Animal Dissection: Effective Instructional Aid Than Alternative Methods.

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ABSTRACT: In the National Conference on Animal Dissection -Need and Alternatives, held on 3rd and 4th February, 2017 teachers, students and research scholar concluded that Animal dissection in the most effective and constructive teaching aid than alternatives. Use of animals for various like purposes like food, transportation, pets, sports, recreation and companionship is as old as the human beings itself. Using animals for the purpose of research is one of the extended uses. Various animals like mice, rats, hamsters, rabbits, fishes, zebra fish, trout, birds mainly chicken, guinea pigs, amphibian's xenopus frogs etc. are being used in research for long time. During testing and toxicological screenings which are useful in development of new treatments for infectious and non-infectious diseases is the main purpose of such studies. Animals also serve as a tool to understand effects of medical procedures and surgical experiments. Moreover, they are used to obtain products like vaccines, antibiotics etc. Which are used in diagnostics as well as treatments. Dissection is carried out with an objective of imparting knowledge on the anatomy and physiology of the species being dissected including understanding the relationship between animals of different species, griping the concept of individual variation understanding the relationship of structure to function, gaining a right into the relationship between an organism and its environment and teaching respect for life. Dissection helps students in the acquisition of biological knowledge and it provides a concrete, non-abstract personal experience. moreover, practical work and experimentation is at the heart of science. Dissection enables the students to gain a hands-on experience of the species.

Key Words: Effective instructional dissection methods.

INTRODUCTION :-
Animal dissection as an aspect of Zoology curriculum is about ninety-year-old. Over the years there has been a tremendous expansion of knowledge content of Zoology in the light of emergence of newer branches such as biodiversity, biochemistry, biophysics, molecular biology, etc. Thus, in the contemporary scenario, there is over-emphasis of learning of anatomy as laboratory exercises. It has been felt that the curriculum must be revamped to accommodate the latest developments where in there is pertinent need to underplay animal dissections. Further, when there were fewer higher learning institutions and fewer students, fewer animals were used in dissections. Now the number of such institutions has become manifold and more than a million students take to programs requiring animals for dissections. Most of these animals are caught from the wild, and their indiscriminate removal from the natural habitats disrupts the biodiversity and ecological balance. Indeed, dissection is not a global phenomenon: it is no longer practiced in primary and secondary schools in The Netherlands, Switzerland, Argentina, Slovak Republic, and Israel, and is rare in schools in Sweden, Germany, and England (Balcombe, 2001; Waltzman, 1999). Although habitat loss, pollution, and climate change are the primary causes for the decline of the population of these species, demand for dissection specimens increases pressure on this threatened species. Research regarding teachers’ use of dissection alternatives is sparse, making it difficult to gain a clear picture of the popularity of alternatives. The limited research to date suggests teachers mainly use alternatives as supplements, rather than substitutes, to conventional dissection. This is demonstrated in King et al.’s study (2004), where teachers reported using charts, videos, 3D models, CD-ROMs, and other computer-based resources, but only 31.4% agreed that alternatives were as good as dissection for teaching anatomy and/or physiology. Furthermore, by drawing distinction between dissection and “humane science education practices” (Oakley, 2012a, p. 253), Oakley appears to imply that all dissection is inherently inhumane, and she concludes that “school-based dissections are not justified the practice of dissection in education “needs to be critically
Every year, millions of animals from India (PCI) to completely stop dissection and replace harmful animal use or complement humane education. Humane education in the Life Sciences is increasing in popularity and life sciences courses (UGC, 2011). Following an extensive campaign by PETA India, scientists and other concerned people, the Ministry of Environment and Forests (MoEF) has issued guidelines to the Medical Council of India (MCI) and Pharmacy Council of India (PCI) to completely stop dissection and experimentation on animals for the training of both undergraduate and post-graduate students and to use non-animal methods of teaching (PETA, 2012). Ministry of Environment and Forests agreed with PETA that animal experiments should be stopped when alternatives are available, according to section 17(d) of the Prevention of Cruelty to Animals Act, 1960 of India.

