

# The Language and Teaching Techniques of Science and Mathematics

The project was implemented during the year 2002-03 by involving various government schools in Delhi. It was fundamentally a research oriented project, but at the same time an attempt was also made to address and look for a solution to the problems being encountered by the teachers and students. In this sense, to a certain extent the project acquired the shape of an action research.

## Objectives

The key objectives of the project were:

- To understand the nature of school education in mathematics and science.
- To explore and analyse the structures of mathematics and science teaching in schools.
- To find out the learning status of children in mathematics and science in secondary schools.
- To identify the major obstacles and problems in mathematics and science teaching.
- To analyse the role of language in learning mathematics and science, and to identify the nature of the language used in teaching the same.
- To suggest inputs for effective methods to teach mathematics and science in schools.

## Methodology

The project was conducted through a participatory method involving active participation of teachers and students from various government schools in Delhi. The major research stages were as follows:

- The key research questions were identified through literature review and discussions with education experts and different stakeholders in the school education sector.
- Workshops and Focus group Discussions with teachers and children were conducted in order to understand various aspects of the academic framework of mathematics and science teaching.

- On the basis of the findings from the workshop and FGDs, intensive interactions and discussions were conducted with students in order to understand various issues related to their difficulties in learning mathematics and science.
- Further workshops were conducted with teachers in order to understand and analyse the problem areas in the teaching of these subjects.
- On the basis of the findings from the research a guideline on teaching mathematics and science was prepared for school teachers.

## Major Findings

The findings of the research project can be summarised as follows:

- A child's ability or inability to learn mathematics in secondary schools depends to a large extent on the levels of their pre-achieved proficiency in the subject.
- The level of proficiency of a child in the language used in the text book as well as in teaching enhances pace with which the child can learn mathematics and science.
- The ability or inability of children to learn science is directly related to the extent to which they are able to relate the concepts and facts with their life experiences.
- Mathematics and science learning for children in schools is determined more by the academic structures existing in schools than by the learning objectives of these subjects.
- In the context of science and mathematics teaching, the examinations, textbooks, and classroom practices are all conducted in the schools as static rituals.