Alternative to Dissection are a more effective real instructional aid than traditional dissection.

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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 Alternatives were more contractive productive and effectual than traditional dissection methods.

Animal Dissection has increased magnified a large scale causing andiscriminatine disruption of the natural habitat and a threat to biodiversity and ecological environment. Threatened species are becoming extinct.

Teaching methods that have animals influence the students negatively and thereby they may develop a callous attitude to both animals and humans. Thus, dissections have a negative Psychological impact a student. As citizen of India, it is our duty to at side by the constitution and its articles which states it is duty of every citizen to protect the natural environment including forests, lakes and wildlife.

Prevention of cruelty to Animals Act 1960 required that animal dissection should be avoided as for as possible and alternatives like books, models, filum ,3D images, and the like should serve as teaching devices.

Therefore, all the Alternative involved in dissection of animals should adhere to the "Ethics" issue which teachers' human beings to be compassionate towards animals. There has been a proliferations of new learning materials that can substitute dissection, that include compacta-based programs aminated sections of films or artists rend enring.

KEY WORDS: - Effective instructional alternative methods

INTRODUCTION :-

Animals have long played an important role in education and research. In higher education, in particular, animals are used to teach systematics, anatomy, physiology, pharmacology, and psychology. Many science courses use dissection to help students understand animal anatomy and also to provide them with skills in medical operation/surgical techniques. The practice of animal dissection in laboratories dates back to the late 1800's. The two aspects of animal killing in science education include dissection and vivisection, for which approximately 170 species of animals are used. Dissection is the exploration of dead animals to study their anatomy and physiology, whereas vivisection is animal experimentation, involving cutting, burning, shocking, drugging, starving, irradiating, blinding, or killing of animals.

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 reconsidered" (Oakley, 2009, p. 65) and that she seeks to "decentre the notion that dissection is the 'best' way students can learn" (Oakley, 2012b).

On the other hand

Huge numbers of toads are sacrificed for educational programs in India every year. The Ethical Treatment of Animals India (PETA) urged that toad dissection be eliminated from zoology courses offered by universities and affiliated colleges (PETA India, 2002). Consequently, the University Grants Commission (UGC), the primary regulatory body for higher education in India, has published official recommendations calling for an end to animal dissection and experimentation for university and college zoology 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.

Study of following animals use in zoology practical lab experiment examples external characters, digestive system, nervous system, reproductive (Male/ Female) system, Urinogenital system and study of brain etc. various animals' studed in Indian colleges of zoology students., Earthworm, Frog, Starfish, Scoliodon, rohu, catla, Mrigal, Prawn, crab, oyster, pila, Leech, nereis, honey bee, housefly, Calotes, Pigeon, Rat, Garden lizard, Turtle, Rat snake, Draco and Cockroach etc

DISCUSSION :-

An appropriate and commonly accepted goal of education is to teach individuals to think independently in an analytical and critical way. To achieve this goal, a teacher must become less of an authority, whose role is to simply pass on information, and more of a facilitator, whose role is to promote questioning, exploration, and synthesis. In addition, teachers – and, more importantly, the education boards, the Boards of Studies, and Academic Councils – should frame syllabi and courses in such a manner that ethical education is disseminated and does not contradict the curriculum. It is ironic that Zoology/Life Science teachers on one hand emphasize the importance of biodiversity/ wildlife conservation but on the other hand practice dissection in education (Sathyanarayana, 2009).

Virtual dissection simulations, 3D models, plastinated specimens, videos, slides, charts, and online presentations offer ways for teachers to avoid the ethical controversies associated with dissection without compromising student learning. Research based in middle and high school contexts indicates that outcomes pertaining to learning anatomy and physiology can be met with virtual alternatives and that student knowledge gain can be equivalent, and sometimes superior, to a traditional dissection (e.g., Kopec, 2002; Lalley, Piotrowski, Battaglia, Brophy, & Chugh2010; Maloney, 2005; Montgomery, 2008; Youngblut, 2001) Other variables that may influence a teacher's decision to use alternatives include their access to them, perceptions of their effectiveness, willingness to explore new modes of learning, attitudes toward animals and technology, preparedness to teach biological science, and available resources, budgets, time, and supports (Hart et al., 2008).

