

PEDAGOGY OF SCIENCE

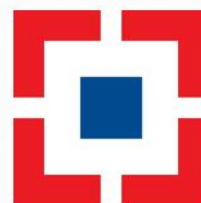
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WHAT IS SCIENCE

- Latin word “scientia” means “to know”
- Systematic body of knowledge
- Study of natural phenomena
- Body of cumulative and ordered observation
- Heap of truth
- Organized common sense

SCIENCE IS

- **PROCESS** - the way of learning science
- Process involves skills-
 - a) observation
 - b) classification
 - c) communication
 - d) measurement
 - e) estimation
 - f) prediction
 - g) generalization
 - h) inferences



PROCESS OF LEARNING SCIENCE

- Identifying and controlling variables
- Defining operationally
- Forming hypothesis
- Experimenting
- Collecting and tabulating data
- Interpreting data
- Investigating
- **TO LEARN SCIENCE IS TO DO SCIENCE**

- **PRODUCT**- Whatever information or ideas we acquire through various processes of science forms the body of knowledge, are known as products of science.
- **FACTS**
- **CONCEPTS**
- **PRINCIPLES**
- **THEORY**
- **LAW**

PLANNING FOR SCIENCE TEACHING

- I K Davies has classified the functions of a teacher as a manager into the following four steps
- PLANNING
- ORGANIZING
- LEADING
- CONTROLLING

PLANNING

- Involves-
- Task analysis
 - content analysis
 - job analysis
 - skill analysis
 - Identification of teaching learning outcomes
 - Writing objectives in behavioral terms

ORGANIZING

- Arrangement of learning resources
- Creating effective environment
- Selecting suitable teaching method/s
- Selecting appropriate communication strategy
- Selecting suitable teaching aids
- Designing teaching activity

So as to realize learning objectives in most effective and economical way.

LEADING

- Teacher selects appropriate motivational strategy
- Teacher motivates and leads students to take interest in learning
- Motivate students to explore new resources

So that teaching learning objectives could be achieved

CONTROLLING

- Last step in teaching learning management
- Teacher determines to what extent the goals have been achieved
- Seek the help of various evaluative techniques
- If the goals achieved, then proceed further
- If not, make necessary changes in the activities of “organizing” and “leading” step

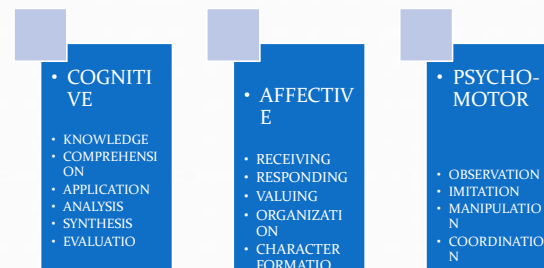
TASK ANALYSIS/PEDAGOGICAL ANALYSIS

- **Content Analysis**- It is the analysis of topic or content unit to be taught into its elements or constituents and synthesize into logical consequences
- **Job analysis**- Physical and psycho motor activities are determined and teacher's and student's job is decided
- **Skill analysis**- determines what skills are required to accomplish the task and how these skills can be learned and practiced

RULES TO FOLLOW IN CONTENT ANALYSIS

- From simple to complex
- From known to unknown
- From concrete to abstract
- From whole to part
- From psychological to logical

BLOOM'S TAXONOMY



Three steps of Teaching Learning Process

PRESAGE--Formulating Educational Objectives
(pre interactive)
 PROCESS--Creating Learning Experiences
(interactive)
 PRODUCT--Evaluating the change of Behavior
(post interactive)

PROCESS STAGE

- LECTURE/DEMONSTRATION/MULTIMEDIA APPROACH/BRAIN STORMING/VIRTUAL LABS/FLIPPED CLASSROOMS/SPORTS BASED LEARNING
- STIMULUS VARIATION
- QUESTIONING
- MANAGING STUDENT'S RESPONSE
- DISCIPLINE
- REINFORCEMENT

THANK YOU