

COURSE MATERIAL

ON

TOPIC: AIMS AND OBJECTIVES FOR SCIENCE TEACHING

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SUBMITTED TO

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AIMS AND OBJECTIVES FOR SCIENCE TEACHING

The Diversity Among Goals, Aims, And Objectives

In the research on explaining science, we come over many words, such as goals, aims, objectives, purposes, results, and instructional objectives.

Indeed, there are distinct variations among certain words, but numerous personalities use them commonly.

Goals:

Goals are broad and persistent and will need ages to accomplish. Sometimes plans lack exactness and represent generality. For example: Developing an inquiring mind.

Aims:

While goal statements present general purpose and direction, aims are more specific but long-term, such as developing aesthetic.

Objectives:

Aims can be specific, and they tend to be short-term. Goals help in planning activities over and above developing exercises for evaluation. Objectives provide a meaningful direction for teaching. For example: Extending Systematic Comprehension.

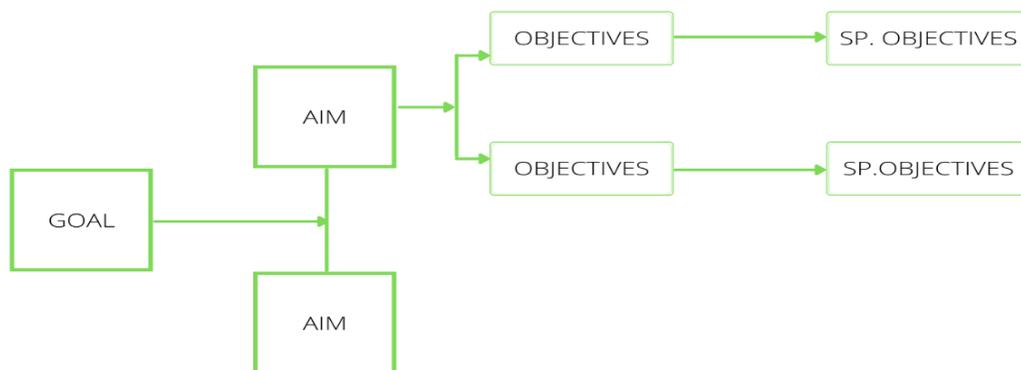


Fig: Relationship among goals, aims, and objectives based upon UNESCO Handbook, p. 183

Types Of Objectives

Principally three types of objectives are found under science teaching. They are as follows,

1. General Objectives:

These concern science as a case. It analyzes the subject as a combination.

2. Specific Objectives:

These are related to a particular topic in a specific period. These further can be indexed into: -

- (i) Knowledge.
- (ii) Understanding.
- (iii) Application.
- (iv) Creativity.

3. Expected Behavioral Objectives:

These symbolize the assumed behavioral modifications that occur in pupils after teaching.

Differences Between Aims And Objectives:

AIMS	OBJECTIVES
1. The object is apparent. The teacher does not practice it everywhere.	1. The objective is minute. These are significant, transparent, and generally to the point.
2. It gives proper navigation to an education program.	2. These are classified points in such a way.

3. A subject is a conceptual part of an answer.	3. The response to the topic is what order be achieved after exercising.
4. Unspecified and nebulous.	4. Transparent and accurate.
5. School, community and domain are responsible for their realization and satisfaction.	5. A teacher is qualified.
6. It resembles ideas that cannot be fulfilled.	6. It can be achieved easily.
7. Chronophagous towards accomplishment.	7. Not of the complete term.
8. It can be accomplished in one day.	8. Bit-by-bit obtained.

Characteristics Of Good Objective:

Objectives help realize the purpose. Good purposes are to help in gaining breakthroughs in the domain.

Characteristics Are:

1. **Clear, Precise, And Specific:** Clear aim and univocal help accomplish the goal.
2. **Describe Behavior Outcome:** This should describe the behavior result following teaching.
3. **Useful:** Beneficial for students in life.
4. **Attainable:** Feasible in life.
5. **Practicability:** Expertise helps in healthier development in lean circumstances.

