SRI GOWTHAMI
COLLEGE OF EDUCATION

(Recognised by NCTE, Govt of Andhra Pradesh)

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SRI GOWTHAMI

COLLEGE OF EDUCATION

Affiliated to

ACHARYA NAGARJUNA UNIVERSITY

2015 - 2017

Sem-I

Name : DEEPTI PATEL

Subject : PHYSICAL SCIENCE

Roll No :

Register No : 16ED90102

CERTIFICATE

This is to certify that Mr. Mrs. Kum. DEEPTI PATEL

Class No.....Regd. No. Y16ED90102 of College of Education visited our Institution and conducted the required activities / collected the required data regarding to.....

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

Name :

Signature of the Head of the Institution

Name :

Seal :

This is to certify that Mr. Mrs. Kum. DEEPTI. PATEL.

Class No.....Regd. No. Y16ED90102 has completed the required activities regarding to.....

Practicum towards fullfillment of B.Ed. Course work stipulated by the Government of Andhra Pradesh and approved by Acharya Nagarjuna University.

This record is assessed.

Valued by

Lecturer in-charge

Lecturer
Sri Gowthami College of Education
DARSI, Prakasam Dt. A.P.

College of Education

ACTIVITIES – 1

1 Identify the most abstract concept from any class Physical Science textbook Suggest ways and means to make it easy to understand and concrete.

Classification of Elements: Periodic Table

i) key concept:– Triad, Octave, Periodic law, Periodic table, Periodic group, lanthanides, Actinide, Element family, metalloids, Periodicity, Atomic radius, Ionisation energy, electron affinity, electronegativity

ii) Learning outcomes:–

(1) Conceptual understanding:–

→ Explains Dobereiners law of triads, Newlands law of octaves, characteristics of modern Periodic table.

→ classifies elements on the basis of atomic number and electronic configuration.

→ Explains the difference between mendeleefs Periodic table and the modern periodic table.

→ Gives reasons why different exhibit same characteristics as per Dobereiners and Newland's theories.

→ Analyses the changes in atomic radius, atomic volume Ionisation energy, electron affinity in the Periodic table.

→ Analyses equation

(2) Asking question and making Hypothesis :→

→ Questions why elements exhibit common characteristic theory they are special when compared to other elements.

→ Discusses mendeleefs hypothesis and proofs in a later period.

→ makes hypothesis on the properties or elements based on periodicity.

3. Experimentation - field investigation:—

→ (1) discusses (2) oberenaik's triads Newlands octaves, mendeleef is periodic law.

→ (2) discusses the basis for the changes across a grou period.

4. Information skills and Project:—

→ collects and analyses the information on elements hypothesised by medeleef.

→ Tabulates and displays the information related to the characteristics exhibited by different elem to periods and groups based on periodic table.

→ collects and displays the additional informatio needed to explain, Ionisation energy and electr affinity.

6. Appreciation and aesthetic sense-values:—

→ Appreciates that different elements in nature exhibits diversibied characteristics

→ Appreciates that mendeleef's hypothesis be wo true that elements are arranged in an order

5. Communication through drawing pictures:—

→ Prepares flow charts to explain periodi rule or (2) obernaic, Newlands and mendeleef.

→ prepares block diagram, flow charts to show the characteristic of modern periodic tal

7. Application to daily life and concern to bio-diversity :→

→ Identifies the diversity displayed in the arrangement of elements having different characteristics.

→ Identifies the diversity displayed in arrangement of elements having different characteristics.

→ Identifies the relation between group and period in periodic table and also the the properties of elements.

→ uses rules of periodic table in solving chemistry problems.

