Methods of Facilitating Learning

2.1 Introduction
2.2 To the teacher trainees
2.3 Teaching Methods
   2.3.1
   ➢ Principles of Play way Method, Merits and Demerits
   ➢ Role of teachers in Play way Method
   ➢ Implementation of Play way Method
2.3.2
   ➢ Anecdotal Method
   ➢ Maths Genius Baskara
   ➢ Inventor of Light
   ➢ Life saved call
   ➢ The indebted Heart
   ➢ Definition of Anecdotal Method
   ➢ Principles
   ➢ Merits of Anecdotal Method
   ➢ De-Merits
   ➢ Role of teacher
   ➢ Conclusion
2.3.3
   ➢ Project Method
   ➢ Definitions
   ➢ Fundamental Principles
   ➢ Stages of Project Method
   ➢ Merits
   ➢ De- Merits
   ➢ Role of teacher in the Project Method
   ➢ Conclusion
2.3.4

- Demonstration Method
- Points to Ponder by the teacher
- Demonstration
- Uses of Demonstration Method
- Conclusion

2.3.5

- Heuristic Method
- Introduction
- Content
- Objectives
- Implementation
- Role of teachers in the Heuristic Method
- Merits
- Conclusion

2.3.6

- Activity Based Learning Method
- Introduction
- Approaches
- Learner's View
- Teacher's View
- Uses of Activity Based Learning Method

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Methods of Enhancing Learning

2.1 Introduction:

In the ancient education system, teachers had adapted various methods to teach different subjects. In the Gurukul system of education, both the teachers and disciples lived together in a same place. In a natural environment, knowledge and values of life were taught through observation method. Before the invention of printing machines the teachers followed oral methods in their teaching. Today, the school climate has drastically changed. In the present world of information and communication technology, it would be more suitable for the teachers to select and use appropriate tools available in the field of teaching.
In this unit, we are going to analyse the different methods of teaching. It is extremely essential for each and every teacher to remember the following idea in mind.

**It is a wrong notion to think that there only one method exists to teach a concept.**

The below mentioned factors are very important to choose the teaching method.

- Ability of student
- Quality of lesson
- Nature of topic
- Creativity of the teacher
- Implementation
- Time Management

It is the responsibility of the teacher to choose the correct teaching method based on the above factors, content and the topic of the lesson. He can choose different contents of a lesson. He is the sole decision maker in his teaching. Few teachers argue that the availability of these methods is practically impossible in the classroom and they ignore it and simply reading the lesson in order to complete the syllabus in time. [Why do teachers make so much effort? Is it not the students' learn the basic objective of teaching?]

If the methods discussed in this unit are effectively used, teaching and learning becomes natural and easy. When a teacher implements continuously all these methods with a clear understanding, he would be an efficient and talented teacher. Also through his teaching experience he might introduce other new methods thus making the learning process happy.

**2.2 To the attention of the teacher trainees:-**

1. In this unit, six types of teaching methods are explained.
2. A separate model plan is provided for each method.
3. A demonstration class can be conducted for teacher trainees.
4. The trainees observe the practical classes.
5. In the group discussion they analyse the advantages and merits.
   
   Example; - Play way method
2.3 Teaching Methods:

Introduction:

All age groups prefer games as per their age level and especially the child group likes to play very much. A man during his childhood spends more time in games. Therefore, play is the natural instinct of children. Surely, it is the natural expression of their needs. It develops physical, cognitive, social and emotional growth of a child and strengthens them in a bigger way.

Difference between work and play:

<table>
<thead>
<tr>
<th>Work</th>
<th>Play</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is considered difficult.</td>
<td>It gives pleasure.</td>
</tr>
<tr>
<td>It is being thrust by others.</td>
<td>Voluntary acceptance with involvement</td>
</tr>
<tr>
<td>Physical work brings tiredness.</td>
<td>Physical work turns into an enjoyable experience</td>
</tr>
<tr>
<td>More concentration on work makes tired.</td>
<td>More concentration but no tiredness</td>
</tr>
<tr>
<td>It is controlled.</td>
<td>There is more freedom</td>
</tr>
</tbody>
</table>

Work and Play are the two different entities. What is ‘work’ for one person may be a ‘play’ for another. Maintaining a garden is the work of a gardener for his livelihood; whereas the same work becomes a hobby for a house wife to relieve her mental stress. Basically, both the activities remain the same. The work is the same for the gardener and the housewife.

A stimulant which consists of pleasure and satisfaction is the basic play.

Gauldwell Cook struggled hard to teach English and Grammar to his students. During his attempt, he invented ‘Play way Method’. In this method, he noticed that the learners had more freedom and interest in their learning.

2.3.1 Principles of Play Way Method.

Play way method is based on Activity Based learning; it stimulates creative skill and self expression.

- This system is life oriented; it serves school as a second home for the children.
- The needs of the children can be fulfilled and increased.
- It narrows down the gap between the children and the teachers.
- It creates apt learning environment.
- It helps to prolong the memory skill.
- It provides opportunities to all children to participate.

Therefore, the teacher has to plan in the initial stage itself to fulfill the needs of every child and act accordingly in the classroom.
Facilitating and Enhancing Learning - I.

Merits of Play way Method:-

Playing is a natural process for children. So, a child actively involves in it. It gets pleasure and satisfaction. Similarly, learning takes place naturally through play way method.

