CHAPTER – 1
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1.0 INTRODUCTION:

The curriculum framework suggested for 10 years schooling gives outline of the various subjects to be included at lower and upper primary stage and secondary stage. At lower primary stage during first two years (class I and II) study of science is visualized as Environmental Studies (EVS), which is a composite course including both natural and social environment. In class III to V environmental studies is taught as two subjects EVS-I and EVS-II. EVS-I is devoted to natural science and EVS-II to social science. At the upper primary stage (class VI to class VIII) environmental studies get separated into two subjects, one is science and other is social science.

Science should help the child to discover and understand the scientific facts, concepts, principles and processes understanding various phenomenon around them. Social studies at this stage should widen the child's mental horizon from his/her home, school and neighborhood to the state, country and the world.

The objectives of the teaching science as recommended by Indian Education Commission (Kothari Commission, 1964-66) are –

(A) At Lower Primary Stage:

1. At lower primary stage the accent should be on the child's environment – social, physical and biological.
2. In class I and II, the accent should be on cleanliness and formation of healthy habits.
3. Development of power of observation.
4. in class III and IV, the study should also include personal hygiene and sanitation.
5. In class IV, children should be taught the Roman alphabets. This is essential as the internationally accepted symbols for the units of scientific measurement and the symbol for chemical elements and compounds are written in the Roman Alphabets.
6. Developing proper understanding of the main facts, concepts, principles, and processes in the physical and biological environment.

(B) At Upper Primary Stage:

1. To develop an understanding of nature of scientific knowledge.
2. To develop understanding about certain physical, chemical and biological principles and their relationship to the operation of scientific principles in nature as well as in daily life.

3. To develop scientific creativity and capability of using the process of science in solving problems, making decisions and furthering his understanding about universe.
4. It should highlight the measures for protection and care of the environment, protection of pollution and conservation of energy.
5. It should also highlight the inter-dependence between the material environment and the plants and animal (including human) life for survival, growth and development.
6. To develop abilities in affective and psychomotor domain.
7. To develop genuine concerns, sensitivity and ability necessary for the preservation and protection of physical and natural resources.
8. To built a sense of values like equality of sexes, protection of environment, observation of small family norms and inculcation of scientific temper.

Concepts are basic and key building blocks for the structure of knowledge of the various academic discipline. Discipline of science is also no exception to this. The higher order objectives of science teaching can not be achieved without proper learning of various concepts in science. For example, if we want that students should learn a rule "Air produces rust on iron", it is necessary that our student should first learn the concepts of "air", "rust" and "iron". The reason is – the rule is the relationship between two or more than two concepts as above.

Same way problem solving and other higher order objectives also can not be learned without learning various concept involved in that. It is with this fact that Gagne (1970) very clearly mentioned that "concept learning is pre-requisite to rule learning and problem solving ability".

A concept is a class of stimuli which have common characteristics. These stimuli are objects, events, or persons. We normally designate a concept by its name, such as book, war and student. A concept is not a particular stimulus but a class of stimuli. Hammerton (1972) define concept as, "The process of discrimination of the common features and relations in the world of events, things and persons." In the words of Kagan (1966) "Concepts are fundamental agents of intellectual work". Klausmeier (1971) described that "Concepts are the mental tools with which we think". According to Deceeco (1968) concepts can be of following types:

1. Conjunctive Concepts
2. Disjunctive Concepts
3. Relational Concepts

1. **Conjunctive Concepts:** In a conjunctive concept, the appropriate values of several attributes are jointly present. For example, "three green circles". It is a conjunctive concept because it has three attributes – number, colour and form and each attribute has a particular value – three, green and circle respectively.

2. **Disjunctive Concept:** In the disjunctive concepts, the appropriate values of one attribute or of another attribute or of both are present. In such a concept, attributes and values are substituted for one another. Two figures and/or two circles is a disjunctive concept.

3. **Relational Concepts:** The relational concept is one that has a specifiable relationship between attributes. distance and direction are relational concepts.

Concept learning requires abstract thought, according to Piaget (1969) the child's stage of development determines the level of thought of which he is capable.

Ausubel (1968) suggested that individual learn meaningfully by building knowledge on the basis of what they already know. Learning is the comprehension and acceptance of concepts that are intelligible to the learner. Learning is not considered as simply the acquisition of a set of conceptual change that occurs in a number of phases, including assimilation, accommodation and progressive differentiation (Novak 1977). Assimilation occurs when the learner uses existing concepts to deal with new phenomenon. Accommodation comes when the learner has existing concepts to deal with new phenomena (Piaget, 1969). Therefore, a critical condition for meaningful learning is that teacher has to determine what the learner already knows. Once the learner's relevant

background knowledge and internal conceptual framework is obtained, teaching strategies may be based on what the learner knows in order to add new knowledge to the conceptual framework; existing concepts must be integrated with the new information and incorporated into the framework.