ACTIVITY-2

Identify concrete and Abstract concepts in Physics and chemistry or any class and Suggest the appropriate teaching methods and approaches to teach them and report.

lecture cum Demonstration method:-

lecture method:-

⇒ It is oldest teaching method given by Philosophy or idealism. As used in education the lecture method refers to the teaching Procedure involved in clarification explanation of the Student or some magore idea. This method lays emphasis on the penetreaction of contents teacher is more active and Students are passive but it. also uses question answers to keep them attentive in the class. It is used to motivate, clarify.

demonstration method

The dictionary meaning of the word "demonstration is the outward showing of a feeling etc. a description and explanation by experiment. So also logically Proof the truth or a practical display of a piece of equipment to show its display of a piece of equipment show its capabilities. In shored it is a Proof provided by logic argument etc.

The success or any demonstration following points should be kept in mind.

1. It should be planned and rehearsed by the teacher before hand.
2. The apparatus used for demonstration should be enough to be seen by the whole class. If the class may be disciplined she may allow them to sit on the benches to enable them a better view.
3. Adequate lighting arrangements be made on destration table and a proper background also to be provided.
4. All the pieces of apparatus be placed in order and starting the demonstration. The apparatus likely to be used should be placed on the left hand side of the and it should be arranged in the same order in which it is likely to be used.
5. Before actually starting the demonstration a clear statement about the purpose of demonstration be made to the students.
6. The teacher makes sure that the demonstration be force method leads to active participation of the student in the process of teaching.
7. The demonstraction should be interesting so that it captures the attention of the students.

8. the demonstration should be quick and slick and should appear to linger on unnecessarily
9. It would be better if the teacher demonstrates with materials or things the children handles every day life.
10. For active participation of students the teacher may call individual student in turn to help him in demonstration.
11. the teacher should write the summary of the principles arrived at because of demonstration on the black board. The black board can be also used for drawing the necessary diagrams.

Steps needed to conduct a lecture-cum-demonstration lesson:

1. (Planning and preparation):—

A great care be taken by the teacher while planning and preparing his demonstration. He should keep the following points I mind while preparing his lesson.

a. Subject matter.
b. Questions to be asked.
c. Apparatus required for the experiment.

To achieve the above stated objective the teacher should throughly go through the page of the text book, relevent to the lesson. After this he should prepare his lesson plan in which he should essentially include the principles to be explained, a lot of

experiments to be demonstrated and type of questions to be asked from the students. these questions be arranged in a systematic order to be followed in the class.

2. INTRODUCTION OF THE LESSON:— As in every subject so also in the case of science the lesson should start with proper motivation of the students. It is always considered more useful to introduce the lesson in a problematic way which should make the student's realise the importance the topic. The usual way through which the teacher introduce the lesson is be telling some personal experience or incident or a simple and interesting experiment.

3. PRESENTATION:— The method presenting the subject matter is very important. A good teacher should present his lesson in an interesting manner and not in an boring manner. To make the lesson interesting the teacher may not be very rigid too remain with in the prescribed course rather he or she should make the lesson as much as broad based as possible for widening the lesson the teacher may think of various useful application taught by him. He is also

4) PERFORMANCE OF EXPERIMENT ⇒

A good observer has been described as a perso who has learnt the use the senses or touch, sight smell in an intelligent way. through th method want children to observe what hap in a experiment and to state it carefully. we also want them make generatization with violating scientific spirit i.e. we should allow children from one experime or observation The following steps are generaly epted as valuable in conducting science experiegene

a. Write the problem to be solved in simple we

b. To make a list of activities that has to b use to solve the problem.

c. Gather material for conducting the experiment.

d. Work out a buremat of steps in the orde procedure so that every one know what to be done.

e. Teacher should try the experiment before conduction.

f. Record the findings.

g. Assist students to make generalisation.

5) BLACK BOARD SUMMARY ⇒
A summary or important results and principle should be written on the black board. Use of black board should be also frequently used to draw sketches and diagrams. the entire procedure should displayed to the Students after the demonstration.

6) SUPERVISION :- Students are asked to take the complete notes or the black board summary including the sketches and diagrams drawn. Such a record will be helpful to the student while learning his lessons. such a summary will prove beneficial only it has been copied correctly from the black boards and to make sure that it is done so the teacher must check it frequently ~~during this stage~~.