6. **Appropriateness:** The education asked for the ability and preparation of the students treated should be appropriate.

7. **Timeliness:** Training should be concerned with familiar elements with faultless motives and thoughts.

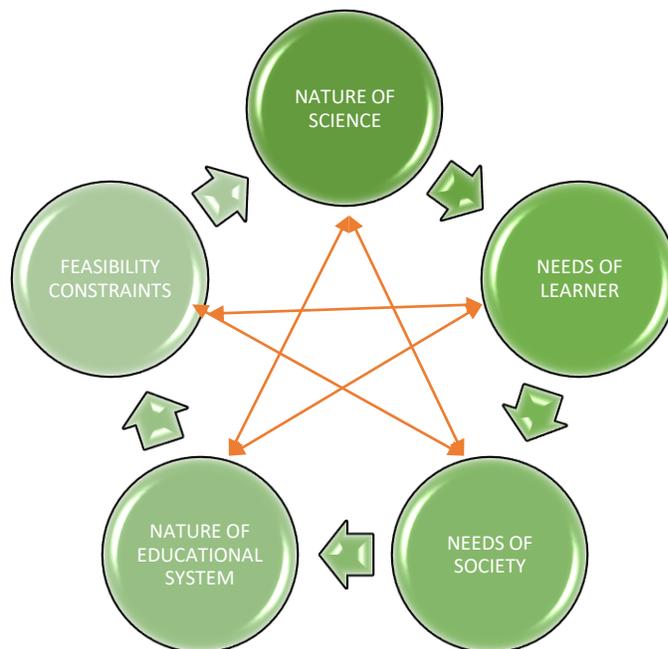
Some of these aims are suggested by Thumber and Collette.

The Basis For The Formation Of Objectives

Objectives should be formulated on the firm foundation of all phases like philosophical, psychological, sociological.

The primary roots for the formulation of purposes exist:

- i. The demands and the abilities of the learner.
- ii. The demands of the community.
- iii. The essence of the direct attention to.
- iv. The essence of the educational policy or the system.
- v. The practical restrictions.



Fig; The Figure, as mentioned above, shows the correlation among these five primary factors.

Bloom's Taxonomy of Educational Objectives:

Dr. Benjamin S. Bloom of Chicago University proposed these objectives. He interpreted aims in three significant areas. These are as follows:

- I. Cognitive Domain Objectives.
- II. Affective Domain Objectives.
- III. Psychomotor Domain Objectives.

Taxonomy of Educational Objectives

Cognitive Domain	Affective Domain	Psychomotor Domain
1. Knowledge	1. Receiving	1. Impulsion
2. Comprehension	2. Responding	2. Manipulation
3. Application	3. Valuing	3. Control
4. Analysis	4. Conceptualization	4. Coordinator
5. Synthesis	5. Organization	5. Naturalization
6. Evaluation	6. Characterization	6. Habit formation

I. Cognitive Domain

These areas or the domains connect those objectives that administer with the sort of knowledge. Mentioned other elements are the growth of intellectual skills and talents. It assists during curriculum reform.

In this cognitive domain, the taxonomy of educational objective is categorized under six significant classes: -

1. Knowledge:

Knowledge involves those actions which are memorizing, recognitional phenomena. It follows from substantial to complex things.

Knowledge includes:

- Recall of particular and remote facts and knowledge.
- Dates, events, personalities, areas, sources of information.
- Vocabulary.
- Rules.
- As it shows, knowledge is a Process, directions, and movements of a phenomenon proportional to time.
- Characteristics of ways of treating and presenting ideas.
- Classification and categories.
- Facts, principles, opinions are tested and judged.
- The best possible approach to explaining your problems.
- Knowledge is about, Programs and their subsequent improvement.
- A global idea.
- Easy to understand the content and the application.

