

SCIENCE ACTIVITY BOX AND SCIENCE TOY

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Ms. Bhaliya has been working at the Ranavshi Primary School in Una taluka of Gir Somnath district in Gujarat for the past 9 years. She has a degree in Microbiology and a B.Ed.

Ms. Bhaliya found that there was very little experimental work when activity-based learning was introduced in science and technology for Class 6-8 in the year 2012-13. The tools for conducting experiments were not easily available in the classroom. After about six months, she prepared a science activity box, and very quickly split it into two boxes, one for each semester.

The children prepared a list of things necessary to conduct these activities such as rubber, safety pin, pen, battery, magnet etc. Ms. Bhaliya collected whatever was available in

the school, and bought the missing items from the market. She then prepared a list of the activities and experiments according to the textbook. Next, she put up a list of all the tools required for each activity on the laboratory wall. The items were all gathered in a cloth bag so that they were easily available at the time of conducting the experiment. Every day, after the prayer session, in the prayer hall, students were given information about one science apparatus or tool used in experiments. Apart from this, even in the laboratory, name of each apparatus was written on the item, which students could read and then hand over to the teacher when required. As the learning was being done with appropriate activity, the children could thoroughly understand the concepts and principles of each unit of the syllabus.



Teachers and students going to another school and explaining the scientific experiment

At the time of taking a class, Ms. Bhaliya would carry the box of science tools so that she could easily instruct the children about the activities related to the subject. For example, when teaching about magnetism, she would show the magnet and iron filings from the box. Gradually, the children became so interested in these activities that they started referring to the box as a “magic box”. Whenever the material got used up, replacements were bought from the market.

Ms. Bhaliya also developed scientific toys to develop in children skills of observation and accuracy. For example, for the chapter based on magnets, the toys prepared included:

- pencil hanging in the air;
- skeleton hanging in the air;
- a jumping frog.

These toys helped the children understand the magnetic force of the magnets. Other scientific tools such as telescopes, infinity well, hand-pumps made from a pen, among others were also shown to the children from time to time. Also, every Thursday, scientific toys or experiments were demonstrated in the prayer hall. On the occasion of National Science Day in the month of February, Science Week was also celebrated in the school. Videos of all the experiments were also made.

The children’s ability was evaluated based on their ability to answer questions related to the activities during the unit tests. Every Thursday, the children demonstrate scientific experiments they prepare themselves. They are also shown experiments to disprove superstition and develop

in children scientific thinking or open in them new avenues of thought. The children conduct experiments by collecting waste from their surroundings and neighbourhood. They have also started to observe the trees, flowers in their surroundings and present their results, for instance:

- The structure of the leaf. Leaf venation.
- The number of petals in a flower.
- Why are the leaves red or green?
- Why does a milky substance ooze out of certain trees or plants?

Earlier only about five children would participate in the Science Week; that number has risen to 50 to 60 children. They have also started observing events such as solar and lunar eclipse. In fact, they have also created tools to watch the solar eclipse safely on their own. Some children have been selected seven times in the taluka level Mathematics, Science and Environment Exhibitions and five times at the district level. This science activity box was also selected at the Education Innovation Fair-1, at the district level.

Five schools at the cluster level and 10 schools at the taluka level have adopted this innovative project. Ms. Bhaliya has demonstrated the mobile lab and activity box at 15 schools in Diu.

The number of scientific toys has increased significantly over the years. The success of the project has gained media attention and been published in newspapers such as Phoolchab and Divya Bhaskar besides the BRC Centre. This activity box was one of the 16 innovative projects to be invited to participate in the International Conference held at IIM Ahmedabad in 2019.



Pencil hanging in the air



A scientific toy made by students



A tool that works on scientific theory

Ms. Bhaliya was given a best teacher award by Sandipani Vidyaniketan of Porabandar and spiritual guru Rameshbhai Oza and another award by Ramanujan Maths Club in 2018.

This innovative project has been uploaded on YouTube channel and there is also a blog on which you can learn about it.



QUESTIONS FOR TEACHERS

1. What should be done to make scientific toys at low cost?
2. What can be done to make children think in a scientific way?
3. What is the difference between demonstration method and experimental method?

QUESTIONS FOR TRAINEES

1. What are the things to keep in mind when teaching children to experiment?
2. How do you encourage kids to make science toys?
3. What extracurricular activities can be done in the classroom for the purpose of imparting knowledge of science to the children?