Wednesday, 12 September 2018

Correlation in Science

One of the aims of education is to achieve unification of knowledge that exists as a separate and isolated one. Science cannot be taught in isolation because science represents the true life of man. Correlation means the relationship between different subjects on the curriculum. The development of the mind can be achieved, when the person has got the ability to solve difficulties or practical problems. To solve a practical difficulty combined knowledge of Physics and other branches of knowledge is necessary. The problems in their daily life situations cannot be dealt with isolated knowledge of any of the subjects. Physical science must be taught in correlation in the schools to show that pupil should not feel, various school subjects are isolated and not dependent, but they have to feel that they are mutually dependent and knowledge in one the subject contributes knowledge to others.

Incidental Correlation

It is the natural correlation which the teacher secures by coordinating a topic with allied materials from other subjects. This requires an exhaustive treatment of the subject bringing about points of similarities with other subjects. The success of the incidental correlation depends on the wide knowledge and reading of the science teacher.

Examples

1. A Chemistry teacher while teaching about Oxygen, talks about hemoglobin, the oxygen carrier in blood.
2. A Biology teacher while teaching about eye correlates it with a camera and the formation of image in a convex lens.
3. A Biology teacher while teaching digestive system correlates it with Chemistry by pointing out the Chemistry of digestive juices and their effects on food.
4. A Chemistry teacher while teaching about the structure of atom correlates with History by telling about Kanada Muni and the progress of science in ancient India.

Systematic Correlation

Systematic correlation with other subjects is achieved by careful organization of the curriculum in different subjects avoiding unnecessary duplication of the subject matter and at the same time developing related topics from different subjects. The syllabus in science must be so arranged (organized) with those of other subjects that when the knowledge of a scientific principle is needed in understanding a topic in some other subject. It should not be necessary for the teacher to break the continuity of his subject and teach those scientific principle. Here the science teacher should make use of the pupils knowledge gained in the other subjects in the continuous development of his own subject. Systematic correlation can be effective only when the teachers of different subjects co-operate and co-ordinate their work.

Correlation of Physical Science with other subjects

All the branches of science are interdependent upon each other and there are number of facts and principles which are common to various science subjects. As a result

interdisciplinary subjects like Biochemistry, Biophysics, Electro chemistry, Geophysics have emerged and got prominence in the curriculum. We cannot classify and deal a subject separately in science without correlating it with any of the allied subject. So correlation within the subjects is very important. In the same way science has its correlation with social sciences, languages, music, craft and many other subjects outside the discipline of science. So science has its correlation with all the subjects in one way or other. Correlation of science with other subjects is discussed below in detail.

Correlation with Science and Mathematics

Mathematics is probably the sole language of science and therefore a real understanding of science is impossible without adequate knowledge of mathematics. Most of the laws relating to physical quantities are conveniently expressed in the form of mathematical equations; several physical quantities such as density, specific heat are not measured directly but calculated mathematically from other measured quantities. Solution of problems in physical science is largely a question of mathematical calculation. The study of several phenomenon of light involves the use of geometrical concepts and proofs. Simple ideas of statistics is essential before dealing with genetics, experimental data obtained in a lesson of specific heat or simple properties of lenses provides real problems in quadratic equations, kinetic theory of gases needs the knowledge of co-ordinate geometry.

Correlation with Science and Biology

The study of natural sciences such as Zoology, Botany, and Physiology is very much related to Physics and Chemistry to explain some common phenomenon
Examples
1. Respiration in plants, photosynthesis are explained by Chemistry
2. The absorption and evaporation of water, assimilation of food taken from the soil and atmosphere are explained by Physics and Chemistry
3. Movements of joints and actions of the various parts of the human body are explained by Physics in working of levers
4. Nature and value of different food materials required by man is explained by Chemistry
5. Agriculture, use of improved implements, farm factors, method of irrigation, modern ways of mechanical farming and harvesting require a knowledge of physical science

Correlation with Science and Language

Science students are weak in their expression, so it is very essential that the science students should be able to express their thoughts in clear, concise, correct and attractive language. Science and language teachers have equal responsibilities in developing clear and accurate expression. After a field trip or visit to a place of scientific interest, pupil should be asked to write essays on reports on their experience. Passages from original and historical scientific works may be given for translation. Science books on natural history and biography are valuable contributions to literature and provide excellent reading material.