- Opportunity is given to a child for full participation in this method.
- It not only develops the knowledge skill of children, but also brings satisfaction in their cognitive level.
- It paves way for self-discipline.
- It gives more opportunities for children's learning with perception and mind.

De-Merits of Play way Method:-

- This method is more suitable to the pre-primary and primary level students only.
- The contents and concepts of all subjects cannot be introduced in this method.
- Few children may give more importance to playing games than learning through play way method.

The role of teachers in Play way Method:-

- The creative skill of the teacher helps to develop new learning activities and feasible classroom climate.
- The learning environment must make the children feel that learning is a joyful experience.
- Relevant teaching learning materials are to be prepared after designing the learning activities.
- The learning activities are to be arranged from simple concept to complex.
- During the learning process, the teacher must be a guide, supervisor and a leader for the learners.
- Evaluation of the students must be achieved through playway activities. Evaluation should not be ignored.
- Montessori, Kindergarten teaching methods were developed based on this play way Method.

The ‘gifts’ of Profell and the ‘learning Materials’ of Maria Montessori are the result of this method. ‘Playing’ is the predominant factor in this method. It rejuvenates the children in their leaning. It enhances their learning abilities. So, it is the duty of a talented teacher to make use of the best aspects of this play way method in the higher level of teaching and learning too.
Implementation of play way method

Ex: Teaching Grammar through play way method

English learning can be made easy by adopting various methods. It is a common rule that poetry should not be dissected. It is only for appreciation. While dealing with a poem, grammar is not dealt with. But here, in this lesson plan, poem is used for teaching grammar. Several games and activities are designed to teach nouns.

Learning outcome

- Students identify nouns,
- Identify types of nouns.
- Classify nouns.

Learning Materials

- Poem on nouns.
- Flash cards.
- Noun Box kit.
- Tree chart on Noun.
- Letter cards.

Motivation Activity

The teacher puts A to Z on the floor; students are grouped into 5 to 6 groups.

One student from each group comes out and picks up a letter card. They go back to their groups. Each group has to utter the name of a person, place or thing.

<table>
<thead>
<tr>
<th>Group</th>
<th>Person</th>
<th>Place</th>
<th>Thing</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Asha</td>
<td>America</td>
<td>Apple</td>
</tr>
<tr>
<td>B</td>
<td>Banu</td>
<td>Bangalore</td>
<td>Ball</td>
</tr>
<tr>
<td>C</td>
<td>Chitra</td>
<td>Calcutta</td>
<td>Cat</td>
</tr>
</tbody>
</table>

Teacher : Students! I have written everything on the board that you said. What are they?

Students : Names.

Teachers : Yes; they are names of either person or place or things. They are known as ‘Nouns’.

Activity: 1    Noun

A Noun is the name of a person, place or thing. (2)

Name, Name, Name.

Asoka and Akbar are the names of kings. (2)

Name, Name, Name.

Agra and Delhi are the names of places.

Name, Name, Name.
Ganga and Yamuna are the names of Rivers.
Name, Name, Name.
All these names are PROPER NOUNS, They begin with CAPITAL.
Chocolates and Biscuits are name of things (2)
Name, Name, Name.
They are known as common nouns
Can all of you count how many?
(Pen, Pencil, Books, Tables)
Yes, Yes, Yes
They are all countable nouns.

Can all of you count milk?
(Sand, Water, Stars)
No, No, No
They are known as uncountable nouns.

**Activity 2**
This Noun kit box should have five small boxes each containing at least 20 cards.
Students should be divided into groups. Each group should have one kit. The
teacher should mingle all cards, put them on the floor. The students should
categorise the nouns and put them in the right box.

**Activity 3**
Material – 2 boxes – Nouns Cards
Students should be divided into 2 groups A and B. From each group a student
comes and picks up cards (denoting only common nouns) and put it in the
countable or uncountable box as the case may be. For each right answer one
mark may be given and for each wrong answer one mark may be deducted.

**Activity 4**
**Evaluation Activity**
A passage from a non-detailed text can be given to the students. The teacher may
ask them to circle the nouns in the passage and categorise them. This should be
done individually.
Purity of Mind

Once upon a time, a rishi called Gautama did tapasya to obtain certain powers. For several days, months and years, he observed rigorous austerities. He didn’t eat and drink; He stood on a single foot; he controlled the senses; he meditated on the chosen deity; one day in the morning, he went to the river for a holy dip. On the bank of the river there was a tree. A crane which was sitting on a branch of the tree, defiled rishi’s head. The rishi was disturbed, annoyed and looked at the bird angrily. It fell down dead. The rishi was happy that he could kill a bird with his power.

After a while, he went begging for food. At one house, the house-wife was busy which again made him annoyed. She came out, looked at him gently and said, “Sir, I’m not a crane to be killed by your stare, sorry for the delay. I’m serving my husband and feeding my children. Please accept the food.” The rishi wondered how she was able to know the fate of the crane. Then as per her suggestion, he went to a butcher to know more about purity of mind. The butcher was duty-conscious and served his parents. He did not preach anything. By observing him, the rishi learnt that

“He who is sincere in service, faithful in doing duties and loving without selfishness is PURE”. The power of purity is high and priceless.