7) COMMON ERRORS IN DEMONSTRATION LESSON ⇒
Summary of the common errors committed while delivering a demonstration lesson is given below.

- Apparatus may not be ready for use.
- there may not be an apparent relation between the demonstration experiment and the topic under discussion.
- Black board summary not up to the mark.

- Teacher may be in a hurrey to arrive a generalisation without allowing students to arrive at a generalization from facts.
- Teacher may take to talking too much wh will mare the enthusiasm of the students
- Teacher may not take have allowed sufficie time for recording of data.
- Teacher may fail to ask the right typ of question.

MERITS OF LECTURE CUM DEMONSTRATION METH

a. It is an economical method as compared t a purely Student Centered method.
b. It is a psychological method and Students take interest in the teaching Learning process.
c. It leads the students from concrete abstract situations.
d. It is suitable method if the apparat to be handled is costly and sensitive Such apparatus is likely to be handled and damaged by the student.
e. This method is safe if the experim is danger if in comparison to the un project method it time saving but purpo

lecture method is too.

G. It can be successfully used for all types of students.

H. It improves the observational and reasoning of the students.

LIMITATIONS OF LECTURE CUM DEMONSTRATION METHOD :→

a) It provides no scope for 'Learning by Doing" for the Students as students are only observing the teachers performing.

b) Since teacher performs the experiment at his canpace many students may not be able to corchend the concept being clarified.

c) It fails to develop Laboratry skills on the Student.

d) It fails to imparct training in scientific attitude in this method students many.

e) Since this method is not child centred it make no provision for individual differences all type of students including slow learners and genius how to proceed with the same speed.

—x—

ACTIVITIES-3

3. Prepare an assignment on any Physical Science and its application and implications with other branches of knowledge.

Why Humans Communicate:

Humans are all about communication. We Communicate with our families, we Communicate with our coworkers we Communicate with strangers. The communi we develop could not have been sustained with out good communication. and today, where the entire world is connected. Communica Continues to be vital But is order communica over huge distance at different times the da and night we need some tricks up our sleeves.

Physics is so integral to those tricks at really there is no example of communicati technology that isn't an application of Physics. teacher all, Physics is the Science Concerned with nature and Properties of energy and matter. It attempts to explain everything in the Universe. The telephone was an applicat of physics. back further, so was the telegraph. But for is lesson, well focus

on some modern communicate technology and their origins in physics. To send a communication from one place another, a signal or data must pass between locations. There are two main type of signals: analog and digital.

Analog signals & Electromagnetic waves:-

An analog signal in physics is just a wave. There lots of types of waves, but for communication of the important ones are part of the electromagn spectrum the electromag-netic spectrum includes. radio waves, microwaves, infrared, ultraviolet, x-ray and gamma rays.

An example of sending analogy communication. be satellite communication. Satellites are artificial objects in orbit around the planet like the earth. We use satellites for many things, but communicate is probably the most common - one of the first of a satelite was when the president of the unistates was able to broad a christmas message 1958. The first message to be transmitted via today communication satellites are used to streams messages across the whole world.

for business between world leaders for news reports and phone calls and Internet connections.

The sign[illegible]d are radio waves

The signals satellites send are radio waves. Those radio waves are used to send our communications into space, and then the satell transmit them back down to the Earth, again as radio waves. the pattern of the wave represents the exact audio being transitte A large peak might be a loud sound, for example, and a small one a quiet sound. But th computers that send and receive those signals are not analog. they are digital and the physics of digital ginals is quite different

(A sending and receiving satellite dish)

DIGITAL SIGNALS & ELECTRONS

The computers used to send and receive the Siginals work on physics principles. They turn analog radio waves into digital signals represented by electrons whizzing along circuit boards. Digital ignals contain a series of ones and zeros otherwise known as binary computers understand is language perfectly. The electric current ~~varies~~ represent these ones and ~~zeros~~. at just to confuse things, digital signals can also be sent using electromagnetic radiation. this is done through a communication technology fiber optics.

