


# Course -7a Method- Physical Science

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Aims and objectives of teaching physical sciences, Instructional and Behavioural objectives with reference to Bloom Taxonomy of educational objectives.

# Importance of physical science

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# Intellectual value

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- Help to know facts spirit of enquiry and judgement.
- Aims to search of truth.
- It requires diligent and patience.
- Help to understand, evaluate and solve special problems of life.



# Utilitarian value

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- Physical science has become more useful and helping instrument and guiding our daily life living style.
- T.V , Radio , Mobile, Robot , Virus



# Disciplinary value

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- It develop and control mental ability of an individual.
- It helps in developing the habit of truthful sense of logical reasoning, critical thinking, decision taking etc.



# Vocational value

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- Physical science has generated a number of vocations and help in individual earning.
- It has become an integral part of during agricultural, banking, teaching, factories and others.





# Atheistic value

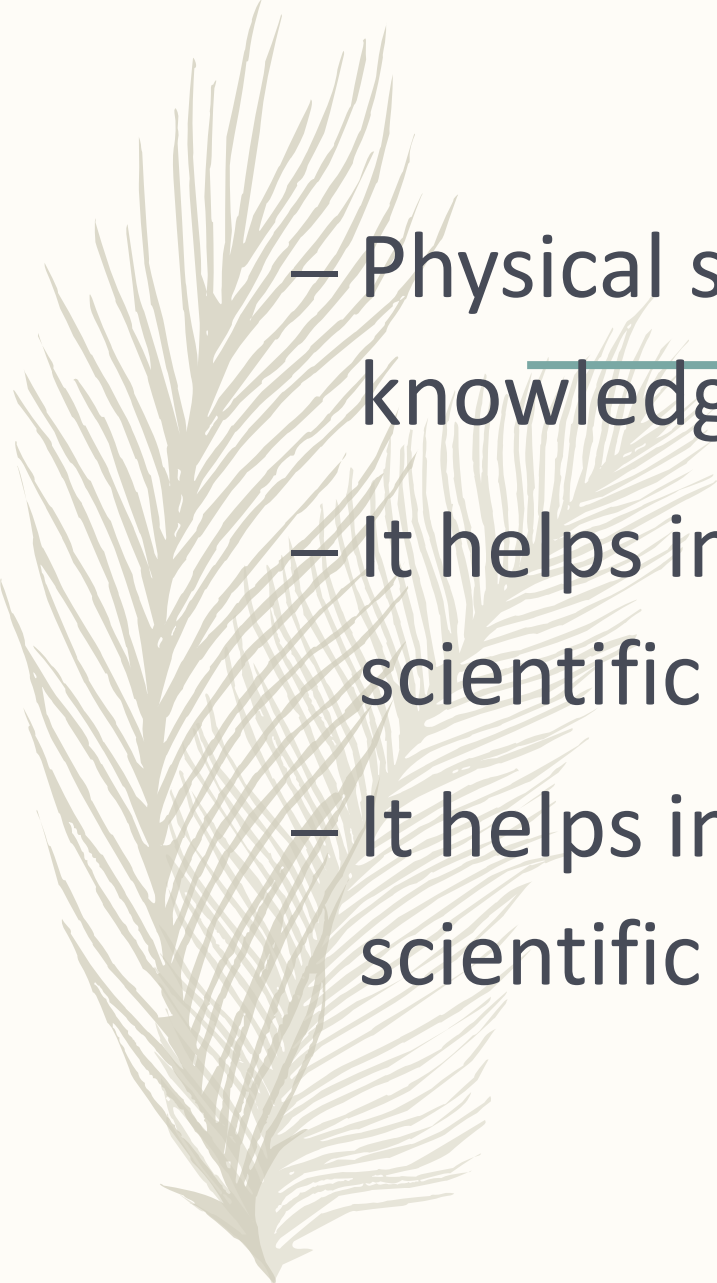
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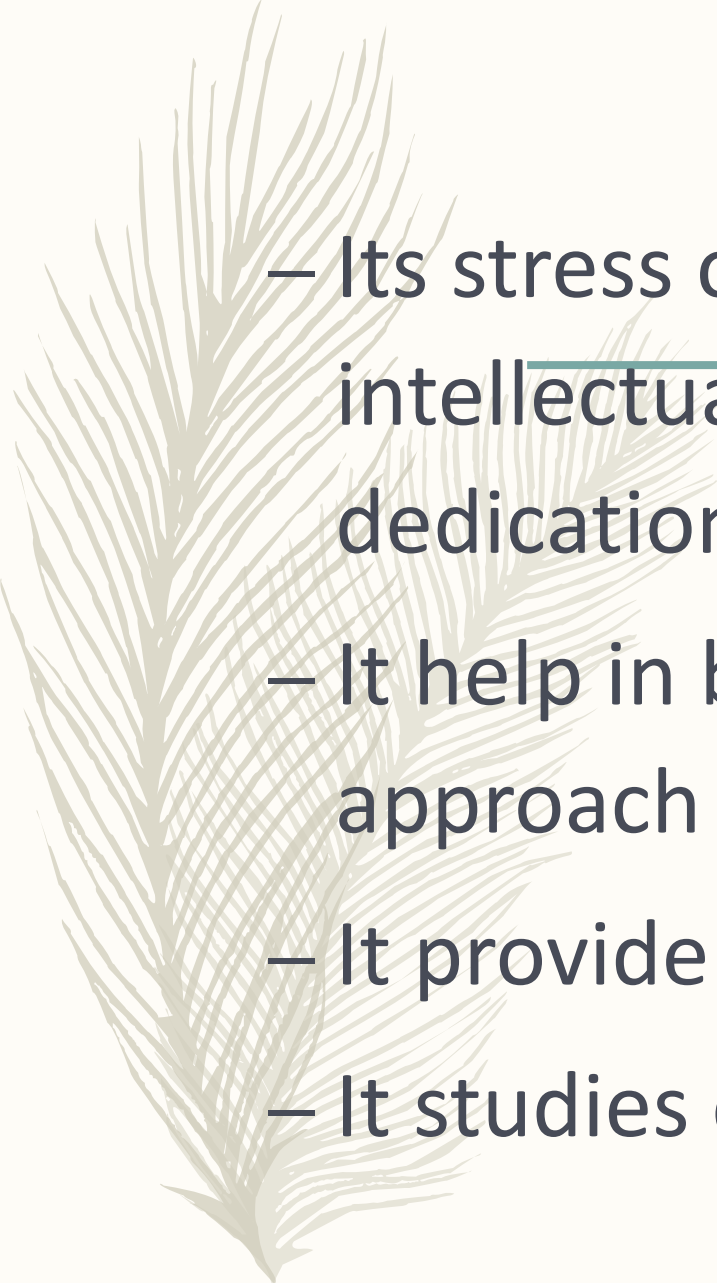
- Science is beauty art source of entertainment and successful means of attaining physical comfort, science promotes truth .
- And , truth is beauty.