According to Rosse (1995), dissection is a destructive (rather than a constructive) process that destroys many of the specimen's structures and their spatial relationships, precluding reexamination by the students. Generally, dissection is too focused on the acquisition of facts while failing to teach students to conceptualize and synthesize (Rollin, 1990).The 3R principles – Reduction, Refinement, and Replacement of animal use in research – were proposed by W. M. S. Russell and R. Burch (1959). The 3R concept, also called "alternatives," delineates the idea of abolishing unethical, unnecessary, and unscientific experiments in bio-medical research, as well a inculcating a sense of care for and humane treatment of animals.

Many different types of non-invasive animal alternative resources are available now, including models, manikins, multimedia computer simulators (CD-ROMS), online simulators, cell culture techniques, in vitro toxicology, molecular tools, functional genomics, tissue engineering, systems biology, cell-laden hydrogels, molecular and acoustic (sonotaxonomy) tools, microlabs, and ethically sourced animal cadavers. Field study of animals also is considered one of the best alternatives to dissection. Manikins have been employed in veterinary education as well. Models of anatomic parts, whole-body manikins, and various computer-based learning programs have provided educators with training tools for students aiming to become professional veterinarians.

The development of e-learning technology, a computer-based technology, has contributed significantly to our knowledge of effective Animal Science education. Students can be trained in animal anatomy using computers, and virtual reality technologies are revolutionizing the educational system. Today we are in an Information and Communication Technology (ICT) era, and it requires that teachers be both digitally literate and liberally sensitive.

The advantages of computer simulations include: Students can learn different variables at one time and various parameters on a large or small scale. Computers can offer scope for feedback, provide hints, and offer help. Experiments can be repeated at any time and almost –

anywhere. Teachers and students can make use of one CD-ROM repeatedly. These methods are cost-effective and affordable when compared to the cost of animals (dissection requires multiple animals to be purchased). They provide for conservation of animals and balanced

ecosystems. They enhance the creativity of teachers, as opposed to the conventional dissection process.

METHODS :-

The enormous strides made by computer science, information technology, and allied fields have changed the very face of the education system. Innovative methods of teaching anatomy, physiology, behaviour, and psychology are available in various formats for a variety of species. Computer simulations, three-dimensional (3-D) models, videotapes, cadavers, and other alternatives involve little or no use of animals. This has resulted in millions of animals

being saved. Teachers and professors have started recognizing that students can learn equally well through the use of modern technology, and reports published in scientific journals testify to it (van der Valk, 1999).

BENEFITS OF ALTERNATIVE

- Health and safety: students' safety in the lab; proper ventilation in the room; exposure to formalin; proper disposal of specimens; bacteria levels.
- Pedagogical: classroom management (e.g., dealing with immature students; ensuring proper respect is shown to specimens); students' learning and retention; addressing and evaluating students who refuse to dissect.
- Ethical: ensuring animals are not caught from wild populations (e.g., not contributing to the declining frog population); concerns about the humane killing of animals; is it necessary or justified to kill animals for this purpose.
- 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.
- A common thread running through the responses was that many students enjoy the unique experience of dissection and that this enjoyment connects to enhanced student learning. With 58 participants citing student engagement as a key benefit of dissection, it is evident.
- becoming a "selling feature" for students to pursue advanced-level biology courses.
- alternatives can alleviate ethical problems associated with the killing of animals, 23 teachers positioned dissection as a unique opportunity for students to engage with ethical issues surrounding respect for life, mortality, death, and dying instilling an ethic of respect in his students.
- One teacher explained: "Even though students may be able to successfully meet curriculum expectations when alternatives are provided, those that will be studying biology in university will be at a disadvantage if they have never performed a dissection in high school.