Fiber optic cables are cables containing materials called optical fibers that can electromagnetic waves - usually infrared. The infrared light reflects off the sides of the to continue down the length

until is reache. destination. These signals are digital just like electrons a pulse of light represents a and the absence of a pulse represents zero computers can receive these pulses and make and them.

Fiber optic cables are often used to Sen audio signals in home theater systems and for in net connections. But readly, fiber optics cable can be used to transmut any kind of informa including telephone calls - they are often used important connections like expensive business communication links or long - distemce links. and then there is the Internet. The internet is a world wide system of connected computers allowing transfer of information, and communication like mails, audio conversations and video chats. The internet is probably one of the biggest advances of last 30 years. It has revolutionzed way we commun -icate, do business and learn out our world.

ACTIVITIES -4

Preparce biographical sketch or and scientist and his/her contributions to physics.

EARLY LIFE AND EDUCATION =>

John Thomson, who was always called J.J.. born in Cheetham hill, England, near manchest in 1856. His father was a bookseller who planed for Thomson was sent to bide his time owens College at the age of 14 in 1876. he received a small scholarship to attend Trinity college at combridge to study mathematics.

Thomson worcked in ~~the~~ cavendish laboratory after ~~graduation~~, under ~~the~~ tutelage of Lord Rayleight. He quickly earned a membership in he prestigious Royal Society and was appointed Rayea ayleights successor as the Cavendish Progessor of physics at the age of 28. He was both respeted and well students came brom around

Peresonal libe and Later years! —

Thomson married Rose Payet one of his Students in 1892, They had one daughte Joan and one son. George paget thomsor who went on to become a physicist and win a Nobel Prize of is own. J.J. Thom published 13 books and more than 200 papers in his libetime. addition to being awarded the Nobel Prize in 190 He was Knighted in 1908 by king Edward He left research in 1918 to become master of Trinity college He died in Comidge on August 30, 1940 and is buried in westminister Abbey near two others influenceal scientists. Isaac Newton and charles Darwin.

RESEARCH ⇒

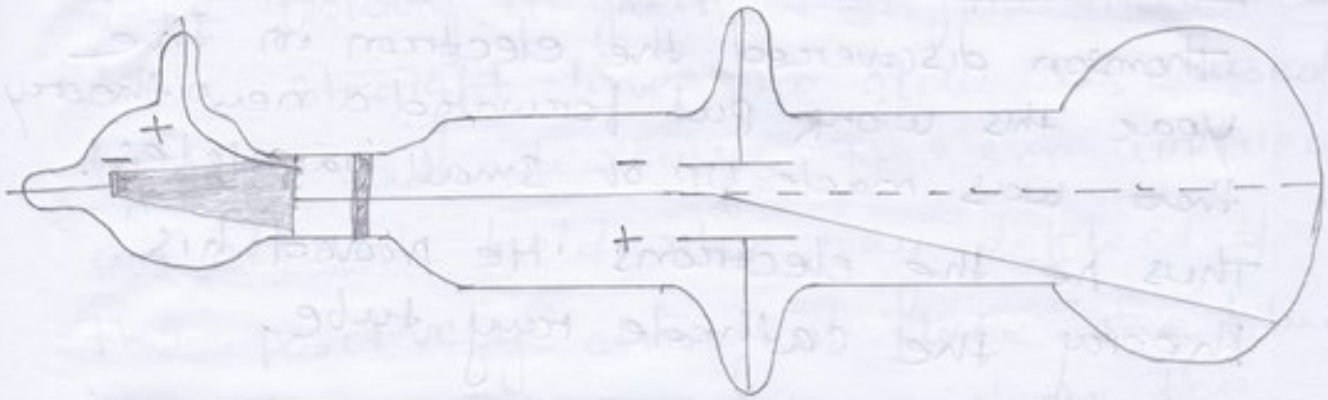
In 1894, Thomson began studying cathode ray which are glowing beams of light that folow an electrical discharge in a high vacum tube. It was a popular research topic among Physics at the time because the nature of cathod ray was unclear.

