

SRI GOWTHAMI

COLLEGE OF EDUCATION

(Recognised by NCTE, Govt of Andhra Pradesh)

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Affiliated to
ACHARYA NAGARJUNA UNIVERSITY

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Semester - III

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Subject : PEDAGOGY OF PHYSICAL SCIENCES (ACTIVITY)

Roll No :

Register No : Y16ED90005

Activity 1

Prepare different steps involved for demonstration of an experiment one each in Physics and Chemistry.

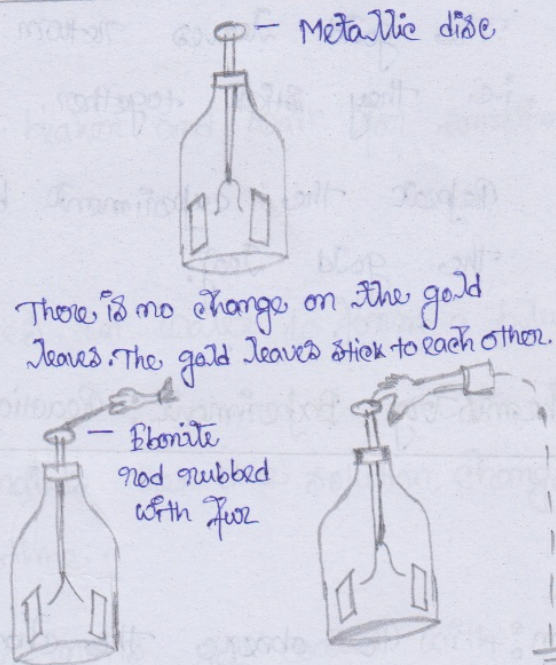
Physics Experiment : No Transfer Charge by direct Touching
(or by conduction)

Aim :- Experiment to prove the transfer of charge by direct touching.
(or by conduction)

Materials required :- Ebonite rod, Fur, Gold leaf electroscope.

Procedure :-

1. Place a gold leaf electroscope on your table.
2. Observe the gold leaves. The gold leaves stick together.
3. Rub an ebonite rod on fur and touch the rubbed side of the ebonite rod, to the metallic



There is no charge on the gold leaves. The gold leaves stick to each other.

The gold leaf diverge (open up) due to similar charge on them

The charge on gold leaves diverge, neutralized due to earthing. The gold leaves stick to each other due to no charge on them.

Gold leaf electroscope showing the charging and discharging

disc of the electroscope.

4. observe the gold leaves.
5. The gold leaves show divergence that is the gold leaves still open up.
6. Now remove the ebonite rod. The leaves will still remain open.
7. Touch the metal disc of the electroscope with your hand and observe.
8. The gold leaves return to their original state i.e. they stick together.
9. Repeat the experiment by charging and discharging the gold leaf.

Chemistry Experiment: Reaction of Copper sulphate with Iron Rod.

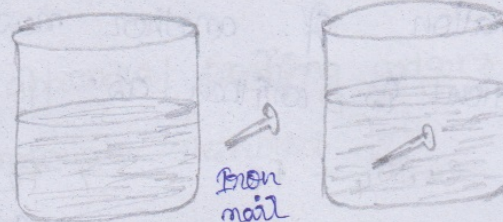
Aim:— To observe the changes that take place when copper sulphate reacts with iron.

Materials Required:— Copper sulphate crystals, a shining iron rod or nail, dilute sulphuric acid, water, a beaker and a test tube.

Procedure :-

1) Fill half of the beaker with water.

2) Dissolve a few crystals of copper sulphate in it. Add a few drops of sulphuric acid in it.



change in colour of copper sulphate and iron due to chemical reaction between them

3) Pour a small amount of this solution in a test tube and keep aside.

4) Drop a nail in the beaker and wait for sometimes.

