

A large number of students are numbered by revulsion at the dissection table. In such cases, children should have the option of learning anatomy and morphology with the help of charts, models, computer simulations and other available aids.

Many of these students give up biology as an elective subject at the Senior Secondary stage driven by their traumatic experience of dissecting animals.

A huge number of amphibians and rodents are destroyed every year in Indian schools as children dissect these animals. This disturbs the ecological balance and threatens some animals with extinction.

In many countries, notably in the UK and the USA, many schools have done away with dissection.

The practice of dissection, therefore, should be abolished from school biology.

Emotions often run high while people debate on these. We shall look at them only dispassionately.

First, the contention or inference that what people do to organisms during dissection is a reflection of the way they will treat their fellow humans is based on wild assumptions.

Secondly, there is no single curricular activity that makes all pupils happy or unhappy. Emotional disturbance may arise as a result of shock on the sight of dissected animals. Such disturbance may arise from the use of film showing exposed heart or blood. In my ten years as a biology teacher, I didn't come across a single student who gave up biology due to emotional disturbance. I know many a student who feel excited about the

dissection class and make it a point that they don't miss it. Most students feel like surgeons when operating on anaesthetised rats.

Thirdly, these who choose biology as an elective subject at the Senior Secondary stage (and dissection is a prescribed activity only for them, not for any earlier stage of schooling), are no longer children but young adults. They opt for biology willingly with a career prospect in mind. If some of them later find themselves too sensitive to dissection, they can amend their choice of subject. In any case, it is not sufficient to argue the case against dissection on grounds that 'children are Squeamish'.

Fourthly, a strong ecological point is often made against dissection. The species *Rana tigrina* is threatened with extinction allegedly because of its large scale use at the dissection table. Common toads are no better off. The fact of the matter is that amphibians have long been excluded as animals for dissection. If *Rana* becomes extinct before long, it would be because too many people look for its delicate legs at the dinner table. Export of these legs is lucrative business. Rats, which are known pests that are destroyed regularly at a much large scale to prevent loss of foodgrains, are the animals that are dissected in the biology classroom. The rate at which rats breed outpace their rate of destruction through dissection in schools. The extent of ecological disturbance caused by dissection of two or three specimens by a student in two years at the Senior Secondary School is far from established. The number of animals that would be saved by abolishing the practice of dissection from the school stage would be insignificant.

Finally, when one is faced with the charge that laboratory experimentation diminishes pupils'

kindness towards animals, one has the option of dismissing such a charge as simply a visceral feeling, *for there are no measures of degree of kindness*. Emotional and moral issues continue to be there no matter whether animals are sacrificed at the school level or in the college.

I have heard people saying that if aeroplane pilots and cardiac surgeons can be trained on simulators, why can't students of biology learn anatomy with computer simulations. Strong argument! And whatever its merit, it has been put to practice in some countries albeit at a limited scale. Curriculum developers may try to work out the input required to (i) create what is widely known as virtual reality that makes you feel as though you were dissecting an animal, (ii) produce multi-media packages that simulate dissection, (iii) provide schools with the hardware that handles CD-ROMs and, of course, (iv) procure necessary software.

The Case for Dissection

The argument in favour of dissection usually runs like this:

The skill of dissection is important for biological investigations at all levels. Information and skills obtained through dissection are a necessary aspect of the training of those who aspire to be biologists, nurses, doctors and the like.

There are people who acknowledge the benefits derived from studies involving dissection. They see beauty and fascination in the bodies of organisms and have a first-hand understanding of the working of the bodies of living things.

Alternatives to dissection – charts, model, photographs or computer software – can be used to supplement dissection. But examination of the actual object results in better learning than through the use of representative materials.

This train of argument is not devoid of interest points. First, the skill of dissection is thought to be necessary for future biologists, doctors and nurses. That is a strong suggestion that dissection is preparatory to something that would take place some time in future; it has no intrinsic value in the context of school biology *per se*. If so, it is not clear why two or three sessions of dissection that pupils go through must be had in schools and not in the first year in degree colleges or in medical colleges or nursing schools. The rationale for dissection must be found within the framework of the school curriculum; if it is not there, dissection should be abolished from schools.

Secondly, more surgeons than one think that the skill that one acquires in the school dissecting a couple of rats is of little value to a medical student who has to work on the human body. The experience of dissecting rats helps one dissect more rats, more efficiently in some cases.

Finally, let us accept that although in most schools dissection is done, as it should be, on anaesthetised animals, schools laboratories have very poor hygienic conditions. Arrangements in schools for disposal of used animals are pathetic, to say the least.

What Then!

Animal dissection in schools has been dragged into much controversy. The solution lies in an

objective response to the singular question, and its natural extension: Is dissection an essential activity for learning biology at the Senior Secondary level? If so, why?

The primary source where we should search for an answer is the biology curriculum which prescribes dissection of rats at the Senior Secondary level.

From Primary classes through the terminal years of schooling, study of the human body – its internal structures and functions of its various organs – is a constant feature of school biology. A substantial portion of the biology course for classes eleven and twelve is description of mammalian anatomy with the example of various systems of man.

The internal anatomy of any mammal, even that of a rat – black or white – it is a useful model that helps understand the human anatomy.

Dissection, like any other practical activity, offers the opportunity to combine cognitive knowledge

and psychomotor skills. It reinforces both; one cannot dissect without the knowledge of anatomy and the knowledge of anatomy is grossly incomplete if it is not acquired through dissection. Besides, dissection is as much a means of biological enquiry as it is an exercise to acquire manipulative and investigatory skills. It is the only way to investigate the internal organs and the spatial and physiological relationships between various structures and their functions. Understanding of these is one of the desired outcomes of school biology. This makes a strong case for animal dissection as an essential component of biology curriculum at the Senior Secondary stage.

It is not much of a child who does not dismember toys, dismantle beyond repair household appliances – much to the annoyance of elders – and ‘dissects’ whatever other object it can lay its hands on. This is instinctive behaviour of the child to explore the unknown. Animal dissection is but a disciplined way to explore the anatomy of animals. Don’t stop it.