International Journal of Education for Peace and Development
Citation: IJEPD: 1(1): 25-27 April 2014

Numbers can be Fun – Innovative Way to Learn

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Abstract

The relevance and usefulness of Mathematics demands that the subject remain with the students beyond the years during which it is compulsory to learn. Mathematics is usually a dreaded subject for students, and communicating its principles effectively to each and every student in a class (with their own unique constraints), often becomes difficult for the teacher if he or she approaches the process in a stereotypical textbook fashion. This paper throws light on some of the creative and interactive ways to teach numbers – even, odd, prime, square, etc. – to the students in the initial years of schooling, so that as they proceed to the higher levels, they carry with them an interest in the subject, appreciating its natural logic and patterns.
A good way to teach mathematics is to capitalize on the characteristic logic that exists in every aspect of the subject, to first appreciate its beautifully simple patterns that connect basic algorithms to many tiered theorems. Upon doing so, spontaneous graphic teaching methods and tools unveil themselves to the teacher, and can be used to make the conventionally boring mathematics class lively and fun for the students.

Keywords: Innovative methods, practical exercises, understanding the subject, learning to teach**s**

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An educator's responsibility is not just limited to imparting knowledge, but also to be concerned with the all round development of the child. Generally, when a teacher plans a class, he or she has a well defined frame to work within. The frame may be topic oriented or student oriented or both. Sometimes, however, it becomes difficult for the teacher to achieve the objectives that may have been set. Students are of different types – some with short attention span, some with easy distractibility, some suffering from impulsiveness, some with poor motor coordination, frustration, low tolerance, hypersensitivity, lack of inhibition, emotional instability, fluctuating moods, and so on.

As such, it often becomes necessary to employ certain alternative techniques to not only make the topic of study interesting and within the grasping power of the students, but also to generate social skills and confidence in them. It is the intelligent *designing* of teaching materials and classroom management that is of utmost importance

This paper looks at how an often dreaded subject such as mathematics can be taught effectively, less painfully and in fact interestingly in the junior schools, so that when the students go to higher levels, the numbers and equations carry more meaning for them. Mathematics is a scientific discipline. It can be learnt with joy, without sacrificing the rigours of scientific study – in fact it is one area of study that has scope for independent work; where the intellect and a certain quality of intelligence can flower together. It also requires from the teacher clarity of thought and careful planning that will lead to a learning process that is more interactive. To focus on the quality of learning, one needs to have a quality of order, a balance between activity and quietness and reflection. If teaching is an art, learning to teach is also an art, and to compromise with the quality only leads to damage which is irrevocable. A teacher who likes to experiment and explore often feels the constraints of time, syllabus, number of classes, tests etc. There are many such factors operating within and without that create obstacles in the learning process. The desire to get quicker and better results often keeps the teacher geared to the end product or target level without being aware of the effect such an attitude would have on the quality of learning.

A good way to teach mathematics is to capitalize on the characteristic logic that exists in every aspect of the subject, to first appreciate its beautifully simple patterns that connect basic algorithms to many tiered theorems. Upon doing so, spontaneous graphic teaching methods and tools unveil themselves and can be used to make the conventionally boring mathematics class lively and fun for the students.

For instance in mathematics one deals with different types of numbers and their patterns such as odd and even numbers, prime and composite numbers etc. Having a strong understanding of even and odd numbers is an important foundation for division, dividing fractions and finding prime numbers further down the mathematical path. Instruction, hands on activities, games and worksheets can all help grasp and retain the concept of even and odd numbers.

A very simple way to determine **odd and even numbers** is to arrange numbers from 1 onwards in two rows. For example:

1, 3, 5, 7, 9, 11, 13, 15, 17, 19 (these are odd numbers)

2, 4, 6, 8, 10, 12, 14, 16, 18, 20 (these are even numbers)

After this the teacher can define even and odd numbers as:

Even Numbers can be divided evenly into groups of two. The number 4 can be divided into groups of two.

Odd numbers cannot be divided evenly into groups of two. The number 5 can be divided into two groups of two and one group of one.

And,

Even numbers always end with a digit of 0, 2, 4, 6 or 8

Hence 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30 are even numbers.

Odd numbers always end with a digit of 1, 3, 5, 7 or 9

Hence 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 are odd numbers.

The addition of a simple exercise can illustrate this topic practically and is likely to be understood at once even by students with a low attention span. For instance the teacher can ask the students to hold up a certain number of fingers, then to "partner up" the fingers. If every finger has a partner, the number is even. If a finger lacks a partner, it is "odd". When the number is 10 or higher say 15 instructions can be given to students to touch their ten fingertips and say 10 then begin counting one's thumb and say 11 and then left thumb and say 12 etc. If the number is 20, 30 etc., touch one's ten fingertips that many times (twice for 20, three times for 30, etc.) and continue counting. In essence, if every finger has a partner the number is even, if it does not, the number is considered odd.

Similarly, the concept of prime and composite numbers can be effectively ingrained in the minds of the students by making use of charts. A **prime number** can be divided evenly only by 1 or itself. And it must be a whole number greater than 1.

8 is not a prime number because it can be divided evenly by 2 or 4(2x4 =8) as well as by 1 and 8.

PRINT ISSN.: 2321-9807

73 is a prime number as it can only be divided evenly by 1 and 73.

When we arrange counting numbers in rows of six and mark the prime numbers, this chart appears:

1	**2**	**3**	4	**5**	6
7	8	9	10	**11**	12
13	14	15	16	**17**	18
19	20	21	22	**23**	24
25	26	**27**	28	**29**	30
31	32	33	34	35	36

After the first row, every prime number is either 1 less than or 1 more than a multiple of 6. Number 25 is not a prime number since it is a product of two already considered prime numbers: 5x5. Similarly 35 is not a prime number since it is a product of two prime numbers: 5x7.

Any number, save 1, that is not a prime number in the given chart is a composite number. A number that can be divided by more than 3 or more factors is called a composite number. For example 4 can be a composite number as it can be divided by 1, 2 and 4. Similarly 6 can be divided by 1, 2 and 3.

Pictorial representations are very helpful in explaining many concepts, such as those of square and cube numbers. A square number is any number which is obtained by multiplying a number by itself. A teacher can explain this by the following numerical pattern:

$1x1=1^2=1$

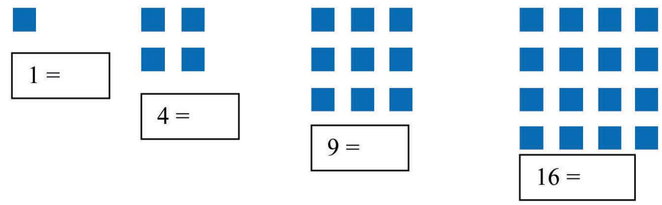
$2x2=2^2=4$

$3x3=3^2=9$

$4x4=4^2=16$

$5x5=5^2=25$ ...and so on.

However, it becomes much clearer if the teacher uses the simple method of representing these numbers by an equivalent number of shapes forming a square (and thus also illustrate the reason for the name "square" number). Squares are rectangles with equal sides. Numbers like 1, 4, 9, 16, 25, 36 and so on which can be illustrated by square arrays can thus be called square numbers.



Mathematics is a habit of mind that helps clarify complex situations. The present world that has made great strides in science and technology demands individuals who are prepared to absorb new ideas, to perceive patterns and to solve unconventional problems. Therefore it is essential that students develop interest, wonder and curiosity rather than the usual dislike for mathematics from a very early age; all that this demands is that the basics of the subject be taught in a simple and interesting manner.

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PRINT ISSN.: 2321-9807