CHAPTER VIII

ANIMALS IN EDUCATION

A. INTRODUCTION

In the current debate over animal research, both animal protection groups and research advocates appear to have decided that education of the public must be a key element in their overall strategy to win lasting support, especially education of school children and university students. A second assumption, by the research advocacy groups, has been that, if only the general public were more "science literate," the public would be much more accepting of the use of animals in research and much less likely to believe the "propaganda" disseminated by animal protection organizations.

For example, one research advocacy group points out with alarm that, in a study of science achievement in seventeen countries (completed in the late 1980s), the U.S. ranked last in a survey of student knowledge in basic biology (Massachusetts Society for Medical Research, 1992). (It should be noted that the survey methodology has been severely criticized because, in the U.S., all school-aged children are given the opportunity to attend school while this is not necessarily the case in some of the other countries included in the study.) They go on to state that the proliferation and growing appeal of animal rights organizations to students is a manifestation of this lack of science knowledge. Other groups have expressed a related concern that the increasing number of protests over dissection and animal research will lead (or have already led) to a decline in the biology literacy of the public.

Sometimes, it is suggested in support of this claim that there has been a reduction in the number of students choosing biological science majors during the
1970s and 1980s when the animal protection movement grew dramatically in size and political clout. However, a survey conducted by the Graduate School of Education at UCLA produced data revealing that the percentage of college freshmen electing biological sciences majors has consistently been rather low and has varied only slightly over the years. There appears to have been an increase in biology in the 1970s (at about the time that animal activism began to increase but no causal connection is being suggested), and then interest declined in the 1980s (see Table 8-1). In 1966, 3.7% of college freshman chose biology majors, exactly the same percentage as in 1990 (Dey, Astin and Korn, 1991).

| Table 8-1 Percentage of American college freshman planning majors in: |
|-----------------|-----------------|-----------------|
| Biology         | Health Sciences | Business Professions |
| 1967-69         | 3.6%            | 5.3%            | 16.3%           |
| 1970-72         | 3.6%            | 8.9%            | 16.0%           |
| 1973-75         | 6.6%            | 8.4%            | 18.2%           |
| 1976-78         | 5.2%            | 8.8%            | 22.3%           |
| 1979-81         | 3.8%            | 9.0%            | 23.9%           |
| 1982-84         | 3.9%            | 9.8%            | 25.0%           |
| 1985-87         | 3.7%            | 8.0%            | 27.0%           |
| 1988-90         | 3.7%            | 9.3%            | 23.7%           |

(Dey, Astin and Korn, 1991)

**B. ATTITUDES TO ANIMALS**

There have been a number of opinion polls of public attitudes to animal research but only a few attempts at a detailed and scholarly assessment of public opinion. Takooshian (1988), after studying the results of two 1985 polls that focused on adult attitudes toward biomedical research (one done by the Associated Press, the other by the Foundation for Biomedical Research), completed his own study to assess attitudes toward animal research and animal welfare. Pilot surveys found
of research. In the detailed study, Takooshian (1988) reported that:

1) there was no discernible difference between the public and the scientific community's attitude toward animal research (vivisection was the term used in the survey) — both had equally mixed feelings; and

2) one's attitude towards animal research is correlated more with one's attitude toward animals than with one's faith in science. Those who were concerned about animals were more likely to be concerned about their use in research, regardless of their support for science and scientific research.

His data also indicated that people have consistent attitudes toward animals and that these attitudes probably develop fairly early in life.

Studies on attitudes toward wild animals conducted by Stephen Kellert and his associates in the 1970s and 1980s are also relevant to questions about animal use in education. His studies revealed that knowledge about animals varied significantly with age (for children), gender, ethnicity, and relative urban or rural nature of the person's residence (Kellert 1988).

Among children, knowledge scale differences between eighth and eleventh graders were greatest between the fifth and eighth grades and then leveled off between eighth and eleventh grades. Female children had lower knowledge scores than males and urban children had lower knowledge scores than suburban or rural children (who had the highest scores).

Kellert (1985) also found major differences in attitudes toward animals among children of different ages. He designated three stages in attitude develop-
ment:

1) six to nine years when there are major changes in affective and emotional relationships with animals;
2) ten to thirteen years when there are major changes in cognitive, factual understanding and knowledge of animals; and
3) thirteen to sixteen years when there is a dramatic broadening of ethical concerns and a development of ecological and environmental appreciation.

He reported that children at the youngest ages had the least concern for animal well-being and the most exploitative attitudes toward animals of the three groups. They also exhibited the least interest in animals. As children develop, they demonstrate a decrease in negative, utilitarianistic and dominionistic attitudes. (Baenninger [1991] suggests that kindness and empathy toward animals is learned, while violence, aggression and/or cruelty are the natural, unlearned responses for children.)

