestock Production stream of that degree.</p> <p>The veterinary science course commenced in 2005 with a vision to provide veterinarians for rural Australia. The animal science degree began in 2007, particularly to prepare graduates for careers in animal research but also to provide training for employment in a wide range of jobs working with animals. The equine science program was revised in 2006 in order to take advantage of the specialist staff joining the School as a result of the introduction of the veterinary degree.</p> <p>CSU's Bachelor of Veterinary Science/Bachelor of Veterinary Biology double degree is a six-year program that prepares graduates for a career in veterinary practice and other related fields.</p> <p>Students completing this course will have developed skills in the diagnosis and management of disease in all common species of farm animals (cattle, sheep, pigs, poultry and fish) and companion animals (horses, dogs, cats, and others). As a result of the unique structure of the CSU course, students will have particular aptitude, skills</p>	<p>Since 2006, James Cooks University's School of Veterinary and Biomedical Sciences has offered the 5-year Bachelor of Veterinary Science course. Students acquire the knowledge and skills to diagnose, treat and prevent disease in a wide range of animals, including farm animals. In addition, students acquire a thorough knowledge of animal production systems. Final year of the course is devoted to clinical and professional training and is delivered in a series of clinical rotations through veterinary hospitals, practices, laboratories and government agencies in Mackay, Townsville, Cairns, Charters Towers and Malanda.</p> <p><b>Practical Experience</b> The course provides students with exposure to a range of practical livestock production and veterinary practice experiences. The practical work program:</p> <ul style="list-style-type: none"> <li>exposes students to a broad variety of agriculture and animal production enterprises;</li> <li>enhances understanding of veterinary practice, animal health and welfare and disease control;</li> <li>integrates with and supports the academic program;</li> <li>helps to prepare students for a range of</li> </ul>	<p>This program is concerned with the promotion of the health and welfare of vertebrate animals of special importance to society. This involves the care of healthy and sick animals and the prevention, recognition, control and treatment of their diseases, and the welfare and productivity of livestock. First year courses provide a foundation knowledge of animal structure and function, chemical principles, and animal husbandry. The structure and function of the normal animal, and its nutrition, breeding, and management, are studied in greater depth in second and third years. Fourth and fifth year students develop knowledge and skills in the prevention, diagnoses, treatment and control of diseases in domestic animals and birds. All years of the program contain a large component of practical work.</p> <p>The first year subject - Animal Handling, Behaviour and Welfare for Veterinary Students covers the application of medical, diagnostic, and therapeutic principles to companion, domestic, exotic, wildlife, and production animals. Veterinary science is vital to the study and protection of animal production practices, herd health and</p>	<p>A new 6-year program in Veterinary Science begins with a 3-year Bachelor of Science (Animal Science: Pre-Veterinary) degree, which commenced in 2008.</p> <p>Beginning in 2011, this undergraduate degree will be followed by a 3-year postgraduate award in Veterinary Science. Accreditation is currently being sought.</p> <p>The undergraduate degree focuses on the rural setting and large animals, and is designed to provide students with the foundation knowledge and skills they require to progress to further studies in both postgraduate veterinary programs and a range of different scientific disciplines. It is expected that most students undertaking the program will progress to the Master of Veterinary Science. This will enable them to pursue occupations open to accredited veterinarians. Students not continuing to the Masters Program are expected to gain employment as animal science professionals in a range of agricultural and livestock industries, zoos, biosecurity and animal welfare organisations.</p>

<p>and the performance of the industries in responding to issues raised by animal <b>welfare</b>/rights/liberation groups. By the end of second year students will have completed two weeks of compulsory extramural work in an animal <b>welfare</b> shelter and submitted a report. Some students have worked in shelters in India, Texas, Hong Kong, China, Singapore and the UK.</p> <p>During <b>Professional Practice 1</b> students can undertake up to four weeks of the required 12 weeks of extramural work with veterinary practices associated with animal shelters.</p> <p><b>Professional Practice 2</b> Lectures on legislation, guidelines and codes.</p> <p><b>Professional Practice 3</b> is a three-week elective as a trainee veterinarian in a clinic associated with an animal <b>welfare</b> shelter. [RSPCA, Lort Smith Animal Hospital, Lost Dogs Home, Cat Protection Society].</p> <p>In 2006 there were more veterinarians working in these organisations than in 1998, and the standard of veterinary care has improved.</p> <p>One reason for changing the curriculum and involving all veterinary students with the animal <b>welfare</b> societies from the start of the BVSc course was to improve the relationship between the veterinary profession and these societies in Victoria.</p>		<p>such as the human animal bond, <b>welfare</b> aspects of breeding and showing, implications of neutering programs, responsible pet ownership, and the relationship between animal abuse and human abuse. Farm animal topics will include <b>welfare</b> assessment on farms, principal <b>welfare</b> issues like husbandry procedures, mutilations, and transport and <b>welfare</b> effects of stockmanship.</p> <p>Animal Systems III covers the <b>welfare</b> aspects of slaughter, disease control and epidemiology.</p> <p>Veterinary Medicine and Surgery I and II expands on earlier themes of animal <b>welfare</b> as students focus on the prevention and treatment of disease in clinical setting.</p>	<p>and knowledge for working in the farm animal industries.</p> <p>The course provides a solid grounding in agricultural production systems and the integration of nutrition, genetics, economics and epidemiology into the management of herds and flocks. The CSU course recognises the role of veterinarians in ensuring the safety of animal products for human consumption and the <b>welfare</b> of animals in livestock production systems.</p> <p>The process of accreditation of the course by the Australian Veterinary Boards Council has commenced. Final accreditation takes place until 2010, the final year of the initial intake.</p>	<p>employment opportunities available to the veterinary profession.</p> <p>In the first four years of the program, students complete three separate compulsory extramural practical work and veterinary clinical experience placements, as follows:</p> <ol style="list-style-type: none"> <li>1. Five consecutive days of extramural work experience in an approved veterinary practice prior to entering Year 2 of the academic program.</li> <li>2. Twelve weeks of farm/animal industry extramural work experience following completion of Year 1 and prior to the completion of the Year 3 of the academic program.</li> <li>3. Twelve weeks of extramural work experience in approved veterinary practices, government agencies and an abattoir following completion of Year 3 and prior to the commencement of Year 5 of the academic program.</li> </ol>	<p>monitoring spread of widespread disease. It requires the acquisition and application of scientific knowledge in multiple disciplines and uses technical skills towards disease prevention in both domestic and wild animals.</p>	
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**Table 10B Vet Science Course content**