2. **Comprehension Include:**

i. **Translation:**

- Different levels of abstraction.
- Interdisciplinary level of formation and vice-versa.
- Altered form of verbal and the other way round.

ii. **Interpretation:**

- Ability to describe numerous types of social data and metadata.

iii. **Extrapolation:**

- This involves drawing outcomes and predictions and all the rest.
- The ability to differentiate value judgment from predictions of consequences.

3. Applications:

Applications can be illustrated by applying the comprehensive method followed by principles. It can be summarized that students understand something than can apply it. Postulates are followed that can be utilized to generalized approaches, an idea to solve the query.

4. Analysis:

We understand that analysis is meant to break substances into their parts and how they are designed.

It includes,

- Analysis of the complete components.
- Analysis of connections.
- Analysis of organizational principles.

5. Synthesis.

It is nothing but establishing together every element or part to form a unity. It consists of the below-mentioned elements:

- Creation of novel communication.
- Create and prescribed a plan or proposed set of operations.
- Derivation of a set of theoretical relations.

6. Evaluation:

It aims at making a judgment about the values, ideas, works, solutions, methods, materials, and all the rest. It involves using criteria and standards for appraising the extent to which particulars are accurate, practical, economic, or satisfying.

II. Affective Domain

It includes objectives that represent variations in interest perspectives, grades, and appreciation. Objectives in this domain are generally in cloud mode; hence we are hazy about learning expertise. Levels of this domain is discussed curtly: -

1. **Receiving:**

It is the first and entry-level affective domain and includes awareness, readiness, regulated attention. Consciousness is of various scientific information sources, and willingness portrays the behavior of being willing to tolerate a given motive.

Controlled attention:

Pupils select attention from motives and serve to it despite competing with stimulus.

2. **Responding:**

It is countered as a response to a motive or phenomenon. It involves studying science and is attractive in various non-scholastic activities. As soon as a learner receives or attends stimuli or to a particular idea or event, he must be made to respond to it in dynamic behavior. Those dynamic or active behaviors are like follow the stimuli, responding, reading, consulting, recording, writing to a motive. It has three levels: -

1. Obedience for responding.
2. Willingness to respond.
3. Satisfaction in response.

3. **Valuing:**

Last but not least, valuing is the third level which indicates an internalization of and loyalty to specific models or values—valuing stands for two significant factors like receiving and responding. It also consists of other factors like phenomena or behavior. This line will help us understand the phenomenon, preference for practical information rather than opinion superstition suspended judgment.

It also represents the evolution of a scientific attitude and which has three types: -

1. Acceptance of value.
2. Preference of value.
3. Commitment to a value.

4. **Organization:**

All the above categories, i.e., Receiving, respond and valuing, are pre-requisites for the organization category. It builds a way of advantages. Students encounter a situation for which more than one value relevant in that situation. It includes:

- Conceptualization of values
- Organization of values.

5. **Characterization of value:**

The highest category level includes characterizing a person's behavior by controlling values, ideas, or beliefs. Their integration learner can imbibe an affective behavior, i.e., various interests, attitudes, and values. It has two levels:

- **Generalized set.** It gives internal consistency to the system of attitude and values.
- **Characterization.** Objectives are concerned with one's view of the universe, one's philosophy of life.

III. **Psychomotor Domain/Conative Objective**

Psychomotor objectives are involved with the training of the student's physical activities and the growth of their abilities.

According to Simpson's View:

E.G., Simpson (1966) divided these objectives into five distinct levels: -

1. **Perception:**

It is either concerned with activities relating to the response of the senses to the objects or events of the outer world. Which comprises three levels:

1. Description level.
2. Condition of a transition period.
3. Interpretive level.

2. **Set:**

It means the initial adjustment which occurs for some specific activities and experiences. It also has divided into three levels. They are as follows.

- Mental level.
- Physical level.
- Emotional level.

