Teaching-Learning of Mathematics through simple activities

Prakash
Lecturer Mathematics, G.H.S. Rambass, Dist. Ch. Dadri (Haryana)-127312
Email: prakashchandeni2007@rediffmail.com

Abstract- *All the individuals have unique characteristics and potentials, which if identified and nurtured can facilitate learning and get the required learning outcome. In this paper, I focus on the students who appear to be intelligent but do not learn mathematical concepts, terms, operations, reading numerical symbols, counting objects and learning multiple tables. In spite of their best efforts, these children fail to read the proficiency of their grade level in reading, writing and arithmetic. Such children are slow learners. These children can be provided special training in perception, improvement of attention and coordination of visual and motor coordination in mathematics give credit for each step, they complete correctly. I provide them concrete teaching learning experience of mathematics with the help of origami and paper cutting activities. These children require repetition and practice more than other children.*

Students want to escape from learning of mathematics. They assume that mathematics is only for making calculations. They are deprived from the inner beauty of mathematics. But if we relate mathematics with some hands-on activities, then they feel excited and take interest in the process of teaching learning of mathematics. 'Learning by doing' gives the chance for self-learning to students and provides scope for using creative and enhance and enhance analytical and critical thinking, logical reasoning. Each class divided in groups. Each group has four to five students. Each group performed the activity and presented it to the whole class. After that, the remaining class provided suggestions for batter performance. In the present paper, researcher personally organized and implemented origami (paper folding) and paper cutting activities to enhance learning in different branches of mathematics like arithmetic, algebra and geometry. Correlated test was used for analyzing data and the results were in the favor of teaching of mathematics with the help of paper folding activities. Some sample of activities: -

$$\textit{Visualize}\quad 2^0 = 1,$$
$$(a+b)^2 = a^2 + 2ab + b^2 \textit{ and}$$

Pythagoras Theorem.

Hence the present paper analyses the various activities of paper folding and paper cutting to make the learning of mathematics meaningful, realistic and life oriented. Origami activities performed by students contribute to the development of their basic mathematical concepts and get the required learning outcome.

Key words- Slow learners, Mathematics learning, Origami, Learning Outcomes

Introduction

Child is the centre of education, and education should be designed to conform to him. Children are found to differ from each other in physical, emotional and mental terms. These individual differences between children give rise to many problems in teaching; for instance, which method of teaching should the teacher adopt so that every student may benefit from his teaching? Intelligence tests have conclusively established that children differ in respect of their intelligence, their mental level. In the same class we find children with different levels of intelligence. Every teacher and every parent know that some children learn quickly while other learns slowly. Those who learn quickly need only a minimum of help from the teacher, and once they have learnt something, it remains in their minds for long time. In contrast, slow learners compel the teacher to make strenuous efforts in teaching them.

There are children who are above average in intelligence. They do not have a hearing or visual impairment. But they have specific learning problems in reading, writing, spelling or arithmetic. For example, some children always read and write 'b' as 'd', 'was' as 'saw', '21' as '12'. These problems are due to impairment of their psychological process, like perception and memory. Such children are said to have a learning disability which arises out of the problems in psychological process. These children need to be identified to provide special help in education. In teaching learning of Mathematics, give credit for each, they complete correctly. Today, there is an over emphasis on rote learning and examination. The students do not experience joy in this way of learning and acquiring knowledge. Whatever is taught at different levels of the school is mostly based on certain formulae, set rules and methods. It denies the true inner involvement of student to learn through firsthand experience. In the present paper, I provide first hand learning experiences to the students in Mathematics and help them to acquire the required learning outcome.

Students want to escape from learning of mathematics. They do not take interest in learning of mathematics. They assume that mathematics is only for making calculations. They are deprived from the inner beauty of mathematics. But if we relate mathematics with some hands on activities, then they feel excited and take interest in the process of teaching learning of mathematics. Activity based approach makes learning interesting and it will be helpful for the students to remember content for a longtime as they are active participants in the process of learning of mathematics. 'Learning by doing' gives the chance for self-learning to students and provides scope for using creative and enhance and enhance analytical and critical thinking, logical reasoning.

Aims and Objective

- To create interest in learning of mathematics among students.
- Increasing peer learning among students.
- To ensure that each student take part in the process of teaching learning of mathematics.
- To acquire the required learning outcome
- Appreciate the power and beauty of mathematics.

Target group

Students of class 6^{th} - 8^{th} of Govt. High School Rambass (Charkhi Dadri).

Methodology

Each class divided in groups. Each group has four to five students. Each group performed the activity and presented it to the whole class. After that, the remaining class provided suggestions for batter performance. At last, I concluded the whole activity and helped the students to reach the final conclusion.

In the present paper, researcher personally organized and implemented origami (paper folding) and paper cutting activities to enhance learning in different branches of mathematics like arithmetic, algebra and geometry. Correlated test was used for analyzing data and the results were in the favor of teaching of mathematics with the help of paper folding / cutting activities.

Some samples of activities:-

1. Visualize $2^0=1$.

Take any paper. Fold it three times. Then open it. Write the result in your notebook in the given table, like this

Folds of the paper	Parts of the paper	Result
3	8	$2x2x2=2^3$
2	4	$2x2=2^2$
1	2	2^1
0	1	2^0

Hence by this activity, students themselves reach the conclusion that $2^0=1$.

2. Visualize $(a+b)^2 = a^2 +2ab + b^2$.

Take a square paper. Join its any two diagonal corners and fold it diagonally. Again from any point, fold the folded paper horizontally joining its edges. Now open it. We have a small square on the paper. Now fold the paper according to two sides of the square. Take the length of side of the small square as a. Take the remaining length of the paper as b. we have find the following figure, i.e.

$$(a + b)= a^2 + 2ab + b^2.$$

3. Visualize Pythagoras Theorem:-

This theorem is visualized by making a boat. Students know how to make a boat. They float it on the water. For convenience, here we make the boat. Take a square paper. Fold it one time by joining opposite edges. Determine the midpoint of the folded line. From this midpoint, fold the paper in a triangular shape. Change the side of the paper horizontally. Open it as a cone and join

its opposite faces. Again join its faces outside the paper. Repeat this process as you can. Now pull its two opposite corners outside. We have got the boat. Now open the boat. We get a grid of lines on the paper. Make a right angled triangle. Length of its sides be a, b and c units. Make squares of length a, b and c units on the given triangle. Calculate the area of each square by counting small triangles. We have find $c^2=a^2+b^2$, where c is the length of the largest side of the right angled triangle.

Conclusion

The present paper analyses the various activities of paper folding and paper cutting to make the learning of mathematics meaningful, realistic and life oriented. These simple activities performed by students contribute to the development of their basic mathematical concepts and thus they acquired the required learning outcome.

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Learning Outcomes at the Elementary Stage