Year of Course	University of Melbourne Faculty of Veterinary Science	University of Sydney Faculty of Veterinary Science	Murdoch University School of Veterinary and Biomedical Sciences	Charles Sturt University School of Animal and Veterinary Science	James Cook University School of Veterinary and Biomedical Sciences	University of Queensland Faculty of Natural Resources, Agriculture and Veterinary Science	University of Adelaide Faculty of Sciences
Year 1	Pre-veterinary year or one year of Science	Animal Husbandry 1A & 1B Cell Biology 1A & 1B Chemistry Professional Practice 1 Veterinary Anatomy and Physiology 1A & 1B	<b>Animal and Human Bioethics</b> Veterinary Anatomy 1 & II Veterinary Biochemistry Veterinary Physiology I & II <b>Animal Systems I</b> Veterinary Professional Life I	Animal Genetics Concepts of Biology Veterinary Chemistry Animal Production Veterinary Practice 1 Pastures and Rangelands Scientific Statistics <b>Animal Behaviour and Welfare</b> Veterinary Case Studies	Biological Principles for Veterinary Science Chemistry: A Central Science Veterinary Professional Life 1 Cell Biology and Biochemistry for Veterinary Science and Agriculture Plant Biology for Agriculture and Veterinary Science Animal Biology for Agricultural and Veterinary Science Veterinary Professional Life 2 Physiology and Pharmacology for Veterinary Science	Animal Husbandry Molecular Basis of Life Veterinary Professional Studies Veterinary Biology & Histology Cell and Tissue Biology Digestion, Metabolism & Nutrition Functional Anatomy of Locomotion and the Integument <b>Animal Handling, Behaviour and Welfare</b> for Veterinary Students	Biology 1 Chemistry 1A Foundations of Chemistry IA Perspectives in Animal Science Physics for the Life & Earth Sciences Physics Principles & Applications Principles in Animal Behaviour, <b>Welfare &amp; Ethics</b> Statistical Practice 1
Year 2	Veterinary Professional Studies <b>Animal Health, Management &amp; Welfare</b> 1A & 1B Veterinary Anatomy 1A & 1B Veterinary Biochemistry A & B Veterinary Physiology 1A & 1B	Animal Digestion and Nutrition Equine Anatomy Genetics and Biometry Principles of Disease Professional Practice 2 Veterinary Anatomy and Physiology 2A & 2B Veterinary Conservation Biology	Processes in Animal Disease Veterinary Microbiology Veterinary Nutrition and Animal Toxicology <b>Animal Systems II</b> Veterinary Immunology and Molecular Genetics Veterinary Parasitology Veterinary Professional Life II	Biochemistry Veterinary Practice 2 Development Biology Veterinary Anatomy Veterinary Physiology Animal Nutrition Ruminant Production Comparative Anatomy Applied Veterinary Physiology	Integrated Animal Structure and Function 1 Integrated Animal Structure and Function 2	Applied Animal Nutrition & Grazing Management Principles of Disease I Structure and Function I Animal Breeding & Molecular Genetics Principles of Disease II Veterinary Reproduction Structure and Function II	Biochemistry Comparative Veterinary Anatomy Comparative Veterinary Physiology Veterinary Skills 1 Animal Reproduction & Genetics Statistics - Research methods
Year 3	Veterinary Physiology 2 Veterinary Anatomy 2 Introductory Vet. Clinical Sciences Veterinary Microbiology & Virology Veterinary Bacteriology & Mycology Veterinary Parasitology A & B Veterinary Pathology A & B <b>Animal Health, Management &amp; Welfare</b> 2A & 2B Veterinary Pharmacology & Toxicology A & B	Animal Behaviour and <b>Animal Welfare</b> Science Animal Disease Professional Practice 3 Veterinary Clinical Sciences 3 Veterinary Microbiology Veterinary Parasitology Veterinary Pathology Veterinary Pharmacology and Toxicology Veterinary Public Health	Veterinary Pharmacology and Chemotherapy Veterinary Applied Pathology <b>Animal Systems III</b> Veterinary Professional Life III Veterinary Medicine and Surgery I	Applied Reproduction Intensive Animal Production Principles of Pathobiology Veterinary Practice 3 Animal Nutrition 2 Farm Animal 1 Companion Animal 1 & 2 Population Medicine 1	Transitions from Health to Disease 1 Transitions from Health to Disease 2	Infectious Diseases Pathophysiology, Pharmacological & Clinical Principles Used in Diagnosis of Diseases in Body Systems Systems Approach to Management and <b>Welfare</b> of Companion and Production <b>Animals</b> and Wildlife Infectious Diseases Pathophysiology, Pharmacological & Clinical Principles Used in Diagnosis of Diseases in Body Systems	Available in 2010 Animal Nutrition Veterinary Skills Veterinary Immunology Veterinary Microbiology Veterinary Parasitology Veterinary Pathology Veterinary Pharmacology & Toxicology
Year 4	<b>Animal Health, Management &amp; Welfare</b> 3 Clinical Medicine and Surgery	Animal Husbandry Practical Report Bird Health and Production Horse Medicine and Surgery	Veterinary Medicine & Surgery II Veterinary Professional Life IV	Population Medicine 2 & 3 Farm Animal 2 & 3 Companion Animal 3, 4 & 5 Public Health and	YEAR 4 (2009) Veterinary Clinical Sciences 1 Veterinary Clinical Sciences 2	Animal Clinical Studies Ruminant Clinical Studies Principles of Clinical Practice	

