MAKING EAGERNESS IN STUDYING MATHS BY INNOVATIVE METHODS

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ABSTRACT

I am working as Maths teacher in the Govt. Hr. Sec. School in a village named Alagankulam. I am teaching maths to the age group of 11 to 15 yr old students those who are studying 6th std to 10th std. In my class , most of the students are not so much interest in studying maths. When I use the questionnaire , I know that they(95%) do not know the Multiplication Table and they think that Maths is very hard subject to study and they are not interest in maths.

I know that I can not force them to memorise the Multiplication Table . Because it may give strong idea to their thought like maths also very hard and they may hate the maths subject . I want to use some **innovative methods to learn the Multiplication Table .**

First I introduce **Magic Maths** daily in my maths class and teach the Magic how to do (for an exmple : how to **find out the day** for **any date**) and I do some simple **science experiments** using waste meterials. Maths is queen of Science .(for an example: using mirror and a pan with some water , I show the Rainbow in my classroom wall) After some days, they are very eager to meet me in maths class. I think that very first the students should love the maths teacher then only the teacher make interest in Maths . In my Maths class , I divide the 45 minutes in to four parts. First 5 minutes Magic maths or simple experiments . **15 minutes teaching maths** in the text book. Then 5 minutes Magic maths or simple experiments doing themselves. **15 minutes teaching maths** in the text book . Last 5 minutes interaction about their dought in maths subject and any dought in and around (for an example : one day they ask why the milk rises up when it is boiled and the water does not so)

After one month , i used the same questionnaire. The result was very good. Many students (92%) are very interesting in studying maths the rest of the students (8%) donot know how to read and write in tamil . They don't know the letters in tamil . So I give the coaching for reading and writing tamil letter to the 8% of the students in the evening for 45 minutes after school time.

In this my paper presentation , I explain the following technique to make the students eagerness in Maths studying .

- Innovative method to learn Multiplication Table 2 to 19
- Innovative method to say the DAY for any date.
- Innovative method to learn squaring a 2 digit number
- Innovative method to checking sums on arithmetic operations (addition.subtraction,multiplication and division
- Introducing DVD of Video clipping of geometry drawing to 10th std students.
- Making awareness to participate in Competition to get extra curricular skills .

Key Words: Questionnaire, Extra Curricular Skills, Arithmetic Operations

Introduction:

Now a days, most of the student are not so much interest in studying maths. They do not know the Multiplication Table and they think that Maths is very hard subject to study and they are not interest in maths. I know that I cannot force them to memorise the Multiplication Table . Because it may give strong idea to their thought like maths also very hard and they also hate the maths subject . I want to use some innovative methods to learn the Multiplication Table . First I introduce Magic Maths daily in my maths class and teach the Magic(for an exmple : how to find out the day for any date of any year) how to do and I do some simple science experiments using waste materials. Maths is queen of Science. (for an example: using mirror and a pan with some water , I show the Rainbow in my classroom wall) After some days, they are very eager to meet me in maths class. I think that very first the students should love the maths teacher then only the teacher make interest in Maths .

In my Maths class , I divide the 45 minutes in to four parts like First 5 minutes   Magic maths or simple experiments ,**15 minutes teaching maths** in the text book , then 5 minutes Magic maths or simple experiments doing themselves , **15 minutes teaching maths** in the text book, Last 5 minutes interaction about their dought in maths subject and any dought in and around (for an example : one day they asked why the milk rises up when it is boiled and the water does not do so)

Survey area:

Students of Govt.higher Sec.School , Alagankulam Village , Ramanathapuram District Tamilnadu state .

Objectives :

Making awareness in studying Maths .

Making eagerness in studying Maths.

Making Learning Multiplication Table of 2 to 19 .

Making skill of drawing geometry in Maths using video CD.

