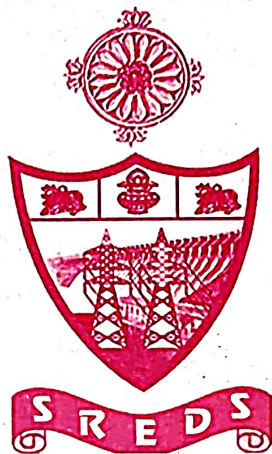


CORAMANDAL COLLEGE OF EDUCATION

Medikonduru - 522 438, Guntur Dist.



Affiliated to Acharya Nagarjuna University

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Semester : 3rd

PEDAGOGY - I
ACTIVITIES / PROJECT / RECORD

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CERTIFICATE

This is to certify that Mr. / Mrs. / Kum Saubhagya Jena
Class No. _____ Regd. No. YR5ED69036 of College of
Education visited our Institution and conducted the required activities / collected
the required data regarding to PEDAGOGY - I (Mathematics)
Practicum as a part of B.Ed. Course work stipulated by the Government of Andhra
Pradesh and approved by Acharya Nagarjuna University.

Signature of the Concerned Teacher

Signature of the Head of the Institution

Name :

Name :

Seal :

This is to certify that Mr. / Mrs. / Kum Saubhagya Jena
Class No. _____ Regd. No. YR5ED69036 has completed the
required activities regarding to PEDAGOGY - I (Mathematics)
Practicum towards fulfillment of B.Ed., Course work stipulated by the Government
of Andhra Pradesh and approved by Acharya Nagarjuna University.

This record

Lecturer in-charge

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Activity - 1

Create different activities to realize concepts attainment by children in any unit from mathematics.

CONCEPTUAL UNDERSTANDING IN MATHEMATICS :

The common core standards in mathematics stress the importance of conceptual understanding as a key component of mathematical expressive. Teeban in my experience many math teachers do not understand conceptual understanding for too many think that if students know all the definition and rules. Then they possess such understanding.

Student understanding connection between counting and addition and subtraction. They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on. These properties solve addition and subtraction problems with in 20. By comparing a variety of solution strategies

Knowledge of procedures is no guarantee of conceptual understanding for examples. many children can execute a procedure to divide fractions without understanding. Why the procedure works most observes agree that knowledge of procedures and concept is desirable.

1) A number with three digit is always bigger than one with two same children with swear blind that 3.24 is bigger than 4.6 because. It's got more digit why? because for the first few years of learning. They only come across whole number where the digit rule does work.

2) When you multiply two numbers together. The answer is always bigger than both the original numbers. Another seductive rule that works for whole numbers but falls to pieces when one or both of the numbers is less than one remember that. Instead of the word times we can always substitute the word of so $\frac{1}{2}$ time $\frac{1}{4}$ is the same as a half of a quarter. that immediately demolishes the expectation that the product is going to be bigger than both original numbers.

3) Which fraction is bigger $\frac{1}{3}$ or $\frac{1}{6}$?

How many pupils will say $\frac{1}{6}$ because they know that 6 is bigger than 3? This reveals a gap in knowledge about what the bottom numbers the denominator of a fraction does it divides the top numbers. The numerator of course practical work such as cutting pre divider on to third and concept is desirable.

Another common conceptual problem is understanding that an equal sign and exist and comparing the shapes, helps the common understanding of fractions.

4) Common regular shapes aren't recognised for what they are unless they are copyright teachers can understanding feed this misconception. If they always draw a square right angled, are isosceles triangle in the usual position. Why not draw them occasionally upside down. Facing a different direction or just tried over to force pupil to look at the essential properties and by the way in math there is no such things as a demand. It is either a square or Rhombus.

5) The diagonal of squares is the same length as the side. Not true but lemping for many young minds so how about challenging the class to investigate this by drawing and measuring once the top table have mastered this. Then draw it and see how close their guess was.

6) To multiply by 10. Just add and zero not always. What about 23.7×10 , 0.35×10 or $\frac{2}{3} \times 10$? Try to spot and work the just and zero rule wherever of rears its head.

group the heuristics value of those idea. They are thus better able to use them strategically to solve problems especially non routine problems and avoid common misunderstanding as well as flexible knowledge and skill in other words students demonstrate understanding of.

- 1) Which mathematical idea are key and why they are important.
- 2) Which ideas are helpful in a particular context for problem solving.
- 3) Why and how key ideas aid in problems solving by reminding us of the systematic nature of math.
- 4) How an idea or procedure is mathematically defensible why we and they are justify in using it.
- 5) How to adoptable parallel expression to new transfer problems.

