Session III-5: Introducing multi-media to the curriculum

Session III-5: Oral presentations

III-5-320

The usage of alternatives at the Norwegian School of Veterinary Science

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In March 2009 the Norwegian Reference Centre for Laboratory Animal Science and Alternatives at the Norwegian School of Veterinary Science opened a multimedia room / training clinic. It contains a large number of alternatives that can be used in the education of the veterinary students and the veterinary nurse students. The room has 4 laptops that are equipped with a number of programs made for teaching anatomy, pathology and physiology. There are also many CDs and DVDs with teaching material in laboratory animal science, ethics, anatomy, handling of laboratory animals, anesthesia, analgesia, surgery, necropsy and more. The room also has a number of models used for training practical clinical techniques. Today the room is being used frequently by the students in both mandatory education and also in their spare time. Some of the alternatives can completely replace animals being used in teaching. In addition, usage of the alternatives gives the student skills and confidence, so that when the student does the procedure on a live animal for the first time they do it faster and better, which leads to better animal welfare.

III-5-659

Teaching surgical techniques in the twenty-first century

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The use of microsurgical techniques is increasing all over the world, necessitating the training of more and more people in microsurgical skills. Traditionally, live animals have been used for this purpose, and in rather large numbers, as it often takes seventy or more attempts for a person to learn the necessary skills. Students are faced with tough problems at the same time, to master the hand-eye co-ordination techniques whilst simultaneously assuring the animal's welfare. On top of that the knowledge on the animals' anatomy is most often disappointing. The result is too often the untimely death of the animal.

The Microsurgical Developments Foundation has a clear policy of reducing, refining or replacing animal use wherever possible. We wanted to apply this admirable policy to the problem described above. Our basic innovative idea was that in the same way that physical models have been used throughout the ages to teach anatomy; it should be possible to build a suitable life-like model for the teaching of anatomy (MD 3-D Anatomical Rat Model), whilst the surgical procedures could be trained using the MD PVC-Rat. Students could separately learn all anatomical structures involved and the different skills needed before moving on to live animal experiments. Several aspects of both models will be discussed, together with the results that our students obtain.

III-5-440

Personalized resources on human and animal biology: Lessons from U.S. veterinary medical education

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The vigorous transition to alternatives occurring within United States veterinary medical education, especially with multimedia approaches, has been spearheaded by the creative leadership of educators developing new resources and teaching methods, a widespread movement with contributions from all veterinary schools. Many previous uses of animals in veterinary teaching have been replaced with alternatives. The explosive growth in subject matter that must be learned by veterinary students, combined with economic pressures, has stimulated these developments. This presentation provides background on the power of web-based instruction for students' personalized curricular access, with delivery of the specific information whenever needed, even in bite-sized pieces, much as students expect to acquire their own personal music collections.

As one example from the University of California, Davis, oral descriptors annotate individual histology slides, providing simple, personalized instruction. The teacher's familiar voice guides the student in looking at complex visual material, with a pointing arrow and zooming into areas of interest, leading the viewer to understand what is seen. Superb resources such as these are available to students whenever needed. Rather than students sitting as passive receptacles in a large classroom lecture, they are given a personal tour at a time of their choosing, with the option of returning for a refresher whenever useful.

Such a concept is available for translation to other learning settings. Building personalized listings of efficacious resources appropriate for the situation, and providing them online, places learners at the forefront in choosing what to learn.

III-5-402

Development of the 3Rs platform website in Korea for exchanging knowledge and sharing examples of best practice to replace laboratory animal use in education

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This year will mark the 250th world anniversary of veterinary education. Veterinary science was introduced into the Korean curriculum in 1906. There are ten veterinary medical schools in Korea. Two new Korean laws legislating animal welfare and the humane use of animals in science came into effect in 2008 and 2009. Both laws, the Animal Protection Law and the Laboratory Animal Law impose the Three Rs principles of replacement, reduction and refinement on procedures using animals and require ethical committee review prior to conducting animal experiments in research, testing and education. The joint project of the Royal Society for the Prevention of Cruelty to Animals, UK and the College of Veterinary Medicine, Konkuk University, Korea has set up systematic procedures to promote awareness of moral and ethical issues based on sound science from 2008 to 2010. Our research discovered that the need for development and implementation of well-proven alternatives to animals in education is clearly recognized by a majority of the veterinary professors and students. At this early stage, alternatives to the use of laboratory animals are often viewed as supplementary educational teaching aids, rather than replacements for animals. For a teacher with a busy teaching schedule and a traditional curriculum already in place, the prospect of adopting new and unfamiliar materials with a language barrier could be daunting. We are undertaking the development of the 3Rs platform website in Korea to provide user friendly alternative teaching resources collaborating with global experts and the Alternatives Research & Development Foundation.