Methodology of Research :

Experimental method is used in this project. Questionnaire and observations tools are used as tools and techniques. When I use the questionnaire , I know that they(95%) do not know the Multiplication Table and they think that Maths is very hard subject to study and they are not interest in maths. I want to use some innovative methods to learn the Multiplication Table . First I introduce Magic Maths daily in my maths class and teach the Magic how to do (for an exmple : how to find out the day for any date of any year) and I do some simple science experiments using waste meterials. Maths is queen of Science .(for an example: using mirror and a pan with some water , I show the Rainbow in my classroom wall) . I use the following technique.

- Innovative method to learn Multiplication Table 2 to 19
- Innovative method to say the DAY for any date.

- Innovative method to learn squaring a 2 digit number
- Innovative method to checking sums on arithmetic operations(addition.subtraction,multiplication and division
- Introducing DVD of Video clipping of geometry drawing to 10th std students.
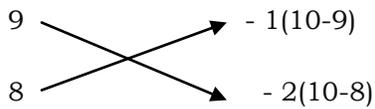- Making awareness to participate in Competition to get extra curricular skills

Explanation :

Innovative method to learn Multiplication Table 2 to 19

Example 1: (Deficiency)

$9 \times 8 = ?$

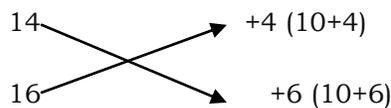i)Number Deviation from 10

9   - 1(10-9)

8   - 2(10-8)

ii) The left part of the answer is equal to **9-2 = 7**   or 8-1 = 7

iii) The right part of the answer is obtained by multiplying both the deviations **-1and -2 = + 2**   **Answer: 9 × 8 = 7 2**

Example 2: (Excess)

$14 \times 16 = ?$

i)Number Deviation from 10

14   +4 (10+4)

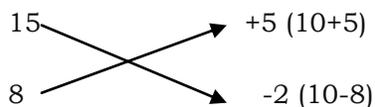16   +6 (10+6)

ii) The left part of the answer is equal to **14+6 = 20**   or   16+4 = 20

iii) The right part of the answer is obtained by multiplying both the deviations +4 and +6 = **+ 24**

Answer: 14 × **16 =**   **20**

        + 2   4

        22   **4 = 224**

Example 3: (Deficiency & Excess)

$15 \times 8 = ?$

i)Number Deviation from 10

15   +5 (10+5)

8   -2 (10-8)

ii) The left part of the answer is equal to **15- 2 = 13**   or   8+5 = 13

iii) The right part of the answer is obtained by multiplying
both the deviations +5 and - 2 = **- 10**
Answer: 14 × **16 =**   **13**

$$\begin{array}{ccc} & -1 & 0 \\ \hline & 12 & 0 = 120 \\ \hline \end{array}$$

- Innovative method to say the DAY for any date.

15.Oct.2013 What is the day ?

i)   Add   :   Date + Month Code + Year Code
ii)   Divide   :   Sum is divided by 7
iii)   Remainder :   0 = Sunday
               1 = Monday   2 = Tuesday   3 = Wednesday   4 = Thursday   5 =
     Friday
               6 = Saturday
     Month Code: Year Code 2013 = 1
     January = 0
     February = 3
     March = 3
     April = 6
     May = 1
     June = 4
     July = 6
     August = 2
     September = 5
     October = 0
     November = 3
     December = 5

Example 1:   **15.Oct.2013   What is the Day ?**

15 + 0 + 1 =   16 / 7 = remainder 2   so Answer : Tuesday

Example 2 :   10. Nov.2013   What is the Day ?

10 + 3 + 1 = 14 / 7 = remainder 0   so Answer : Sunday

Example 3:   **11.Sep.2013   What is the Day ?**

11 + 5 + 1 = 17 / 7 = remainder 5   so Answer: Wednesday

Innovative method to learn squaring a 2 digit number

Squaring a two digit number ending in 1:

Steps:
   i)   Subtract 1 from the given number .
   ii) Square that number
   iii) Multiply by 2 the number obtained from step 1
   iv) Add the number in step ii) & iii) and add 1 to get the ANSWER.