Teachers cited CD-ROMs or computer programs (80.0%); charts, posters, textbook diagrams, and/or overheads (76.8%); 3D anatomical models (67.2%); videos (56.8%); and "other alternatives" (21.6%). "Other alternatives" included written assignments, websites, field trips and virtual field trips, dissection picture cards, and other creative teaching strategies, such as asking students to build 3D models out of clay or asking them to create a board game illustrating their understanding of anatomy and physiology.

Sr.no	Advantages of Alternative	Disadvantages of Alternative
1	Supplemental teaching aid to physical dissection: alternatives allow students to become familiar with the intricacies of dissection before they dissect; provide a model of a properly dissected organism; offer additional information for students to extend their knowledge; allow for the viewing of specimens not normally dissected in class	Pedagogical: alternatives are not pedagogically comparable to physical dissection—they lack realism; do not showcase diversity within a species; cannot capture the fascination of examining a real specimen; provide a less effective educational experience; are not hands-on or experiential
2	Provide an alternative learning option for students who do not want to dissect (e.g., for ethical, religious, or cultural reasons) or who cannot attend	Availability of school resources: limited or outdated school resources (i.e., computers) make it difficult to use alternatives

	classes due to extenuating circumstances	
3	Reusable: alternatives can be re-used year after year and revisited at a later date during the school year	Lack of information/teacher professional development opportunities to assist in the selection of appropriate alternatives and their use
4	Costs: it is less costly to use (some) dissection alternatives than to dissect	Costs: some alternatives are expensive/have to be renewed year after year; budget limitations
5	Environmental footprint: dissection alternatives leave less of an environmental footprint	Student disinterest
6	Ethics: dissection alternatives do not involve taking an animal life	Ethics: alternatives may desensitize students; there is no opportunity to develop an ethic of appreciation toward animal life
7	Time savings: less time is needed for setup/clean-up	Teacher discomfort with students spending time on computers: students are sufficiently "wired"
8	Alternatives alleviate teacher discomfort with dissection	I use it as a pre-dissection tool, as well as a dissection tool, because it sets the kids up for learning much more deeply about of the actual dissection itself.

CONCLUSION :-

The Medical Council of India, the apex board that decides the course structure and sets laws for medical colleges, has conceded that exemplary and innovative alternative tools are available that can replace or at least lessen the use of animals for the purpose of education. The Council directed the medical schools to replace the use of live animals in medical course experiments with sophisticated non-animal training methods, such as computer-aided learning (Medical Council of India, 2009).

A number of Zoology/Life Science/Medical/Pharmacy and Veterinary Educators in colleges and universities have played a role in preventing the animal killings, improving the learner's (students') learning experiences by replacing dissection with modern, effective, and economical non-animal, student-friendly alternatives in the science laboratories The biggest tickets to ecstasy for animal welfare, teachers, and scientists were earned when the UGC accepted the Expert Committee's recommendations and enacted new guidelines, which is historic (http://www.ugc.ac.in/notices/guidelines_ animaldisection.pdf). For the first time, animal dissection is almost completely removed from the university courses. This triumph was made possible by the painstaking efforts of many authorities, teachers, scientists, animal welfare organizations and, in particular, MGDC, PfA, I-CARE, and PeTA India.

This ethical question gains momentum from a set of principles created to guide the ethical use of animals in science and education: the tenet of the "Three Rs," introduced over 50 years ago by scientists William Russell and Rex Burch (Russell & Burch, 1959). The Three Rs guideline is an animal welfare initiative that pertains to the replacement, reduction, and refinement of harmful animal use in science and education. Today in Canada and internationally, the Three Rs are a recognized part of the culture of animal-based science and considered important from an ethical standpoint, given that research involving animals can cause them suffering, pain, distress and death (Canadian Council of Animal Care, 2010; King,

2004; Robinson, 2005). An application of the Three Rs would likely lead to the full replacement of animals used in classroom dissections. The Canadian Council of Animal Care (2010) supports this in writing that:

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