2.3.2 Anecdotal Method:
Maths Genius – Baskara

Baskara Acharya was one of the well known geniuses who contributed for the growth and development in the field of maths. He is also called as Baskara. He lived in the 12th century. He is a genius in Mathematics and an expert in Astrology. He was born in Vijayapuram in 1114 A.D. His father, Maheswarer, was a famous astrologer. Baskara was so talented that he had established his own approach in maths and astrology. Of the six books he wrote, Leelavathy, Bejakanitham, Sithandha Siromani are the most popular and notable Maths books.

His beloved daughter Leelavathi’s marriage was cancelled. So, he dedicated his first Maths book named “Leelavathi" to console and comfort his daughter. It consists of 13 titles. They are profit and loss, Interest, Measurements, Decimals, Additional series, Multiplication series, Eight basics of Arithmetics, Triangle, Quadrangle, Square root, Cube root in which all these topics are explained in detail. There was no scientific development in his period. But his vivid explanation on the principles of Zero and Decimals astonish us. He mentioned the value of \( \pi \) as 3.1428 or 22/7. His Maths book “Bijakanitham” deals with the rules of Algebra. In his book “Sithandha Siromani” he mentioned that the earth is round in shape and it has gravitational force.
Facilitating and Enhancing Learning - I.

The mathematical genius, Baskara passed away in 1185 A.D. His books give more information about the political, economic and social conditions of his period; the slavery system, money lenders and the faith of the people in astrology. After the demise of Baskara, there was a lull in the field of maths from 13th century to 17th century due to Mohemmedan invasions and the British Colonial rule. [India has named one of the satellites after Baskara to honour him.] To fill up the void Srinivasa Ramanujar was born.

**Inventor of light:-**

Who was he? He is a genius; he invented many things even at the age of 10. Inventions were easily achieved by him. It took only 10 days to invent ‘light’. But he faced some difficulties to identify the light emitting substance in the bulb. He tried whatever came to his mind, including the hair of his assistant’s beard. It took 14 months and 10 days and finally he tried with the cotton thread in the eclectic bulb which burned brightly for 40 hours. His name spread all over the world like the light in his electric bulb.

**Life saved phone call:-**

It was a true incident which took place few hundred years ago in Newyork. Standing in the brim of a building window, a young lad threatened everyone that he would commit suicide by jumping outside. Within minutes police and fire personnel rushed to the scene. News reporters also came to the site. They tried their best to convince him but they failed. An idea suddenly flashed in the mind of a reporter, who dialled immediately to the lad’s phone number. On hearing the ringing of his phone, the young lad went to attend the call in his room. The timely ringing of the phone call distracted his attention and his life was saved. The young lad was none other than Thomas Watson,

At the age of 14. Thomas Watson discontinued his studies and joined in an electric company. It also assisted the interested persons in scientific inventions by providing necessary equipments and instruments. It was here Watson helped Alexander Grahambell to invent telephone. The successful talk took place over the telephone on 10th March 1876 between Thomas Watson and Alexander Grahambell.

**The indebted heart:-**

Once there was a small boy studying in a countryside school. He used to go out during intervals to buy eatables like his friends from an old woman. But he did not have enough money to buy like others. Inspite of his inability, the old woman was magnanimous enough to supply whatever he wanted. In due course of time, the small
Facilitating and Enhancing Learning - I.

boy grew up as a talented youth who managed to hold a higher cadre in the French army. Later on his calibre and capacity raised him to the level of the Emperor of France.

One day when he was contemplating about the sweet reminiscenses of his school days, he remembered the old woman who used to supply eatables and other necessary things to whom he failed to pay money. Immediately, he rushed to the school and met the old woman. On his introduction, the old woman identified him and informed about his due amount. Only after the repayment he had a sense of satisfaction and peace of mind. Who was he? Can you recollect his name? He was none other than Napoleon Bonapart who brought fame and glory to France.

This incident in the life of Napoleon can be narrated to motivate the students, and then the teacher may teach the lesson of Napoleon.

**Anecdotal Approach:**

Anecdotal Method not only makes the lessons more interesting, but also reveals the hard work done by scientists to find out the scientific truth. The self designed tools for inventions and its principles would help the students to know and understand the facts well. In this method the scientific invention, its scientific Truth and its principles are taught along with the life history of the scientist. If the teacher follows this method, the students can inculcate the best values and principles of life in their lives.

**Definition:** According to Garial “Life is not what a man benefitted in this world; basically it is a display of the contributions of the scholars through hard work to this world."

**Principles of Anecdotal approach:-**

- True incidents in real life would be interesting.
- It enhances learning techniques or skills among the learners.
- The youth would follow the footsteps of genius people.
- The life style of scientists indirectly creates more interest to the learners in their subjects. The life history of Darwin would stimulate students’ interest in life science.
- As these scientists serve as the guardian of knowledge, beacon of tradition and culture, the future generation would follow their footprints in life.
- This approach indirectly serves as a tool to develop ‘personality’ among the students. It is possible to introduce this method at any time during the teaching learning process.

