

# Science and Technology

## (Upper Primary)

### Executive Summary

The syllabus at upper primary level in science is designed according to following principles.

- Spirit of learning without burden.
- Connecting knowledge to life outside the school
- It also ensures active participation by each child in developing the knowledge and understanding concepts.
- The depth content has been linked to mental level of children of the respective classes.
- Efforts have also been made to provide various life experiences to make ideas more interesting and useful.
- Overall development of children e.g. appropriateness of topics and themes for the relevant stages of children's development from a psychological point of view.
- Values enshrined in the constitution of India is existing in the syllabus e.g. freedom to express.
- Continuity from one level to the next i.e. known to unknown and simple to complex.

### Objectives

Science education at this stage should provide a gradual transition from environmental studies of the primary stage to elements of science and technology.

Scientific concepts to be taught at this stage are chosen so as to make sense of everyday experiences. Though most concepts should be arrived at from activities/ experiments, It is important to ensure that a majority of activities and experiments are inexpensive and use readily available materials.

Experiments based science teaching is possible and viable under diverse conditions and with a very reasonable demand on resources.

This is the stage where children should be provided with the process of science. Observing things closely, recording observations, tabulation, drawing, plotting graphs-and of course, drawing inferences from what they observe. Following are the objectives at upper primary stage:-

1. Exposing and encouraging scientific and technological talent among children.
2. Making children realize the relationship between Science, Technology and Society.
3. Understanding the need of the proper management for the optimum utilization of the resources and prevailing technology.
4. Stimulating interest in Science and technology and inculcating scientific spirit in younger generation.
5. Inculcating aesthetic and team spirit among the students.
6. To nurture the natural curiosity and creativity in science and technology.
7. To cultivate 'Scientific temper' - objectivity, critical thinking and freedom from fear and prejudice.

### **Content**

Technology component of science curriculum includes design and fabrication of simple models, practical knowledge about common mechanical and electrical devices and local specific technologies.

### **Pedagogy**

To engage the students (in groups) in meaningful investigations particularly of the significant and important problems. This may be done through discussion in the class with the teacher, peer interactions, gathering information from newspapers, talking to knowledgeable persons in neighborhood, collecting data from easily available resources and carrying out simple investigations, organizing information and displaying it in class room in the school or the neighborhood or through skits and plays.

## **Evaluation**

There should be continuous assessment and periodic assessment (unit tests and term tests) with much less weight age to the annual examination. There should be internal assessment also. Direct grading system should be adopted. The report card should show these grades.

The periodic tests should have both a written and an experimental component. The school should set aside some time every week for interactions in which students can share and seek information, discuss and clarify their doubts with teachers about adolescent problems and if possible with counselors.

## **Outcome Expected**

- Understanding based on observation and illustration rather than abstraction.
- Development of skills of observation, identification, classification.
- To expand scientific vocabulary.
- To help the learner to expand their knowledge of the topic.
- To arouse curiosity and scientific temper.
- Productive pedagogy.
- Knowledge of scientific concepts to be arrived at through experiments/ activities.
- Recording observation, tabulation, drawing, plotting graphs and drawing inferences from what they observe.
- Practical knowledge about common mechanical and electrical devices and local specific technologies.
- Ability to carry out simple investigations, organizing information and displaying it in class room or in school through skits and plays or participation in science fair