# Nature of physical science

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- Physical science provide essential background of knowledge for cultural development.
  - It helps in developing the scientific attitude , scientific interest , scientific outlook.
  - It helps in training the children for developing scientific temper, and scientific creativity.

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- Its stress on the value of open mindedness, intellectual honesty, creative thinking and dedication.
  - It help in building up self confidence systematic approach to day to day problems.
  - It provide training in scientific method.
  - It studies on non living things, material substance.



– It explain a natural phenomenon on the basis of established laws of nature.

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– It also study the composition of various substances of their efforts upon one another.

– It is both product in process means of explaining the truth presence a organised body of knowledge.

– It adapt the scientific method which is reliable, valid, objective, unbiased and variables.




Meaning of science



Nature of science



Science as a human  
enterprise consisted at



Science as a human enterprise consisted at

Value of science

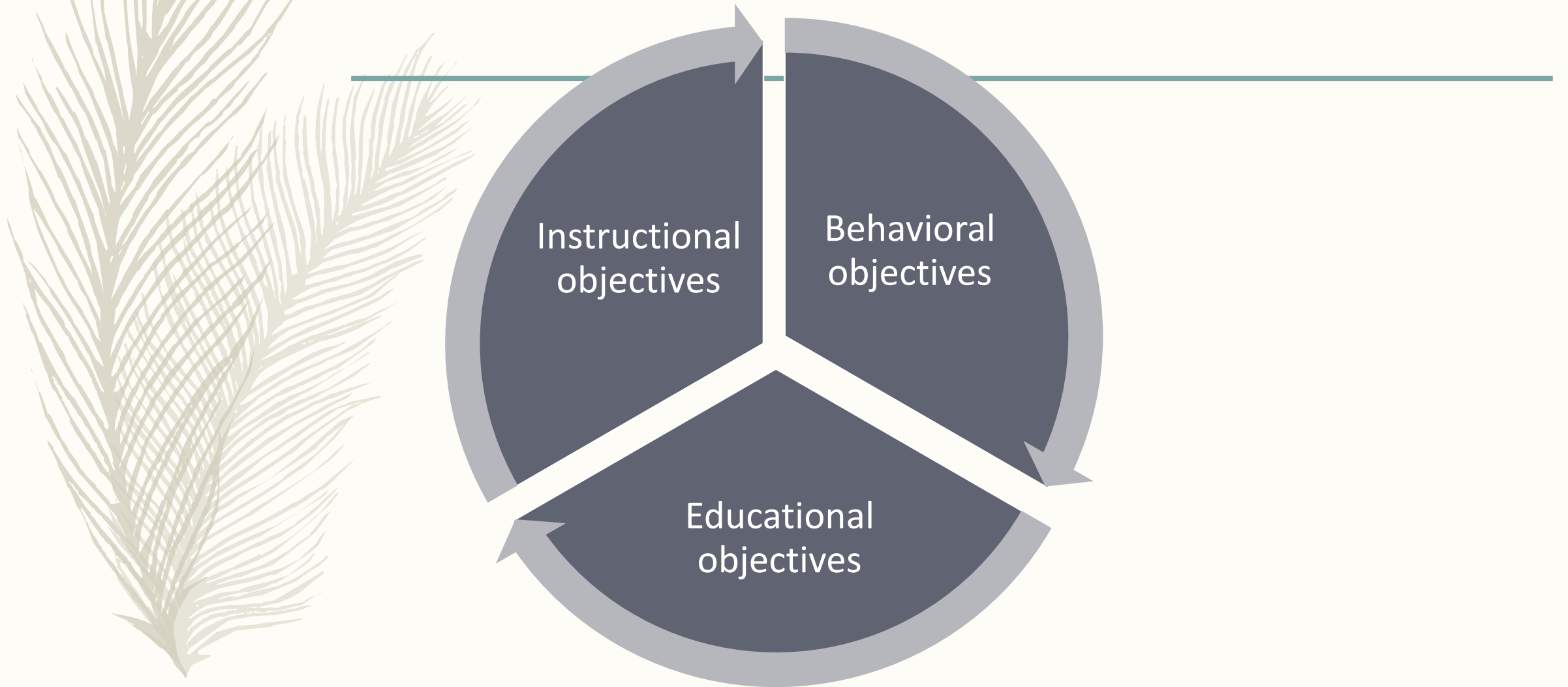
Concept of science, facts, principal, theories

Process of science


Science , society relationship

# Aims and objectives

- There are three types of objectives –








# The aims of the teaching and study of sciences are to encourage and ~~enable students to:~~

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- develop inquiring minds and curiosity about science and the natural world
- acquire knowledge, conceptual understanding and skills to solve problems and make informed decisions in scientific and other contexts
- develop skills of scientific inquiry to design and carry out scientific investigations and evaluate scientific evidence to draw conclusions
- communicate scientific ideas, arguments and practical experiences accurately in a variety of ways

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- think analytically, critically and creatively to solve problems, judge arguments and make decisions in scientific and other contexts
  - appreciate the benefits and limitations of science and its application in technological developments
  - understand the international nature of science and the interdependence of science, technology and society, including the benefits, limitations and implications imposed by social, economic, political, environmental, cultural and ethical factors
  - demonstrate attitudes and develop values of honesty and respect for themselves, others, and their shared environment.



# Objectives

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- This objective refers to enabling students to understand the interdependence between science and society.
- Students should be aware of the global dimension of science, as a universal activity with consequences for our lives and subject to social, economic, political, environmental, cultural and ethical factors.

# At the end of the course, and within local and global contexts, students should be able to:

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- describe and discuss ways in which science is applied and used to solve local and global problems
- describe and evaluate the benefits and limitations of science and scientific applications as well as their effect on life and society
- discuss how science and technology are interdependent and assist each other in the development of knowledge and technological applications
- discuss how science and its applications interact with social, economic, political, environmental, cultural and ethical fact

# BLOOM'S TAXONOMY OF EDUCATIONAL OBJECTIVES

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- Bloom' Benjamin's has put forward a taxonomy of educational objectives, which provides a practical framework within which educational objectives could be organized and measured. In this taxonomy Bloom divided educational objectives into three domains. These are-

# Bloom's Domains of Learning

(higher order skills are on top)

## Psychomotor

- Origination
- Adaptation
- Complex Overt Response
- Mechanism
- Guided Response
- Set
- Perception

## Cognitive

- Evaluation
- Synthesis
- Analysis
- Application
- Comprehension
- Knowledge

## Affective

- Characterizing
- Organizing
- Valuing
- Responding
- Receiving

Sources: Bloom 1984; Krathwohl, Bloom and Masia 1990; Simpson 1972.




