

PROJECT WORK

CLASS: VI CLASS (EM)

SUBJECT: GENERAL SCIENCE

LESSON: LIVING & NON LIVING

NAME OF THE PROJECT: Dr. JAGADEESH CHANDRA BOSE

STRATEGY: Individual

NAME OF THE STUDENT:

NAME OF THE GUIDE TEACHER: K. MANJULA

DAYS ALLOTTED: 2 DAYS



AIM: Collecting information and analyzing about the contributions of the scientist Dr. Jagadeesh Chandra Bose.

OBJECTIVES:


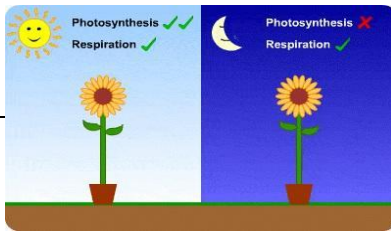


- ❖ To list out the processes that take place in a plant.
- ❖ To collect information from the teacher about the different scientist who worked on the life processes in plants with the help of questionere prepared.
- ❖ To collect the information about the contributions of Jagadeesh Chandra Bose from the internet.
- ❖ Analyzing his scientific attitude, commitment and contributions towards science.

TOOLS:

- Table showing the properties of plants as living things.
- Table showing different scientists & their contributions towards research in plants in brief
- Questioner to a teacher to collect information about J.C. Bose

PROCEDURE:

When our teacher discussed about the properties of living and nonliving things, we gained the knowledge of plants as having the properties of living things. We started thinking, “How the scientists could identify all living properties of plants”. Then we would like to undertake the project on the study and contributions of Jagadeesh Chandra Bose. As the first step we tabulated the different activities that take place in the plants.

SN	ACTIVITY	CHANGE THAT IS BROUGHT
1	Growth	Grow in height, girth and protrude deep into the soil 
2	Reproduction	Get energy and release CO ₂ 
3	Photosynthesis	Prepare food material and release O ₂
4	Response to stimuli	Growth, protection, etc 
5	Reproduction	Production of new plants & maintains the population. 

Now we approached our teacher and enquired about the life processes in the plants and the scientists who worked in this plants with the help of questioner.

QUESTIONER

- Do all the life processes help the plant for its existence?**
 - Yes. All the life processes help the plant to grow, respire, prepare food, sustain its population, etc.
- Who discovered all these processes?**
 - There are many scientists who worked on the plant physiology. They brought many facts about the plants into lime light.
- By considering all these life processes can we assume the plants as living things?**
 - Yes, the plants show all the properties of living organisms such as respiration photosynthesis, growth, respond to stimuli, reproduction, etc. So they can be assumed as living organisms.
- Who are the scientists who made their contributions towards the biology?**
 - There are number of scientists such as Jagadeesh Chandra Bose, Salim Ali, M.S. Swamynathan, Panchanan Maheswari, etc who had investigated a lot towards biology.
- Who is the scientist who said that plants have life?**
 - The great Indian scientist Jagadeesh Chandra Bose had said that plants have life.

Thank you

From the above interaction with our teacher we could gain the awareness of some Indian scientists and tabulated them as below.

SN	SCIENTIST	CONTRIBUTION
1	Jagadeesh Chandra Bose	Proved that plants have life
2	Salim Ali	Naturalist. Studied about Ornithology
3	Swaminathan	Developed rice varieties with high yield
4	Birbal Shani	Father of Indian paleobotany

We decided to undertake a project to collect the information about the scientist Jagadeesh Chandra Bose and his contribution as he said plants have life. We approached and collected a lot of information about J.C.Bose from the internet and aggregated the information as below.

INTRODUCTION:

Jagadeesh Chandra Bose is a pioneer to work on microwaves. He is a physicist, Biologist, especially botanist, archeologist and science fiction writer. He is well known as Father of the Bengali Science Fiction & inventor of Cresco graph. He was the first person to investigate about microwave optics. He did a lot of experiments on radio physics. As he was investigating about radio waves in plants, he turned his interest towards plants.



ABOUT RESEARCH IN PLANTS:

- He showed experimentally plants too have life.
- He invented an instrument to record the pulse of the plants and connected it to plants.
- He also invented Cresco graph to measure the growth of a plant.
- He founded Bose Institute of Calcutta which was aimed at investigation on plants.
- Bose had written a book on Response in the Living & Non- Living and The nervous mechanism of plants.

HOW HE PROVED THAT PLANTS HAVE LIFE:

J.C.Bose proved that the plants have a definite life cycle, a reproductive system and are aware of their surroundings. The demonstration took place in Royal Society of London, England.

- Bose used his invention to introduce the world of plants to the humans. His invention – The Cresco graph – showed how plants move.
- He also showed how plants behave differently under different environmental factors such as temperature, chemicals, electricity, gases and humidity.
- He also showed the electrical nature of conduction among several stimulations in plants. He especially worked on touch me not plant.
- Through his studies he proved that the plants are sensitive to pain and affection.



ANALYSIS:

After discussing the above information we came to know that there are no any boundaries in between the different branches of science. When we observed the journey of J.C.Bose we could learn that the scientific attitude is highlighted throughout his studies. He is not only a biologist, but also a physicist, archeologist, science fiction writer. He also worked on poly math. His scientific attitude, hard work lead him to contribute a lot towards science. His hypothetical and experimental attitude made him to bring out the universal facts into lime light.

CONCLUSION:

With this study we could not only learn how plants are proved to be living organisms, but also the scientific attitude of J.C.Bose. This universe is full of facts which have to be studied investigated and applied for human empowerment. It is learnt that every investigation should start with a n observation followed by a question. We decided and aimed to inculcate the observation skills and questioning nature so as to develop the scientific temper.

OUR EXPERIENCES:

While collecting the information about J.C.Bose, we could learn many things about him, his scientific attitude, hard work and contribution to human welfare. We felt very proud to work on this project.

QUESTONS RISED:

- How to develop the scientific attitude?
- What to study to become a scientist in future?
- What should be our approach to become a scientist?

AKNOWLEDGEMENT: We thank our guide teacher Smt. K. Manjula for her proper guidance. We also thank the person at the internet center for providing us the useful material.

RESOURCES: Our teacher and Internet