	Diseases of Body Systems 1 & 2 Dogs, Cats & Miscellaneous Pets 1 Pigs Horses 1 Cattle 1 Small Ruminants 1 Professional Practice 1 (Hospital)	Pig Health and Production Ruminant Health and Production Veterinary Anaesthesia Veterinary Medicine & Clinical Pathology Veterinary Radiology Veterinary Surgery	Veterinary Clinics & Externships	Biosecurity 1 Veterinary Practice 4		Equine Clinical Studies Companion Animal Clinical Studies Ruminant Clinical Studies Intensive Livestock Medicine Equine Clinical Studies	
Year 5	Dogs, Cats & Miscellaneous Pets 2 Horses 2 Cattle 2 Small Ruminants 2 Birds and Non-Domestic Animals Professional Practice 2 (Hospital) Professional Practice 3 (Electives)	Anaesthesia and Intensive Care Elective Rotation 1 Elective Rotation 2 Preparation Veterinary Practice Primary Accession Med & Surgery Referral Medicine Rural Mixed Practice 1 Rural Mixed Practice 2 (Extramural) Rural Public Practice Small Animal Practice (Extramural) Small Animal Surgery	Veterinary Professional Life V Continuation of Veterinary Clinics and Externships Veterinary Electives	Companion Animal 6 & 7 Public Health and Biosecurity 2 Population Medicine 4 Veterinary Practice 5 Transition to Practice Clinical Rotation 1 & 2 Veterinary Practice 5	YEAR 5 (2010) Veterinary Clinical and Professional Practice 1 Veterinary Clinical and Professional Practice 2	Practice Management & Professional Life Veterinary Public Health and Pathology Small Animal Clinics Livestock Clinics Equine Clinics Clinical Veterinary Elective Research Veterinary Elective	
Year 6 or Electives				Clinical Rotations 3 -10		Food & Fibre in the E-Landscape Grazing Animal Management Captive Wildlife Husbandry DNA & Protein Technology Conservation & Wildlife Biology Molecular Mechanisms of Development Business Management Introduction to Human Resource Management Microbial Biotechnology Agriculture & Food Industry Marketing	

## Appendix 4 – website references

Table 11: Examples of Animal Welfare Education and Training in Australian Primary Schools

AAWS Sector	Program/Course	Website Address
Companion Animals	PetPEP – Pets & People Education Program.	<a href="http://www.rspcaqld.org.au/education/petpep.htm">http://www.rspcaqld.org.au/education/petpep.htm</a> <a href="http://www.ava.com.au/petpep">www.ava.com.au/petpep</a> <a href="http://avacms.eseries.hengsystems.com.au/Content/NavigationMenu/Community2/AVAPetPEP/default.htm">http://avacms.eseries.hengsystems.com.au/Content/NavigationMenu/Community2/AVAPetPEP/default.htm</a>
	Victoria's Responsible Pet Ownership Program.	<a href="http://www.pets.info.vic.gov.au/">http://www.pets.info.vic.gov.au/</a>
	SPOT (Safe Pets Out There) NSW Program.	<a href="http://www.spot.nsw.gov.au/">http://www.spot.nsw.gov.au/</a>
	Rights, Roles & Responsibilities RSPCA Victoria Education Program	<a href="http://www.rspcavic.org/rspca_services/education.htm">http://www.rspcavic.org/rspca_services/education.htm</a>
Animals in the Wild  Animals used for Work, Sport, Recreation & on Display	Australian Wildlife Health Centre (AWHC) at Healesville Sanctuary/ Melbourne Zoo.	<a href="http://www.zoo.org.au/Healesville/Australian_Wildlife_Health_Centre">http://www.zoo.org.au/Healesville/Australian_Wildlife_Health_Centre</a>
Aquatic Animals	Get Hooked It's Fun to Fish Recreational Fishing Schools Program run by Fishcare in Victoria	<a href="http://www.fishcare.org.au/index.php?option=com_content&amp;task=view&amp;id=16&amp;Itemid=26">http://www.fishcare.org.au/index.php?option=com_content&amp;task=view&amp;id=16&amp;Itemid=26</a> <a href="http://www.fishcare.org.au">www.fishcare.org.au</a>
	'Fish for the Future' Education Package Western Australian Government	<a href="http://www.fish.wa.gov.au/fishtales/education/index.php">http://www.fish.wa.gov.au/fishtales/education/index.php</a>
Livestock/ production animals	'Farm Animals and Us in Australia' Compassion in World Farming	<a href="http://www.ciwf.org.au/resources.htm">http://www.ciwf.org.au/resources.htm</a>
	Pork Industry Education Program (PIEP)	<a href="http://www.nationalporkcentre.com.au/html/piged.html">http://www.nationalporkcentre.com.au/html/piged.html</a>
Animals used in research and teaching	Schools Animal Welfare Officer Full time officer employed by NSW Department of Education & Training (DET) & Catholic Education Commission (CEC) & the Association of Independent Schools of NSW (AIS NSW).	<a href="http://www.schools.nsw.edu.au/animalsinschools/">http://www.schools.nsw.edu.au/animalsinschools/</a>