III-5-511

A collaborative multi-language website and database for alternatives in education and training

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The new InterNICHE website under development at www.interniche.org is a content-rich resource designed to facilitate the implementation of humane education and alternatives. Using the open-source Drupal software, the Content Management System (CSM) and Framework (CMF) allows for a development process that is module-based and customisable so as to meet the needs of both developers and end-users. Information and other resources from InterNICHE and from teachers, students, campaigners and others from across the world can be effectively shared through such a collaborative international project and user-friendly system. The site is extensible, so further functionality to support such sharing, and to meet needs as they arise, can be added module by module. The translation functionality facilitates the localisation of information and news resources, and encourages participation and sharing from the diverse community that is involved in curricular transformation. Introductory information is available in over 100 languages, and translations of existing and new text can be uploaded with ease. The role-based access defines which users can view, edit and publish data, thereby better serving all users, including InterNICHE as a network and organisation. The many roles available encourage participation according to chosen degree of input. Various searchable databases such as the Alternatives File from the book "from Guinea Pig to Computer Mouse" (InterNICHE, 2003) provide rich seams of collated information, with database updating and translation opportunities provided through registered access. Management of other InterNICHE resources such as the network of Alternative Loan Systems is also supported. Version control supports management of the evolving information resource base. The site itself is hosted by an ethical communications collective.

III-5-500

Modular delivery of core surgical skills instruction in veterinary medicine

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Based on the results of two recent national surveys conducted by the authors about core surgical skills and proficiencies expected of entry-level veterinarians, an initiative has begun, the goal of which is to create a complete set of interactive core skills trainers in a digital multi-media modular format to be delivered through a centralized e-learning platform. Advantages of these modules include: guided/self-paced skills acquisition in a low stakes on-line format; potential reduction of required live animal experiences since students will have the necessary learning resources to acquire the core skills essential for multi-species surgical practice; inherent flexibility and re-usability of the e-learning format will allow for integration of modules into a variety of curricular plans. Developing teaching formats that maximally leverage faculty teaching resources, while allowing earlier opportunities for students to practice critical skill sets, such as those required to become competent entry-level surgeons, is vital to advancing ethical surgical teaching programs and graduating high quality veterinarians. These trainers will help ensure that learners are able to maximize the increasingly limited number of cadaveric and live-animal hands-on training experiences to their fullest potential. This session will highlight our first skills trainer, "Surgical Instrument Handing and Atraumatic Use." The developmental stages of this trainer and the finished module will be presented as a proof of concept. The course will contain a variety of interactive multimedia materials produced specifically for the course including: mini-lectures with 3D illustrations and demonstrations, interactive activities and assessments, course notes, hands-on laboratory exercises, and a course evaluation.

Session III-5: Poster presentations

III-5-086

The new alternative laboratory for training and teaching

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The new alternative lab (AltLab) was opened in the summer of 2009 thanks to donations from the Norwegian Animal Protection Alliance and the University of Bergen. This has given an opportunity to teach and train students, researchers and animal technicians. The AltLab contain several animal models, multimedia programs and surgical items. In the AltLab, users can learn intubation, blood sampling and different surgery techniques like transplantation of veins and organs, and injections. The AltLab also contains a library for selected books, DVDs and multimedia programs.

III-5-435

Teaching human biology and health in pre-college

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Continuing a historic tradition and following national and state standards for teaching human and animal biology and body systems, elementary and high school science teachers employ anatomical specimens and models in laboratory activities. Students explore the anatomical models or specimens and gain a perspective on their own bodies that can include a growing understanding of health maintenance. These high school classes offer most students their last formal opportunity to consolidate knowledge about their own bodies and health care. High motivation accompanies these activities that include or simulate dissection and even physiological processes. Students gain an opportunity to integrate knowledge concerning the basic biology of the human body and how that relates to specific experiences of family members with various medical conditions.

We provide a convenient guide to free teaching resources on human and animal anatomy that have been peer-reviewed by science teachers for use in intermediate and secondary schools. Point-and-click access leads to free, refereed web-based resources for teaching about human body systems. Sites were selected from focus group reviews by teachers. A related webquest presents activities and teacher guides that make use of the websites, all available at: http://www.vetmed.ucdavis.edu/Animal_Alternatives/goanatomy.html

Complementary to these web resources are models of human and body systems and organs available free from The Science Bank at Animalearn through an easy-to-use loan program. The models and manikins, plus additional CD-ROMS and software, are rated for educational level and are loaned at no cost by Animalearn.