A test for conceptual understanding.

Rather than explain my definition further here. I will operationalize it in a little test of 13 questions to be given to 10th, 11th and 12th grader who have passed all traditional math courses through algebra and geometry middle school students can be given the first questions. math teachers give it to your students tell us the result.

I will make a friendly wager. I predict that no students will get all the questions correct. Prove me wrong and I shall give the teachers and students a big shout out.

- 1) You can't divided by zero explain why not even though of course you can multiply by zero.
- 2) Solving problems typically requires findings equivalent statements that simplify the problems explain and in so doing define the meaning of the $=$ sign.
- 3) You are told to invert and multiply to solve direct on problems with fractions but why does it work?
- 4) Place those numbers in order of largest to smallest 0.0153 , $\frac{1}{60}$, 0.015 , 0.001 , 0.002 .
- 5) Multiplication is just repeated addition explain why this statement is false giving examples.
- 6) A catering company puts out table for big parties 8 group of people can sit around a table. a school is giving a party for parents. is being students and teacher. The quiete list total 243. How many tables should the school react.
- 7) Most teachers assign final grades by using the mathematical mean to determine them. Give at Least.

Reasons why the mean may not be the best measures of achievement by explaining what the mean hides.

- 8) Construct a mathematical equation that describes the mathematical relationship between feed and years. Until you need as part of the equation are 7 and 3.
- 9) As you know PEMDAS is shorthand for the order of operation for evaluating complex expression. The order of operation is a convention $x(A+B) = xA + xB$. In the distributive property. It is a law what is the difference between a communication and a law then. Give another examples of each.
- 10) Why were imaginary numbers invented.
- 11) What is the difference between an accurate answer and an appropriately precise answer.

Activity - 2

INDIAN MATHEMATICIANS AND THEIR CONTRIBUTIONS

RAMANUJAN : →

- He was born on 22 of December 1887 in a small village Tanjore district Madras. He failed in English in intermediate, so his formal studies were stopped but the study of mathematics continued.
- He sent a set of 120 theorems to professor Hardy of Cambridge. As a result he invited Ramanujan to England.
- Ramanujan showed that any big numbers can be written as a sum of not more than four prime no.
- He showed that how to divide the number into two or more squares or cube.
- When Mr. Little word loves to see Ramanujan in taxi no. 1729. He said that 1729 is smallest number which can be written in the form of sum of cubes of two numbers in two ways i.e. $1729 = 9^3 + 10^3 = 1^3 + 12^3$. Hence 1729 is called Ramanujan's number.
- In the third century B.C Archimedes noted that the ratio of circumference of a circle to its diameter is constant. The ratio π now called Pi (π) The 16th letter in the Greek alphabet series.

→ The largest number the Greek and Ramanujan used were 10^6 whereas Hindus used number as big as 10^5^3 with specific names as early as 5000 BC during the Vedic period.

ARYABHATA :

- Aryabhatta was born in 476 A.D. in Rasampur India.
- He was the first person to say that earth is spherical and it revolves around the sun.
- He gave the formula $(a+b)^2 = a^2 + b^2 + 2ab$.
- He taught the method of solving the following problems.

$$1 + 2 + 3 + 4 + 5 + \dots + n = \frac{n(n+1)}{2}$$

$$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

$$1^4 + 2^4 + 3^4 + \dots + n^4 = \frac{n(n+1)(2n+1)(3n^2+3n+1)}{30}$$

BRAHMA GUPTA :

- Brahmagupta was born in 598 A.D. in Pakistan.
- He gave four methods of multiplication.
- He gave the following formula used in G.P. series.

$$a + ar + ar^2 + ar^3 + \dots + ar^{n-1} = \frac{a(r^n - 1)}{r - 1}$$

Heo gave the following formula = Area.

Area of cyclic quadrilateral with side a, b, c, d

$$= \sqrt{(s-a)(s-b)(s-c)(s-d)} \text{ where } 2s = a+b+c+d$$

$$\text{length of its diagonal} = \sqrt{\frac{bc+ad}{ab+cd} (ac+bd)} \times \sqrt{\frac{ab+cd}{bc+ad} (ac+bd)}$$

SHAKUNTALA DEVI :→

She was born in 1939.

- In 1980 she gave the product of two, thirteen digit number with in 28 seconds, many countries have invited her to demonstrate her extraordinary talent.
- In Dollar she completed with a computer to see who give the cube root of 188138517 faster. She was as university of USA. She was asked to give the 23rd root of 91674867692003915247222671265164040867939659.
- She answered in 50 seconds. The answer is 54637891. It took a UNIVAC 108 computer full one mixture (10 second more) to conform that she was right after. It was fed with 1300.
- Now she is known to be human computer.