Observation :-

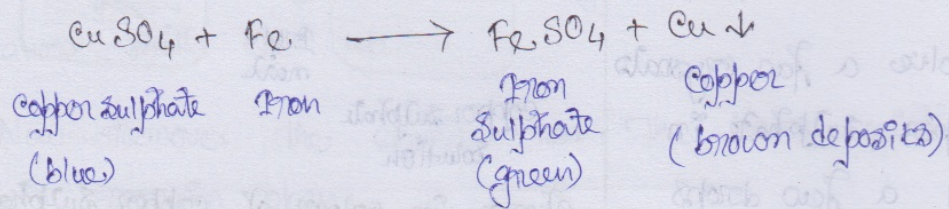
1) Copper sulphate dissolves in water to form a blue solution.

2) On dropping iron nails the blue solution changes to green after some time.

3) The surface of iron nails get coated with a dull reddish brown deposit.

Conclusion :- Copper sulphate reacts with iron to form iron sulphate, a new substance. Therefore the colour changes from blue to green. The dull reddish brown

deposit formed on the iron nail is due to the formation of another new substance, copper. The reaction is written as:



Activity - 2

Prepare two improvised apparatus/teaching gadgets with locally available materials/resources for physics and chemistry.

By presenting problems to children they can be encouraged to devise apparatus for themselves a substitute for complex apparatus. If once the interest of the students is developed in improvising apparatus they repeat class experiments at home by home-made apparatus. It helps to improve their laboratory technique. However science teaching is limited to everyday life. The pupils learn the habit of neat and accurate work as well as keen observation. They come to know that science is not a subject to be learn and experimented upon with sophisticated apparatus only.

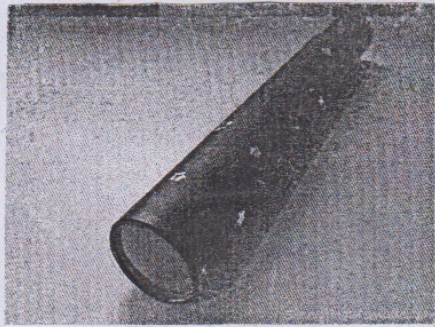
Values of improvisation are as follows:—

- 1) Economical saves much money by replacing costly equipments.

- 2) Develops useful hobbies like self confidence, co-operation, reasoning, planning, resourcefulness and dignity of labour.
- 3) Develops skills and basic principles for developing apparatus.
- 4) It is a creative source of hobbies. Helps children to spend leisure time properly.
- 5) Develops hand and head co-operation.
- 6) It helps to retain the knowledge for long term.
- 7) Creative instincts of the children are satisfied.
- 8) Children develop scientific thinking.
- 9) Develops problem solving skills.
- 10) Schools become self-sufficient.
- 11) Students improve their work by self criticism and auto-suggestion.

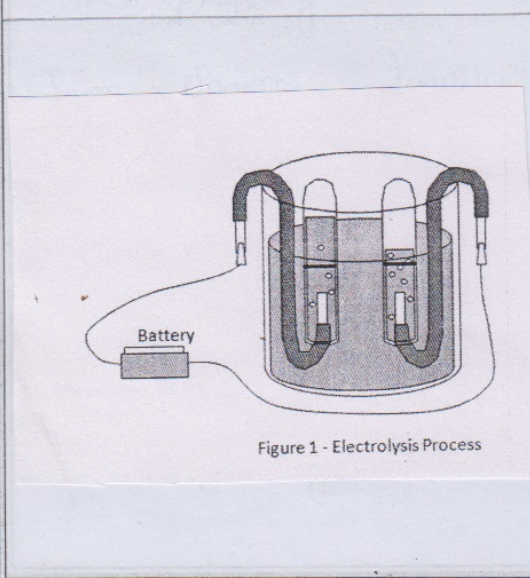
Improvized Physics apparatus : Astronomical Telescope

To prepare astronomical telescope first two cardboard tubes were taken such as they can fit in to the other. Two lenses of different focal length were fixed at the end of the tubes.