**DISCUSSION:**

The 3R concept originally was introduced with respect to research activity, but the idea snowballed, as educators, animal welfare groups, scientists, conservationists, and academics realized the potential of alternatives in education and teaching. Animal dissection is a controversial pedagogical practice. In educational contexts it raises ethical and environmental concerns regarding the killing of animals, the ignoring of animal welfare standards, the weakening of respect for life, and the “turn-off” factor for some students (Balcombe, 2000; Bishop & Nolen, 2001; Hug, 2008; Jukes & Chiuia, 2003; Marr, 2001; Oakley, 2009; Sapontzis, 1995). But the majority continue to strongly favor traditional dissection and see it as vital to biology education. Further, although teachers expressed concerns with dissection, their concerns were overshadowed by an overall dissatisfaction with alternatives. Historically, plenty of animals were easily available for a lesser number of students, but with the ever-increasing number of schools and colleges, the student population has swollen while animal numbers have declined— the situation has reversed itself (Akbarsha, 2007).

Teachers cited a range of animals and animal parts dissected in class. The specimens cited, and the number of teachers who reported using them for classroom dissections, were as follows: fetal pigs, Rat parts (e.g., hearts, kidneys, lungs, brains, uteri, eyes, and other “plucks, frogs, worms, sheep parts, pig parts, grasshoppers, crayfish, dogfish sharks, starfish, chicken part, pigeons, mice, snakes, minks, mudpuppies, squid, and many others cited a single time. The vast majority of teachers who conducted dissections reported purchasing the animals and parts from biological supply companies (98.6%), although some also reported obtaining them from supermarkets (26.4%), slaughterhouses (22.2%), and breeders and dealers (2.1%). One teacher reported using road kill and another said she obtained animal donations from a supplier.

India has one of the most comprehensive animal protection laws in the world. Detailed codes of conduct govern the use and treatment of animals, both domestic and “wild.” The Constitution of India, section 51 A(g) demands from the citizens as their fundamental duty to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for all living creatures.

The Wildlife (Protection) Act, 1972, provides legal protection to all species included under various schedules, i.e., schedule I to schedule VI. Some of the commonly used animals in dissection, such as sharks and rays (Elasmobranchii), Bonnet macaque (Macaca radiata), Rhesus macaque (Macaca mulata), and freshwater frogs (Rana spp.) are protected under these schedules. The ongoing use of animals for dissection/ vivisection in education in India is in violation of the legal provisions (Vasudevan and Surpriaya, 2011).

Tentative, in the present context, are defined as educational aids or teaching approaches that replace harmful animal use or complement humane education. Humane education in the Life Sciences is progressive education for which the teaching objectives are met using humane, alternative methods where
animals are free from harm and students have freedom of conscience in an education that encourages holistic perception and a respect for life (Jukes and Chiuria, 2003). In their book, “The Principles of Humane Experimental Technique,” Russell and Burch (1959) defined the Replacement alternatives as methods that permit a given purpose to be achieved without conducting experiments or other scientific procedures on animals. The 3R concept has evolved today as “the science of alternatives,” making tremendous changes in laboratory techniques across the world in knowledge; only humane science can be good science. The use of non-animal methods in experimentation is integral to credible research.

The models are used to study the anatomy and to learn animal handling without animal stress. The three-dimensional platinated animal models (Plastination is a chemical process that transforms the tissues of a dead animal into plastic) are available. This alternative tool is helpful in teaching laboratory exercises in pharmacy and medicine. Manikins have been employed in veterinary education as well. Cadavers are used as alternative educational tools in veterinary colleges to facilitate learning of animal anatomy and to fine-tune surgical skills, especially for novice veterinary students (Tefera, 2011), as many teachers no doubt do, that the goals of laboratory activities involving dissection often include development of students’ skills and techniques that are important for participating in science programs and careers. It seems likely that they may have considered the ethics and found dissection is the best method for achieving the objectives and intended outcomes of their curricula.