III-5-505

The impact of decentralised alternatives libraries on campaigning for replacement

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Libraries of alternatives offer hands-on experience of non-animal teaching and training tools. They enable borrowers to assess products and become familiarised with the range of available alternatives. InterNICHE established the first international alternatives library, known as the Alternatives Loan System, in 2002. It comprises a wide range of software, models, manikins and training devices chosen for their pedagogical value and potential for replacement. The alternatives cover all disciplines within medicine, veterinary medicine and biology. Borrowers range from teachers through ethics committees to campaigners. The library makes alternatives more accessible and provides a resource for conferences, exhibitions, outreach tours and training. The loans have facilitated implementation, as demonstrated by subsequent purchase and use of alternatives, and replacement of dissections and animal experiments. The positive impact of the resource and the growth and capacity of the InterNICHE network led to the establishment of further libraries in Russia, Ukraine, India, Mexico, Peru, Kenya and South Africa. Each resource has brought the benefits of the international library to the country, with further advantages. Being localised, it is more practical and economic, facilitating significantly increased access. Being managed by the InterNICHE National Contact or Partner, it empowers through new responsibilities; and with an important resource to offer, it strengthens their position nationally. Reflecting further decentralisation and provision of localised resources, each InterNICHE National Contact and Partner across the world also now has a set of 30 software alternatives. This equips even more campaigners with small but valuable software libraries that complement the Alternative Loan Systems.

III-5-506

Alternatives seminars and multimedia exhibitions: Global outreach and support for humane education initiatives

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An increasing number of seminars on humane education and alternatives to dissection and animal experiments have been organised by InterNICHE and its partners across the world. In combination with oral presentations and workshops, multimedia exhibitions with demonstrations of alternatives from across the disciplines comprise an essential part of the seminars. The multimedia exhibitions have also played a contributory role at other events. This paper details major events by region or country (Latin America, Europe, Africa, Middle East, India, China); by nature (type of outreach, degree of training); and by focus (faculty and discipline, participants). It situates each event within the context of local, national and international humane education initiatives and the growing movement for curricular change.

Session III-6: Training animal-based scientists

Session III-6: Poster presentations

III-6-046

Refinement in practical works in FELASA accredited course at ENVT

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The FELASA training course 011/05, organized at ENVT for numerous years, was accredited on 14 February 2006 as C level. This course entitled "Use and care of laboratory animals", i.e. "Utilisation et Protection des Animaux de Laboratoire" (UPAL) is accredited as level I in the French regulation. Based on the FELASA annual reports, the main features characterising this course will be summarized and analyzed

UPAL organises two annual sessions, in March and September. From 2006 to 2009, a total of 273 students attended the courses, with an equal repartition between the two sessions (135 and 138 students in March and September, respectively). Continuing education candidates represent the major part of students, comprising researchers from public and from private institutes. The staff included 17 teachers, half coming from private or public institutes (Sanofi-Aventis, Galderma, Pierre Fabre, Charles River, Janvier, Safe, INSERM, INRA); the other half from Veterinary Schools (Toulouse and Alfort). Electronic evaluation forms, asking general questions but also rating each presentation on the pertinence of the subject and on the quality of the presentation allowed fine analysis of the feedback of each course.

For wet-lab practice, students were divided into two sub-groups (composed of 15 to 20 students each). Over the years 2006-2009, we have improved the practical works in order to

- Reduce the number of animals;
- Refine their use, by switching from injectable to inhalation anesthesia and morphine analgesia;
- Re-use of animals for other pedagogic or scientific purposes instead of using another set of animals.

III-6-421

las-online.eu – a trilingual approach to refinement through laboratory animal science (LAS) education

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The welfare of animals used for research purposes depends on the professional competence of all personnel involved. High quality education in LAS lays the foundation that this competence is built upon as such courses that not only teach good scientific practice but help create awareness for the needs and the welfare of laboratory animals. Teaching in itself can be regarded as refinement as it ensures that the principles of the 3Rs are acted upon. However, no definite regulations regarding training programs are in place. Harmonizing LAS education would contribute to the welfare of animals by relating a common standardized set of minimum requirements, such as stated in the FELASA Guidelines, Annex V of the EU Directive 2010/63/EU or "The Guide". Language barriers might hamper the creation of such programs. A multilingual basic curriculum could help to further the harmonization process. Here we report on a trilingual online platform (EN/FR/DE) for teaching laboratory animal science (las-online.eu). Topics are based on the FELASA category B guidelines. Multimedia content, such as videos, animations and pictures help to prepare and review practical training, such as the zoom in section about rodent anatomy. Teaching content from a variety of sources can be easily imported and made available to the LAS community. The platforms' availability in different languages and the integration of other countries' legal requirements pertaining to animal research make it accessible to a broader user group. Training as a means of refinement may not reduce the number of animals but directly impacts the animals' wellbeing.