The Child –A Store House of Creativity

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The National Curriculum Framework -2005, recommends that, children's life at school must be linked to their life outside the school. This must be a guiding principle for the teachers while planning teaching-learning activities. The NCERT text books are developed keeping the guide lines of NCF as basic idea.

Like other text books, the mathematics text books are also designed to be student friendly. Though there are some hurdles for teachers, like coverage of syllabus, work load and heterogeneous group of students, but this heterogeneous factor can become a boon, if teacher plans and guides more peer learning activities.

The Pythagoras theorem, 'in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.' was explained to class X students. Afterwards, I introduced the similar thought of ancient Indian mathematician Baudhyan, "the diagonal of a rectangle produced by itself the same area as produced by its both sides *(i.e. length and breadth)*. Pythagoras was in the period from 569-479 BC whereas Baudhyan lived around 800BC. But Budhyan's thought did not come into the light as Pythagoras theorem. I posed a question in a casual way, to think and find out other ways of defining the theorem. After some days, many different thoughts were presented by the students. A few of them are as follows:

1) The area of a semi-circle produced on the hypotenuse of a right triangle is same as the sum of areas of the semi-circles produced on other two sides.
2) The area of an equilateral triangle produced on the hypotenuse is equal to the sum of areas of equilateral triangles produced on the other two sides.
3) If the radii of three circles are the lengths of three sides of a right triangle then the area of larger circle is equal to the sum of areas of other two circles.
4) If the radii of three cylinders are lengths of three sides of a right triangle and if their heights remain same, then the volume of larger cylinder is equal to the sum of volumes of the other two cylinders.
5) If the radii of three spheres are the lengths of three sides of a right triangle, then the surface area of bigger sphere is equal to the sum of surface areas of other two spheres.
6) If the radii of three hemispheres are the lengths of a right triangle then the curved surface area of bigger hemisphere is equal to the sum of curved surface areas of other two hemispheres. And the total surface area of the bigger hemisphere is also equal to the sum of total surface areas of other two hemispheres.
7) If the radii of three cones are the lengths of a right triangle and the heights remain the same, then the volume of bigger cone is equal to the sum of volumes of the other two cones.
8) If the lengths of edges of three cubes is equal to the sides of a right triangle then the lateral surface area of bigger cube is equal to the sum of lateral surface areas of other two cubes. And the total surface area of bigger cube is also equal to the sum of the total surface areas of other two cubes.

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9) If the sectors are formed with the same central angle on the sides of a right triangle taking sides as radii, the area of sector formed on the bigger side is equal to the sum of areas of the two sectors formed on the other two sides.

10) If the radii of three circles are the Pythagorean triplets then the area of a bigger circle is equal to the sum of areas of other two circles.

The list goes on. The students have taken Pythagoras principle and applied in all the possible cases. By seeing the tremendous response from the students I have organised a seminar where all the students, were given an opportunity to show the given theorem in their own way. And obviously the seminar was lively and highly knowledgeable.

The children should be given freedom to interact in teaching and learning process. A sixth standard students made a puzzle. The numbers from 93 to 100 are to be arranged in the boxes in such a way that neither predecessor nor successor should be arranged in a box, which has a common side or a common vertex.

A student of sixth standard put a question to find any three unlike fractions whose sum is 1 and one of the denominators must be the LCM of three denominators.

Though these questions look simple they cannot be answered in a quick way unless we already know these questions. We require 5 to 10 minutes to solve them. When the children put questions, the teacher should listen patiently and show curiosity in solving them. This creates interest in the children towards the subject and they feel the teacher as a co- learner.

A project was assigned to the students of class VIII. The students should use the concept "Comparing Quantities" and apply it in their day to day life situations to solve problems. A group of students turned up with an excellent project titled "Be a Smart Customer" they have taken five advertisements of garment shops offering discounts during festive season and made a comparative study.

The ready-made and routine projects should not be assigned. These do not involve observation, creativity, and critical thinking. These will only help to develop cutting and pasting or drawing skills. While assigning the projects, the student should not be kept in a limited boundary, rather he/she should have full freedom to think, observe and present in a way he/she likes. This gives him/her more joy and develops interest in the subject. We can expect surprising results in achieving the goals of NCF.