METHODS:
Teachers play an important role in framing the courses and syllabi, and the fate of hundreds of animals hangs on them. There was a time when teachers relied on and preferred animal dissection for the purpose of knowledge dissemination, rebuffing the latest technologies. This could be attributed to an unwillingness to adopt the modern technology or to their lack of awareness/understanding about it. However, effective campaigns, relentless efforts by the welfare organizations, ethical issues, budgetary concerns, and innovative technologies have made an impact. The attitude of teachers has changed or is changing, and they have come forward and proposed substituting the use of computer simulations and multimedia presentations in place of the conventional dissections. Today, the Zoology/Life Science teachers are experiencing an ethical crisis over animal dissections and experiments (Chitralekha, 2009).

BENEFITS OF ANIMAL DISSECTION:
- Pedagogical: solidifies student knowledge of structure, function, placement, and interconnections of organs and systems; reinforces concepts covered in class/curricular materials; provides the most authentic/memorable/“best” way to learn about anatomy and physiology.
- Realism: conveys reality and complexity; demonstrates similarities and differences between organisms (including those of the same species); allows for comparisons to the human body; “3D model” (i.e., actual animal) looks completely different than diagrams.
- Experiential: provides hands-on learning; allows students to develop manual dexterity and experience with equipment, lab safety skills.
- Student engagement/enjoyment: dissection is an exciting, one-of-a-kind experience that interests students and promotes desire for further studies in biology.
- Ethics and respect: an opportunity for students to develop respect and admiration for life; loss represented by the death of an animal can teach about ethics.
- Future learning: supports the development of students considering further biological or medical studies; prepares students for future dissections.
- To health and safety.
- About chemicals and proper ventilation in the rooms was also expressed:
  - exposure to the formalin solution
  - deliberately mutilate, abuse, or otherwise disrespect the animals’
  - kids feeling that it is okay to hurt or ‘dissect’ other animals that they come across... frog in ponds, etc.
- Cost and declining budgets slaughterhouse “plucks having students pay for the animal they were going to dissect.

CONCLUSION:
Today, many countries, including Argentina, Switzerland, Norway, the Netherlands, and Denmark, have enacted legislation to prohibit dissection below the university level, and several other countries do not require it. Being a country with a human population of more than a billion, India, too, had witnessed many
such incidences, and some of the State Education Boards and Universities have acted to shed, partially, syllabi involving animal use in Life Sciences programs (Salunkhe, 2009). The Ministry of Environment and Forests (Government of India), New Delhi also asked the UGC to explore the possibility of ending the practice of dissecting animals in laboratories. These initiatives taken by the UGC boosted other organizations, such as the Pharmacy Council of India, which sent letters to all Pharmacy institutions to use computer simulations as an alternative to use of animals. Rather slowly but steadily, the revamping of traditional animal-based programs took place. These laws, regulations, guidelines, and notifications require the educators to use non-invasive alternative methods to replace the killing of animals in the laboratories.

Dissection is an old-fashioned teaching and learning method that has worn out over the years and is of negligible use in the modern education system. With the advent of modern technology educators should frame curricula that expose students to the acquisition of knowledge through observation rather than through the archaic method of dissecting animals (Sathyanarayana, 2009). Laboratory curricula should be designed to develop the student’s sense of responsibility towards animal welfare, as well as an appreciation of and respect for life.

The use of animals in science is acceptable ONLY if it promises to contribute to understanding of fundamental biological principles, or to the development of knowledge that can reasonably be expected to benefit humans, animals or the environment. At the same time, NABT urges teachers to be aware that alternatives to dissection have their limitations. NABT supports the use of these materials as adjuncts to the educational process but not as exclusive replacements for the use of actual organisms. (NABT, 2008).

REFERENCES: