

‘Raju hurry up, Rupa is throwing the ball,’ Payal called out to Raju loudly and ran away from the *Pittul*. Raju, Payal, Rupa and some of their friends are playing the game of *Pittul*. They are not able to arrange the *Pittul*. Rupa is repeatedly advising that the heavier stones should be placed at the bottom and the lighter ones on top, but Raju could not do it and got out. At that moment, Payal’s mother called Payal, ‘Come on, it is very late, you have been playing for a long time, come home and study now.’ ‘Ma, it is Sunday today, please let me play,’ Payal pleaded, but her mother did not listen to her and asked all the other children too to go home. Payal went home reluctantly.

Raju, Payal and Rupa study in class I. They enjoy playing. I was watching this from the terrace of my house. This happens in my classroom also. When we ask children to share their experiences of daily life or when we ask them to categorise things into small-big, fat-thin, light-heavy, less-more, slide-roll, then they do it spontaneously. Also, with the help of various teaching aids, they enjoy doing the activities connected with far-near, up-down, in-out, arranging things from top to bottom and bottom to top, to count, match or reduce. When they see the activities of their surroundings connected to the classroom, their interest in learning and understanding mathematics increases. Even before understanding the concept of numbers, this kind of knowledge plays an important role in their understanding of numbers – counting solid objects, arranging or placing them in order and matching. All the things we play with, in our childhood, like pebbles-stones, wood, marbles, balls, etc. help us as friends to learn and understand mathematics in the class.

We use various teaching aids to introduce a new concept in primary classes. To introduce the concept of data representation in class V, we used events from the daily life of children. We made groups and collected data by surveying the number of children present that day in classes I to X and thus understood the primary data. We then presented it in the form of a table, prepared questions based on

it and gave it to them to solve in groups. This was the secondary data.

In class III, we explained Tally Marks and Bar Graph Representation by taking tiles of different colours and shapes. These tiles are made of EVA sheet that sticks to the board with water. All the groups were given different numbers of shapes with various colours and were asked to present it in the form of a table on the board. One group was asked to make a graph while the other was to formulate questions. The children were enjoying so much that they wanted to continue the activity in the next period also. We realised that teaching aids should be interesting as well as accessible to everyone. Every child in our class wanted to do it and there was enough material for all of them, so the class was organised and the topic interesting for the children. The children said that they can also make tally marks for household items. One child said that with the number of cows, goats and chickens he has at home, he can make tables with tally marks. In the next class, children made tables on running board for all the classroom items such as table, chair, board, pin-up board, cupboard, English books, Hindi books, dictionary, bulb, fan etc. and discussed.

We also used balls, marbles and objects of various colours and tried to give ample opportunity to the children who learn slowly. We gave them enough opportunity to touch, handle and work with the material and share their ideas. When we work with them, it is the teaching aids that help us to connect with the class and reach each child.

We measured the table, board, playground, kabaddi ground, notebook and pencil using non-standard units like span, steps, hands, rope, pencil, wood etc. and arrived at standard units like millimetres, centimetres, meters and kilometres with the help of these teaching aids. We understood the perimeter and the area by making different shapes with ropes, spokes, tiles etc. Children also understood that we can find the perimeter and area of a closed shape only through this activity. The children

made a triangle, rectangle, pentagon, hexagon and octagon with the help of a rope. They made a circle with the rope and understood its various parts such as radius, diameter, circumference, centre, chord. They could also explain the difference between a segment and a sector. How many radii can be drawn in a circle? When we asked this, the children replied quickly, 'Many! The whole circle will be filled. We cannot even count the number of radii that we can draw.' We believe that when children themselves formulate a definition, the understanding stays with them forever.

We gave 2D and 3D shapes to children to understand the difference between them. We also allowed them to open 3D shapes to see the net of how it was made. The children enjoyed this activity very much. At first, they could not tell how many faces there were in the cube, cuboid. But after opening the 3D shape, they were able to tell it easily by looking at the net. We believe that every child can learn provided she or he gets the opportunity. Some children may be slow in learning, but they also learn as per their understanding. When children start with concrete (tangible) things in primary classes, they find it easy to understand and they are able to relate it to their daily lives. Then gradually they start thinking and working in abstraction without the help of teaching aids and also enjoy it.



In the *Bal Shodh Mela*, we researched about teaching aids with six friends (we consider children as our friends) of class IV and one from class VI, who joined us voluntarily. Through this research, we wanted to understand how all the teaching aids related to mathematics are used in the classroom or school and how the related mathematical concept is explained with their help. The reasons for this research were:

1. During the fellowship programme, when I used to go to government schools, I would see that the school/classroom had many teaching aids

provided by government or other educational institutions but teachers and children did not know how to use them and they lay in some corner gathering dust.

2. The friends from class IV we selected were the ones who needed special attention in the class. We took them in our group because they did not want to do anything in class. We gave them the opportunity to use the teaching aids and learn and understand the related mathematical concepts. We also motivated them to speak and answer the questions of the audience at the *Bal Shodh Mela* to boost their confidence and participation in the classroom.
3. Most parents complain that teaching aids that teachers use in the classroom are not available at home, so how can they help their children? But in and around the house there are many things that can be used as teaching aids such as rolling pins, stools, ropes, mirrors, nails, pebbles, wood, gram and wheat grains, leaves and so on. We told them how they can help children by using these. After the *Bal Shodh Mela*, parents gave the feedback that they have now understood how to help their children at home. They can teach their children addition and subtraction, work on comparison, give them practice which plays an important role in increasing mathematical ability.



In our experience so far, we have understood that teaching aids play an important role in learning and understanding any concept if these are accessible to children and easy to use. Despite all this, some children still face challenges while learning and understanding in the class. Some of them do not practice and are not at the class level. Nevertheless, we are working with them. We are trying our best to develop every possible understanding without losing patience. At times, the reaction of some parents is not positive, they want the child to mug up things and feel there is no need to work so hard

with them. They are also of the view that children should be beaten for not working. But we constantly talk to them about this and tell them that when we work with children on understanding, they

will be able to connect things with daily life and understand. A school will become a better place only when teachers, parents and children work together on learning and understanding.



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Every child is unique, and each learns in diverse ways, different times and at various places. The teacher needs to create a space which promotes thinking by allowing children to experience, experiment and question things around them and supporting them. Then, every child will learn.

ECE Team, Children Learn in Diverse Ways, p 25.