Example 1: 31^2 = ?

Steps:
   i)   Subtract 1 from the given number 31-1 = 30
   ii) Square that number 30 × 30 = 900
   iii) Multiply by 2 the number obtained from step 1   30 × 2 = 60
   iv) Add the number in step ii) & iii) and add 1 to get the ANSWER
         900 + 60 + 1 = 961

Squaring a two digit number ending in 2 :
Steps:
   i)   The last digit of the answer is 2^2 = 4
   ii) Multiply the first digit of the given number by 4 . Keep the first part as the middle part
         of the answer and take the carry over.
   iii) Square the first digit of the given number and add with the carry over.
   iv) The answer is written from bottom to top.

Example 2: 42^2 = ?
Steps:
   i)   The last digit of the answer is 2^2 = 4
   ii) Multiply the first digit of the given number by 4 . Keep the first part as the middle part
         of the answer and take the carry over. 4 × 4 = 1 6
         Take 1 as the carry over .
   iii) Square the first digit of the given number and add with the carry over.
         4^2 + 1 = 16 +1 = 17
   iv) The answer is written from bottom to top.

         17 6 4   so 42^2 = 1764

Squaring a two digit number ending in 3 :
Steps:
   i)   The last digit of the answer is 3^2 = 9
   ii) Multiply the first digit of the given number by 6 . Keep the first part as the middle part
         of the answer and take the carry over.

iii) Square the first digit of the given number and add with the carry over.
iv) The answer is written from bottom to top.

Example 3: 73² = ?
Steps:

i) The last digit of the answer is $3^2 = 9$
ii) Multiply the first digit of the given number by 6 . Keep the first part as the middle part of the answer and take the carry over. 7 × 6 = 4 2
Take 4 as the carry over
iii) Square the first digit of the given number and add with the carry over.
$7^2 + 4 = 49 + 4 = 53$
iv) The answer is written from bottom to top.
53 2 9   =   so Answer : $73^2 = 5329$

Squaring a two digit number ending in 4 :

Example 4: 44² = ?
Steps:
i) The last digit of the answer is $4^2 = 1\ 6$
Take 1 as carry over
ii) Multiply the first digit of the given number by 8   4 × 8 = 32 Add 1 with the previous carry over 32 + 1 = 3 3.
iii) Take 3 as carry over .
iv) Square the first digit of the given number and add with the carry over.
$4^2 + 3 = 19$
v) The answer is written from bottom to top.
19 3 6   so   Answer : $44^2 = 1936$

Squaring a two digit number ending in 5 :

Example 5 : 25² = ?
Steps:
i) The last digit of the answer is $5^2 = 2\ 5$
ii) Multiply the first digit of the given number by its successor.
2×3 = 6
iii) The answer is written from bottom to top.
6 25   so   Answer : $25^2 = 625$

Squaring a two digit number ending in 6 :

Example 6 : 56² = ?
Steps:
i) The last digit of the answer is $6^2 = 3\ 6$
Take 3 as carry over
ii) Multiply the first digit of the given number by 2 and add the carry over .
5×2 = 10 + 3 = 1 3
iii) Multiply the first digit of the given number by its successor add with the carry over.

$5 \times 6 = 30 + 1 = 31$

iv) The answer is written from bottom to top.

31 3 6   so   Answer : 56^2 = 3136

Squaring a two digit number ending in 7 :

Example 7 : 37^2 = ?

Steps:
i)   The last digit of the answer is 7^2 = 4 9

Take 4 as carry over

ii) Multiply the first digit of the given number by 4 and add the carry over .

$3 \times 4 = 12 + 4 = 1\ 6$

iii) Multiply the first digit of the given number by its successor add 1 the carry over.

$3 \times 4 = 12 + 1 = 13$

iv) The answer is written from bottom to top.

13 6 9   so   Answer : 37^2 = 13 6 9

Squaring a two digit number ending in 8 :
Example 8 : 58^2 = ?

