

Proposed Sessions for 2016 Summer Workshop:

1. **Basics of Graphs:** This session will deal with the importance of graphs – how to select relevant data to draw a graph, how to choose the axes and scale; how we go from equations to graphs and graphs to equations; what can be learnt from graphs. Finally, we will also deal with the complex issue of correlation vs causation.

The resource person for this session will be Bhas Bapat who is currently with IISER, Pune.

2. **Chemical Representations:** In this session, we will be discussing the various ways to symbolize and present theoretical ideas like atomic symbols, molecular formulae, chemical equations, and balanced chemical equations. We also use pictorial representations of atoms, molecules, electrons, bonds and states of matter. How do these representations influence the manner in which learners think about concepts, how does using multiple representations help in developing abstract models – these are a few of the points that will be covered in this session.

This session will be conducted by Dr. Ankush Gupta who is at present working with the Homi Bhabha Centre for Science Education (HBCSE), Mumbai.

3. **Textbook Analysis and the Treatment of topics like waste-management, health and ecology / natural resources:** We will initiate a discussion with teachers on what is the predominant mind-set that is reflected in the manner in which these topics are dealt with, how the majority of students might be perceiving these ideas, and what alternate treatments are possible.

This session will be facilitated by Himanshu (PhD student, HBCSE, Mumbai) and Uma Sudhir (Eklavya).

4. **Questions in the Class-room:** This takes up an important focus of research in pedagogy – what is the role of questions in the classroom – whether asked by the teacher (what is the nature of these questions, what kind of responses do they elicit, how many open-ended questions are encouraged, etc.) or by students (how much freedom do the students have to express their doubts, do the topics in the classroom address the questions arising from their daily life experiences? how could these be brought into the classroom, etc.). This session hopes to open up the possibility of more democratic classroom and will focus mainly on the questions asked by children.

This session is being planned by Gurinder Singh who is a PhD student at HBCSE, Mumbai.

5. **Astronomy:** This session will attempt to take the participants from observations to the heliocentric model of the solar system by understanding the rotation and revolution of the earth, the motion of the moon and different planets. En route, it will take in the different ways in which people have measured time, made calendars, etc.

Sushil Joshi and Uma Sudhir will lead this session.

6. **Investigative Projects:** As in previous years, this is a session in which the participants conduct open-ended enquiry into questions of their interest – the idea is to give an experience of what the method of science involves and encourage critical thinking. Some of the questions that were taken up in previous workshops – why do people yawn; why threads are twisted together for greater strength, why smoke is produced when most materials burn, etc.

The resource person for this session will be Sushil Joshi.