The lens of low focal length serves as the eye piece say (2cm) and of 15.30 cm as the object lens.

Improvized Chemistry Apparatus : Voltmeter



A plastic glass was pierced with two holes at its bottom. Two copper wires were inserted, one in each hole. The glass was filled with acidulated water and two test tubes were

Inverted one on each wire, one connecting wires to the terminals of a battery, water will begin to decompose into Hydrogen and oxygen.

Activity - 3

Visit a science centre or science Museum (District / State / National) prepare a report.

Report on visit to Birla Industrial and Technological Museum

Birla Industrial and Technological museum, Kolkata is an unit under National Council of Science Museums. The parent body of all the science centres / Museums in India.

History:- Birla Industrial and Technological museum is situated at 19, A Gurusaday Road, Kolkata. The property was bought by G. D. Birla from Tagore Family in the year 1919. C. R. Das, Aurobindo Ghosh, Sister Nivedita, important foreign visitors like Makuzo Onakura, Yokoyama, all famous Japanese artists, frequented it at the time of Tagore. Again close association of

G.D. Birla with nationalist leaders brought Mahatma Gandhi, Motilal Nehru, Lala Lajpat Rai to this place.

In 1956, Dr. B.C. Roy, then Chief Minister of West Bengal, foresaw a big role of such museums of science, technology and industries in a developing country. This idea was matched with that of Shri G.D. Birla and the property was handed over to Pandit Jawaharlal Nehru the then Prime Minister of India for setting up a science museum in Kolkata.

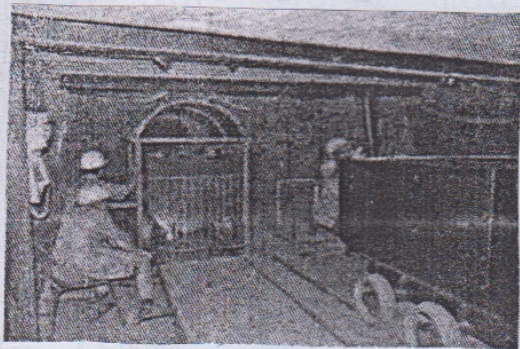
After three years the museum was thrown open to the public on 2nd May 1959.

Development : The BIRLA has galleries on Mathematics, Life science, Biotechnology, Metals, fascinating Physics, Television and and children's. The ones that got a face lift were electricity, transport, popular science,

Motive, power and an underground Mock-up coal mine with 'light and sound show'. 3D show was added in 2006.

To encourage syllabus oriented practical experiment multimedia, software entitled "Virtual laboratories on chemistry and zoology" have been

developed and are currently available in BITM library.



In the areas of Mobile science exhibition, units of energy, fun science, emerging technologies, Mathematics, Electricity and Magnetism, global changes etc. have generated a lot

of interest among the rural masses.

Daily science shows on fun science, science magic, miracle, fantastic chemistry,

Balls, Ballons and Bubbles, Egg-celents, Super cool bodies, and Fire-y-ale are must see items for all. Planetarium show and sky observation through telescope were visitors having inclination towards astronomy. In keeping with the age old trend of BITM to encourage creativity among students a centre called "Innovation Hub" has been inaugurated.

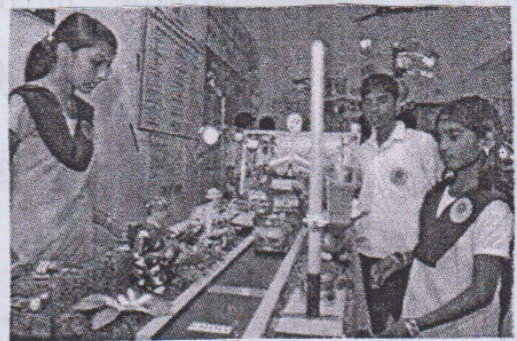
Activity - 4

Participate in District / State level Science fair and prepare a report on the exhibits and activities presented.