Steps:
i)   The last digit of the answer is 8^2 = 6 4

Take 6 as carry over

ii) Multiply the first digit of the given number by 6 and add the carry over .

$5 \times 6 = 30 + 6 = 3\ 6$

iii) Multiply the first digit of the given number by its successor add 3 the carry over.

$5 \times 6 = 30 + 3 = 33$

iv) The answer is written from bottom to top.

33 6 4   so   Answer : 58^2 = 3364

Squaring a two digit number ending in 9 :

Example 9 : 79^2 = ?

Steps:
i)   The last digit of the answer is 9^2 = 8 1

Take 8 as carry over

ii) Multiply the first digit of the given number by 8 and add 8 the carry over .

$7 \times 8 = 56 + 8 = 6\ 4$

iii) Multiply the first digit of the given number by its successor add 6 the carry over.

$7 \times 8 = 56 + 6 = 62$

iv) The answer is written from bottom to top.

62   1   so   Answer : 79^2 = 6241

63

Innovative method to checking sums on arithmetic operations (addition. subtraction, multiplication and division)

Example 1: Checking Addition

```
  783
  416 +
  245
───────
 1444
───────
```

Steps :

i)   Sum of digits 783 ⟶ 7+8+3= 18 =1+8 = 9
                    416 ⟶ 4+1+6= 11 =1+1 = 2 +
                    245 ⟶ 2+4+5= 11 =1+1 = 2
                    ─────────
                    13 =   1+3 =   4

ii)   Sum of digits of the Answer 1444 ⟶ 1+4+4+4 = 13=1+3= 4
Since   the sum of digits in both the cases are equal,We conclude that our Answer is CORRECT

Example 2: Checking Subtraction

```
  4126
  3925  -
───────
   201
───────
```

Steps :

i)   Sum of digits 4126 ⟶ 4+1+2+6= 13 =1+3   =   4
                    3925 ⟶ 3+9+2+5= 19 =1+9 = 10=1+0 = 1 -
                    ─────────
                    3

ii)   Sum of digits of the Answer 201   2+0+1= 3

Since the sum of digits in both the cases are equal,
We conclude that our Answer is CORRECT

Example 3: Checking Multiplication

```
  215
  162 ×
───────
```

34830
_____

Steps :

i)   Sum of digits 215 ⟶ 2+1+5= 8
              162 ⟶ 1+6+2= 9×

72 = 7+2 =   9
_____

ii)   Sum of digits of the Answer 34830   3+4+8+3+0= 18=1+8 =9

Since the sum of digits in both the cases are equal,
We conclude that our Answer is CORRECT

Example 4: Checking Division

19135 ÷ 89 = 215
19135 is called as dividend
89 is called as divisor
215 is called as quotient

The product of divisor and quotient is egual to dividend.
So
 89×215 =19135   We just follow the above rules to check it.

Introducing DVD of Video clipping of geometry drawing to 10th std students.

        I give DVD to each and every 10th std students to make skill in geometry drawing and graph drawing. It can be played in normal DVD player like seeing films. So they are very skillful in geometry drawing as well as graph drawing .

I uploaded the videoes in YOU TUBE website also. In our district , many students from other school also download this videoes and use them .

When we enter my name venkatesanteacher in google search , we can get the below link also.
http://www.youtube.com/watch?v=kOAqk9waQMM
http://www.youtube.com/watch?v=Ci9wXtOJ35Q
http://www.youtube.com/watch?v=FojC6deMG5M
http://www.youtube.com/watch?v=4tJrWJOA-ls
http://www.youtube.com/watch?v=E_e6bQ_-wno
http://www.youtube.com/watch?v=ftwlnA4PS9s
http://www.youtube.com/watch?v=bk1SZiODsCY
 http://youtu.be/yPavOqVDzG0

Making awareness to participate in Competition to get extracurricular skills .