**Table 12: Examples of Animal Welfare Education and Training in Australian Secondary Schools**

<b>AAWS Sector</b>	<b>Program/Course</b>	<b>Website Address</b>
<b>Livestock/ production animals</b>	<b>Farm Animals &amp; Us in Australia 1 &amp; 2</b> Compassion in World Farming	<a href="http://www.ciwf.org.au/resources.htm">http://www.ciwf.org.au/resources.htm</a>
	<b>Western Australian Colleges of Agriculture</b>	<a href="http://www.denmarkag.wa.edu.au">www.denmarkag.wa.edu.au</a> <a href="http://www.harveyag.wa.edu.au">www.harveyag.wa.edu.au</a> <a href="http://www.narroginag.wa.edu.au/">http://www.narroginag.wa.edu.au/</a> <a href="http://www.morawaag.wa.edu.au/">http://www.morawaag.wa.edu.au/</a> <a href="http://www.cunderdinag.wa.edu.au/">http://www.cunderdinag.wa.edu.au/</a>
	<b>New South Wales (NSW) Agricultural High Schools</b>	<a href="http://www.farreragri-h.schools.nsw.edu.au/">http://www.farreragri-h.schools.nsw.edu.au/</a> <a href="http://www.hurlstone.com.au">http://www.hurlstone.com.au</a> <a href="http://www.jamesruse.nsw.edu.au/">http://www.jamesruse.nsw.edu.au/</a> <a href="http://www.yancoag-h.schools.nsw.edu.au/">http://www.yancoag-h.schools.nsw.edu.au/</a>
	<b>Queensland Australian Agricultural College Corporation</b>	<a href="http://www.agriculturalcollege.qld.edu.au/campus/index.htm">http://www.agriculturalcollege.qld.edu.au/campus/index.htm</a>
	<b>PigEd</b> National Centre for Pork Industry Training & Education (NCPITE) and Australian Pork	<a href="http://www.nationalporkcentre.com.au/html/piged.html">http://www.nationalporkcentre.com.au/html/piged.html</a>
<b>Livestock/ production animals</b>	<b>Woolpro in Schools</b> Department of Agriculture and Food, WA	<a href="http://www.agric.wa.gov.au/content/aap/sl/WinS2007.htm">http://www.agric.wa.gov.au/content/aap/sl/WinS2007.htm</a>
<b>Animals used for Work, Sport, Recreation &amp; on Display</b>	<b>Certificate II in Equine Industry</b> Hamilton and Alexandra College	<a href="http://www.hamiltoncollege.vic.edu.au/">http://www.hamiltoncollege.vic.edu.au/</a>
<b>Animals in the Wild</b>	<b>Animals used for Work, Sport, Recreation &amp; on Display</b> <b>Australian Wildlife Health Centre</b> Vet for a Day Program (Years 9-11)	<a href="http://www.zoo.org.au/Healesville/Australian_Wildlife_Health_Centre">http://www.zoo.org.au/Healesville/Australian_Wildlife_Health_Centre</a>
<b>Animals used in research and teaching</b>	<b>Schools Animal Welfare Officer</b> (Full time officer employed by NSW Department of Education & Training (DET) & Catholic Education Commission (CEC) & the Association of Independent Schools of NSW (AIS NSW).	<a href="http://www.schools.nsw.edu.au/animalsinschools/">http://www.schools.nsw.edu.au/animalsinschools/</a>

**Table 13: Examples of Animal Welfare Education and Training in the Australian Industry and Vocational Education & Training (VET) Sector**

AAWS Sector	Program/Course	Website Address
Livestock/ production animals	<b>Certificate III in Agriculture (Dairy)</b> National Centre for Dairy Education Australia (NCDEA)	<a href="http://www.ncdea.edu.au">www.ncdea.edu.au</a>
	<b>PigTrain</b> National Centre for Pork Industry Training and Education (NCPITE)	<a href="http://www.nationalporkcentre.com.au/html/pigtrain.html">http://www.nationalporkcentre.com.au/html/pigtrain.html</a>
	<b>Rural Training Production Package</b> Agrifood-Skills Industry Council and RTOs	<a href="http://www.agrifoodskills.net.au/training-rural.php">http://www.agrifoodskills.net.au/training-rural.php</a> <a href="http://www.agrifoodskills.net.au/rte03_main.php">http://www.agrifoodskills.net.au/rte03_main.php</a>
	<b>National Mulesing Assurance Training</b> One-day training program delivered by the Kondinin Group Industry Training	<a href="http://www.nmap.com.au/">http://www.nmap.com.au/</a>
	<b>Certificate III in Agriculture (Horse Husbandry)</b> TOCAL College	<a href="http://www.tocal.nsw.edu.au/reader/tocal-fulltime-courses/certificate-3-horse.htm">http://www.tocal.nsw.edu.au/reader/tocal-fulltime-courses/certificate-3-horse.htm</a>
	<b>Saleyard Operators Course</b> A Pilot Program being run by TOCAL College for saleyard managers	Not yet available on-line. Contact Saleyard Operators Australia ( <a href="http://www.saleyards.info">www.saleyards.info</a> )
Animals used for Work, Sport, Recreation & on Display	<b>Diploma of Equine Stud Management</b> Northern Metropolitan Institute of Technology (NMIT)	<a href="http://www.nmit.vic.edu.au/courses/horse/equine_dip_a.html">http://www.nmit.vic.edu.au/courses/horse/equine_dip_a.html</a>
	<b>Horse Health &amp; Welfare short course</b> National Centre for Equine Education	<a href="http://www.ncee.edu.au/corporate_ncee/SpecialityPrograms.cfm">http://www.ncee.edu.au/corporate_ncee/SpecialityPrograms.cfm</a>
Companion Animals  Animals used in research and teaching	<b>Animal Care &amp; Management Training Package.</b> Agrifood-Skills Industry Council and RTOs	<a href="http://www.agrifoodskills.net.au/training-animal.php">http://www.agrifoodskills.net.au/training-animal.php</a>
Animals in the Wild	<b>Conservation and Land Management Training Package</b> Agrifood-Skills Industry Council and RTOs	<a href="http://www.agrifoodskills.net.au/training-conservation.php">http://www.agrifoodskills.net.au/training-conservation.php</a> <a href="http://www.agrifoodskills.net.au/rtd02_main.php">http://www.agrifoodskills.net.au/rtd02_main.php</a>
	<b>Code of Practice and Game meat courses and firearms competency tests for licensing of all professional shooters</b> Kangaroo Industry Association of Australia	<a href="http://www.kangaroo-industry.asn.au/index.html">http://www.kangaroo-industry.asn.au/index.html</a>
Aquatic animals	<b>Seafood Industry Training Package</b> Agrifood-Skills Industry Council and RTOs	<a href="http://www.agrifoodskills.net.au/training-seafood.php">http://www.agrifoodskills.net.au/training-seafood.php</a> <a href="http://www.agrifoodskills.net.au/sfi04_main.php">http://www.agrifoodskills.net.au/sfi04_main.php</a>
	<b>Certificate II in Recreational Fishing</b> National Fishing Industry Education Centre (Natfish)	<a href="http://www.natfish.tafensw.edu.au/study-areas/recreational-fishing/RecFishCertIII.asp">http://www.natfish.tafensw.edu.au/study-areas/recreational-fishing/RecFishCertIII.asp</a>

