NASA B.Ed. ACADEMY

B.Ed., 2021 - 2023

CERTIFICATE

This is to certify that Mr./Mrs./Miss Pritimayee Nayak

bearing the Register Number 2113605760 49

has successfully completed his/her Activity Record work for

Pedagogy of Biological Science

as a part of B.Ed., (Regular) Course for the semester One

2021-2023

Signature of the Lecturer *Principal*

Date :

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STUDY OF SCIENCE

Meaning of Science

The term "Science" has been derived from Latin word "Scientia" which means all that one should know. The nearest German equivalent for the English word Science is Wissen schaft which includes systematic study in various disciplines including history philosophy.

(1) Science is study of natural phenomena.
(2) Science is a body of knowledge on observation, experimentation and inference.
(3) Science as ordered knowledge of Natural phenomena. - (W.C. DAMPIER)

Functions of Science

The following are the functions of science:
(a) To predict on phenomena in nature.
(b) To explain things and events around us
(c) To create scientific culture
(d) To produce empirical knowledge.

Nature & Characteristics of Science

→ Science is a system. It is system of knowledge where so many facts are related together.
→ Science is a body of record knowledge.
→ It is self-corrective in nature.
→ Science Formulates laws.
→ Science is based on critical discrimination. It is objective and impartial.
→ It is objective in nature. Science does not depend on subject attitudes like feeling, temperament, biases.
→ Science is both product and process.

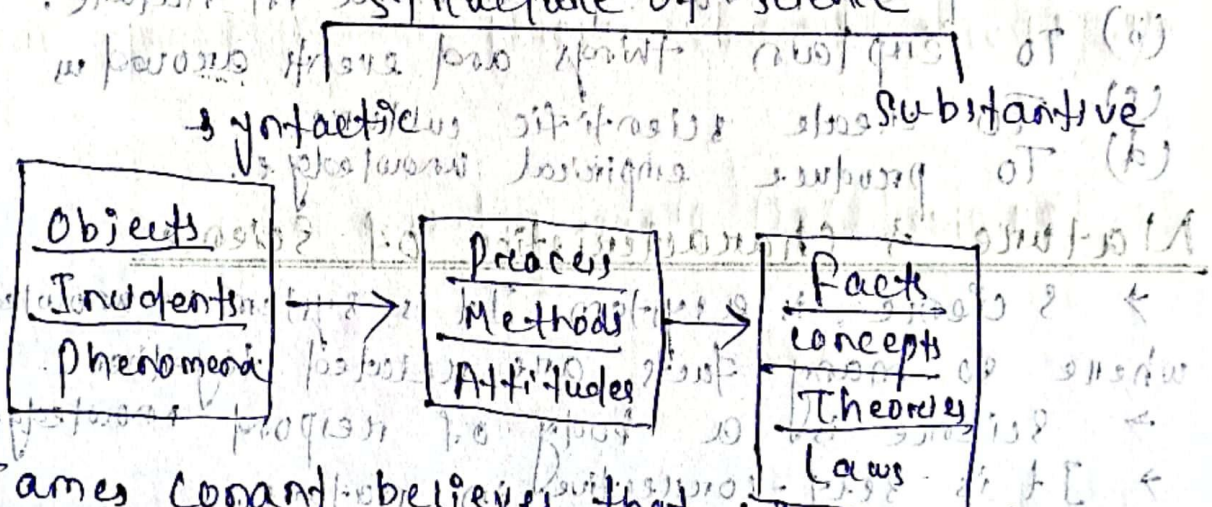
Structure of Science

Joseph J. Schwab and Philip. H. Phenics (1964) described the structure of science based on its processes and products.

Structure of science is built on two parts they are:

(a) **Substantive structure**: Science as product is explained by the substantive structure. Scientists by using various methods and processes, obtain facts. Principals, concepts and theories about nature. So according to the substantive structure, the structure of science consists of various theories, facts etc.

(b) **Syntactic structure**: It is concerned with the process of scientific inquiry. i.e. means by which the scientific knowledge is acquired and verified. methods through which the new knowledge is developed.