The above mentioned principles can be adapted by the teachers in the classroom to motivate the students.
Merits of Anecdotal Method:
1. The life history of great personalities is an authenticated proof to know more
   about a specific place, a city or a country.
2. Generally, the children are curious to know about an individual’s way of living.
3. Introduction of great genius people would create an interest among the youth to
   know about the history of the past.
4. Interesting events in the life of great people inspire the students in the process of
   learning.
5. The life history of kings and individuals would portray the conditions of their
   country, Government and society.
6. This method is more suitable to teach in the higher classes.
7. This method indirectly stimulates interest in specific subjects.
   For example:- The life history of Charles Darwin would evince interest in zoology subject.
8. Continuous exposure of the life history of genius people would help the learners
   to understand the life values.

Demerits of Anecdotal Method:
1. The life history of an individual, the information gathered on evidence or reason
   is recorded in different points of view.
2. Genius people and their life can not represent the common people in a society.
3. This method is undemocratic because the ups and downs of an individual cannot
   represent a society.
4. It does not contain information for day to day activities.
5. It does not provide information and ideas coherently in social science.
6. Most of the biographies do not reveal the negative aspects of great men.
7. It paves way for hero worship.
8. No time scale is followed in this method.

Role of Teacher:
1. Select the notable biographies of great personalities with their life principles.
2. It is better to use more than five biographies.
3. The Anecdotal Method should be handled in such a way that it should not lead to
   Hero Worship.
Conclusion:-
In the initial stage the Anecdotal Method is necessary. In this method the evidences and TLMs are used in this method. Though there are disadvantages, it is one of the best methods to be used to teach all subjects at all levels.

2.3.3. Project Method

Introduction:-
Activity is the integral part of life. Learning though activity is the fundamental of project method. Students gain knowledge in this method. Project method is designed based on the student’s aptitude, objectives and utility. This method makes learning easier. It serves as a bridge between schools and the society. Life oriented activities of the students in their daily life are selected. This is one of the special objectives of project method.

Definition:-
According to John Alford Stevenson, “A project is a problematic act carried to the completion in its Natural settling”. To Ballord, “A project is a bit of real life that has been imported into the school”.

Dr. William Head Kilpatrick defined, “A project is a whole hearted purposeful activity proceeding in a social environment.

Principles of Project Method:-
Objective: - The success of Project Method lies in the students understanding of its objectives.
Activity: - After defining the objectives, it is the duty of the teacher to create a learning environment. Students begin to learn through self planning, Group discussion and Group activities.
Reality: - It is necessary to create real life activities for effective learning.
Liberty: - In Project Method, learning takes place naturally. So, students perform activities freely.
Utility: - The learned knowledge must serve the immediate needs of the learners in their present life. It is necessary that the project method must be useful to the present needs.

Stages of Project Method:-
- Environment Creation
- Topic Selection
Facilitating and Enhancing Learning - I.

- Implementation
- Evaluation of Activities

First Stage: The teacher should not thrust any project forcefully. It can be selected by discussion with the learners. He motivates them by adapting any techniques from their previous experiences. The teacher provides many opportunities to identify the problem.

Second Stage: On the basis of discussion a concept or a problem or a topic can be derived at. With the assistance of the teacher, the students are divided into groups and each group is allotted a part of the problem or topic. If the selected topic or problem is irrelevant the teacher guides the learners.

Third Stage: Planning by students is necessary in the preparatory stage and the teacher must assist them. Report is prepared after the discussion. It consists of the available basic facilities, time duration, expenditure and the work allotment to different groups.

   - Identification of problem
   - Activities
   - Selection of Tools
   - Time Duration

   It is the duty of the teacher to verify the plan and allot duties to all the members of a group.

Fourth Stage:-

This is a very important stage. Learning takes place in this stage. It includes various activities.

1. Activities like Collection of Reference books, visiting places for material collection, Interviewing people and data collection.
2. Coordinated Activities
3. Guiding Activities
4. Supervising group Activities

Teacher guides every student to contribute his level best to complete the project successfully.

Fifth Stage:-

Evaluation of the project is very important. Students must examine whether their projects were completed within the stipulated time. In case of delay, the causes
Facilitating and Enhancing Learning - I.

are to be examined. The hindrances and the learned experiences are to be analyzed.

Students prepare their project report. The contribution of each group is also submitted in the class.

**Merits of Project Method: -**

- Basic Learning
- Students involvement
- Method of Integrated Learning
- Content and Learning method are linked
- Voluntary Activity
- It develops Skill and Attitude other than knowledge.
- Opportunity to mingle with the society.

**Demerits: -**

- No fixed School Time Table
- Implementation depends upon the availability of facilities.
- Activities outside the school premises might not be easy.
- Classroom learning is to be supplemented for better results.
- It cannot cover all the concepts of different subjects.
- More expensive and implementing it in ordinary schools is very difficult.
- It is a challenging task to the teacher. Only experienced teachers can execute it.

**Role of a Teacher in the Project Method: -**

In this method, teacher not only transfers knowledge, but also act as a

- Programmer
- Facilitator
- Guide
- Expert
- Advisor
- Researcher and
- Leader

The teacher creates challenging tasks. The students face the challenges and find solutions.

He must know their involvement, interest and talents of the students.

In all the five stages of the project method, the teacher needs patience to supervise all the activities of the students.
Facilitating and Enhancing Learning - I.

- The teacher assumes himself as one of the members of the group.
- He guides and supervises the students with utmost care.
- Wide knowledge and experience are essential for the teachers.

