The Utility of the Subject

(a) The "Intellectual Value" (Knowledge Value) of science is necessary for almost every individual in the scientific world of today. Study of this subject develops not only high regard for truth but also for search of truth. Science fosters intellectual ways of thinking and reasoning.

(b) Science has great "Vocational Value", Agriculture, Engineering etc., are science based. Fully realizing the vocational value of science, in the +2 stage, certain applied sciences are offered in the vocational stream.

(c) Scientific discoveries to solve the mysteries of nature are concerned with "aesthetic value" in the sense that science is concerned with truth of all existence and it provides a chance for application.

(d) The moral integrity caused by the pursuit of science is mainly due to the nature of science. The "Moral Values" of scientists could be maintained only when they express the truths without any fear or bias.

(e) The "Utilitarian Value" of science is quite obvious. Right from the cradle to the grave, all our activities are controlled and fashioned by science.

(f) Science provides "Scientific Method" of solving problems. The various steps in scientific method can be listed as sensing the problems, collection of data, forming hypothesis, verifying the hypothesis and then drawing conclusions. Science created self-confidence in life.

The Cultural Values of the Subject

Science has a cultural value also. By the study of lives of great scientists we not only know about their great works but also draw inspiration for the study of science. The methods of science inspire the students to do things in reasonable and logical manner. Science is studied through observation and practical training. All these things help the development of the power of reasoning. In short, we may say that science is an essential part of education which helps the students to prepare themselves for future life.

INTERDISCIPLINARY APPROACH

All the branches of science are interdependent. There are many areas in science which are common to all science subjects. Because of the reciprocal relationship between various subjects, the inter-disciplinary approach or correlation is being emphasized. In physical science teaching, we cannot confine ourselves with physics and chemistry alone, we are to combine and correlate physics and chemistry with other subjects, and with learner environment to avoid rote memory and artificial learning. This is what is known as interdisciplinary approach in science teaching.

Inter disciplinary approach can be discussed under three headings.

1. Correlation of science subjects with one another.
2. Correlation of science with other school subjects.
3. Correlation of science with life and environment.

Relationship of Science Subjects with one another

Chemistry and biology are interdependent. A biology teacher while teaching digestion needs to use the knowledge of chemistry. Further photosynthesis in Botany is taught by interdisciplinary approach- Botany and chemistry.

Similarly, the atomic structure and the electronic configuration of atoms, of elements, radioactive isotopes are areas common to physics and chemistry. Hence interdisciplinary approach is essential for better understanding.

Relationship of Science with other School Subjects

1. **Science and Literature**

   There are excellent writers in Biography and Natural History and on discoveries and inventions. These can be recommended for class and home reading as literature.

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Science and Languages

Elementary books used in foreign countries for science teaching might occasionally be read. More advanced foreign text books on special subjects should be placed in the library. Children can't express themselves until they develop a good language (both written and spoken) skill.

Science and History

The life of a nation is greatly influenced by the application of scientific discovery to national trade, industry, diet and standards of living and by the imparting of current scientific thought on the general idea of the age.

Science and Geography

Simple problems connected with the composition, pressure, temperature and moisture of the air are usually dealt with in science courses; so also conventional currents in air and in the sea and variation of the density of water with temperature. It will mutually benefit both subjects if the science and geography masters work in cooperation, so that the use of thermometers, barometers, rain gauge and hygrometer can be really understood.

5. **Science and Social Studies**

Science has changed our way of thinking and the standard of living. Many superstitious beliefs are vividly explained on the basis of scientific principles. Modern dress materials, Jewelleries, Transportation facilities, mass media, films, cinema theatres, magic shows etc., are all scientific inventions that make our lives a different one. Everyday, science has its play from dawn to night.

6. **Science and Fine Arts**

The topic of sound can be easily and interestingly taught, when the topic is compared with musical instruments. Pitch and length of the string, vibration of air columns and flutes etc., can be demonstrated easily. In the preparation of record note books or charts children need skill of drawing without proper diagrams we cannot teach some complex concepts such as structure of atoms etc., Science drawing, improvisation, musical groups can be included as activities in science club.

7. **Science and Mathematics**

Many problems of proportion, inverse ratio, equations and graphs are constantly in use in science courses. The early introduction of the ratio of trigonometry is a great help in the science course and their use in mechanics, magnetism and light give reality to their meaning.

8. **Science with Painting and Drawing**

Drawing is of immense importance for all branches of science, may be physics or chemistry or biology. Preparations of charts, models, diagrams etc., require skill in drawing. Diagram in science have important place. Without diagrams, we cannot grapple with theoretical descriptions.

9. Science and Craft

Correlation between science and craft is possible to a great extent. Now-a-days improvisation has proved its utility. Besides making school self-sufficient it also cultivates in the students the habit of manual work. They learn more when they do it with their own hands and knowledge of basic principles underlying the apparatus improvised by them is understood by them.

10. Science and Economics

Science has a profound effect on the economy of a particular country. India has been able to achieve self sufficiency of food due to artificial manure and good insecticides. Similarly health of nation is, dependent upon the knowledge of science in terms of balanced diet food preservation, canning, medicine etc., Similarly the industrial economy is also dependent upon the chemical know-how of metals, their ores etc.,

Relationship of Science with Life and Environment

For basic needs of life such as food, clothing, shelter, we have to depend upon science. Science has gone deep in the veins of modern society. All our daily routine is controlled by science and its products. In food production, insecticides, pesticides, preservation of food industry and ingredients of balanced diet are the basis on which science can be correlated. Science helps otherwise in cooking, transportation, communication, metallic industry etc. It is therefore essential on the part of science teacher that he should make sure that applications of that topic in daily life affects the thought and actions of students, so that students begin to understand the implications of the subject.

Advantages of Inter Disciplinary Approaches.

(a) Correlation gives a sort of unity to the curriculum.
(b) It encourages all-round development and growth of the child.
(c) It assists in bringing closer the school and society.
(d) It establishes a close relationship between experience and knowledge.
(e) It prevents narrow specialization.
(f) It makes education natural.
(g) It makes the lesson interesting by bringing in the other subjects and experience.