**Table 14: Examples of Animal Welfare Education and Training in the Australian Higher Education Sector (Postgraduate)**

AAWS Sector	Program/Course	Website Address
Animals used in Research & Teaching	<b>Animal Ethics Course</b> University of Adelaide	<a href="http://www.adelaide.edu.au/ethics/animal/training/">www.adelaide.edu.au/ethics/animal/training/</a>
	<b>Postgraduate studies</b> Centre for Animal Welfare and Ethics (CAWE) University of Queensland.	<a href="http://www.uq.edu.au/cawe">www.uq.edu.au/cawe</a>
	<b>Research Animal Training Scheme (RATS Program)</b> University of Newcastle	<a href="http://www.newcastle.edu.au/research/animal/training.html">www.newcastle.edu.au/research/animal/training.html</a>
All sectors (but mainly Livestock /Production)	<b>Masters of Animal Welfare (Research) and PhD in Animal Behaviour and Welfare</b> Animal Welfare Science Centre University of Melbourne	<a href="http://www.animalwelfare.net.au/educate/educate.html">www.animalwelfare.net.au/educate/educate.html</a>
Animals in the Wild	<b>Master of Applied Science (Wildlife Health and Population Management)</b> University of Sydney	<a href="http://www.vetsci.usyd.edu.au/wild/future_students/master.shtml">http://www.vetsci.usyd.edu.au/wild/future_students/master.shtml</a>
Animals in the Wild Animal used in Work, Sport, Recreation & on Display	<b>Postgraduate Certificate in Veterinary Conservation Medicine</b> Murdoch University	<a href="http://www.vetbiomed.murdoch.edu.au/vet/grad_courses/cert_cons.html">http://www.vetbiomed.murdoch.edu.au/vet/grad_courses/cert_cons.html</a>
All	<b>Post-Graduate Foundation in Veterinary Science</b> University of Sydney	<a href="http://www.pgf.edu.au/">http://www.pgf.edu.au/</a>

**Table 15: Examples of Animal Welfare Education and Training in the Australian Higher Education Sector (Undergraduate)**

<b>AAWS Sector</b>	<b>Program/Course</b>	<b>Website Address</b>
<b>All</b>	<b>Bachelor of Veterinary Science</b> Murdoch University	<a href="http://www.veterinaryscience.murdoch.edu.au/about.php">http://www.veterinaryscience.murdoch.edu.au/about.php</a>
<b>Animal used in Work, Sport, Recreation &amp; on Display</b>	<b>Bachelor of Equine Science</b> Charles Sturt University	<a href="http://www.csu.edu.au/courses/undergraduate/equine_studies_science/index.html">http://www.csu.edu.au/courses/undergraduate/equine_studies_science/index.html</a>
<b>Aquatic Animals</b>	<b>Bachelor of Aquaculture</b> University of Tasmania	<a href="http://fcms.its.utas.edu.au/scieng/aqua/coursedetail.asp?ICourseId=10&amp;ICourseLevelId=&amp;ab=43346340">http://fcms.its.utas.edu.au/scieng/aqua/coursedetail.asp?ICourseId=10&amp;ICourseLevelId=&amp;ab=43346340</a>
<b>Animals used in Research &amp; Teaching</b>	<b>CARE (Caring for Animals in Research and Education)</b> University of NSW and the University of Sydney	<a href="http://web.med.unsw.edu.au/physiology/CARE/">http://web.med.unsw.edu.au/physiology/CARE/</a>
	<b>Research Animal Training Scheme (RATS)</b> University of Newcastle	<a href="http://www.newcastle.edu.au/research/animal/training.html">www.newcastle.edu.au/research/animal/training.html</a>
	<b>PAWES (Program in animal ethics, welfare &amp; science)</b> University of Western Australia	<a href="http://www.research.uwa.edu.au/welcome/research_services/Ethics/animal_ethics/forms_information/pawes_course_information">http://www.research.uwa.edu.au/welcome/research_services/Ethics/animal_ethics/forms_information/pawes_course_information</a>
	<b>Course for Honours and Postgraduate students</b> Monash University	<a href="http://www.monash.edu.au/research/ethics/animal/moreinfo/training.html">www.monash.edu.au/research/ethics/animal/moreinfo/training.html</a>
	<b>Animal Ethics Course</b> University of Adelaide	<a href="http://www.adelaide.edu.au/ethics/animal/training/">www.adelaide.edu.au/ethics/animal/training/</a>
<b>Livestock/ Production</b>	<b>Bachelor of Applied Science (Animal Studies)</b> University of Queensland	<a href="http://www.uq.edu.au/study/program.html?acad_prog=2005">http://www.uq.edu.au/study/program.html?acad_prog=2005</a>
	<b>Bachelor of Livestock Science</b> University of New England	<a href="http://www.une.edu.au/blisc/">http://www.une.edu.au/blisc/</a>
<b>Animals in the Wild</b>	<b>Bachelor of Science (Wildlife Management)</b> University of Western Australia	<a href="http://courses.handbooks.uwa.edu.au/courses/c7/70100_nas12">http://courses.handbooks.uwa.edu.au/courses/c7/70100_nas12</a>