Conclusion:-

It is no exaggeration to state that this is the appropriate method for teaching and learning of all contents. It paves way for integrated learning. This project method is to be supplemented with classroom learning. The school hour is to be divided into two sections, one for the allotment of classroom learning and the other for project work. As this method involves in self – learning, the acquired knowledge is sustained. So, this method is highly benefitable for student's best learning.

Activities:-

Water Pollution:-

Objectives:-

- Understanding of the environment by students.
- Analyzing the various causes for water pollution.
- To create environmental awareness among the learners.
- The students learn about water pollution and various definitions of water pollution.
- Discussion by the students to prevent water pollution.
- Developing the skill of undertaking research in 'Water Pollution'.

Water Pollution:-

- Establishing a favorable situation to select ‘Activities’.
- Visit by the students to nearby pond, lake and the sea.
- The students observe the three types of water in polythene bags.
- Students identify the colour and the taste of the three types of water.

Identification of Problem:-

To study the properties of the three types of water, the students are divided into three groups. Each group may consist of 5 or 6 members. The three groups are named after Pond, River and Sea respectively. They discuss about the properties of water like change of colour, the taste and the problems of water pollution.

- Students clear their doubts with the teacher while analyzing the problem.
- A discussion on the identified problem by the members is organized.
- A group leader is selected in accordance with the interests and skills of group members.
When the students lack the knowledge of identifying a problem, the teacher presents a problem and helps them to analyze and find solutions.

**Example – Green House Effect**

**Planning:**
- Students are divided into different groups consist of 5 or 6 members.
- A team leader is selected from the group.
- Each group is given a problem.

E.g. If water pollution is identified as a problem; the groups are named after pond, Lake and Sea. The students analyze the various causes of the problem among themselves.

**Example:**
Domestic wastage, Agricultural wastage and Industrial wastage cause pollution. The teacher should guide the students to prepare tools and equipments for their research.

Implementation work may be carried out by choosing the problematic sites. The students plan the expenditure and the time duration of the programme. The students prepare two reports, i.e., Planning Report and the Result report.

The below mentioned water pollutants are distributed to each member of the group with a sample of 1 litre of polluted water. The students conduct experiments in the laboratory and assess the percentage of pollution.

One member in a group assesses the pollution caused by organic compounds like sulphite, Nitrate and phosphate in water.
Another member finds out the percentage of pollution caused by inorganic compounds like insecticide and fungus in the water.

The other student in the group evaluates the percentage of pollution caused by biological factors in water.

Another student assesses the pollution of water by oil spills.

The domestic wastage which pollutes the pure rain water is also assessed.

The percentage of pollution caused by insecticides like Malathian, Endrin and Bacon is also ascertained. The amount of pollution caused by Industrial wastage is also assessed.

The above mentioned things pollute water. Each student in the group assesses it individually and then collectively study the data to determine the various causes of pollution. With the guidelines of the teacher, the students discuss and prepare a final report about the possible measures to be taken up to prevent water pollution.

**Causes and Percentage of water Pollution:**

- Water pollution caused by Industrial waste, Domestic waste and Agricultural waste must be evaluated.
- Self learning by the students about pollution is also evaluated
- Evaluating the effects of water pollution
- Merits and Demerits of the research undertaken
- Evaluating the recommended preventing measures, Implementation period and the expenditure to be incurred. *e.g.: Steps to clean the sewage water.*
  - i. Primary Treatment
  - ii. Secondary Treatment
  - iii. Teritary Treatment
Having a thorough knowledge about the three types of treatment, the industrial wastage, the domestic debris, the agricultural sewage may be treated properly and the remaining wastage let out.

**Conclusion:**

By this research, the students understand the importance of safeguarding the clean environment. Also, the students develop individual skills and group attitude towards pollution. This project method is considered as the best method because it develops the thinking ability. It also promotes integration and creates good citizens.

**2.3.4. Demonstration Method**

**Introduction:**

The principle of Education is not to provide information to the students. On the other hand, the primary aim is to help the learners possess ‘skills’. The teacher adapts different methods to fulfill this objective in the classroom. The methods are inductive, deductive, Project Method, Dramatization and play way method etc. One such method is ‘Demonstration Method’.

To explain concepts, the teacher uses relevant tools and directly demonstrates it before the students. This is known as Demonstration Method.

The Demonstration method paves way for a thorough knowledge as they learn by seeing. The teacher serves as a guide, counsellor and facilitator in this method.

While the teacher conducts the scientific experiments in the class, he poses questions and explains in order to attract the attention of the students and stimulate interests among them.

As the teacher provides information in between the experiment, this method is also known as ‘Demonstration with Explanation’. The teacher also clears the doubts raised by the students at the time of demonstration. So, this method enhances the learning skills of the students.

**Points to Ponder by the Teacher:**

- The teacher introduces the lesson clearly, actively and in an interesting manner.
- The contribution of science in our daily activities and its benefits can be introduced along with the introduction of the biographies of scientists
- It is essential to check the instruments before experiment.
- The experiment must be lesson oriented.
- During demonstration, the equipments and the experiment are viewed by the students clearly. The teacher gives some tools to the students to handle them.
Do not announce the result before the experiment. Let the students observe the demonstration closely and then tell the results of the experiment.

**Method of Demonstration:**

Demonstration is not an experiment; students also can be involved by the teacher. The objective of demonstration method is: Explaining a concept, problem solving, Revision and completion.

