

## TEACHING MATH BY ACTIVITIES AND EXPERIMENTS

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Dr Gordhanbhai Devjibhai Dihora (M.Sc., M.Ed., and Ph.D.) has been teaching Mathematics to grades 6 to 8 of Shri Trambak Primary School, in Bhavnagar district of Gujarat since 2010. According to Dr Dihora, the ancient book named “Vedant Jyotish” puts the subject of mathematics at a pedestal. He was deeply motivated by the thought and wanted to eradicate fear of the subject from the minds of his students and build in them a love and interest in the subject.

He gave emphasis to both practical learning of mathematics and textbook knowledge. He asks his children to practice Mathematics and make workbooks based on subjects they are familiar with, for instance, things in their households. The aim is to help them discover Mathematics and incorporate its concepts in their routine transactions.

During the recess hour, Gordhanbhai works on various activities such as puzzles, Vedic mathematics, mathematical dramas and songs,

stories, seminars, fun with maths, simple clocks, wrapper project, mathematical sudoku, magic of maths and maths power magazine. Some of these activities have interesting concepts and names such as Kalbal, Magajmaari, Snakes and Ladders, Cut, Measure and Give (Kaapo, Maapo ane Aapo). Besides, he has also come up with the concept of an innovative exam known as the NMMS exam paper. The field work includes activities such as guessing the number of bricks used to build a wall, identifying the perpendicular angles in water taps and estimating the volume of water that can be contained in the water tank after taking its measurements. The students also visit homes in the villages to take measurements of the rooms and estimate the number of tiles that may be required for the flooring. To learn the Pythagoras theorem, the children are asked to measure the steps in the village.

The children also learn about perimeter and area by taking measurements of open fields.



Students participating in Maths Competition



*School honors students who have won math competitions*

They are asked to measure the units of electric supply consumed by each appliance in their house, estimate the total in order to prepare an electricity bill and then compare it with the actual electricity bill. They also calculate the quantity of water used in their households, in their streets and entire villages. To calculate the circumference, they measure the thickness of the trunk of a tree. In this way Dr. Dihora goes beyond textual knowledge and makes knowledge practical and contextual.

The children are evaluated through written exams, quizzes and performance in these activities. They have also taken part in a National Maths Convention which was organised by The Emerald Heights International School, Indore and the Ramanujan Maths Club. A large number of schools participated, and this school did well in all the events. This was a historic achievement and a proud moment for the village and the school as the children had never participated in any national level event ever since the school was established in 1956. So proud were the residents and sarpanch

of the village, that they welcomed the returning team with flowers. Besides, they also took out a celebratory procession around the village to honour the children.

The children who travelled to Indore for the competition had to pay for their own travel expenses and they earned the money by working late in the evenings sowing onion crops. Impressed by their enthusiasm, the trustee of Emerald Heights International School gave the children a cash prize of Rs 1000 and announced that in future if they had to travel to participate in any competition the school would fund their expenses.

The local education officer has motivated Dr. Dihora to visit other schools in the taluka and talk about this innovative project. Dr Dihora has also held seminars at 13 schools of Ghogha taluka till date and a programme for six districts at Amreli town. A presentation was also made at the state-level Innovation Fair held at Sandipani Vidyapith at Porbandar.

All India Ramanujan Maths Club has awarded Dr Dihora with the “Best Teacher of the Year” award to honour his concerted efforts to teach mathematics to rural children. He also got the chance to present his project at various places. Apart from math, Dr Dihora has also worked on simplifying the English teaching. He had also implemented a program to get rid of plastic waste in the village. Under this program, every child had to bring 5 waste plastic bags to the school. The waste was sold and the money was used to buy stationery for the needy children and prizes for those doing well in weekly tests.



#### QUESTIONS FOR TEACHERS

1. Which assessment will be most effective in checking the achievement of knowledge of mathematics subjects in children?
2. What activities would be more effective in explaining the concepts of mathematics?
3. What are the things to keep in mind while conducting various experiments?

#### QUESTIONS FOR TRAINEES

1. What should be done to make the teaching-learning process effective?
2. What skills do children develop through activity learning?
3. How can the process of everyday life be associated with the concepts of mathematics?