

Working  
to make  
alternative  
tracks the  
status quo

# ALTERNATIVES

## IN VETERINARY MEDICAL EDUCATION



ISSUE 8, 1998

Association of Veterinarians for Animal Rights

# The Future of Biology

One Student's Innovative Approach

Russell Benford is a wildlife ecology/zoology student at Arizona State University who has addressed his ethical concerns in a way that will help not just himself, but future generations of students and nonhuman animals. In the following interview, Russ shares his plans to rewrite the General Biology curriculum at ASU to both improve the quality of education and to "write out" invasive nonhuman animal laboratories altogether.



**AVAR:** What got you interested in rewriting the curriculum?

**BENFORD:** We had wrestled with the "student's right to not dissect" issue for a long time at ASU. The course we're revising actually used more animals invasively than any other course in the department. While many professors offered alternative labs to conscientious objectors, some hesitated, citing the educational value of "hands-on experience." Designing and using a noninvasive curriculum seems to be a way to accommodate students' right of conscience without interfering with teachers' academic freedom. Our current curriculum is ten years old, and recent advances in technology and educational theory give us the resources to teach biology more effectively than we could a decade ago.

Our intent is to teach the fundamentals of biology and the scientific method to as large and diverse a group of students as we can. We also want to involve students in the future of biology. We'll ask them to research and discuss recent advancements and trends in the life sciences, including (but not limited to) the trend toward the more humane and appropriate use of animals.

Our goals are:

To provide *interactive* labs that require students to use critical analysis skills and perform experiments using sound scientific methodology. We are designing the labs with an "inquiry-based" approach, focusing more on thinking and analytical skills and less on technical details, which can be learned later. Effective thinking skills are more valuable to students at this level of education.

To present concepts and material *comparatively*, analyzing similarities and differences in plants and animals. We will focus on broad biological concepts, like "What is the value of biodiversity?", "How do plants and animals utilize energy?", and "Why do plants and

animals circulate fluids?" We want to convey an understanding of how living systems and organisms work.

To design labs so they are *noninvasive* to animals. The overall number and types of animals students will be exposed to will actually increase while the negative impact students will have on animals will dramatically decrease. Students will study wild animals in their natural habitats. For example, in a behavior lab, students might study how the vigilance of feeding birds correlates with the tendency of their species to congregate in flocks.

**AVAR:** What was your first step?

**BENFORD:** I initially approached Dr. Jeffrey Hazel, a professor and

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animal physiologist in the Biology Department. He's had several students approach him over the years, requesting nonanimal labs, but he's never been quite satisfied with the quality of the alternatives he could offer them. I chose to approach Dr. Hazel because he was supportive of my choice to not dissect in his class, and he was committed to finding me alternatives of equal work and educational value. He was very willing to address this issue and work to improve the overall curriculum.

**AVAR:** Did you encounter support or resistance from administration, faculty, or students?

**BENFORD:** Since we've started this project, I've gotten nothing but positive feedback from the administration, faculty, and students. It's very encouraging; I know we're headed in the right direction.

The only resistance I experienced was before we had the idea to revise the curriculum. Many teachers are, understandably, protective of their academic freedom. Some view requirements that students be offered alternative labs as infringements on that freedom. Designing and using a good noninvasive curriculum is a positive way to circumvent that issue.

**AVAR:** What have you accomplished so far?

**BENFORD:** We've established our scientific and pedagogic goals, and we have a good idea of what we'd like to do in each lab. Now we're starting to work on the technical and logistical details of each individual lab.

We're starting with Internal Transport, a lab that investigates fluid movement in

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animals and plants. It was previously our most invasive lab, requiring students to vivisection frogs and observe the effect of various chemical treatments on the circulatory system. The revised lab will investigate the physics of fluid movement in tubes. Students will use their knowledge of pressure and osmotic gradients, muscle activity, transpiration, and capillary action to make and test

hypotheses on fluid movement in plant and animal circulatory systems. Students will also investigate why multicellular organisms need to circulate fluids for survival.

**AVAR:** What do you plan to accomplish in the future?

**BENFORD:** We'll be working on all labs as separate modules, bringing them off the drawing board and testing them in the classroom over the next year or so. We are developing Native Ecosystems, Genetics and Evolution, Reproduction and Behavior, Growth and Development, Energy Production and Use, and Internal Transport labs.

When we're finished designing the labs, we hope to find a way to gauge the effectiveness of our approach. We'll probably use student surveys and some kind of objective test to measure our effectiveness.

**AVAR:** Do you have suggestions to others in your position?

**BENFORD:** I encourage students and teachers at all levels of education to develop their own progressive labs or to expand on what we're doing here. Science and education always need to grow and improve. There are better ways to teach biology out there; it's our generation's responsibility to find them.

*Russ welcomes your input and can be contacted at: [benford@asu.edu](mailto:benford@asu.edu)*

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**AVAR Offers Funding to Pursue Alternatives in Veterinary Education**  
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The AVAR is offering funding for the development of an alternative classroom laboratory, model, or computer program that could replace nonhuman animals in traditional veterinary training exercises at veterinary medical schools. Two awards of \$2,500 each will be made to veterinary medical students or faculty of veterinary medical schools to pursue more ethical means of teaching veterinary education.

Funding for alternatives in veterinary education was provided by the AVAR last year, both awards going toward the development of computer-based alternative programs. One of the awards

went to a faculty member in the Department of Veterinary Clinical Sciences at Washington State University for work on an anesthesiology computer laboratory (see Accent on an Alternative). The other went to two veterinary medical students at the University of California at Davis. The students developed a computer program to replace the traditional first-year anatomy practical exams, which currently use dozens of animal carcasses each quarter.

An alternative is defined as an educational exercise which replaces one that harms or kills nonhuman animals

with one that teaches the same or similar lesson without inflicting harm or death. In some cases, an alternative may involve direct substitution. In other cases, the entire approach to teaching a lesson might be changed. In still other cases, an alternative may involve nonhuman animals, but the use is either beneficial to the individual or does not harm her or him.

*Interested individuals can contact the AVAR for an application form. The deadline for applications is May 15, 1998. Projects must be completed by December 1998.*