I make them awareness to participate in district , state and national level Competition . I started my carrier from 1998 as school teacher. Since 1999 , I have been participating the competition and making students to get YOUNG SCIENTIST AWARD. I think that teachers should not be as a ladder but they should be like a lift. We also grow up with them to avoid generation gap. I also got some awards to inspire them.

After experiments:

After I had used the above techniques , i gave them the same questionnaire. The result was very good. Many students (92%) are very interesting in studying maths the rest of the students (8%) donot know how to read and write in tamil . They don't know the letters in tamil . So I give the coaching for reading and writing tamil letter to the 8% of the students in the evening for 45 minutes after school time.
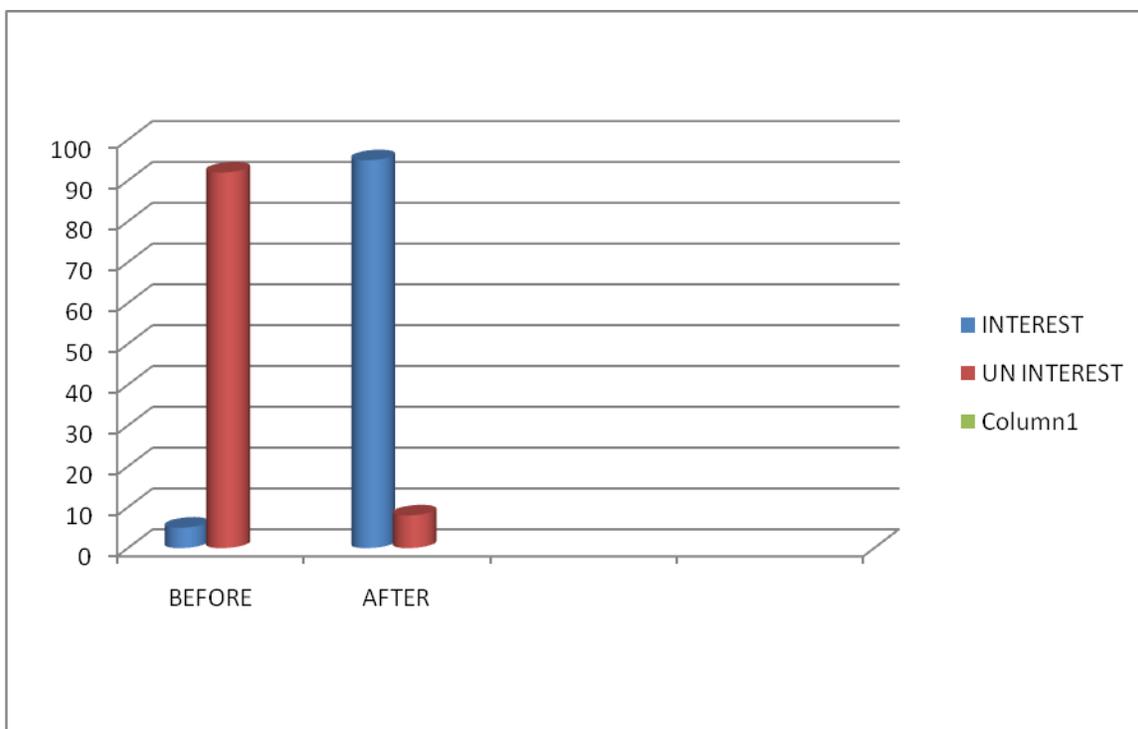
Conclusion:

After my using above techniques to make them eagerness in studying maths, they are so much interesting in studying maths. So daily I give some magic activities in maths. They are very eager to await for maths class. They are very happy to know something new. They are not ready to listen the whole period (45 minutes). So I give some activities in interwal of each 15 minutes .It is very useful to me to control them to teach maths in the text book.

Scope for future work :

     I hope that the above techniques which I follow in the class room is very useful to make awareness in studying maths. In future , I think that I would like to go to the nearest schools and make the students to get awareness and interest in studying maths. I will teach them the new innovative methods to learn the multiplication table and some sums also. I hope it will make them to love maths.