**Table 16: Examples of International Animal Welfare Education and Training in Primary Schools**

AAWS Sector	Program/Course	Website Address
Livestock/ Production animals	<b>Operation OutReach</b> A National Humane Education and Literacy Program for Elementary Schools. American Humane Education Society (AHES)	<a href="http://www.americanhumane.org/">http://www.americanhumane.org/</a>
	<b>Farm animals: Who Cares?</b> Alberta Farm Animal Care (AFAC)	<a href="http://www.afac.ab.ca/education.htm">http://www.afac.ab.ca/education.htm</a>
Companion animals	<b>People-Pet Partnership (PPP)</b> Washington State University	<a href="http://www.vetmed.wsu.edu/depts-pppp/">http://www.vetmed.wsu.edu/depts-pppp/</a>
	<b>Responsible Pet Ownership Program, Singapore</b> Agri-Food and Veterinary Authority (AVA) Singapore	<a href="http://www.ava.gov.sg/AnimalsPetSector/ResponsiblePetOwnership/">http://www.ava.gov.sg/AnimalsPetSector/ResponsiblePetOwnership/</a>
All Sectors	<b>World Animal Day</b> One of the best animal and animal welfare resource available.	<a href="http://www.worldanimalday.org.uk">www.worldanimalday.org.uk</a>
Companion animals  Animals in the Wild	<b>Kindness Clubs and International Animal Welfare Education (IN AWE)</b> World Society for the Protection of Animals (WSPA)	<a href="http://www.kindnessclub.nb.ca/">http://www.kindnessclub.nb.ca/</a>  <a href="http://animal-education.org/">http://animal-education.org/</a>
	<b>Animal Welfare Education Database (AWED)</b> Developed by WSPA and World Animal Net (WAN).	<a href="http://animal-education.org/resource-database.asp">http://animal-education.org/resource-database.asp</a>
<b>Animal Welfare Certificate Course</b> WSPA (Africa)		<a href="http://www.animal-education.org/awed/queryherd3.asp?detailid=21">http://www.animal-education.org/awed/queryherd3.asp?detailid=21</a>
All sectors	<b>RSPCA UK Education Program</b>	<a href="http://www.rspca.org.uk/">http://www.rspca.org.uk/</a>

Table 17: Examples of International Animal Welfare Education and Training in Secondary Schools

AAWS Sector	Program/Course	Website Address
Livestock/ Production animals	<b>Farm Animals &amp; Us 1 &amp; 2</b> Compassion in World Farming	<a href="http://www.ciwf.org.au/resources.htm">http://www.ciwf.org.au/resources.htm</a>
	<b>Farm Animal Welfare in Alberta</b> Alberta Farm Animal Care (AFAC)	<a href="http://www.afac.ab.ca/education.htm">http://www.afac.ab.ca/education.htm</a>
Companion Animals	<b>"Extend the Web" Program</b> American Society for the Prevention of Cruelty to Animals	<a href="http://www.asPCA.org/site/PageServer?pagename=edu_home">http://www.asPCA.org/site/PageServer?pagename=edu_home</a>
Companion animals  Animals in the Wild	<b>International Animal Welfare Education (IN AWE)</b> World Society for the Protection of Animals (WSPA)	<a href="http://animal-education.org/">http://animal-education.org/</a>
All sectors	<b>Vet Camp</b> Atlantic Veterinary College, University of Prince Edward Island	<a href="http://www.upei.ca/vetcamp/">http://www.upei.ca/vetcamp/</a>
	<b>RSPCA (UK) Education Program</b>	<a href="http://www.rspca.org.uk/">http://www.rspca.org.uk/</a>
All sectors	<b>Animals &amp; Us</b> SAFE (Save Animals From Exploitation) NZ	<a href="http://www.safe.org.nz/Home/">http://www.safe.org.nz/Home/</a>
All sectors	<b>Animal Welfare Certificate Course</b> WSPA (Africa)	<a href="http://www.animal-education.org/awed/queryherd3.asp?detailid=21">http://www.animal-education.org/awed/queryherd3.asp?detailid=21</a>
Livestock/ Production	<b>Campaigns for Farm Animal Welfare Citizenship Studies</b> Compassion in World Farming (CIWF)	<a href="http://www.ciwf.org.uk/what_we_do/">http://www.ciwf.org.uk/what_we_do/</a>

**Table 18: Examples of International Animal Welfare Education and Training in the Industry and Vocational Education and Training (VET) Sector**

<b>AAWS Sector</b>	<b>Program/Course</b>	<b>Website Address</b>
Livestock/ production animals	<b>Humane Farm Animal Care (USA)</b> Accreditation Program	<a href="http://www.certifiedhumane.org/">http://www.certifiedhumane.org/</a>
	<b>Certified Livestock Transporters Training Program, Canada</b>	<a href="http://livestocktransport.ca/">http://livestocktransport.ca/</a>
	<b>Putting Farm Animal Welfare on the Agenda Project (Canada)</b>	<a href="http://www.livestockwelfare.com/pawota.htm">http://www.livestockwelfare.com/pawota.htm</a>
	<b>AWTraining</b>	<a href="http://www.awtraining.com">http://www.awtraining.com</a>
	<b>Farm Animal Welfare Council (UK)</b>	<a href="http://www.fawc.org.uk/">http://www.fawc.org.uk/</a>
Companion Animals	<b>Companion Animal Behaviour &amp; Welfare (Distance Learning Package )</b> University of Edinburgh Royal (Dick) School of Veterinary Studies	<a href="http://www.vet.ed.ac.uk/animalbehaviour/ecourse/">http://www.vet.ed.ac.uk/animalbehaviour/ecourse/</a>
	<b>Courses in Animal Care &amp; Vet Nursing</b> The College of Animal Welfare (UK).	<a href="http://www.caw.ac.uk/mainpage.asp">http://www.caw.ac.uk/mainpage.asp</a>
	<b>Educational Materials for Animal Shelter Workers</b> University of California, Davis, School of Veterinary Medicine	<a href="http://animalscience.ucdavis.edu/faculty/mench/Students/Talley.htm">http://animalscience.ucdavis.edu/faculty/mench/Students/Talley.htm</a>
Aquatic animals	<b>'Aquanet' Seminar Series</b>	<a href="http://www.aquanet.ca/English/educate_train/index.php">http://www.aquanet.ca/English/educate_train/index.php</a>
Aquatic animals	<b>Care, Handling and Use of Aquatic Animals</b> Canadian Aquaculture Institute, University of Prince Edward Island	<a href="http://www.upei.ca/lifelonglearning/experimentalfish">http://www.upei.ca/lifelonglearning/experimentalfish</a>
Animals used in Research & Teaching		
Aquatics	<b>Fish Welfare Course</b> British Veterinary Association Animal Welfare Foundation	<a href="http://www.bva-awf.org.uk/grants/projects/fish.asp">http://www.bva-awf.org.uk/grants/projects/fish.asp</a>
Animals used in Research & Teaching	<b>International Council for Laboratory Animal Science (ICLAS)</b>	<a href="http://www.iclas.org/Education.htm">http://www.iclas.org/Education.htm</a>
	<b>National Institutional Animal User Training (NIAUT) Program.</b> Canadian Council on Animal Care (CCAC)	<a href="http://www.ccac.ca/en/CCAC_Programs/ETCC/MEMO.HTM">http://www.ccac.ca/en/CCAC_Programs/ETCC/MEMO.HTM</a>
Animals used in Research & Teaching	<b>NORINA - A Norwegian Inventory of Audiovisuals</b> Norwegian School of Veterinary Science	<a href="http://oslovet.veths.no">http://oslovet.veths.no</a>
	<b>Laboratory Animal Science Course for Researchers</b> Norwegian School of Veterinary Science	<a href="http://oslovet.veths.no/dokument.aspx?dokument=80&amp;mnu=about_us">http://oslovet.veths.no/dokument.aspx?dokument=80&amp;mnu=about_us</a>
	<b>Animal Care Short Course</b> University of Guelph (Canada)	<a href="http://www.uoguelph.ca/registrar/calendars/graduate/2007-2008/othstu/othstu-anicare.shtml">http://www.uoguelph.ca/registrar/calendars/graduate/2007-2008/othstu/othstu-anicare.shtml</a>
	<b>The National Animal Welfare Education Program, Conferences and Workshops</b> Animal Welfare Information Center (US)	<a href="http://awic.nal.usda.gov">http://awic.nal.usda.gov</a>
	<b>Training workshops for members of Institutional Animal Care and Use Committees (IACUCs)</b> Scientists Center for Animal Welfare (SCAW)	<a href="http://www.scaw.com/iacuc-advanced.htm">http://www.scaw.com/iacuc-advanced.htm</a>