Factors Influencing Concept Framework:

According to Shrivastava (1987), following are the factors which influence in concept formation -

1. Conditions of the sense-organs.
2. Intelligence.
3. Opportunities for Learning.
4. Type of Experience.
5. Amount of Guidance.
6. Type of Mass Media.
7. Sex
8. Personality

Uses of Concepts:

1. Concepts reduce the complexity of the environment.
2. Concepts help us to identity the objects of the world around us.
3. Concept reduce the necessity of constant learning.
4. Concepts provide direction for instrumental activity.
5. Concepts make instruction possible.

1.1 NEED AND IMPORTANCE OF THE STUDY:

Osborne and Cosgrove (1983) studied "The Children's Conceptions of the Changes of State of Water", Dolgin and Behaend (1984) explored "Children's Knowledge about Animates and Inanimate", William and Marck (1988) studied "Understanding and Misconceptions of Biology Concepts held by Students of Small and Large High School" Brody, Marion and Chipman (1988-89) studied "Students' knowledge in Fourth, Eight ad Eleven grade related to "acidic deposition", Westbroak and Mark (1991) conducted a cross age study of students' understanding of the concept of "Diffusion". Jaoude (1991) investigated "the nature of students' understanding about the concept of "Burning", and Brody (1991) "Understanding of pollution among 4^{th} , 8^{th} and 11^{th} grade students. Abraham and Williamson (1994) conducted a cross-age study of the understanding of five chemistry concepts, further Hynd et.al (1994) studied "The role of instructional variables in conceptual change in high school Physics topics". Atwood and Atwood (1996) studied "Pre-service elementary teachers' conceptions of the cause of seasons", Kikas (1998) studied "Pupils explanation of seasonal changes: age differences and the influence of teaching. Stahly, Krockover and Shepardson (1999) investigated "Third grade students' idea about the learner phases".

In India Pachaury (1986) examine "Teachers' concept of density". He also studied, in 1986, about the "developing concept of speed in school children" , Grewal (1992) studied the "Children's conceptions of life", Saxena (1998-99) investigated "understanding of the concept about pollution among VI and VII grade students".

The investigator did not come across any study conducted in India where the effect of instructions on the concept formation about the Moon and Sun has been investigated. This around interest of the investigator to conduct the present study with Indian children.

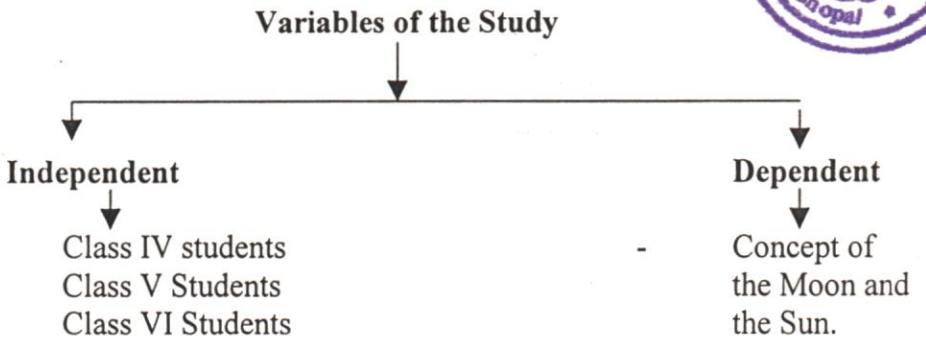
1.2 STATEMENT OF THE PROBLEM:

This study has been stated as :

"Conception about the Moon and the Sun of Students Studying in Class IV, V and VI".

1.3 VARIABLES OF THE STUDY:

The independent variable of the study were the classes in which the sample under investigation was studying. The sample has been selected from class IV, V and VI. The dependent variable were concept of the Moon and the Sun.



1.4 OBJECTIVES OF THE STUDY:

Following were the objectives of the study:

1. To study conception about the Moon and the Sun of students studying in class IV, V and VI.
2. To study the effect of intervention on the students' conception about the Moon and the Sun.
3. To identify misconceptions of the students about the Moon and the Sun.

1.5 DELIMITATIONS OF THE STUDY:

1. The study has been confined to a sample drawn from Demonstration Multipurpose School (DMS), Bhopal.
2. The study was conducted on selected students of class IV, V and VI.
3. Only the concept of the Sun and the Moon had been investigated in this study.
4. Only those students were selected who had the interactive ability to participate in the study.