

## Broad Goals of Teaching Natural Science in Secondary Schools

The explosion of knowledge and the consequent changes in the curricula methods of instruction have necessitated setting up of new goals for science teaching. The Education Commission (1964-66) in its report has rightly described education as "a three fold process of imparting knowledge, developing skills and inculcating proper interests, attitudes and values." In the light of this statement, teaching science in the schools is of greater interest today than in the past. Aims and objectives of teaching science were recast giving due emphasis to the product, process and national goals. The following are the broad goals of teaching Natural science.

1. To develop scientific literacy related to the discipline: Despite the tremendous progress in science and technology and increasing interest in science, schools in India have not succeeded in producing scientific awareness among individuals. In order to develop thorough understanding among the students, a science teacher should not only have adequate understanding of science but also be familiar with the process of science. The importance of having an accurate understanding of the nature of and the relationship among science, technology and society cannot be undermined. Economic development, public health, national unity, desirable attitudes in people, etc. are indices of national development. For these indices we should develop scientific literacy, with special reference to Natural Science, in this special context.

**Scientific literacy** means a firm understanding of the nature of the science and its interrelationship with technology and society. This implies:

- a good science background - knowledge of related facts, concepts, theories with the ability to apply them
- a clear understanding of the ever changing nature of science
- a positive attitude towards science and technology related to it (for example genetic engineering)
- ability to make value judgement and decisions in issues related to the science based on societal needs
- ability to use scientific method to solve problems related to biological phenomena and to make decisions appropriate to day-today life
- sufficient process skills in science, which would enable a person to function in a better manner as a citizen

A person possessing these attributes can be considered as scientifically literate. Unfortunately, many Natural science teachers themselves lack several of these attributes. So the major goal of Natural science education should be the development of these attributes.

## 2. To create an awareness of national goals with reference to:

i. Population control: Population explosion is the most serious obstacle in national development. India is the second most populous country in the world with 2% population increase per year. India was early in realizing the need for birth control in ensuring national development. We are one of the first nations to have accepted family planning and family welfare as national policy. But we are lagging behind to achieve the set target. So awareness in population control has been considered a national goal of teaching Biological science. The ideas of population control should be developed in pupils even at the school stage. The Natural science teacher can successfully carry out the task of fostering attitudes in pupils towards population control, family health, reduction of infant mortality, maternal health, etc.

ii. Increase of food production: India is an agricultural country. In order to attain self-sufficiency in food production different areas of agriculture should be identified right from the school level. Awareness of modern farming, use of fertilizers and pesticides and storage of food products are some of the major areas of agriculture which are to be developed in students. This awareness created in school children may help them when they enter the agricultural labour force.

iii. Eradication of diseases: There is no time to lose! We have the goal of 'Health for all'. This is the call of the World Health Organisation and India too has taken up the challenge. The Natural science teacher should find the hidden curriculum with respect to health and hygiene. Awareness of environmental cleanliness, disinfection, immunization, hygienic habits, use and abuse of drugs, control of insects, rats and stray dogs, disposal of refuse and excreta, sanitation of food and milk, first aid, care of the sick at home, etc. is to be developed in pupils. Training in these should go beyond the routine curricular requirements. The Natural science teacher should see through the hidden curriculum and the learning experiences provided should help in developing positive attitudes and effective skills which in turn would help in eradicating diseases and building up a healthy welfare society.

iv. Better nutrition: Nutritional problems are so drastic among our masses especially in rural areas. Nutrition, malnutrition, cheap sources of nutritious food, deficiency diseases, balanced diet, food adulteration, improving diets, locally available nutrients, etc. are areas which can be concentrated by Biology teachers in secondary schools.

v. Improvements of livestock and development of fisheries: Job oriented education is a pre-requisite for solving unemployment problems. A student when he leaves the portals of a school may be able to find a job if he has adequate awareness of job opportunities. Rearing cattle and poultry farming, sericulture, apiculture, horticulture, floriculture, fisheries, etc. are some of the areas in which awareness

has to be created in school children. Teaching of Biology should be oriented towards these dimensions.

1. Conservation of natural resources: The earth's resources though abundant, are exhaustible and non-replenishable in the case of most. Fresh water, forests, topsoil, petrol and minerals are a few among such resources. Man depends on these resources for his living. Many of today's burning problems such as pollution, depletion of natural resources, erosion of top soil, deforestation are all the results of the selfish nature of man as well as over use and misuse of the limited resources. In this context, it is of utmost urgency that people are made aware of these issues and the ways by which such resources could be conserved. Only such an awareness can motivate people to practise eco-friendly life styles.

3. To raise the standard of living: The students of Biological science should know the laws of health and hygiene and should be given training in healthy living. They should be taught to improve their surroundings and thereby to improve the standard of living. Teaching of Biology should be oriented in such a way that the learners internalise attitudes and skills oriented towards a life style that maintain high standards, good health, higher earnings and regulated consumption.

4. To effect social change: Science has been functioning as an instrument of social change. There has been tremendous improvement in fields such as communication, production, medicine, etc. Thus man is compelled to modify his behavioural pattern to meet the changes in the society. Since science will continue to change the environment, man will be required either to adjust himself to such changes or to control the environment. Teaching of Biological sciences has to take up this challenge faced by society.