**Table 19: Examples of International Animal Welfare Education and Training in the Higher Education Sector**

<b>AAWS Sector</b>	<b>Program/Course</b>	<b>Website Address</b>
<b>All sectors</b>	<b>Animal Welfare and the Ethics of Animal Use</b> University of British Columbia (Canada) Animal Welfare Program	<a href="http://www.landfood.ubc.ca/animalwelfare/">http://www.landfood.ubc.ca/animalwelfare/</a>
	<b>Concepts in Animal Welfare (CAW) and vocational training</b> WSPA and the School of Clinical Veterinary Science, University of Bristol	<a href="http://www.wspa-international.org/wspaswork/education/Default.aspx">http://www.wspa-international.org/wspaswork/education/Default.aspx</a>
	<b>Animal Welfare and Bioethics</b> University of Maryland (USA) Department of Animal and Avian Sciences	<a href="http://ansc.umd.edu/undergraduate/courses.html">http://ansc.umd.edu/undergraduate/courses.html</a>
	<b>BSc (Hons) Animal Management &amp; Welfare</b> University of Lincoln (UK)	<a href="http://www.lincoln.ac.uk/home/courses/dbs/undergraduate/animalmanagement/index.asp">http://www.lincoln.ac.uk/home/courses/dbs/undergraduate/animalmanagement/index.asp</a>
<b>All sectors</b>	<b>University of Guelph (Canada)</b>  <b>Principles of Farm Animal Care and Welfare</b> <b>Animal Welfare: Does it matter?</b> <b>Agri-food Systems Trends and Issues</b>  <b>Veterinary Studies Electives:</b> Animal Welfare Science Clinical Rotation Elective Animal Welfare  <b>Graduate Level Course: 'The Scientific Assessment of Animal Welfare'</b>	<a href="http://www.uoguelph.ca/csaw/">http://www.uoguelph.ca/csaw/</a>
	<b>MSc Animal Welfare</b> University of Northampton (UK)	<a href="http://www.northampton.ac.uk/courses/postgraduate/detail/?id=0327">http://www.northampton.ac.uk/courses/postgraduate/detail/?id=0327</a>
	<b>Wageningen Institute of Animal Sciences (The Netherlands)</b> Animal Sciences subjects:	<a href="http://www.wias.nl/">http://www.wias.nl/</a>
	<b>Swedish University of Agricultural Sciences (Uppsala, Sweden)</b>  Animal Science Masters Program and the course 'Protection and welfare of animals'	<a href="http://www.slu.se/?id=362&amp;programkod=VM003">http://www.slu.se/?id=362&amp;programkod=VM003</a>
<b>Livestock/ production animals and all sectors</b>	<b>Purdue University (USA)</b> <b>School of Veterinary Medicine</b>  Animal Welfare course - Seminar in Animal Welfare and Human-Animal Interaction; Animal Welfare Assessment (new in 2009)	<a href="http://www.ansc.purdue.edu/CAWB/Education/Undergrad.html">http://www.ansc.purdue.edu/CAWB/Education/Undergrad.html</a>
	<b>Oregon State University (USA)</b> <b>College of Agricultural Sciences</b>  Contentious Social Issues in Animal Agriculture, and Applied Animal Behavior	<a href="http://www.agriculture.purdue.edu/arp/">http://www.agriculture.purdue.edu/arp/</a>
<b>Livestock/ production animals</b>	<b>Aarhus University (Denmark)</b> Faculty of Agricultural Sciences  PhD Program	<a href="http://www.au.dk/en">http://www.au.dk/en</a>
	<b>Norwegian University of Life Sciences (UMB) (Norway)</b>  BSc Animal Science	<a href="http://www.umb.no/?avd=22&amp;static=showsp&amp;sp=B-HF&amp;lang=en">http://www.umb.no/?avd=22&amp;static=showsp&amp;sp=B-HF&amp;lang=en</a>
	<b>Ohio State University (USA)</b>  Animal Use On-line training course	<a href="http://orpp.osu.edu/iacuc/training/">http://orpp.osu.edu/iacuc/training/</a>
	<b>Scottish Agricultural College (SAC) (UK)</b>  BSc Applied Animal Science BSc Agricultural Science	<a href="http://www.sac.ac.uk/">http://www.sac.ac.uk/</a>