Science Fair is an exciting opportunity for students to do research, design experiments, collect and analyse data, make conclusions and share their results with the scientific community. The All India Science Fair is one way to get involve and watch the knowledge to spread across budding minds of the next generation.

Students projects range from simple to complex and span all major areas of scientific study. Each project must include a poster, data tables, a data log and a three dimensional component, such as the apparatus used to collect the data. Projects are evaluated by a group of judges from the

scientific, technological and academic communities. Students are given the opportunity to discuss their projects with each judge. They are given marks on the basis of their ability to represent new and exciting thoughts.



The fair is organised every year under supervision of the National Council of Science Museum, Ministry of Culture, Govt. of India inside the premises of the Birla Industrial and Technology Museum between 12th to 18th January. Students from

13. Various states join in the examination.

I had been to the Fair with four of my students and a senior colleague. We reached the Fair in the morning. The place of Fair was overcrowded with children, students, college students, men and women. They were visiting each and every counter and paying attention to the demonstration behind the counter. The representation of the students reflected their hard work and thought.

Different ideas and projects presented in the Fair are :-

Life Science Ideas :

1. Compare the germination of Monocot seeds and dicot seeds. Experiment with different factors like sunlight, water, fertilizer, that affect germination of seeds.
2. Experiment with how the pH of soil affects plant growth.

3. Study of protozoa using a microscope from local pond and any other water sample.

Earth Science Ideas :-

1. Experiment with the effects of erosion (by wind, water, etc) on different rock or soil types.

* How vegetation can stop soil erosion.

2. Find out how temperature, wind or humidity affects the rate of evaporation.

Physical Science Ideas :-

1. Build your own light-bulb and experiment with what materials make the long-lasting or brighter filaments.

2. Try distilling drinkable water from salt water using sun.

3. Use a semi-permeable membrane to experiment with osmosis. What kind of substances pass through the membrane and what substances don't.

Activity-5

Celebration of earth day in school.

Earthday is an annual event, celebrated on April 22 on which day events worldwide are held to demonstrate support for environmental protection. It was first celebrated in 1970, and is now co-ordinated globally by Earth day network and celebrated in more than 193 countries each year.

On Earth day 2016, the landmark Paris Agreement is scheduled to be signed by the United States, China and some 120 other countries. This signing marks a key requirement for the entry into force of the historic global climate protection treaty adopted by consensus of the 195 nations present at the 2015 United Nations climate change conference in Paris.

In 1969, at the UNESCO Conference in San Francisco, peace activist John Mc. Connell proposed a day to honour the earth and the concept of peace, to be first celebrated on March 21, 1970. the first day of spring in the northern Hemisphere. This day of mother's equinox was later sanctioned in a proclamation written by Mc. Connell and signed by Secretary General U Thant at the United Nations. A month later a separate Earth day was founded by United States Senator Gaylord Nelson as an environmental teach-in first held on April 22, 1970. Nelson was later awarded the Presidential Medal of Freedom award in recognition of his work. While this April 22, Earth day was focused on the United States, an organization launched by Denis Hayes, who was the original national co-ordinator in 1970, took it international

In 1990 and organized events in 141 nations. Numerous communities celebrate Earth week, an entire week of activities focused on the environmental issues that the world faces.

Celebration of Earth Day in School, 22nd April 2016

Earth day is celebrated in most of the schools to make children aware about environmental issues and also to develop sense of responsibility towards the community, society and environment. In Aritya Academy senior secondary school every year earth day is celebrated with social events and with a definite objective to work with.



In India people are less aware of their environment and due to high rate of literacy people are now aware about environmental hazards and how to protect their environment.

In the year 2016, Earth day was celebrated by the students of Aditya Academy with an intention to make the local people aware about their environment. Students performed with hand-made posters. Wall-painting was done by students and lectures on the screen with theme of environment. Also a street-play was performed to educate people about their environment.

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