BHASKARACHARYA :

He was born in a village of Mysore district.

→ He was the first to give that any number divided by 0 gives infinity (∞).

→ He was written a lot of about zero, surds, permutations and combinations.

→ He wrote the hundredth part of the circumference of a circle seems to be straight our earth is a big sphere and that's why it appears to be flat.

→ He gave the formulae like $\sin(A+B) = \sin A \cdot \cos B \pm \cos A \cdot \sin B$.

Activity - 3

Preparation of T.L.M for any one topic from
class 6-10 mathematics.

Mathematics teaching learning material (T.L.M) for
primary and middle school classes :-

In primary and middle school classes there are many concepts in mathematics related to our environment. It is very nice to arrange the teaching learning materials for these classes. Using teaching learning materials is very useful to make teachers presentation easy effective and attractive. Teachers learning material makes the mathematics concept easy and interesting. Lets talk about some material terms and related T.L.M that can be use and prepared easily in any school. There may be different innovative ideas smart math learning. How to make math learning smart and interesting.

Innovative education to know more
please visit page that this blog. Useful teaching
learning material (T.L.M) for mathematics
teaching in middle school classes.

Teaching learning material is the great tool to teach the students. It simplifies the subjects and makes teachers presentation interesting and attractive. Adults learn better by examples and T.L.M. In an innovative classroom just like smart class. There are many opportunities for a teacher to arrange many teaching learning materials online. They know about some useful and attractive teaching remains learning techniques visit other parts on this vlog innovative education.

Ready-made-teaching learning materials :-

In many schools there are many ready-made T.L.M. are available for teachers. Many schools have science and mathematics kits. They can purchase several ready-made teaching learning materials from the market. This ready-made T.L.M. is very useful. Teachers can purchase many mathematical instruments.

Mathematics kit for class :-

It is a good idea to prepare a mathematics kit in school. A mathematics kit should contain essential equipment used in classroom teaching. It may contain various models of math instruments and equipments like scale, compass, geometry box, number line.

models and such equipment. It should be easily available for students and teachers should encourage the students to use this kit. In primary school teachers have many ideas for teaching learning material like ball pencil seeds etc. They are very cheap and easily available. There should be a separate box to put those learning materials.

On line learning resources for mathematics:

There are several on line tools for teaching mathematics. Teachers can find many are some websites useful in their classroom. Even they can find many sites teach how to teach numbers. Now students can learn by social networking website, many social and educational websites are providing a platform to share educational content and ideas world wide. The use of such a website is very helpful for teaching and students. Different learning software help the teachers to make mathematics learning easy and fun. Teachers can use collaborative learning techniques within the class. It is very interesting to introduce project based learning. It is very helpful to use audio, visual just learning videos to explain the different hard topic in an easy way. Teachers can use different types mathematics online learning games as powerful T.L.M (Teacher learning material)

The geometrical concepts in primary and middle school :-
 In primary and middle school syllabus in Madhya Pradesh. There are some basic concept in mathematics like line, rectangle, square, triangle, circle, field, cone such type basic concept. The textbook are designed in such type to correlate these concepts with the environment use of sketch pens and colour pencil are very useful to create the interest and attraction among the students in mathematics learning.

Easy T.L.M that may be used by teachers :

It is very easy to use teaching learning materials in these classes. Teachers can use different type easily available teaching learning materials as match box for rectangle Scale for line, These are many teaching learning materials can be prepared by teachers using easily available materials. They can make different learning materials by card, sheets bangles, match boxes and so many material easily available in environment. It is a nice idea to prepare a cloth sheet for number 1, 2, 3 when teachers uses collaborative techniques to make the teaching learning material in classroom he can achieve many goals. On innovative teachers has a lot of innovation ideas for T.L.M just try to use T.L.M in your classroom and bring the new experiences of mathematics learning with try.

How to prepare mathematical teaching learning mathematics in class.

It is an easy and interesting activity to prepare mathematics T.L.M and models in classroom. Teacher can provide It is a project for the groups of students. Teacher should facilitated the students to prepare the project. Teacher can arrange the assential material for students when students learn how to prepare the T.L.M they inspired to do such action again and again.

White board as powerful teaching learning materials.

Teachers use white board in teaching the classroom. What are the smart and innovative ways to use white board as effective teaching learning material in mathematics, teaching Smart and active teaching learning method inspire the teachers to use more and more interactive teaching style. These teaching method logics ensure the students participate in learning. Teacher can facilitate the students to use board to explained their problems, ideas and practice. When students use white board they can learn better. They will be able to member the concept. For long time.