Thomson devised better apparatus and
Meter than had been used before. When he
pass the rays through the vacum, he was
able to measure the angle at which they
were created and calculate the ratio of the
electcharge to the mass of the particles. He
divarced that the ratio was the same
regardless of what type of gas was used.
which led him to conclude that the particle
that made up the gases were universal.
Thomson determind that all matter is made
of thiny particles that are much smaller
atoms. He originally called these particles
Co-Scles. Although they are now called
electrods. the glowing materials bent
towards the positively charged plate. He
found out that the towing light were
smaller particles. they were small r than
the atom. Thus. Thomson bound the Parteled
called electron. Thus J. J. Thomson's
atomic theory was found.

Thomson suggested that the electrons came out the trace gas that was inside the cathod tube. thus a new theory that atoms were made of tiny particles suggested.

Thomson discovered the electrons and it was coined that atoms were made up of protons. electrons and neutrons. Thus thomson proved that the atom was divisible, since the atom was neutral, Thomson suggested that the negative charge electron equalled the positively hanged Proton and neutrons had no charges. Thomson suggested to consider the atom as a phere. It has positively charged Particles the positively charged particles is surrounded by negatively charged electron. the electrons were placed there due to electrostatic forces.

J.j thomson's Experiment for his Atomic Theory



This discovery upended the prevailing theory the atom was the smallest fundamental unit. In 1906, Thomson began studying positively charge ions, or positive rays. This led to one of his other famous discoveries in 1912, when he characterised a stream of Ionized neon through a metic and an electric field and used deflection techniques to measure the charge to mass ratio. In doing so, he discovered that neon composed of two different kinds of atoms proved the existence of Isotopes in a stable element. This was the first use of mass spectrometry.

INTRODUCTION TO J.J. THOMSON ATOMIC THEOR

Thomson discovered the electron in the yeae this work put forward a new theor that was made UP of small particles. Thus he the electrons ·He proved his theory the cathode ray tube.

Scientists had already done many experiment to find the structure of the atom. that passed an electric curren through a vacume tube. It travelled in a straight line. they could not explai the phenomenon. Thomsons did more experiments on the cathode tube. He plac two electric plates on is path. One was positively charged. The other was negati charged. the glowing light towards the positively charged plate and forceed J.J. Thomson Used a highly evacuated discharge tube. placed two anodes inside the tube. He fixed two parallel to each other inside. the tube He pass a thin cathode ray through the pin hole

of the tube could see the sides of the tube glowing in green. the glow travelled in a straight line. the glow was caused by the cathode rays. Now son applied an electric field. the ray deflected the positively charged plate. the blue line in the above picture shows the deflection. Thus Thomson discovered the electrons.

J.J. THOMSON ATOMIC THEORY - PROPERTIES ELECTRONS →

The Properties of electrons were found out by experiments.

When a maltese cross was placed in its path a shadow of the cross was seen on the wall of the tube opposite to the cathode. If the cross was covered. Its shadow disappeared. Thus it was found that electrons travelled in a straight line.

1- When a light wheel or mica was placed in the path of the cathode rays, the wheel started rotating wards the anode. This proved that the cathode rays especially the electrons have momentum and kinetic energy.

2 A platinum strip was placed at the centre of the concave shaped cathode. The platinum was blackened. when the cathode rays struck the platinum

3 the strip became red hot, this shows that electrons produce heat when they strike an object.

4. X-rays are emitted by the electrons

5. When electric field and magnetic field are applied, the electrons deflec

6 - Electrons travel with high velocit

7 - Electrons produce fluorescence wh they state crystals, minerals an salts

ACTIVITIES - 5

5. Write down the objectives and Specifications under Congnitive Domain associated with them.

BLOOMS TAXONOMY OF LEARNING DOMAINS ⇒

Blooms taxonomy was Created in 1956 under the leadership of educational Psyehologist Benyamin Bloom in order to promote higher Hreams of thinking in education, such as knalyzing and evaluating concepts, Processes, Hocedures and Principles, Hather than Just remembering facts. It is most of ten Used when desining ~~educational~~, training and learning processes.