Correlation with Science and History

Even the study of history can be to a certain extent influenced by scientific approach.
It is useful to mention the events in the world history which coincide with important scientific discoveries. The study of history approached in inductive and deductive methods makes us understand the interaction of events and the influence of their results on human civilization.
Examples
1. Archimedes the king of Syracuse. Archimedes found a solution to a problem, when the king asked him to examine the purity of his crown. Archimedes got the royal patronage in his search for scientific truth.
2. Similarly, Aristotle, Newton and many other scientists received royal patronage on the other hand Galileo had to face quite the opposite situation. Germany gained scientific leadership in the early decades of this century and her monopoly of the manufacture of many scientific instruments paved the way for the World War I.
3. Correlation with Science and History is very prominent in topics like the 'story of moon', story of Earth', 'story of man' and 'story of planets'
4. A Chemistry teacher while correlating while teaching about Iron and Steel correlates incidentally with history by telling about the famous Delhi pillar and the metallurgical skill of the pupil of Ayurvedic period.

Correlation with Science and Geography

The study of Geography especially Physical Geography is based on scientific principles. The facts of climates and seasons depend on the principles in Physics. Some of the

areas in geography where correlations with science can be seen are given below
Examples
1. Instruments like barometer, seismograph, rain gauge, sundial, magnetic needle used by geographers are common to science also.
2. The study of sea-bed, sea erosion, fisheries, transport can be correlated easily with science. Lessons on tides, prevailing winds, snow and ice, skin of animals, minerals and ores are nothing but scientific
3. Principle of evaporation, condensation, convection, crystallizations have their practical applications in geography.
4. Rotation of planets, their influence on climate, change of seasons, flow of ocean current, structure of earth strata, action of volcanoes, earthquakes are best understood when geography is studied with the aid of physics and chemistry.

Correlation with Science and Earth Science (Geology)

Geology or Earth science as the name implies has got lot of correlations with science. The study of internal structure of earth and its applications mainly deals with physical science. Some of the common areas under this section are
1. Different types of rocks and the minerals present in it
2. Weathering, metallurgy
3. Meteorology- Scientific study of the exact measurement of weather
4. Water and Petroleum analysis
5. Ores of some common elements and their presence in the earth, their extraction etc.

Correlation with Science and Fine Arts

The knowledge of different notes, typical vibrating system in strings and air columns, musical scales etc are essential for the learning of music. On the other hand gramophones, tape recorders, films etc which involve music can make science lessons interesting and real by appealing to the emotions. The principles of resonance, reverberation etc is also plays important role in both science and music. Drawing is of immense importance in the study of all the branches of science especially biology. The preparation of charts and pictures requires some skill in painting. In craft work also, when we prepare some typical things is based on scales of measurement and law of symmetry based on science.
Examples
1. wood work, metal work, cardboard modeling, clay work etc can be successfully made use of in the improvisation and construction of science apparatus
2. Polishing articles of wood and metal, soldering can be encouraged among pupils

Correlation of Science with Life and Environment

Man lives in a scientific society. Many natural phenomenons that we see in our daily life can be explained with the help of simple scientific principles. Every phenomenon and/or the inconveniences faced by man in his life and environment can be solved by science. There are no problems exist in this world that cannot be reasoned with the help of science. So science and life are correlated in such a way that they cannot be separated. So science teacher should relate the classroom teaching with the social and physical environments by quoting examples from the daily life of the child.

Advantages of Correlation

1. Education is only means to an end. All the subjects are taught to fit children into life and help them understand and appreciate it. Hence it is not the isolated knowledge of different subjects but the synthesized form that would be really useful to them
2. By correlation, the relation between different subjects is better brought about than when the subjects are separately studied
3. Correlation makes use of the principle of 'apperception' in the assimilation of new knowledge and hence it promotes understanding, memory and interest
4. By the use of correlation pupil is able to organize the different pieces of knowledge into a well ordered system.

Posted by REJI at 00:04

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REJI 7 April 2022 at 19:27

Thank You❣️

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Unknown 10 February 2022 at 01:00

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REJI 7 April 2022 at 19:27

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Unknown 19 February 2022 at 22:43

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REJI 7 April 2022 at 19:28

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Anonymous 6 April 2022 at 11:51

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