- James Conant believed that world is devided into (a) World of facts & (b) World of theories. Scientist enters from world of facts into world of theories by inductive reasoning.
- According to him, science is a dynamic subject and there is no end for it.

CORRELATION of BIOLOGICAL SCIENCE

Correlation of Biological Science with other school subjects

(1) Biology with Physics :

Various phenomena in plants and animals can be presented by using physics principles only. To explain certain instruments like photometer, stethoscope and B.P. apparatus physical science knowledge is required, they work on physics principles.

(2) Biology with Chemistry :

Most of the concepts in physiology are closely related to chemistry. Chemistry and biology are much inter-dependent upon each other.

(3) Biology with Mathematics :

Proportions and sizes of animals and plant are explained by using Mathematical units genetics is one of the branches of biology which is presented with the help of statistical calculation.

(4) Biology with Social Studies :

Knowledge of biology improves social conditions of the people. Knowledge of principles of health and hygience improves surroundings

there by improves the social condition.

(5) **Biology with Craft:**

Agriculture as a craft and as a branch of biology, explains the relation between these two subjects.

(6) **Biology with fine arts:**

Drawing is of immense importance in the study of biology.

(7) **Biology with Language:**

Language is very essential that the science students should be able to express their ideas precisely in clear and correct language.

OBJECTIVES

Meaning of Objectives

The aims of education which can be achieved in a school are called as Objectives. An objective is a part of an aim. Objectives are immidiately attainable goals. Objectives make a teaching programme meaningful. They indicate the behavioral changes in the pupil after completion of instruction.

Objectives as an end, towards which a school sponsored activity is directed.

- GOOD C.V.

Objectives of Teaching Biology

* Providing advanced information.
* Providing practical knowledge of the content.
* Stimulating the spirit of investigation & invention
* Developing the problem solving capacities.

Characteristics of Objectives

* Measurable * They should be content oriented
* They should be able to test
* According to student's ability.

Importance of Objectives

The objectives are important because

* Helps in modifying the goals
* Guide student learning
* Help the teacher in Instructional planning
* They enable construction and usage of valid and reliable tools for evaluating student achievement of the objectives
* They help the teachers to identify the goals that they want to include in the curriculum.

LECTURE METHOD

Lecture Method

It is the oldest teaching method given by philosophy of Idealism. The lecture method refers to the teaching procedure involved in the clarification or explanation to the students of some major Idea. This method lays Importance to the presentation of content.

The lecture is a pedagogical method where by the teacher formally delivers a carefully planned expository address on some particular topic or problem.

— JAMES MICHEL LEE

Steps in the lecture Method

(1) While reading of the subject to be delivered through lecture.

(2) Preparing the synopsis

(3) Preparing sufficient teaching aids, selecting suitable experiments

(4) It should be started with brief

(5) Teacher can ask questions as a follow up as a follow up activity

Merits :

* Teachers work simplified
* Economical - no need of library or laboratory.

Demerits :

* Skill will not be developed
* There is a lack of good - feeling

UNIT PLANNING / LESSON PLANNING

Unit plan (or) Lesson plan

The planning for activity is known as unit plan. A unit may have several lessons, a unit also includes the procedure of presentation of the subject matter that means the unit is not only a block of content but also a method in itself.

"Unit is as large a block of related subject matter as can be overviewed by the learner" - PRESTON

Characteristics of a good unit:

(1) The aims should be clear & well defined.
(2) It should consider the previous experiences of the students.
(3) It should keep in view the needs, capabilities, and interests of the students.
(4) It should have similar type of content.

Steps Involved in developing a unit:

(1) **Preparation:** By knowing the overall idea of a unit by the teacher, pupils are motivated.
(2) **Knowing the previous experiences:** The second step that should follow motivation is testing the previous knowledge of the students.
(3) **Presentation:** This step provides new experiences to the students.
(4) **Organization of the learning:** Students should be provided opportunities to organize their learning.
(5) **Evaluation:** This last step is meant to check the achievement levels of the students.