3. **Guided response:**

It is the beginning stage of the development of practical skills. It is the external behavior of a person under the guidance of another person.

4. **Mechanism:**

In this psychomotor domain category, two primary abilities occur like self-confidence and skill of doing is developed in students.

5. **Complex overt response:**

Here, students gained the efficiency and skill to perform the most challenging quest with the least energy and time.

Once more recently, some scholars have agreed on a common finding, scientific education as a common goal of science teaching. They have agreed to include the knowledge domain and its pertinence, the skills or processes of science.

There are other standard inputs like philosophical and sociological concerns of science feeling and valuing (affective aspects), and the rest. (Hodson and Reid, 1988; Yager 2000). Let us understand these objectives by an executive summary.

1. **Concept Development (Knowing and Understanding)**

Science should grant a practical education that will navigate the students and help them to grab reasonable opportunities. Dewey also noticed that an intelligent fellow citizen must be made of humankind who can invent reflectively.

What does the most vital value addition to being a knowledgeable fellow citizen mean? According to science, it helps them to design and state scientifically.

However, that sort of knowledge must have endurance value. Milton Pella (1966) has observed that concepts are the desired outcomes of science education. Concepts are the outcomes of processes. The outcome is that it helps pupils form concepts, which should remain the first significant result of science teaching.

II. Developing Science Process Skills (Exploring and Discovering)

To understand the investigatory nature of science, students use processes of science to learn how scientists think and work. In learning science, pupils encounter many situations where they have to perform research drills. These skills start from micro-observation to the analysis of specific values and evidence-based conclusions.

It appears that all of them are called methods of science. To acquire the next level of knowledge, researchers have to follow or attain these kinds of processes. Various methods are there googling science concepts.

Therefore, we can say that concepts are immediately associated with science or various mental and motor processes to make observations and get concepts. Learning science processes happens best when a legitimate circumstance is there.

III. Using and Applying Science Knowledge and Skills (Application of Science Knowledge)

It is recommended, students must use the knowledge and skills of science in their everyday life. First, they need to understand the concept and finish their activities by finding the best possible answers. These practical concepts help them to operate household electronic appliances. This knowledge will also help to understand the different factors of food and their respective nutrition to enhance their physical and mental well-being. Presently knowledge of science has submerged everything from where we can take out maximum benefits.

IV. Developing Feelings and Valuing (Affective Aspects of Science)

In modern states, affective states of mind are meaningful, promoting positive attitudes towards oneself. These minds also help everybody develop sensitivity and respect for other people, making decisions about social and environmental matters—a healthy mindset help in providing productive outlooks towards science. Hodson and Reid (1988) have tried to distinguish the reasonable purposes of science education.

- ✓ Independence of thought and self-confidence.
- ✓ Acceptance of other's perspectives.
- ✓ Inner findings.
- ✓ Maintain healthy or regulated relations amongst everybody.
- ✓ Broad mindset.
- ✓ Listing everybody's perspectives, filter out irrelevant and conclude. Giving credit creates a healthy environment.
- ✓ Transparency and sincerity are the two primary elements for any successful experiment.
- ✓ By using scientific analysis, we can Jot down necessary findings.
- ✓ Daily use of science will improve our problem-solving skills.
- ✓ Confident enough to choosing science-related hobbies.

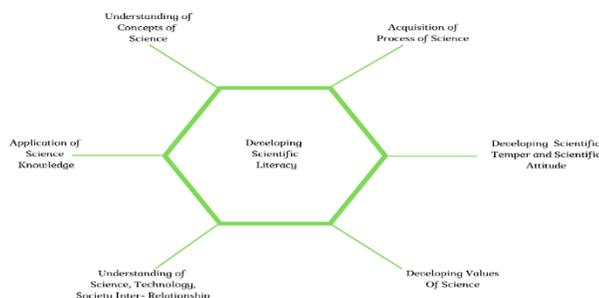


Fig Showing Objectives of Teaching Science

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