Livestock/ production animals	<b>Michigan State University, (USA)</b> Animal Behavior and Welfare Teaching Program	<a href="https://www.msu.edu/~zanela/">https://www.msu.edu/~zanela/</a>
Work, Sport, Recreation & on Display	<b>The Open College of Equine Studies (TOCES) (UK)</b> BSc Equine (Behaviour, Welfare & Rehabilitation)	<a href="http://www.equinestudies.co.uk/">http://www.equinestudies.co.uk/</a>
	<b>University of Chester (UK)</b> BSc Honours Degree in Animal Behaviour and Welfare	<a href="http://www.chester.ac.uk/ccsrs/au/natural.html">www.chester.ac.uk/ccsrs/au/natural.html</a>
	<b>University of Natural Resources and Applied Life Sciences (Austria)</b> Bachelor of Equine Sciences	<a href="http://www.boku.ac.at/home.html?&amp;no_cache=1&amp;&amp;L=1">http://www.boku.ac.at/home.html?&amp;no_cache=1&amp;&amp;L=1</a>
Companion animals	<b>Animals and Society</b> University of British Columbia (UBC) (Canada) Animal Welfare Program	<a href="http://www.landfood.ubc.ca/animalwelfare/education/undergrad.htm">http://www.landfood.ubc.ca/animalwelfare/education/undergrad.htm</a>
	<b>Animal Welfare Certificate</b> (Distance Education only) UBC & Thomson Rivers University (TRU) (Canada)	<a href="http://www.landfood.ubc.ca/animalwelfare/education/undergrad.htm">http://www.landfood.ubc.ca/animalwelfare/education/undergrad.htm</a>
	<b>Undergraduate Program in Animal Welfare and Societal Concerns</b> Purdue University School of Veterinary Medicine (USA) Centre for the Human Animal Bond	<a href="http://www.vet.purdue.edu/chab/edu2.htm">http://www.vet.purdue.edu/chab/edu2.htm</a>
All sectors	<b>Course on Animal Welfare for Veterinary Surgeons and others</b> University of Cambridge, Department of Veterinary Medicine	<a href="http://www.vet.cam.ac.uk/awcourse.pdf">www.vet.cam.ac.uk/awcourse.pdf</a>
Companion animals	<b>Introduction to the Human-Animal Bond in Veterinary Medicine: Courses 1 &amp; 2.</b> Washington State University College of Veterinary Medicine On-line education	<a href="http://www.vetmed.wsu.edu/ce/hab/">http://www.vetmed.wsu.edu/ce/hab/</a>
	<b>The Ethics and Values Signature Program (ESVP)</b> <b>The Master of Science in Animals and Public Policy (MAPP)</b> Tufts University (USA) Center for Animals and Public Policy	<a href="http://www.tufts.edu/vet/signature/ethics.html">http://www.tufts.edu/vet/signature/ethics.html</a>
	<b>Bachelor of Applied Science (Animal Management and Welfare)</b> UNITEC (NZ)	<a href="http://www.unitec.ac.nz/?B8C8960B-559A-4F40-9104-7DE137029900">http://www.unitec.ac.nz/?B8C8960B-559A-4F40-9104-7DE137029900</a>
All sectors	<b>Universities Federation of Animal Welfare (UFAW)</b> involves 27 academic institutions, including UBC, University of Edinburgh, Iowa State University, Massey University, Royal Veterinary College and Unitec NZ.	<a href="http://www.ufaw.org.uk/">http://www.ufaw.org.uk/</a>
All sectors	<b>Animal Behavior Graduate Group - Ethics of Animal Use</b> University of California, Davis (USA) Department of Animal Science	<a href="http://biosci2.ucdavis.edu/ggc/anb/programs/curriculum.html">http://biosci2.ucdavis.edu/ggc/anb/programs/curriculum.html</a>

Table 19 continued

AAWS Sector	Program/Course	Website Address
Aquatics	<p><b>European 2-yr Master in Sustainable Aquaculture (BM-SA)</b></p> <p>Provided by a consortium of universities. Norwegian University of Life Sciences, UMB (Norway) as co-ordinator, the Hólar University College (Iceland), the Norwegian School of Veterinary Sciences (Norway), the Swedish University of Agricultural Sciences (Sweden), Szent Istvan University (Hungary), Universidad de Las Palmas de Gran Canaria (Spain), University of Copenhagen (Denmark) and University of Stirling (Scotland).</p>	<p><a href="http://www.external.stir.ac.uk/postgrad/course_info/nat_science/aquacult/aquacult.php">http://www.external.stir.ac.uk/postgrad/course_info/nat_science/aquacult/aquacult.php</a></p>
<p>Animals used in Research &amp; Teaching</p> <p>Livestock/ Production</p> <p>Companion</p>	<p><b>Animal Science courses, including: Rights and Welfare of Animals AND Companion Animal Management.</b></p> <p>Washington State University (USA)</p> <p>College of Agricultural, Human and Natural Resource Sciences, Department of Animal Sciences</p>	<p><a href="http://futurestudents.wsu.edu/academics/fos/study.asp?ID=PREVE">http://futurestudents.wsu.edu/academics/fos/study.asp?ID=PREVE</a></p>
Animals used in Research & Teaching	<p><b>Animal Use On-line training course</b></p> <p>Ohio State University (USA)</p>	<p><a href="http://orpp.osu.edu/iacuc/training/">http://orpp.osu.edu/iacuc/training/</a></p>
All sectors	<p><b>BvetMed; BVetMed (Accelerated); BSc/BvetMed; BSc(Hons) Vet Nursing; Vet Gateway programme; BSc Biovet Sciences (was BSc Vet Sciences); Foundation Vet Nursing;</b></p> <p><b>BSc Vet Pathology</b></p> <p>Royal Veterinary College, University of London (UK)</p>	<p><a href="http://www.rvc.ac.uk/">http://www.rvc.ac.uk/</a></p>
All sectors	<p><b>International Animal Law's (IAL) Animal Law course, part of the Veterinary Masters Degree.</b></p> <p>Massey University Veterinary School (NZ)</p>	<p><a href="http://vet-extramural.massey.ac.nz/paper_law.asp">http://vet-extramural.massey.ac.nz/paper_law.asp</a></p>