

A Mela which Introduced Me to a New Form of Mathematics

Pramod Chandra Pandey



'Mathematics *Mela*' was an alien and unimaginable word to me before this was held in our school. Generally schools arrange science exhibition or science *mela* where children display things that take place in day to day life and are also connected with principles of science. These exhibits, or events, are presented from the point of view of science and children participate in it with a lot of enthusiasm. This was my only experience about *melas*.

This year while discussing science *mela* in our group, we explored the idea of making mathematics a part of the *mela*. We thought that it might help in breaking the misconception about mathematics being boring. Since I had been also working on mathematics with children for a long time, the challenges related to mathematics came to my mind one after the other. Personally, I liked the suggestion but it was difficult to figure out what could be done in a mathematics *mela* and what could be displayed or exhibited. Then I thought that it was probably not important to display or exhibit something. What is more significant is to create an atmosphere and opportunity where children can identify and connect mathematics to their everyday activity and learn mathematical skills in a play-way method.

Before taking this idea to the children, we decided that the plan of action should be explored in our mathematics team. While discussing in the group, we made an attempt to understand the topics that are connected with the children's daily life so that their interest in mathematics increases. Since we were doing something like this for the first time, very apt suggestions were not coming forth, yet we made a list of a few topics and decided to take help of the children and talk to them.

As the next step, we talked to the children about organising a mathematics *mela*. The children were also confused when they heard the words like 'mathematics' and '*mela*' together, though very few children expressed their doubts. Most of them expressed their willingness to participate in science *mela*.

I was also a little unenthusiastic, but I could see that the children were interested in discovering and

doing something and then exhibit their work. This is how children learn, I thought, and it is natural for them to be interested in science. We decided that we should play some mathematical games and solve certain puzzles with the children which they could enjoy. So we included these activities in our classes and continued our discussions with the children in small groups. During one of such discussion the children came up with the idea to make the people who visit the *mela* solve some puzzles. I said why not? Upon hearing this, the children's enthusiasm knew no bounds and they wanted to share the games and puzzles they had, with the visitors. Taking advantage of the situation I asked them as to what more could be done in the *mela*. That set children thinking. So I suggested that they should think about it and that I would also give a thought to it and then all of us together could come up with a plan.

Eventually we had a good set of children who had started thinking about doing something in mathematics. I talked to my team and decided that I would discuss topics with children and work on them in groups. We had substantial talks with the children in the next meeting and we decided with mutual consent to work on some important topics that were related to their daily lives. The topics were:

1. Changing forms of measuring devices
2. Mathematics behind mid-day meal (MDM)
3. Body Mass Index
4. The world of patterns
5. Puzzles and games

The children were aware of these topics but did not have an understanding of them from the point of view of mathematics. For example, they were involved with the MDM, but did not have much knowledge about things like which food item provides how many grams of nutrition, how much is each child getting and what is its cost etc. We wanted to go beyond the classroom or textbook - based learning of mathematics and so our team and the children were divided into small groups to move forward in this process. Each group chose the topics according to their interests.

After this, the outline of work plan began to emerge in each group. The children made efforts to understand their topics with the help of library books and Internet. I was the member of the group which had to work on the MDM and changing forms of measuring devices. Their responsibility was to understand these topics and explain it to others. We further divided ourselves into two sub-groups and one had to work on the MDM while the other would take care of measurement.

Now the time had come to work at ground level. The children started discussions in their groups. Initially they really got bogged down with the problem of gathering the material for their work. For example the MDM team was discussing the cost of provisions in the market, and things like does the cost of things always remain same in the market, how much rice or pulses are needed for daily meals and how will we know about the nutrition each child gets etc. Our solution to these queries was to make a list of work that we needed to do and divide the work between ourselves.

Now the children had a format and their responsibilities in place. For example, it was decided that two children would go to the kitchen every day to find out the number of children present that day and the quantity of food items used. The second group would find out the cost of the food items in this list and calculate the expenditure for that day. The third group had to find out about the nutrients and their quantities that would be available from the food included in that day's menu. This group also had the responsibility to get the information on why these food items are being included in our food.

The children started their work, collected data every day, read books, browsed the Internet and sat in their groups in the afternoon for the calculations and finally put all their research findings in a format. After a few days' work they started analysing the data, such as which food item's cost was increasing but its nutritional value was low. Using cooking gas was also increasing the expenditure. While working in groups, the children also calculated the expenditure of one month on the basis of the data available for a week and the expenditure of the whole year on the basis of the data available for a month. Not only this, they also calculated the MDM amount spent on each child.

The other groups were also working in a similar

way. They were discussing, sharing and preparing to present their work. For example, to understand the changing forms of measuring devices they collected the devices that were used in olden times, used them to measure things and compared them with the modern devices and thus understood the conversion by doing things themselves. To analyse the pattern the children collected things from around them where they saw some pattern. It clearly meant that they were trying to understand the mathematical concepts by associating these patterns with real life. Puzzles are always a big hit with children. They helped each other with puzzles, had good mental exercise and also made the visitors of the *mela* play these interesting mathematical games. The children calculated BMI of their group members to understand it. In this process, they did a lot of work on fast and mental calculation and it was clearly visible in their presentation. Children had also studied about the recommendations of eating habits based on BMI through Internet. They calculated the BMI of the visitors and gave them advice as a doctor would do.

On the whole, the *mela* was full of interesting experiences for me. It gave me the opportunity to understand different dimensions of teaching and learning. As for the children, their confidence grew since they were participating in various activities and exploring things themselves. The very topics that they used to find boring and burdensome in the classroom had become interesting and joyful because they were learning them by doing.

It became clear that when mathematical topics are applied in daily life and things are learnt in a practical way within groups, then the learning becomes interesting and long-lasting. It was so evident in the mathematics *mela*. Children were very active, self-assured and answered the questions of the visitors with confidence while also discussing certain points. They had to spend a lot of time and energy in calculating nutritional value of each food item of the MDM and although it was tiring, they were curious to find the result and hence their interest sustained.

The additional benefit was the experience the children got from the exercise. They had been fully involved in the complete process of *mela*, from planning to execution, hence it was not just a collection of data but it gave them the satisfaction of creating something new.