

## HASMUKH M. ACHARYA

*"I have been encouraging other teachers to think about teaching aids which could enrich their experience"*

My first two jobs were in private schools. I taught for three years in the secondary and primary sections of the schools. In 1964 I joined the district *panchayat* school system as a primary school teacher in Bhachau taluka of Kutch district. My contribution to education in one village, where I spent some time, are described below.

**(1) *Mathematical skills for children of class three:*** I found that children did not understand the 'units' and 'tens' in three or four digit numbers. Zero was a difficult concept. The children also found relating number to the way they were actually written difficult.

With these problems as challenges, I prepared charts and a working model of a 'Number Reader'. This device is a rectangular box. One side has five windows, each one representing a digit. Inside the box there are five flat aluminium cylinders which can be operated, one at a time, by means of handles. The curved surface of each cylinder has the numerals 1 to 9, and zero, in that order, painted on them. Only one numeral is visible through any window at a time. This part of the device is like an odometer used to count the distance travelled by a vehicle. On the top of the box, against each digit, there is a bent aluminium rod, with both ends fixed. Each rod contains nine beads which can be transferred from one arm of the rod to the other. The five sets of beads are of different colours.

I first operate the units counter, starting from one. As the number is called out, one bead is transferred. And so on. When all nine beads have been transferred, I explain the concept of zero and tens and start again with ten. Then I repeat the process for teaching the numbers eleven through nineteen, and so on. I taught some students through this method and found their performance better than that of the students taught by the regular method. This evaluation convinced me to continue with this method.

***Complex numbers:*** Many students found it difficult to understand the concepts of numerator and denominator in a fraction. Allied problems included inability to deal with inverse numbers, add fractions to whole numbers and place decimal points. To teach these concepts, I prepared a series of models like fruits, biscuits and paper articles. I evaluated this initiative also through a system of pre-testing, conducted after trying out the traditional method of teaching, but before the improved method, and post-testing. I found that the lowest category of marks which had some students in it in the pre-test, did not have any in the post-test.

**(3) *Geometry and measurement :*** The measuring aids like foot rules available with the children were often broken. It was difficult to expect them to replace a ruler when one end broke. I did not pay much attention to this issue until I thought about the reasons for

the variety of answers that the children gave me when I asked them to measure a line. I observed them carefully when they measured. I found that even children who had an unbroken ruler used to begin their measurement from the end of the ruler, that is, about two millimetres before the zero mark. Learning from these observations, I taught children how to measure correctly. I repeated this process to teach correct measuring of angles.

(4) *Other teaching aids* : I have also prepared many teaching aids like spring balances, kaleidoscopes, models of the human body, mathematical boards which run on electricity, cameras, barometers, periscopes, models illustrating energy pathways. I have encouraged many of my fellow teachers to make their own models and to take part in science fairs. I myself have won many district and state prizes for my teaching aids.

A peculiar difficulty in all these experiments was that very often two classes used to sit in the same room, and the teaching experiments were specific to only one class. I therefore used to divide the room with the help of gunny curtains. From the experiments I proceeded to the period system in the upper primary section.

I started involving the children in cultural activities and in making use of waste material which the children collected. For the latter purpose, I enlisted the help of village artisans like carpenters and blacksmiths. Under their guidance, I prepared 39 mathematical and educational aids and exhibited them in various science fairs.

Slowly, the parents started taking note of my experiments. Most of the families were engaged in agriculture or labour. Their contact with the school was limited to attendance at the annual day or any other celebration in the school. When the parents felt that their children were achieving something in the school they started taking an interest. They also started contributing to the school fund. There was an old building with the village *panchayat* which the village had been unwilling to hand over to the school. This building was transferred to the school, so that the number of classrooms increased. Many pieces of equipment like amplifier and musical instruments were purchased from the money donated by the parents. The school also got an electricity connection.

As part of my duties as head master, I have been encouraging other teachers to think about teaching aids which could enrich their experience. I feel there is an urgent need to network teachers so that they can learn from one another.