# 3 Domains for Behavioral Objectives

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- Cognitive Domain
- Refers to intellectual learning and problem solving
- Cognitive levels of learning include: knowledge, comprehension, application, analysis, synthesis, and evaluation
- Affective Domain
- Refers to the emotions and value system of a person
- Affective levels of learning include: receiving, responding, valuing, organizing, and characterizing by a value



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- Psychomotor Domain
  - Refers to physical movement characteristics and motor skill capabilities that involve behaviors requiring certain levels of physical dexterity and coordination
  - These skills are developed through repetitive practice and measured in terms of speed, precision, distance, procedures, or execution techniques. Psychomotor levels include: perception, set, guided response, mechanism, complex overt response, adaptation, and origination.



# Bloom listed six basic objectives within the *COGNITIVE* domain:1

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- Knowledge - remembering or recognising something previously encountered without necessarily understanding, using, or changing it.
- Comprehension - understanding the material being communicated without necessarily relating it to anything else.
- Application - using general concept to solve a particular problem.
- Analysis - breaking something down into parts.
- Synthesis - creating something new by combining different ideas.
- Evaluation - judging the value of materials or methods as they might be applied in a particular situation.



# Bloom listed five basic objectives in the *AFFECTIVE* domain:

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- Receiving - being aware of or attending to something in the environment.
- Responding - showing some new behaviour as a result of experience.
- Valuing - showing some definite involvement or commitment.
- Organisation - integrating a new value into one's general set of values, giving it some ranking among one's general priorities.
- Characterisation by value - acting consistently with the new value.



# Bloom listed six basic objectives in the *PSYCHOMOTOR* domain:

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- Reflex movements - actions that occur involuntarily in response to some stimulus.
- Basic fundamental movements - innate movement patterns formed from a combination of reflex movements.
- Perceptual abilities - translation of stimuli received through the senses into appropriate movements.
- Physical abilities - basic movements and abilities that are essential to the development of more highly skilled movements.
- Skilled movements - more complex movements requiring a certain degree of efficiency.
- Non-discursive movements - ability to communicate through body movement.



# Examples of Behavioral Objectives

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- General
  - The learner will be able to: orally present a new patient's case
- Specific
  - The learner will be able to: orally present a new patient's case in a logical manner, chronologically developing the present illness, summarizing the pertinent positive and negative findings as well as the differential diagnosis and plans for further testing and treatment.

# COGNITIVE DOMAIN

**Evaluate:** appraises, compares, concludes, contrasts, criticizes, discriminates, explains, justifies, interprets, relates, summarizes, supports

**Synthesize:** categorizes, combines, compiles, composes, devises, generates, interprets, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, translates

**Analyze:** assesses, breaks down, defines, diagrams, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, points out, selects, separates, subdivides

**Apply:** changes, computes, demonstrates, discovers, locates, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses

**Comprehend:** coverts, defends, distinguishes, estimates, explains, extends, generalizes, gives, examples, infers, paraphrases, recognizes, writes

**Know:** defines, describes, identifies, lists, matches, names, reproduces

knowledge & thinking skills



# PSYCHOMOTOR DOMAIN

**Originate:** arranges, combines, composes, constructs, creates, designs, develops, directs, establishes, originates

**Adapt:** adjusts, alters, changes, conducts, converts, coordinates, manages, rearranges, reorganizes, repairs, revises, varies

**Perform Automatically:** (same as Responds) collects, draws, graphs, illustrates, maps, monitors, operates, prepares, sets up, solicits

**Respond:** arranges, assembles, builds, calculates, calibrates, charts, connects, constructs, dismantles, displays, dissects, drafts, fastens, files, fixes, makes, manipulates, measures, mends, mixes, organizes, plots, provides, searches, sketches, works

**Perceive (Sensing):** chooses, describes, detects, differentiates, distinguishes, identifies, isolates, relates, selects, separates, begins, displays, explains, moves, proceeds, reacts, responds, shows, starts

physical & combined skills



# AFFECTIVE DOMAIN

**Characterize:** acts, advocates, collaborates, discriminates, displays, facilitates, implements, influences, interacts, leads, negotiates, performs, practices, resolves, revises, serves

**Organization:** adheres, alters, arranges, combines, compares, completes, defends, formulates, fosters, generalizes, integrates, modifies, orders, organizes

**Value:** completes, contributes, cooperates, decides, determines, embraces, explains, initiates, invites, justifies, participates, proposes, questions, researches, selects, shares, studies

**Respond:** answers, articulates, assists, communicates, complies, conforms, discusses, expresses, greets, listens, presents, prepares, reads, recites, reports, verifies, writes

**Receive:** asks, chooses, describes, follows, gives, holds, identifies, locates, names, points to, replies, selects

beliefs, attitudes, & values





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Thank you