The various steps involved in the demonstration method are:-

a. Planning
b. Introduction
c. Experimentation
d. Blackboard usage
e. Concepts completion

**A. Planning:**

- Confirm if the lesson is suitable for this method.
- Collect necessary tools and equipments for demonstration.
- The necessary instruments are arranged properly and correctly on the table for the students view.
- If any breakable instrument is used in the demonstration, an extra is to be kept in reserve.
- The experiment is tested by the teacher before demonstration.
- Explanatory notes and questions must be prepared by the teacher for demonstration.

**B. Introduction of the Lesson:**

- The students are well motivated by the teacher in order to accept new concepts after the experiment.
- The teacher must introduce the lesson as a ‘Problem’ or an issue, so that the students understand the importance of the lesson.
- The teacher should introduce the lesson either by quoting his own personal experience or from the information collected or by stimulating the interest of the learners.

**C. Experimentation:**

- The curiosity of the students must be kindled by the teacher during the experiment.
- The students must be able to follow the experiment of the teacher.
Teacher must compare the experiment with the day to day activities of the students.

- Handle the instruments safely.
- Keep the instruments clean
- Instruments must be arranged in their respective places.

**D. The usage of Black board:**

- To make the students understand the significance of the demonstration method, the teacher should write the objectives clearly on the Black board.
- Draw relevant pictures.
- Write the results of the experiment immediately on the Black board.
- Make the students write the tabular columns and draw the pictures in their notebooks.
- The teacher should check the students while writing.

**E. Lesson Concepts Compilation:**

The results of the experiment and its explanation are presented in the class.

**An Example of Demonstration Method:**

A lesson from the II STD, text book titled “Come Let’s touch the SKY” is taken as an example for Demonstration method.

**A. Planning:**

- The objective of this experiment is to make the students understand ‘Solar eclipse’.
- A Torch light, a small ball, a big ball and a Globe is collected.
- Darken the classroom before starting the experiment.
- The teacher himself conducts the experiment.

**B. Introduction of the Lesson:**

- The teacher creates interest among the learners by playing shadow games with his fingers with the help of torch light in the dark room.
- Conduct simple experiments to explain that the distance between the light and the real object brings changes in the shape of the real object in shadow.
- The teacher writes the tabular columns on the blackboard before the experiment and he instructs the students to copy the same in their note pads.

**C. Demonstration:**

Collect a small ball, a big ball and a torch light. Let the small ball stand for Moon, the big ball for Earth. Torch light stands for the Sun.
Place the Moon between the Sun and the Earth focus the light from the small ball i.e. The Moon.

**Question to be asked to the Students:-**
1. Does the sun light cover the Earth entirely?
2. Why doesn’t the light not cover the Earth completely?
3. What prevents the light from covering the Earth entirely?
4. Why does darkness occur on the Earth?
5. Does the shade of the Moon cover the Earth completely?
6. Why does the moon’s shadow fall on the Earth?
7. Can the people under the effect of Lunar Eclipse see the Sun?
8. Why does not it occur daily?
9. What is this ‘occurrence’ called? When does it happen?

**D. usage of Blackboard:-**
- Draw the picture of torch light, a small ball, a big ball and the tabular columns on the black board.
- The teacher writes the following on the black board.
- Solar eclipse occurs when the sun, the moon and the Earth appear on the same path in a straight line.
- It happens during the Day.
- It occurs on the New Moon Day.

**E. Compilation of the Concepts of the Lesson:-**
Solar eclipse occurs during the day, when the Moon occurs to be between the Sun and the Earth and it happens on the New Moon Day. This concept is explained to the students.

**Uses of Demonstration Method:-**
- Demonstrative method occupies a predominant place in the method of teaching because of its multiple benefits.
- It is cost effective because of its limited instruments.
- As the teacher performs this method, it becomes more economical and time saving.
- Teacher explains the concepts during the experiment and so the students clearly understand the concepts of the lesson.
- The doubts of the students are cleared during the demonstration by the teacher then and there.
- Students get opportunities to do the following activities.
Facilitating and Enhancing Learning - I.

- Observation
- Note making
- Questioning
- Drawing
- Involving in Experiments

➢ This method is more suitable for the teacher because he handles minute tools, conducts hazardous and time consuming experiments.
➢ It promotes sustained attention among the students and paves way for useful learning.
➢ It stimulates learning. Further, it reduces the distraction of attention very much among the learners.

Conclusion:-
Most of the teachers in the primary schools adapt the demonstration method due to economical factors and the non-availability of additional tools, equipments, instruments and materials. Instead of teaching, if the teacher follows the demonstration method the learners comprehend the concepts of the lesson clearly and effectively.

Think and do: How will you identify the properties of materials by following the demonstration method?

2.3.5. Heuristic Method

Introduction:-
Heuristic method is one of the teaching methods introduced by Professor Henry Edward Armstrong. This method is based on the inductive method. Professor Armstrong used this Heuristic method in the teaching of science.

Meaning:-
Heuristic method is the method in which children discover and find things by themselves. They are placed in the position of discoverers or inventors. He involved his students in finding out themselves instead of telling or lecturing them. Problems are provided to the students. The students were expected to take observations and conduct experiments as per the instructions. Conclusions were drawn by the students. They were introduced to reasoning skill from their own observation and experiments.