Kellert's studies also indicated the considerable diversity (and potential for public conflict) among adult attitudes toward animals. There was a lack of interest in and affection for animals among lesser-educated adults; significant differences in perceptions of animals and the natural world among socioeconomic groups; regional differences in attitudes (western U.S. respondents exhibited the strongest interest and concern while the southern respondents manifested the least); large attitude variations among ethnic groups; and an extremely limited knowledge of animals by the American public as a whole.

In addition, a study by Kellert and Berry (1987) indicate significant gender differences. Women generally expressed substantially greater affection for individual animals, were more concerned about animal exploitation, were more fearful of animals and were far
less likely to value animals for their practical attributes. Kellert’s data also revealed that, among adults, there is strong affection for pets and large, attractive wild animals and that a substantial minority of adults were concerned about presumed maltreatment associated with various uses of animals. In addition, his data (collected mainly in the late 1970s) suggest that wildlife values were going through a period of confusion and transition. Kellert and Westervelt (1982) report that, from 1900 to 1975, the frequency of utilitarian attitudes in society declined, especially in the 1960s and 1970s, while the frequency of humanitarian attitudes increased.

C. HOW DOES EDUCATION AFFECT ATTITUDES?

Both animal protection organizations and research-defense groups have targeted their education programs toward pupils in elementary and secondary schools with relatively little attention being paid to college level students. Hundreds of thousands of dollars have been spent developing curricula and educational materials of varying sophistication that provide many “facts” about animal research, sometimes combined with values/ethics discussion elements. The aim, either explicit or implicit, of nearly all the curricula is to convince the student of the “correctness” of a particular view or argument. There has been very little evaluation of these curricula (although Ascione [1992] reported that a humane education curriculum developed by the National Association for the Advancement of Humane and Environmental Education did enhance caring attitudes and empathy towards animals in first-through fifth-grade children).

The lack of studies of how these curricula affect student attitudes and behavior is a serious problem. It means that we really do not know what affects attitudes and values among students. One unpublished study of student knowledge and attitudes toward marine mammals and how they are affected by a new curriculum was reported by John Lien of Memorial University in
Newfoundland at a workshop in 1993 (Lien, 1993). His data suggest that information content and attitude formation are relatively independent of each other and that the belief that merely presenting information will modify attitudes or develop new ones may be wrong.

Lien tested students in Newfoundland and other parts of Canada for knowledge of and attitudes to marine mammals before and after exposure to a curriculum on marine mammals that he had developed. Newfoundland children had lower knowledge scores and more utilitarian attitudes than children in cities such as Toronto. After exposure to the curriculum (which contained no elements designed specifically to discuss values), knowledge scores of all children had increased to the same level and the attitudes toward marine mammals had also changed. However, the original attitudes were simply reinforced. In other words, students who had humanitarian/protective attitudes became more protective while those who had utilitarian attitudes became more utilitarian - the curriculum had increased the polarization of values.

Lien suggests that “positive” attitude changes (in the direction the designer intended) in response to education programs do not appear to result from the materials themselves, but rather from the educator’s or spokesperson’s own attitude and prestige among those being taught. This is an important suggestion and raises questions about the use of authority figures (movie stars, high profile doctors) as spokespersons for particular value and attitude messages aimed at both students and the general public.

D. DISSECTION

In the secondary schools of America, the practice of dissection has become the focus of considerable debate and argument. In fact, dissection has replaced student use of animals in science projects as the “hot” issue of the moment. Students have sued schools over
JENNIFER GRAHAM AND DISSECTION

In the 1960s and 1970s, the battle over the use of animals by school children swirled around the annual science fair. Westinghouse, sponsors of one set of science fairs, bowed to public pressure and excluded projects that involved animals in invasive or aversive situations. The International Science and Engineering Fair organizers, however, only banned actual animals from the exhibits and tightened up the published rules for the use of animals. Then, the National Association of Biology Teachers published guidelines for animal use in the classroom that discouraged invasive use of animals and the Institute for Laboratory Animal Resources (of the National Research Council) endorsed the new guidelines. Although the question of animal use in science projects has surfaced from time to time since then, there have been no sustained campaigns or high-profile incidents.

Then in 1987, the Jennifer Graham case switched attention to the issue of dissection as a teaching tool. Jennifer Graham was a sophomore in a California high school when, citing her strong moral objections to killing animals, she refused to dissect a dead frog as part of her biology course. The teacher and school administration refused to allow her to do an alternative exercise that did not involve dissecting a dead animal and said that her grade would be affected if she did not complete the frog dissection. Jennifer received a D for the course and she took the school to court.