Teacher can plan how to use the white board for students. He can use white board as interactive, teaching learning material. Many educational white board are providing learning games and multimedia on mathematics. Teachers can display these multimedia lessons on white boards by the computer and projectors.

Smart and innovative teaching learning materials for smart class.

In modern classroom where we are planning to use internet and multimedia device to make classroom learning easy. Interactive and interesting. It is very nice to use internet based teaching learning materials to make mathematics learning smart and innovative. What is the internet based learning materials?

Internet provides several opportunities to make teaching interesting and interactive online learning games are the best examples for this. There are many learning games for students to make mathematics learning easy and interesting smart school class is very suitable for using these learning games better. Students learn better by games and interactive teaching techniques.

Activity - 4

Preparation of powerpoint presentation (ppt) for any topic from a different branch of mathematics.

* Some application on Trigonometry :

What is trigonometry ?

Trigonometry is a branch of mathematics that studies triangles and the relationship between their sides and the angles between these sides.

Line of sight :

We observe generally that children usually look up to an aeroplane when it passes overhead. This line joining their eye to the plane while looking up is called line of sight.

Angle of elevation : The angle which the line of sight makes with a horizontal line drawn away from their eyes is called the angle of elevation of aeroplane from them. In this topic we shall make use of trigonometric ratios to find the height of a tower, a water tank, width of a river, distance of ship from light house etc.

Angle of depression :

If the pilot of aeroplane looks downwards at any object on the ground then the angle between his line of sight and horizontal line drawn away from his eye is called angle of depression.

* Now let us solve some problem related to height and distance.

The angle of elevation of the top of a tower from a point on to ground which is 30 m away from the foot of tower is 30° find the height of the tower.

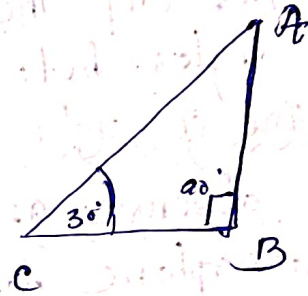
Ans : Let AB be the tower and angle of elevation from point C (on ground) is 30° .

$$\triangle ABC \quad \frac{AB}{BC} = \tan 30^\circ$$

$$\Rightarrow \frac{AB}{30} = \frac{1}{\sqrt{3}}$$

$$\Rightarrow AB = \frac{30}{\sqrt{3}} = 10\sqrt{3}$$

$\therefore$ The height of the tower is $10\sqrt{3}$ m.



Activity - 5

Methods of teaching mathematics :

INDUCTIVE METHODS

- Inductive approach is advocated by Pestal and Francis Bacon.
- Inductive approach is based on the process of education.
- In this we first take a few examples and then generalize.
- The children follow the subject matter with great interest and understanding this method is more useful in arithmetic teaching and learning.

Inductive approach proceeds from

1. Particular cases to general rules or formulae.
2. Concrete instance to abstract rules.
3. Known to unknown.
4. Simple to complex.

a. Presentation of examples :

- In this step teacher present many examples of same type and solutions of these specific examples are obtained with the help of the student.

b. Observation :

After getting the solution the students observe and try to reach to some conclusion.

c. Generalisation :

After observation the examples presented the teacher and children decide some common formulae principles or have law by logical mutual decision.

Testing and verification :

After deciding some common formula, principle or law children test and verify the law with the help of other examples.

Demerits :

- It is time consuming and laborious method.
- It is lengthy.
- Its application is limited to very few topics.
- It is not suitable for higher classes.
- Inductive reasoning is not absolutely conclusive because the generalization made with the help of a few specific examples may not hold good in all case.

Applicability of inductive method :

Inductive approach is most suitable where

- Rules are to be formulated.
- Definitions are to be formulated.
- Formulae are to be derived.
- Generalization or law are to be arrived at.

Example : law of Indices $a^m \times a^n = a^{m+n}$.

Soln : We have starts with $a^2 \times a^3 = (a \times a) (a \times a \times a)$

$$= a^5 = a^{2+3}$$

$$a^3 \times a^4 = (a \times a \times a) \times (a \times a \times a \times a) = a^7 = a^{3+4}$$

$$\text{in } a^m \times a^n = (a \times a \times a \dots a) \times (a \times a \times a \dots a) \\ = a^m \times a^n = a^{m+n}$$

Merits :

- It enhance self confident.
 - It is a psychological method.
 - It is a meaningful learning.
 - It is a scientific method.
 - It is develops scientific attitude.
 - It helps understanding because the student know now a particular formulae has been formed.
 - Since it is a logical method. So it is suits teaching mathematics.
-