Objectives of Heuristic Method:-

Increasing the Scientific Attitude:-
In this Heuristic method of teaching, the students attain scientific knowledge through scientific approach. The learners read, think, learn and conduct scientific
experiments to know the results. They invent new principles. The students develop scientific attitude, critical attitude and spirit. They also begin to think scientifically and act accordingly. It makes pupils more exact, more truthful, observant and thoughtful for future self-education.

**Readiness for Inventions:**

The students discover and find things by themselves for any problem. This method enhances the growth of a spirit of enquiry and research.

**Creating congenial Atmosphere:**

The success of learning depends upon a favourable classroom climate. The students are allowed to discuss freely and necessary tools must be supplied by the teacher.  

**SCIENTIFIC TRUTH:**  

E.g. Newton’s Three Laws of Motion.

The Heuristic Method of teaching directly involves the students in the process of learning through scientific truth enquiries and experiments. The students are responsible for their findings and conclusions. Therefore the students are exposed to finding of facts or Truth for any problem.

**Readiness for Hardwork:**

The role of students in this method is more than the contribution of the teachers in this method. Continuous effort is essential till they identify the scientific Truth. Since all the students are involved in all types of activities like questioning, data collection and discussion, they develop dexterity, self effort and perseverance among themselves.

**Creating self – Confidence and Responsibility:**

Each student is given a problem thus creating a situation to solve it compulsorily and individually. Each learner is made responsible to find out something for himself. This method provides self – confidence and scientific attitude.

**Procedure:**

Each student is provided instruction sheets, with an identified problem and the students are expected to take observations and conduct experiments according to those instructions. They collect information from various sources. Teacher also guides the students to discover the facts by encouraging them. When each student tries on his own to find solution for the problem, he realizes his responsibility.

The learners solve problems, with their acquired knowledge. They also conduct experiments, gather information from the library. They learn facts through hard work and they analyze the problems thoroughly before deriving a solution. The learners are in the
position of researchers and scientists in this method. So, every student knows how to approach a problem, to collect information, to give explanation and to find solution.

**Role of the teacher in the Heuristic Method:-**

The teacher should plan and give problems which are in accordance with their attitude, age, aptitude, interest and ability. The teacher should possess ample knowledge and information about the problems. The teacher replenishes and keeps his store of knowledge up-to-date to clear all the doubts raised by the students. The teacher must be sympathetic enough to create a favorable classroom climate and maintain an atmosphere of freedom. The teacher helps the students as a friend and guide during the process.

**Merits of Heuristic Method:-**

- It develops a scientific and critical attitude in the students
- It arouses the spirit of enquiry in the learners.
- It fosters the art of testing patiently, observing keenly, conducting experiments neatly, cleanly and responsibly.
- It develops self effort, self-confidence, self-reliance and self-determination.
- It helps to develop good rapport between the teacher and pupils.
- They would be able to solve any problem in their life in future. This method provides enough training to prepare themselves for life.
- As the students learn facts through their own labour, learning becomes more effective and permanent.

**Example for Heuristic Method:-**

The student finds out a solution for a problem on his own effort as a researcher instead of getting the facts directly from the teacher.

**Stages:-**

- Identification of a problem
- Experimentation and observation
- Problem solving
- Evaluation

**Procedure:-**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Subject</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>: -</td>
<td>: -</td>
<td>‘View the changes’</td>
</tr>
</tbody>
</table>
The students learn that a solid changes into liquid and liquid changes into gaseous state when heated.

**Preliminary Task by the Teacher:**
The teacher collects lac, candle, sugar, rock salt, Aluminum plate, water, kerosene, petrol, insence sticks, camphor, piece of wood and butter. Each student is asked to select any one of the above things. The name of the thing and its present state is noted.

**Identifying the Problem:**
The collected materials are distributed. The teacher questions whether the selected material would change its present state to the other.

**Pupils Activity:** *(Observation of the experiment)*
A candle is lighted on the experiment table to heat the selected material with the help of the necessary instrument; every student heats the material and observes the changes.

**Example:**
1. The student with the lac heats it in the candle light and the student observes the solid lac turn into liquid state.
2. A few drops of water on an aluminium plate, turns into gaseous state when it is heated in the candle light. The change of state is observed.
3. The student with the incense stick observes that it turns into gaseous state directly, when it is lighted in the candle.

Likewise, each student heats the selected material in the candle light, observes the change and writes down the results.

As stated above, the results of the heated materials are marked in the below mentioned tabular column.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Existing State of the Material</th>
<th>Name of the heated Material</th>
<th>Change of State</th>
</tr>
</thead>
</table>

From the above table, it is learnt that heat is necessary for a material to change from its existent state to another.

**Evaluation:**
The names of different materials are written in bit papers. They are neatly rolled and placed on the table. Each student is called to select one paper from the table. He reads the name of the material aloud and he himself tells the existent state of the material and its changing state when heated.
Conclusion:-

Learning is made easy through Heuristic method. It increases the knowledge of the learners and also the skill of teaching among the teachers. It further increases the skill of thinking, problem solving, decision making and creates interest in learning in the students.

Practice:-
Select a content of a lesson and develop Heuristic Method of activities with its learning outcome.