THE THREE DOMAINS OF LEARNING ⇒

The committee identified three domains of educational activities or learning (Bloomet at 1956)

→ Cognitive: mental skills (knowledge)

→ Affective: growth in fellings or emotional areas (attitude or self)

→ Psychomotor: manual or physical skills (Skills)

COGNITIVE DOMAIN :⇒

The cognitive domain volves knowledge and the development of intellactual skills (Bloom 1956) his includes the recall or cecognition of specific facts. rocedural patterns and concepts that Serve in the development of intellectual

abilities and skills. There are six majore Categories of cognitive an processes, Startir from the simple to the most complex (See the table below for an depth covenage of each category)

- Knowledge,
- Application,
- Analysis,
- Synthesis,
- Evaluation,

The categories can be through or as degree of difficulties. that is the first ones must not be mastered before the next one can place.

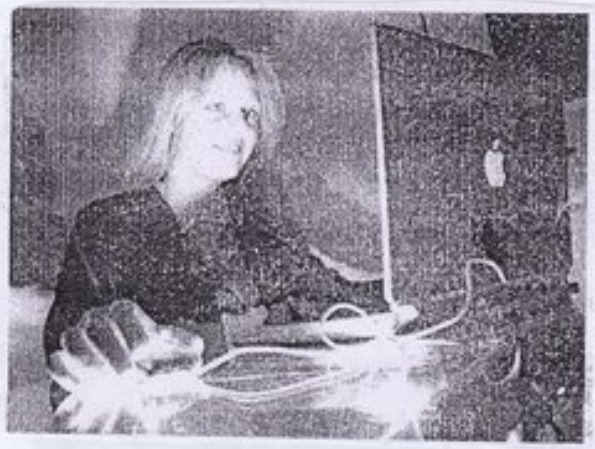
BLOOMS REVISED TAXONOMY :-

Lorin Anderson, a former student of Bloom and David krathwohl revisited the cognitive domain the mid-nineties and made some changes with perhaps the three most prominent ones being (Anderson, krathwohl, Airasian, Cruikshank, mapintrich, Raths, wittrock, 2000):

- changeing the names in the six categories from noun to verb forms.
- Rearrearging them as shown in the chart below.
- Creating a processes and levels of knowledge matrix.

The chart shown below compares the Original nomy with the revised one: this new taxonomy reflects a more active form of king and is perhaps more accurate,

The new verbs of Bloom's Taxonomy, with examples and keywords.



COGNITIVE PROCESSES AND LEVELS OF KNOWLEDGE MATRIX →

Bloom's Revised taxonomy not only improved the usability of it by using action words, but added cognitive and knowledge matrix!

While Blooms original cognitive taxonomy did mentained three levels of knowledge or products that could be processed they were not discussed

very much and remained one-dimensional.

- FACTUAL :-

The basic elements students must know be acquainted with a discipline or Problems.

- CONCEPTUAL :-

The interrelationships among the basic elements with in a lareger structure that enable them to function together.

- PROCEDURAL :-

How to do something, methods of inquiry, and criteria for using skills. algorithms, techniques and methods.

- FACTS :-

Specific and unique data or instance.

- CONCEPTS :-

A class of items, words or ideas that are known by a common name, includs multiple Specific examples, shares common features there are two types.

of concepts concrete and abstract.

- **PROCESSES :-**

A flow of events or activities that describe how things work rather than how to do things. There are normally two types : business processes that describe work flows and technical processes that describe how things work in equipment or nature. They may be thought of as the big picture of how something works.

- **PROCEDURES :-**

A series of step-by-step actions and decissions that result in the achievement of a task. There are two types of actions. linear and branched.

- **PRINCIPLES :->**

Guidelines, rules and parameters that govern. It includes not only what should be done but also what should not be done. Principles allow one to make predictions and draw implications. Given an effect, one can infer the cause of a phenomena. Principles are the basic building blocks of casual models or theoretical models.