Eventually she won her case and it became the stimulus for a number of state laws (in California, Florida, Maine, New York and Pennsylvania) that guarantee students the right to "choose" whether or not to do animal projects. In addition, Pat Graham, Jennifer's mother, became the co-ordinator of a national "hot-line" run by the Animal Legal Defense Fund that offers advice to callers about their rights to opt out of animal exercises. As a final footnote, Apple Computer used Jennifer in an advertisement to promote their computers but pulled it very quickly when they became aware of the hornet's nest that they had disturbed!

The Jennifer Graham case propelled the dissection issue into the forefront of the debate over the use of animals in education. People for the Ethical Treatment of Animals (PETA) began a nationwide campaign to eliminate dissection (including setting up an ABC TV exposé of Carolina Biological's procedures for obtaining and embalming animals for the dissection market) and research advocates began to fight back as they became alarmed at the influence that the animal protection literature and message might have (see Leepson, 1991).
the right to opt out of dissection and use alternative methods, and several states have passed or are considering legislation that grants students the right to opt out of dissection and choose alternative projects.

The National Association of Biology Teachers (NABT) has struggled for a decade to come up with a dissection policy that will satisfy everyone. Since 1981, they have voted on three different policies on the subject and members are still debating the current version. There are no reliable surveys of the attitudes of biology teachers, students, parents or school administration, let alone studies of the skills and knowledge of those students who have done dissection compared to those who have not. However, the NABT did a preliminary survey of its members (which produced a response from less than 10% of the members) that indicated that members are strongly divided on the issue. There is also anecdotal evidence that the animal rights debate has had little effect on the decision whether or not to offer dissection in the classroom. Most of those who know the high school biology classroom indicate that cost, lack of time, and lack of interest among teachers are the primary reasons why live and dead animal exercises are dropped from or not offered in biology classrooms.

"It is my belief that scientists need to vigorously and positively promote the value of dissection, as well as other human uses of animals. First, I do not believe that there is really any substitute for the multisensory learning which takes place in dissection. Second, I sense an anti-science, anti-rationalist undercurrent beneath much of the animal rights rhetoric, which I believe, if allowed to grow, will undermine support for every kind of scientific research."

"A large number of students have ethical objections to dissection ... it's hard enough as it is to get students to think critically about ethical issues ... it would be tragic to have educators 'correct' student ethical beliefs (and insist that dissection is the only alternative)."

(Differing views on dissection - two responses to NABT Survey)  
(McWethy, 1993)

There are no studies on the overall effectiveness of animal rights or research-advocacy curricula or at different age levels. In the U.K., Lock and Millet (1991) report that British students have negative attitudes toward dissection and generally do not understand what they are supposed to learn. No recent data address student attitudes to animal use but one preliminary survey suggests that students who have been involved in animal laboratories in high school or college are more
likely to be opposed to animal research than students not exposed to such laboratories (Broida et al, 1993). This apparently contradictory finding might have a logical explanation. Some students undoubtedly are interested in dissection but many (as reported by Lock and Millet, 1991) are not. Those who find dissection unpleasant may well take strong negative feelings away from the laboratory. If this speculation is correct, then biology teachers would do well to allow students a choice rather than forcing them to endure a laboratory they find distasteful.

Concern over animal use in educational exercises has extended into the professional schools. A growing number of veterinary schools now offer the students the option of operating only on client-owned or shelter animals that are to be put up for adoption rather than laboratory animals that are purchased specifically for surgery education (Pavletic et al, 1994). Recently, the Association of American Medical Colleges surveyed all 126 medical schools and found that 34 (27%) of the 126 schools reported no current use of live animals in their regular medical curriculum (Kelly, 1991). Of the 92 schools that did use live animals, 61 offered alternative exercises for students who object to direct participation. In other words, 75% of the medical schools permit students to graduate if they have experienced no surgery or other laboratory exercises on living animals.

Kelly (1991) also reported that less than 10% of the students who had the opportunity to opt out actually chose the alternative exercises and that, in 22 schools, refusal to attend live animal sessions affects an individual's chances for admission or promotion through the school's program. Only four of the schools reporting no use of animals stated that pressure from students or animal rights activists influenced their thinking.

E. POLICY ISSUES

The main problem in relation to the use of live
and dead animals in school and college classrooms is that there are very few data on the extent and manner of animal use in classrooms, on the educational effectiveness of such use and on student attitudes toward animal exercises. Clearly, research on these questions is necessary if we are to avoid the current debate where strong opinion is usually unsupported by anything more than anecdotes.

However, what little data are available indicate that heavy-handed mandates that either forbid or demand student use of or interaction with animals are unlikely to be particularly productive. Where animals are used, students should be encouraged to discuss their feelings and values. Their values can certainly be challenged in an appropriate discussion but should not be denigrated or dismissed. It is generally accepted that students learn most efficiently when they play a role in their own learning as opposed to being treated as passive receptacles into which facts and values are poured.