2.3.6. Activity Based Learning Method

Introduction:-
Education must bring out the hidden talents and the personality skills of the learner. The ‘Yashpal committee’ consisting of educationists strongly voiced its concern to reduce the burden of the primary school curriculum and the books to create improvement in the primary education. Education must provide a joyful learning atmosphere in the classroom and opportunities for all the learners to participate in the teaching learning process. Fostering the creative skill of the students and developing self-confidence of the learners are also recommended in the National Curriculum Frame Work - 2005.

In the ABL method, the children are active learners rather than passive recipients of information. The higher motive of ABL method is to provide complete learning freedom to the pupils in the classroom without fear. This system must create opportunities to learn as per their choice, interest and their own pace. Students learn through activities in the ABL method. Individual learning, Group learning, Experiments, Discussion, Drawings, Data collection, Games, Analogy, Sensory Learning are some of the activities through which a learner gets permanent learning experience. It is a joyful method of learning. The method helps the students to understand the contents.

In the ABL method, there is a provision for self-directed learning, learning by doing activities, group learning, sharing of learning, and reinforcement of learning activities. The learning activity is a child’s individual experience. It cannot be expected to take place for all the learners at a time simultaneously. Based on this principle, a new method of teaching and learning emerged which is known as “Activity Based Learning”.
The Process of ABL Approach:-

The classified competencies of each class are split into different parts / units and treated as steps of learning. Each part is called a milestone.

In each subject, the relevant milestones are clustered and linked as chain and this chain of milestones is called Ladder.

1. Preliminary activities for skill development.
2. Reinforcement activities for the learned skills.
3. Practice activities
4. Evaluation activities
5. Remedial activities
6. Enrichment activities

   All activities are represented by different Logos.

Special Aspects of ABL:-

Students from I STD to IV STD learn through ABL method.

Colourful activity cards are prepared for each subject.

The competencies to be acquired by the learners in each subject are split into different parts or units and converted into different activity cards. Each unit is called a milestone. Each milestone has different steps of learning process and each step of learning process is represented by different logos. In each subject, the relevant milestones are clustered and linked as chain and this chain of milestone is called Ladder. The students with the help of activity cards learn from one simple step to complex stage. No student can move to the next higher step of learning unless he learns the previous one. The different types of activities such as introduction, learning by doing, reinforcement, remedial learning, practice, evaluation and enrichment activities are represented.

   It develops self-confidence and students learn on their own pace.
   There is no burden of books, no fear of Examination and marks.
   Learning is strengthened in group learning. With the guidance of the teacher the child chooses his learning activity.
   It reduces the wide gap between the teacher and students and develops a friendly attitude.
   Assignments can be completed either in the classroom or at home.

In the view of children:-

Freedom of Learning in the classroom stimulates interest in school. As there is no burden in the curriculum and text books. They feel 'Second Home'. The children
have freedom to choose the activities on their own and there is no compulsion. So, interest in learning increases. Children in the class sit in rounds, discuss with other students and learn in a friendly situation. So, learning climate is created in the classroom. Colourful cards, freedom in learning, discussion with the friends during learning, free movement in the classroom, no examination fear, individual attention of the teacher with a friendly attitude, guidance of the teacher by sitting close with the learners make the learning experiences more interesting.

- It allows discussion with his classmates and shares his ideas about the lesson.
- No fear in clarifying the doubts with the teacher. No fear of missing the lessons in case of absence by the learner.
- It is a novel method of sitting in rounds with his peer group in the class.
- Filling up of the weather chart, tabular columns and visiting places to collect information stimulates experimental attitudes.

In the Views of Teacher:-

Teachers are happy when the children attain mastery in a learning skill. The achievement level of all learners in the class can be easily assessed simultaneously. As the learning level or stage of the student is clearly understood, the inspecting officers can only assess his learnt skills. So, unnecessary fear among the students and the teacher is avoided. Identification of the learner’s difficulty in learning a skill is easy and extra practice can be given. It is a result oriented method and so there is a sense of satisfaction among the teachers. The difficulties faced by the teacher in the I STD level while introducing Zero level milestones are shared by the co-teachers. The Activity Based Learning Method promotes Honesty, Discipline, Punctuality, Responsibility, Self-confidence, Leadership quality and helping tendency among the pupils. In the past blackboard was used only by the teacher and now it becomes the vital learning tool for the learners. Text book based teaching is replaced by the colourful and attractive picture cards which are directly handled by the students in the process of learning. The act of Learning by the learners themselves in the classroom is a pleasing sight to be witnessed.
Benefits of ABL Method:-

- Children learn on their own pace.
- The teaching time is judiciously distributed among the children. Only needy children are addressed by teachers.
- More provision for self-directed learning and teacher directed learning is reduced considerably. It is not teacher centred. It is learner centred.
- Children’s participation in every learning step is ensured in the process of learning.
- New learning techniques like self-learning and peer-group learning are implemented.
- The scientific approach of evaluation is inbuilt in the system. It is done without the child knowing it.
- Periodical absence of children due to festivals and house hold functions from school is properly addressed by permitting them to proceed from the discontinued activities.
- Attractive cards and activities create interest among children.
- Children have the opportunity to know their achievement level.
- The wide gap between the teacher and the children is very much reduced and the teacher acts as a facilitator rather than teacher.
- Freedom in learning as the child chooses his activity.
- There is scope for the child to transfer his ideas which results in the development of communicative skills.

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Before PowerPoint I had to remember what it was I came here to say, and you had to write your own handout notes.